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BARRIERS TO NURSES' PROMOTING MOBILITY IN HOSPITALIZED OLDER ADULTS

by

Gordana Dermody

A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

in Nursing

at

The University of Wisconsin-Milwaukee

August 2016

ABSTRACT

BARRIERS TO NURSES' PROMOTING MOBILITY IN
HOSPITALIZED OLDER ADULTS
by

Gordana Dermody

The University of Wisconsin Milwaukee, 2016
Under the Supervision of Dr. Christine Kovach

Objectives: To examine the association between nurses' knowledge, attitude and external barriers and the nurse's mobility-promoting behavior. Nurse perception of the priority organizations place on mobility, and the relationship of nurses' level of experience to nurse prioritization for promoting mobility was also investigated.

Design: Cross-sectional, descriptive, correlational study with convenience sampling.

Setting: Two community-based hospitals in the Pacific Northwest of the U.S.

Participants: Eighty-five nurses caring for 98 inpatients 65 and older.

Measurement: Nurses' knowledge, attitude and external barriers were examined with a validated 5-point Likert Scale. Patient-related and other clinical barriers and the nurses mobility-promoting behavior was obtained with the validated self-recorded mobility log. Patient Basic Metabolic Index (BMI) and severity of illness was obtained though data extraction.

Results: Nurses viewed the promotion of mobility as important, yet mobilizing older patients was infrequent. Nurses perceived a number of barriers to promoting mobility: Patient condition, the perception that patients could be harmed during mobilization, perceptions of heavy workload, difficulty prioritizing nursing care, and staffing shortages. While novice nurses had lower priority to promote mobility compared to more experienced nurses, novice nurses tended to promote more mobility.

Conclusion: As nurses care for hospitalized older adults the convergence of interpersonal, patient, and environmental complexities acting as barriers to mobility need to be considered. It is important to understand the needs of beginning, less experienced nurses to overcome the barriers to promoting mobility. This study shows that even experienced nurses need to overcome barriers to promoting mobility. Hospitals need to address the needs of the novice nurse while enhancing the practice of more experienced nurses in order to support nurse-promoted mobility. The findings from this study show that nurses knowledge, attitude, and external barriers could play a role in the low levels of mobility in hospitalized older adults.

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To

Alana Sophie and Yana Kathleen

&

Matthew

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CHAPTER 1

This chapter begins by introducing the problem of insufficient promotion of mobility in hospitalized older adults. The prevalence of immobility-related functional decline is given, and the impact of functional decline is discussed. The significance of the rising numbers of older adults in the near future is highlighted. Next, this chapter provides an introduction to nurse barriers to promoting mobility in hospitalized older adults. The purpose of this proposed dissertation study is given, and the conceptual framework is introduced. In chapter 2 a review using Cabana's adapted Knowledge, Attitude and Behavior framework will be used to guide the review of literature regarding nurses' barriers to promoting mobility. Gaps in nursing knowledge provide context for the research questions and hypotheses. Lastly, conceptual definitions will be provided.

Introduction to the Problem

No one should leave the hospital in a worse condition than when they first arrived. Yet studies show that older adults are not receiving the nurse-promoted mobility needed to maintain independent physical function (Boltz, Capezuti, Shabbat, & Hall, 2010; Brown, Friedkin, & Inouye, 2004). Promoting mobility has been defined as getting patients out of bed, including sitting in a chair, toileting at bedside or bathroom, standing, and ambulating (Hoyer, Brotman, Chan, & Needham, 2015). Although the problem of insufficient mobility in hospitalized older adults has been studied since the 1940's, studies continue to verify the incongruence between the mobility needed and received (Asher, 1947; Boltz et al., 2010; Brown, Williams, Woodby, Davis, & Allman, 2007; Brown, Redden, Flood, & Allman, 2009a; Brown et al., 2009b; Fisher, et al., 2011; Harper & Lyles, 1988; Hoyer et al., 2015; Katz, Ford, & Moskowitz, 1963; Lazarus, Murphy, & Coletta, 1991; Warshaw, Moore, & Friedman, 1982; Rosin & Boyd, 1966). Studies

show that insufficient mobility in older adults during hospitalization may result in devastating consequences due to the effects of muscle atrophy and muscle weakness (Brown et al., 2004; Pedersen et al., 2013). Functional decline may lead to hospital readmissions, hospital-acquired conditions, and preventable nursing home admission, all of which decrease quality of life and place a financial burden on family and healthcare systems (Brown et al., 2009a, 2009 b; D'Ambruoso & Cadogan, 2012; Garrison, Manshukani, & Bohn, 2010; Inouye et al., 2000).

Due to muscular and skeletal age-related changes, hospitalized older adults are at increased risk for loss of muscle tissue and weakness if they do not receive the mobility they need (Cruz-Jentoff, Baeyens, & Bauer, 2010; Pedersen et al., 2013). Due to illness and associated pain, weakness, use of medications, and medical equipment, hospitalized older adults may not have the motivation, capacity, or knowledge for independent mobility during hospitalization (Doenges, Moorhouse, & Murr, 2014). Promotion of basic mobility in hospitalized patients such as the promotion of ambulation in the hall and the promotion of active and passive range-of-motion is a nursing responsibility (DeLaune & Ladner, 2011; Doengess et al., 2014; NANDA, 2012). Studies link nurse-promoted mobility to the prevention of adverse health complications and the preservation of physical function in hospitalized patients (Brown, et al., 2004; 2009a; 2009b; Doengess et al., 2014). Nursing diagnosis and care planning textbooks confirm that holistic nursing care includes the promotion of mobility to maintain physical function in hospitalized older adults (DeLaune & Ladner, 2011; Doengess et al., 2014; NANDA, 2012).

Studies show that care coordination for hospitalized patients has become increasingly complex for nurses (Ebright, Patterson, Chalko, & Render, 2003, Potter, et al., 2005). These complexities may contribute to nurses encountering barriers to promoting mobility thus

perpetuating the incongruence between mobility needed and received. Nurse's barriers to promoting mobility include nurse knowledge, nurse attitude, and the perception of external barriers and other influences on nurse behaviors (Brown et al., 2004; Hoyer, et al., 2015).

Prevalence and Significance of Insufficient Mobility

Chronic illnesses and associated co-morbidities often accompany aging. Older adults with chronic health conditions are three times more likely to be hospitalized compared to the general population (Administration on Aging, 2012). Accordingly, the proposed study will take place in a hospital setting in the United States. One third of all hospitalized patients in the U.S. are over 65, and as the number of older adults grows, increased hospital utilization can be expected (He, Sengupta, & DeBarros, 2005). The number of older adults in the United States is predicted to increase from 43.1 million in 2012 to 79.7 million by 2040 and older adults over the age of 85 years will triple from 5.9 million in 2012 to 14.1 million by 2040 (AOA, 2012).

The importance of nurse-promoted mobility in hospitalized older adults is well described in the literature (Brown et al., 2007; Brown et al., 2004; Pashikanti, & Von Ah, 2012). Hospitalized older adults need more specialized nursing care because they are at increased risk for functional decline due to a longer recovery time, (D'Ambruoso, & Cadogan, 2012). Studies show that a lack of mobility in hospitalized older adults may lead to a cascade of negative biophysical and psychosocial outcomes, including hospital-acquired conditions, sarcopenia, functional decline, and subsequent loss of independence and potential nursing home admission as well as hospital readmissions (Brown, et al., 2004; 2007; Pedersen et al., 2013; Parke & Hunter, 2014). These negative consequences decrease the quality of life of older adults, and place a financial burden on family and healthcare systems (Brown et al., 2009 a; 2009 b; Garrison et al., 2010; D'Ambruoso & Cadogan, 2012; Inouye et al., 2000). Hospitalized older

adults with insufficient therapeutic mobility intervention during their hospital stay may suffer a staggering 34%-50% functional decline (ADL) (Zisberg et al., 2011). Once functional decline sets in it is difficult for older adults to recover from it (Brown et al., 2009 a; 2009 b; Cruz-Jentoff, et al., 2010). If the promotion of mobility during hospitalization is not adequate, the post-hospitalization trajectory of recovery may include decreased functional ability as long as one year after discharge (Brown et al., 2009b).

Numerous studies show that the promotion of early, frequent, and regular mobility activities may lead to beneficial outcomes in hospitalized older adults, such as increased muscle strength and mass, better functional performance, and shorter hospital stays (Drolet et al., 2013; Moore et al., 2014; Padula, Hughes, & Baumhover, 2009; Pashikanti & Von Ah, 2012; Suetta et al., 2004). However, insufficient mobility during hospitalization continues to be a persistent and alarming phenomenon in hospitalized older adults (Brown et al., 2009 a; 2009 b; Zisberg et al., 2011; Hoyer, et al., 2015).

Introduction to Barriers to Promoting Mobility

Studies show that barriers to nurses promoting mobility in hospitalized older adults exist, which may contribute to the phenomenon of nurses not promoting sufficient mobility in non-intensive care units (Doherty-King & Bowers, 2013, Hoyer et al., 2015; Brown, et al., 2004, 2007). Studies suggest that these barriers may include knowledge barriers, attitude barriers, and external barriers to mobility promoting behavior (Brown et al., 2004; Doherty-King & Bowers, 2011; 2013; 2014; Hoyer et al., 2015). **Knowledge barriers** may include a lack of familiarity with the specialized geriatric patients' needs for mobility and awareness of the consequences of insufficient mobility (Hoyer et al., 2015; Moore et al., 2014). Nurses may not fully understand the nursing care process involved in mobility promotion, or have the skills necessary to assess

the functional ability in older patients prior to promoting mobility in the older adult patient (Doenges et al., 2014).

Attitude barriers could also influence the mobility-promoting behavior of nurses. A lack of agreement with available clinical practice guidelines could impede nurses following best-practice guidelines to promoting mobility in hospitalized older adults (Hoyer et al., 2015). Another attitude barrier is lack of outcome expectancy. For example, in one study nurses expressed fear of injuring the patient during mobility (Moore et al., 2014). Deferring the promotion of mobility to other disciplines could be due to a lack of self-efficacy and lack of motivation or inertia of previous practice (Doherty-King & Bowers, 2011; 2013; 2014). **External Barriers** may include patient factors, interdisciplinary factors, and environmental factors. Studies found that patient factors may include patient condition and preference, the presence of medicals devices, or the level of assistance needed (Barber et al., 2014; Brown et al., 2007; Engel, Needham, Morris, & Gropper, 2013; Leditschke, Greene, Irvine, Bissett, &Mitchel, 2012; Parke & Hunter, 2014). Interdisciplinary factors may include communication challenges between nurses and physicians and between nurses and physical therapists. Studies show that physicians may not order timely or sufficient physical therapy consultation (Engel et al., 2013). In addition, bed-rest and activity orders remain exclusively "ordered" by physician providers (Brown et al., 2004). Therefore, it is critical for nurses to communicate and collaborate with both, physicians and physical therapists regarding physician orders to discontinue potentially unnecessary bed-rest, order the promotion of mobility, and garner expert guidance form physical therapists. Studies show that role confusion may exist in some nurses regarding who should primarily be responsible for the promotion of mobility

(Doherty-King & Bowers, 2011; 2013). Other unit-based and organizational environmental factors may include perceived lack of nursing time, resources and staff.

Nurse experience may be a factor in shaping the attitudes that nurses have about promoting mobility, as training may build confidence in implementing mobility interventions (Hoyer et al., 2015). With the retirement of experienced nurses, and the influx of less experienced nurses, disparities in mobility promoting behavior and the perception of barriers among nurses may become increasingly apparent. There is considerable evidence that differences in practice between novice and experienced nurses exist (Benner, 1982; Koh, Park, & Wickens, 2014). Studies show that less experienced nurses lack situational experience and knowledge (Benner, 1982). Because the nursing practice of less experienced nurses in the clinical setting is guided by abstract principles they may not be able to view the clinical patient situation in its holistic context (Aiken, Clark, Cheung, Sloane, & Silber, 2003; Blegen, Goode, Park, Vaughn, & Spetz, 2013).

Gaps in Nursing Knowledge

Research has focused on barriers to mobility in intensive care settings. Their findings may not be generalizable to nurse barriers in the promotion of mobility in non-intensive care settings. Intensive care units may have greater nurse-to-patient ratios, increased presence of physical and occupational therapists, and more aggressive approaches to rehabilitation than non-intensive care units. (Barber et al., 2014; Engel et al., 2013; Jolley, Regan-Braggs, Dickson, & Hough, 2014; Leditschke, et al., 2012; Lee & Fan, 2012). More knowledge is needed about nurses' barriers in non-intensive acute care settings that identify and describe the barriers that could be constraints on nurses' mobility-promoting behavior. In particular, we do not sufficiently understand the nurse knowledge barriers, nurse attitude barriers, perceptions of external barriers,

and how these barriers may influence the mobility promoting behaviors of nurses. It is important to identify these barriers to build the evidence case for the development and implementation of tailored interventions that could eliminate or minimize nurse knowledge, attitude and other external barriers and improve nurse-promoted mobility in hospitalized older adults.

Although nursing publications about the physical mobility needs of hospitalized older adults have increased over the past 15 years, to the knowledge of this author, there is no nursing study that has examined the influence of nurse knowledge barriers, attitude barriers, perceptions of external barriers on nurse-driven mobility promoting behaviors. Further, little is known regarding the perception nurses have of the organizational priority for nurse-driven promotion of mobility. In addition, there is limited knowledge about the differences between novice and experienced nurses related to the knowledge, attitude and external barriers, and how these barriers may influence the nurses 'mobility-promoting behavior. This study will fill these gaps.

Purpose of the Proposed Study

This study was based on the premise that nurses' encounter barriers to promoting mobility in hospitalized older adults that may contribute to inadequate mobility in this population. Accordingly, the purpose of this proposed study was to identify and describe the full spectrum of nurses' barriers including knowledge, attitude and the perception of external barriers, and how these barriers may be associated with the nurse's mobility-promoting behavior. Nurses' perception of the priority organization places on mobility, and the relationship of nurse level of experience to nurses' prioritization for promoting mobility were also investigated.

Hypotheses and Research Questions

The research questions that were addressed in this study include:

1. What are nurse knowledge barriers, nurse attitude barriers, and perceptions of external barriers to promoting mobility?
2. What are the most common clinical barriers that nurses encounter to promoting mobility in patients?
3. What are the nurses' mobility-promoting behaviors?
4. What are the nurses' perceptions of the organizational priority for promoting mobility in hospitalized older adults?
5. Do nurses view the promotion of mobility as a priority?
6. Is there a difference between level of nurse experience and the perception of organizational priority and self-priority regarding patient mobilization?
7. What is the relationship between the patient's measures of severity of illness and the nurses' mobility promoting behavior?

Hypotheses

(1) Nurse-knowledge barriers, nurse attitude barriers, and external barriers will be negatively associated with nurse's mobility promoting behavior in hospitalized older adults.
Rationale: According to the adapted Knowledge, Attitude and Behavior framework knowledge barriers, attitude barriers and external barriers may influence the nurses' mobility-promoting behavior. As barriers increase, nurses provided less mobility.

(2) There will be a difference in mobility promoting behavior and knowledge, attitude and behavior between nurses with different levels of experience: Novice (≤ 1 year), advanced beginner (>1 to 5 years), Competent (>5 to 10 years), and expert (>10 years or more).

Rationale: There is conflicting evidence in the literature, some suggesting that nurses with less experience may struggle to overcome barriers to promoting mobility. However, experienced nurses may be used to old practice routines which could also be a barrier to promoting mobility.

(3) Nurses' perception of the organizational priority to promote mobility will be positively associated with nurses' mobility-promoting behavior.

Rationale: Literature suggests that organizational culture could affect nursing practice. A perception that the organization views mobility as a priority could result in increased nurse-promoted mobility.

The findings of this study could contribute to the design of a tailored, nurse-driven, multi-component mobility intervention that could eliminate or minimize the barriers nurses encounter and improve the promotion of mobility in hospitalized older adults.

Contributions to Nursing

Many studies either describe barriers to promoting mobility—or they describe the lack of mobility promoted by nurses. However, this study proposes that to improve the promotion of mobility in hospitalized older adults, it is critical that nurses' mobility-promoting behavior is described in terms of the barriers they encounter. Accordingly, this study adds to nursing knowledge by examining the associations between the nurses' knowledge, attitude and external barriers and the nurses' promotion of mobility in hospitalized older adults. This knowledge is needed to develop, implement, and test a multi-component nurse-driven mobility protocol for hospitalized older adults in non-intensive care settings. Novice nurses may struggle to overcome barriers more than experienced nurses. This study may show if novice nurses, in particular, need to have increased knowledge and support in prioritizing the nursing care tasks to promote

mobility, and could guide nursing educators and organizations in providing targeted training to nurses with limited experience.

Introduction of the Knowledge, Attitude and Behavior Framework

This conceptual framework is based on the work of Cabana and colleagues (1999), and was adapted for this proposed study. A detailed description of the theoretical foundations for this framework, and conceptual definitions are discussed in manuscript 1, in chapter 2. Briefly, the Knowledge, Attitude and Behavior Framework describes three main barriers that may influence nurse-promoted mobility in hospitalized older adults including: 1) knowledge barriers, 2) attitude barriers 3) and external barriers. Studies show that both nurse's knowledge and attitudes may be linked to the mobility promoting behavior of nurses (Hoyer et al., 2015). Nurse-attitudes have been shown to be influenced by external factors including organizational factors, patient factors, other nurses and interpersonal factors (Alanen, Kaila, & Valimaki, 2009; Ward, 2005; Hoyer et al., 2015). Because studies have shown that interpersonal factors including knowledge and attitudes, and external factors are significant predictors of actual behavior, the Knowledge, Attitude and Behavior framework is appropriate for the proposed dissertation study that will examine knowledge, attitude and external barriers and how these barriers may influence the nurse's mobility-promoting behavior.

Proposed Study Setting and Sample

The setting for this study was a mid-sized acute care hospital in the North-Western United States. This setting provided access to nurses who are caring for hospitalized older adults admitted to non-intensive care settings. The hospital setting was chosen for this study for a number of reasons. U.S. hospitals have been described as chaotic, and a place where change is rapid and unpredictable (Catchpole, 2013). It is here where a myriad of health professionals

including physicians, physical and occupational therapists and unlicensed assistive personnel converge to provide health care to older adults while attempting to adhere to health care reform guidelines and remain fiscally responsible. Nurses are on the front lines of promoting mobility in hospitalized older adult patients. Yet, the prevention of functional decline through the promotion of nurse-promoted mobility has not been actualized despite decades of research (Parke & Hunter, 2014). So, this makes one wonder if the experienced nurses are any better at promoting mobility than the new nurses.

Chapter Summary

This chapter introduced the persistent incongruence between the mobility needed and received in hospitalized older adults. Cabana's (1999) Knowledge, Attitude and Behavior framework was adapted as a conceptual framework for this dissertation study. Nurse knowledge barriers, nurse attitude barriers, and external barriers may influence nurses' mobility promoting behavior in hospitalized older adults. This study provides new information regarding how nurses' mobility-promoting behavior may be influenced by their perceived and experienced knowledge, attitude and external barriers (Hoyer, et al., 2015; Doherty-King & Bowers, 2011, 2012; 2013; Brown et al., 2004; 2007).

CHAPTER 2

Introduction to the Chapter

The main purposes of this study were: 1) To identify and describe nurses' knowledge barriers, attitude barriers and external barriers to nurses promoting mobility in hospitalized older adults in non-intensive care settings; and 2) to examine the association between these barriers and nurses' mobility-promoting behaviors. Nurses' perception of the priority organizations place on mobility, and the relationship of nurses' level of experience to nurses' prioritization for promoting mobility was also investigated. It was hypothesized that nurse-knowledge barriers, nurse attitude barriers, and perception of external barriers could be associated with nurse's mobility promoting behavior in hospitalized older adults. In addition, it was hypothesized that there would be differences between novice and experienced nurses' knowledge barriers, attitude barriers, perception of external barriers; and that these barriers may influence nurses' mobility promoting behaviors.

In chapter 2 of this manuscript-style dissertation proposal, two manuscripts are presented: In the first manuscript the Knowledge, Attitude and Behavior framework is described, conceptual definitions provided, and the application of this framework to study barriers to nurses' mobility-promoting behavior is discussed. The second manuscript is a literature review that uses the aforementioned framework to review the current state of knowledge and organize the findings regarding the barriers that nurses may encounter as they promote mobility in hospitalized older adults.

Section 2.1-Manuscript 1

Exploring the Knowledge, Attitude and Behavior Framework to Study Barriers to Nurses' Mobility-Promoting Behavior

Introduction

Insufficient mobility in hospitalized older adults has been a perplexing phenomenon for decades. Over the years this phenomenon has been extensively studied. The promotion of mobility in hospitalized patients continues to be a nursing responsibility (Doengess, et al., 2014). Nursing textbooks, and other literature link nurse-promoted mobility to the prevention of adverse health complications and the preservation of physical function in hospitalized patients (Brown, et al., 2004; 2009a; 2009b; Doengess et al., 2014). Authors of nursing textbooks that are used in entry-level nursing education describe the importance of nurses in musculoskeletal and mobility assessment, and in the development of nursing care plans to meet the mobility needs of older adults (DeLaune & Ladner, 2011). Nursing diagnosis and care planning textbooks confirm that holistic nursing care includes the promotion of mobility to maintain the physical function in hospitalized older adults (DeLaune & Ladner, 2011; Doengess et al., 2014; NANDA, 2012).

Examination of the potential barriers that could explain nurses' mobility-promoting behavior must include inquiry into why nurses are struggling to promote mobility in hospitalized older adults despite the available research-generated knowledge that shows the important preventative effect of mobility promotion. While the incongruence between mobility needed and the mobility promoted in hospitalized older adults has been studied for decades—and literature

has pointed a critical finger at nurses for failing to promote mobility—little is known about whether the barriers that nurses encounter could explain nurses' mobility-promoting behavior.

Theoretical Background: The Theory of Planned Behavior

The aims to prevent functional decline and to promote better health outcomes in hospitalized older adults has prompted researchers to investigate the phenomenon of nurses not promoting sufficient mobility in their patients. The recognition that nurses' knowledge and attitudes influence nursing practice behavior has contributed to researchers borrowing conceptual models and frameworks from psychology (Alanen, Valimaki, & Kaila, 2008; 2009; McMillan, Tittle, Hagan, & Laughlin, 2000a; McMillan, Tittle, Hagan, Laughlin, & Taber, 2000b). Obtaining a better understanding of the knowledge that nurses possess and what attitudes and beliefs they hold is important to discovering how their nursing practice behavior is affected by these factors (Knowles, et al., 2015). For example, a study that examined nurse's knowledge and attitudes about pain management and patients' experience of pain discovered that nurse's knowledge and attitude affected the clinical pain management interventions that nurses provided. The study found that nurses lacked knowledge about pain management, and had attitudes about pain management and patients with pain that negatively impacted the nurses' provision of pain management (McMillan, et al., 2000a, b). Researchers studying influences on nurse practice behavior need to use conceptual frameworks that can explain the barriers to desired behavior.

One such framework is Cabana and colleague's (1999) Knowledge, Attitude and Behavior Framework (TpB) is based on the theory of planned behavior (Ajzen, 1985). The premise of the theory of planned behavior is that a person's attitude, and what they believe to be true, is interrelated with their behavior (Ajzen, 1991; 2012; 2014). Constructs of the TpB

include *attitude*, which is influenced by behavioral beliefs; *subject norm*, which is influenced by normative beliefs; and *perceived personal control*, which is influenced by control beliefs that lead to intention and actual behavior. A person's attitude may be positive or negative toward the desired behavior. This is influenced by beliefs that link the behavior to expected outcomes (Ajzen, 1991; 2012; 2014).

Beliefs about expectations include *self-efficacy* and *outcome expectancy* which were first introduced by Bandura and colleagues (1980). Self-efficacy is the belief that one can carry out a specific behavior. Nurses may not believe that they are able to promote the needed mobility in their patients due to lack of knowledge, training or skills. Outcome expectancy is a person's expectation that a certain behavior will result in a particular outcome (Bandura, Adams, Hardy, & Howells, 1980). If nurses do not believe that the promotion of mobility they provide will make a difference in patient outcomes, or that it might not be valued by the organization they may lack outcome expectancy. Both nurses' self-efficacy and outcome expectancy may influence the nurses' mobility-promoting behavior. As each behavior outcome is evaluated it further affects the beliefs and subsequently the attitude.

Hospitals are akin to small-scale societies where social norms and peer pressure could be influencing the practice behavior of nurses. *Subjective norms* are defined as external social pressure from peers to either perform or not to perform a behavior (Ajzen, 1991; 2012; 2014; Bandura et al., 1980). Nurses' attitudes have been shown to be influenced by external factors including organizational factors, patients, other nurses and interpersonal factors (Alanen et al., 2009; Ward, 2005; Hoyer et al., 2015). Studies show that both nurse's knowledge and attitudes may be linked to the mobility-promoting behavior of nurses (Hoyer et al., 2015). Nurses working in the hospital setting are interdependent with each other and other disciplines. Organizational

behavior, interdisciplinary collaboration, and culture could influence nurses' attitudes. Studies show that interdisciplinary collaboration and communication between nurses, physicians and physical therapists is fundamental to promoting mobility in hospitalized people (Drolet et al., 2013; Padula et al., 2009; Pashikanti & Von Ah, 2012). In addition, nurses may be influenced by peer opinion and nursing practice culture when performing a desired behavior, such as mobility promotion. Studies show that intentions, perceptions, and attitudes are significant predictors of actual behavior (Ajzen, 1991; Ajzen, 2012; Alanen et al., 2009; Fishbein & Ajzen, 1975). Because studies have shown that interpersonal factors such as attitudes, beliefs, and external factors are significant predictors of actual behavior, Cabana's (1999) Knowledge, Attitude and Behavior framework could be an appropriate conceptual framework to examine knowledge barriers, attitude barriers and their influence on nurses' mobility-promoting behavior.

Cabana's Knowledge, Attitude and Behavior Framework: Concepts and Definitions

Cabana's Knowledge, Attitude and Behavior Framework (1999) was developed to identify the relationships between knowledge, attitude, and external barriers and explain how these barriers influence the behavior of care providers (Cabana et al., 1999). The framework specifically describes provider barriers to following research-generated clinical evidence including: 1) knowledge barriers, 2) attitude barriers, and 3) external barriers. The premise of this framework is to identify and understand barriers, which can lead to their removal in a sequential fashion (first knowledge, then attitude, then finally external barriers). Removing these barriers could lead to changes in how providers care for patients, and may improve patient outcomes (Cabana et al., 1999). Investigating these barriers could help bridge the gap between research-generated evidence and bedside nursing care. Applying this conceptual framework to the phenomenon of insufficient nurse-promoted mobility could lead to the minimization of

barriers that inhibit desired behavior. This could positively impact nurses' mobility-promoting behavior, lead to the prevention of patient functional decline and prevent other adverse health outcomes.

Conceptual Definitions of the Adapted Knowledge, Attitude and Behavior Framework

Knowledge Barriers

Knowledge barriers are defined as a lack of nurse's awareness or familiarity with: 1) the specialized geriatric patient's needs for mobility; 2) nursing care process and skills to promote mobility in hospitalized older adults with varying severity of illness; 3) consequences of immobility in older adults; and 4) when to contact the physical therapist for a potential referral. Do nurses contact PT directly for a referral, or do they have to contact a physician or NP to get a PT order? In addition, because knowledge development about specific diseases and illnesses is continually evolving, bedside nurses may not be aware of the specialized needs of hospitalized older adults for mobility. Little is known about nurses' perceptions of their ability to assess older patient's functional status including the assessment of lower leg strength prior to transfers or ambulation. Further nurses may be unaware of the availability and content of clinical practice guidelines. In addition, nurses may lack knowledge and familiarity of the nursing care tasks that need to be performed to promote mobility (Hoyer et al., 2015).

Attitude Barriers

Attitude barriers have been defined as: 1) lack of agreement regarding the need to promote mobility; 2) lack of outcome expectancy; 3) lack of self-efficacy, and 4) lack of motivation or habits of previous practice. *Lack of agreement* is when nurses do not agree that hospitalized older adults need to be more mobile. They also may not agree that specific patients need to be mobile because it may seem impractical due to cumbersome medical devices or

because of the perception that their patient is too sick for mobility. In addition, nurses may have difficulty adapting evidence-based recommendations to the patient's condition, and may not agree with the recommendations made. *Lack of outcome expectancy* is when nurses feel that promoting mobility may not result in the desired outcome. *Lack of self-efficacy* is when nurses do not believe they are able or capable of carrying out the nursing care process to promote mobility. In addition, nurses' may believe that the promotion of mobility is not their responsibility.

Studies found that nurses who did not hold the view that the promotion of ambulation is a specific nursing responsibility deferred the promotion of mobility to physical therapists. The physical therapist role first emerged during World War I, because there was a great need to assist injured soldiers to recover their function from the injuries sustained during battle (Nicholson, 2008). The discipline of physical therapy was formalized in the late 1960's. Today's physical therapists are valued members of acute care interdisciplinary teams. Physical therapists function autonomously and collaboratively in the hospital setting with the primary role of promoting physical movement to improve function and prevent disability. As this role has evolved in some states, physical therapists are considered "direct access" providers who no longer need a physician's order to evaluate and treat patients (Nicholson, 2008). Nurses also heavily depended on nurses' aides to assist with the promotion of mobility. Some nurses deferred the responsibility of promoting mobility entirely to nurse's aides (Doherty-King & Bowers, 2011; 2013).

Inertia of previous practice is the tendency of habitual practices to remain unchanged, which could be due in part to a lack of *motivation* (Cabana et al., 1999). Old practice routines may be followed despite the knowledge that promoting mobility is important. Nurses may also

hold attitudes that mobility could be more work for them and are averse to adding to their workload.

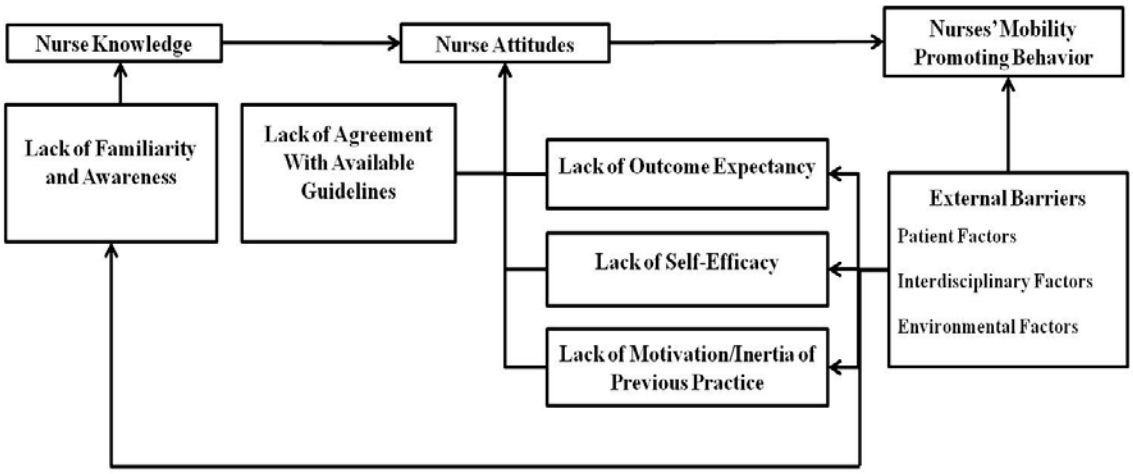
External Barriers

External barriers are defined as barriers that could influence the nurse's ability to promote mobility in hospitalized older adults. External barriers are grouped into patient factors, interdisciplinary factors, and environmental factors. *Patient factors*, such as patient preference, capability, conditions, and readiness for mobility, could impede nurses from promoting mobility. *Interdisciplinary factors* include a lack of communication with the healthcare team. This could make it difficult for nurses to use a coordinated effort to promote mobility with support from the healthcare team including nurses, physicians, and therapists. For example, if physicians do not write orders to promote mobility nurses may feel less motivated to promote mobility. *Environmental factors* are barriers that are not under the control of the nurse including nurse-to-patient staffing, mobility equipment and space, and the support of department leadership. Nurses may have difficulty matching patient factors and conditions with the physician's order or nursing guidelines to increase mobility for an older adult patient. Limited interdisciplinary communication about the patient's physical functioning or the promotion of mobility could also influence self-efficacy, outcome expectancy and motivation. Environmental factors that form barriers to promoting mobility include organizational constraints, such as lack of time and insufficient resources (Cabana, et al., 1999). Although studies have measured the frequency of mobility in patients, this author is not currently aware of studies that have explored the influence of barriers encountered by nurses on the nurses' mobility-promoting behavior.

Mobility-Promoting Behavior

Mobility-promoting behavior is defined by this researcher as nurse-promoted ambulation in the room or in the hall, promoting sitting up in a chair, promoting repositioning in bed, and performance of active/passive range-of-motion. Knowledge barriers are defined as a lack of awareness or familiarity with: 1) the specialized geriatric patient's needs for mobility; 2) nursing care process and skills to promote mobility in hospitalized older adults with varying severity of illness; 3) consequences of immobility in older adults; and 4) knowledge of when to contact the physical therapist for a potential referral, or feeling empowered to question bed-rest orders, or request advanced mobility orders.

Figure 1 Adapted Knowledge, Attitude and Behavior Framework.



Relevancy of the Proposed Conceptual Model to the Science of Nursing

The adapted Knowledge, Attitude and Behavior Framework is relevant to the science of nursing in several ways. This framework could be used in studies to generate knowledge to build

the evidence base to inform policy development, and create a greater focus in nursing education regarding the specialized mobility needs in hospitalized older adults. To ensure good health outcomes in hospitalized patients, organizations have increasingly focused on system-based rapid quality and process improvement (Sollecito & Johnson, 2012), but may not have investigated the influence of barriers on nurses' behavior sufficiently to make mobility interventions sustainable. This conceptual framework brings attention to nurses' knowledge, attitude and external barriers, and that both intrapersonal and external barriers may influence nurses' mobility-promoting behavior. This framework could be useful as a change-framework to eliminate nurse barriers, and to develop tailored nurse-driven mobility interventions. Interventions may be more effective if they are based on a framework with well-defined concepts (Conn, Rantz, Wipke-Tevis, & Maas, 2001).

The Value of Using Borrowed Frameworks

Over the years nursing scholars have developed theories, concepts, models and frameworks to build nursing knowledge, describe phenomena, and promote client-centered health outcomes (King, 1997; McEwen & Wills, 2007; Sieloff et al., 1998). Nurses have commonly used theories from non-nursing disciplines to develop grand and middle range nursing theory (Meleis, 2012). However, some nurse theorists have argued that if nursing researchers do not use nursing theories to conduct their research it is not "nursing research" (Fawcett, 2000). The complete extrication—as Fawcett calls for—from psychology, sociology, and even randomized controlled trials because of their epistemological origins (Fawcett, 2000) may not be realistic for nurse researchers interested in solving clinical problems. It may be necessary to use non-nursing theories—as many nurses who are scientists have—to identify and describe some nursing phenomena, to develop interventions appropriate for the demands of 21st century health

care, and to contribute to nursing theory development. In fact, one study shows that in 76% of over 2500 nursing research articles published across seven top nursing journals between 2002 and 2006—authors used theory to guide their research, and among these studies 45% of the authors used non-nursing theories (Bond et al., 2011).

Nursing theorists have successfully borrowed theories and foundational concepts from other disciplines to positively impact the science of nursing, the discipline of nursing, and health outcomes for individuals, families, and for populations. For example, Meleis' Transitions Theory is grounded in sociology (Im, 2011; Meleis, 2012), and King based her conceptual framework upon the foundation of the General Systems Theory developed by von Bertalanaffy and colleagues (King, 1997; Sieloff et al., 1998). Meleis (2012) discusses the importance of theory development and theoretical thinking to advance the scholarship of the nursing discipline. Out-of-discipline theorizers, as Meleis (2012) calls those who: "…see the world of nursing through glasses tinted by other disciplines" (Meleis, 2012, p. 17), could generate findings and conceptualizations that may illuminate clinical nursing phenomena, and bring solutions with that could contribute to the health outcomes of an aging society.

It is predicted that the aging population will more than double in the next two decades with nearly 80 million individuals over the age of 65 (AOA, 2012). To overcome the incongruence between the mobility needed and promoted by hospitalized older adults it is important that nurse scientists lead the scientific discovery about clinical nurse-related phenomenon that currently exist, through rigorous scientific methods to generate research-based evidence (Polit & Beck, 2012). Therefore, it is critical that nurses select methods, theories and conceptual frameworks that are appropriate to study clinical phenomena such as nurse's barriers to promoting mobility in hospitalized older adults to yield knowledge with ecological

validity. The barriers that hinder nursing from promoting mobility need to be identified and described so that tailored mobility interventions can be implemented.

Discussion

The adapted Knowledge, Attitude and Behavior Framework based on Cabana's work is a dynamic framework that shows the interactive relationship between knowledge, attitude and behavior. Cabana's framework work shows that nurses may be confronted with interpersonal barriers including knowledge and attitude barriers, and external barriers that may influence their mobility promoting behavior. In addition, external barriers may influence nurses' lack of agreement with the demands/necessity to promote mobility, a lack of outcome expectancy, lack of self-efficacy, and lack of motivation or inertia of previous practice. Nurses with these types of attitudes may not seek out new knowledge, and the lack of knowledge may continue to foster a lack of agreement.

Further, this framework explicates how antecedents to nurse behavior, such as patient factors, interdisciplinary factors, and environmental may act as external barriers that influence the attitudes of nurses. The nurses' perceptions of their knowledge or attitude barriers or how these may influence their behavior are important considerations if a clinical nursing practice behavior change is desired. In addition, studies show that patient factors including the patient's condition, presence of medical devices, and patient preferences may be antecedent to nurses' outcome expectancy and self-efficacy to promoting safe mobility (Jolley, et al, 2014; Leditschke, et al., 2012; Lee & Fan, 2012).

Conclusion

In conclusion, when hospital systems use a broad, system-based approach to addressing the quality of healthcare, they may minimize the importance of individual nurses as key players

both in the context of care and environment, and in the processes and transactions that influence the quality health outcomes (Mitchell, Ferketich, & Jennings, 1998). Overly broad, system-based frameworks do not include provider, patient and environmental antecedents despite studies that show that these antecedents play an integral role in the quality care outcomes of patients (Carayon, et. al., 2006; Hoyer et al., 2015).

For example, even if nurses' work environments are improved, nurses may continue to have knowledge and attitude barriers which could undermine system-based efforts to promote mobility. Even if the process or the system interaction is optimal, nurses may continue to have lack of outcomes expectancy, lack of self-efficacy, and lack of motivation or inertia of practice which may influence the mobility-promoting behavior of nurses. Accordingly, the adapted Knowledge, Attitude and Behavior Framework is a conceptual framework that represents a logical and dynamic design that could be useful to describe and explain the phenomenon of nurses not promoting sufficient mobility in hospitalized older adults. In addition, this framework could guide the interpretation of the study findings, and discussion of the implications.

Section 2.2-Manuscript Two

Barriers to Nurse-Promoted Mobility in Hospitalized Older Adults: A Review of Literature

Introduction to the Problem

Insufficient nurse-driven mobility continues to be a perplexing problem with negative outcomes for the growing population of hospitalized older adults (Brown et al., 2009; D'Ambruoso & Cadogan, 2012). The result of insufficient mobility of hospitalized older adults has been associated with a 34%-50% increase in functional-related disabilities (Inouye, et al., 1993; 2000). Studies show that nurses are not integrating best practice recommendations for mobility into their clinical practice (Brown et al., 2004; Brown et al., 2007; 2009a; 2009b; Doherty-King & Bowers, 2011; 2013; 2014). The number of individuals over 65 years old in the United States is predicted to increase to over 70 million by 2030 (AOA, 2012). As one third of hospitalized patients are over 65, increased hospital utilization can be expected as this population grows (He et al., 2005). Studies show that the specialized health care needs of hospitalized older adults is often overlooked (Parke, & Hunter, 2014).

The problems associated with insufficient mobility during hospitalization are well described. Due to musculoskeletal changes that accompany aging, hospitalized older adults are at increased risk for accelerated muscle loss and weakness which contributes to functional decline (Brown, et al., 2009a; 2009b; Cruz-Jentoft et al., 2010 Inouye, et al., 1993; 2000). A longitudinal study found that insufficient mobility in hospitalized older adults contributed to functional decline as long as one year post discharge, which may affect the hospital-to-home transition (Brown et al., 2009; Garrison et al., 2010). Once functional decline sets in, it is difficult for older adults to recover from it, and a decreased ability of performing Activities of Daily Living (ADL) is the result (Brown et al., 2009).

The loss of physical function due to immobility may lead to hospital readmissions, hospital-acquired conditions, and nursing home admission, all of which decrease quality of life and place a financial burden on family and healthcare systems (Brown et al., 2009; Garrison et al., 2010; D'Ambruoso & Cadogan, 2012; Fisher, et al., 2011; Inouye et al., 1993; Ostir et al., 2013).Yet, the literature across nursing, medical and physical therapy disciplines shows that despite the available research-generated knowledge of the importance of promoting sufficient mobility, hospitalized older adults are not receiving the mobility they need to stay well--or at least not get worse (Brown et al., 2004; Brown et al., 2007; 2009a; 2009b; Doherty-King & Bowers, 2011; 2013; 2014). While knowledge gaps remain, there is some evidence that knowledge barriers, attitude barriers, and external barriers contribute to the phenomenon of nurses not promoting sufficient mobility in hospitalized older adults (Doherty-King & Bowers, 2013, Brown, et al., 2004, 2007; Hoyer et al., 2015).

The purpose of this manuscript is to review the literature that describes the barriers to promoting mobility in hospitalized patients. Cabana's Knowledge, Attitude and Behavior Framework, will be used to organize the findings. This review will describe the knowledge, attitude, and external barriers nurses may encounter to promoting mobility in hospitalized older adults. A search for relevant literature was conducted using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed and PsychInfo. A total of 194 articles were retrieved. Inclusion criteria consisted of relevant, full-text English language research studies, resulting in eleven articles to be reviewed.

Methods

The databases searched for relevant literature were CINAHL, PubMed, and PsychInfo. Keywords for this preliminary search included: ‘Exercise,' 'motion,' movement,' 'functional decline;’ ‘acute care, ' hospital', 'hospitalization;' 'older adult,' ‘elderly,’ and 'geriatric’ ‘mobility.’ Over 4,500 articles were identified, some dating back into the 1960's. Additional terms were used to refine the search including keywords ‘mobility,’ ‘barriers,’ and ‘hospital’. The search was limited to relevant, English language papers published between 2000 and 2015. Studies were included in the review if they met the following criteria: Quantitative or qualitative studies that identified barriers to promoting mobility in adult patients in the hospital setting. This refined search resulted in 194 articles of which the titles and abstracts were screened for inclusion criteria. Reference lists of relevant articles were screened for additional studies. A total of eleven papers met the inclusion criteria and were extracted for review. Eleven studies were identified, and the barriers to nurses promoting mobility were reviewed and categorized into the Knowledge, Attitude and Behavior Framework adapted for this purpose (Figure 2).

Results

Knowledge Barriers

Several knowledge barriers were described that may interfere with nurse-promoted mobility for hospitalized patients. Studies show that nurses may not be aware or familiar with the specialized mobility needs, of hospitalized older adults, creating a knowledge barrier to mobility promotion (Hoyer et al., 2015; Lee & Fan, 2012; Moore et al., 2014). Nurses may have limited knowledge about assessing the mobility needs of patients, and involving patients in the planning of their care to promote mobility (Burke & Doody, 2012; Moore et al., 2014). Little is known about nurses’ ability to assess the functional status and lower leg strength of older patients prior

to promoting mobility. A lack of knowledge about nursing care process related to promoting mobility could be yet another barrier to nurse-promoted mobility (Hoyer et al., 2015).

In addition to nursing care tasks, mobility promotion requires nurses to garner interdisciplinary and ancillary staff support to implement the care plan. Because physical therapists' primary role is to promote physical movement to improve function and prevent disability, nurses need to collaborate and communicate with physical therapists to garner support to promote mobility in hospitalized older adults, and to ask questions regarding assistive devices that are potentially needed. Studies show that nurses who view the promotion of mobility as a nursing responsibility assess patient's prior use of assistive devices (walkers, canes, crutches, prosthesis), and ensure that such devices are readily available for use (Doherty-King & Bowers, 2013). Further, nurses need knowledge on how to use the commercially available transfer equipment to facilitate and promote the mobility in patients with high levels of dependence. A variety of commercially available lift and transfer devices are used in hospital settings to ensure safe-patient handling, and to prevent back injuries in health care workers (CDC, 2013). Without the expertise of using the commercially available lift and transfer devices, and prescribed devices such as walkers, canes, crutches or prosthetics, nurses may be reluctant or unable to promote mobility for vulnerable patients who require these devices (Doherty-King & Bowers, 2011; Moore et al, 2014). Consequently, nurses need training and education within their scope of practice to ensure they have the knowledge, competencies and confidence to promote mobility in hospitalized patients (Doherty-King & Bowers, 2011; Hoyer et al., 2015).

Limited nursing experience could be a contributing factor to the knowledge barrier for nurses in promoting mobility in hospitalized older adults. A cross-sectional study found that with a 5-year increase in nursing experience there was a significant decrease in perceived overall

barriers (P=0.02), knowledge (P=0.009), and attitudes (P=0.04) (Hoyer et al., 2015). However, in another cross-sectional study, nurses' knowledge of the benefits of promoting early mobility in critically ill patients were not found to differ between nurses with five years or more experience (P=0.67) compared to those with less than five years of experience (P=0.69) (Jolley, et al., 2014). The latter is more plausible since your literature review reveals that after 60 years of research nurses still do not adequately promote mobility in elderly patients.

Attitude Barriers

Lack of agreement.

Nurses may not agree with recommendations made in clinical practice guidelines that hospitalized older adults need to receive timely and sufficient mobility. No studies were found that discuss a lack of nurse's agreement with clinical practice guidelines specifically about mobility. However, in one study the views and attitudes of nurses regarding adopting a clinical practice guideline for patients with stroke revealed a significant association between nurses' attitude toward the guideline and nurses' adoption of the guideline ($r_s=0.689$, $p<.01$, Spearman's rho) (Hafsteinsdóttir, et al., 2013). Among a sample of 30 nurses, 15 adopted the guideline, and another 15 nurses either did not recommend adoption of the guideline, held a neutral opinion about adoption, or rejected adoption of the guideline entirely. Nurses in this study perceived barriers to adopting and implementing the guideline including organizational challenges, lack of nursing knowledge and skill, lack of resources, and difficulty in coordinating the care recommended by the guideline with other professions (Hafsteinsdóttir, et al., 2013)

Lack of outcome expectancy.

Nurses may not expect that the promotion of mobility will lead to the desired positive health outcomes. Several studies show that nurses perceive that the promotion of mobility may

be a safety hazard for hospitalized patients (Brown et al., 2007; Doherty-King & Bowers, 2011; 2013; Engel et al., 2013; Jolley et al., 2013; Moore et al., 2014). A study by Brown et al., (2007) to identify barriers to mobility during hospitalization found that among ten nurses, 7 identified a risk for patient falls as a barrier to promoting mobility. Another study by Moore et al. (2014) found that nurses may have a fear of injuring the patient during the promotion of mobility. The risk of patient falls or injury may have contributed to some nurses' attitudes that the promotion of basic mobility is no longer a nursing responsibility, but that it is the responsibility of physical therapists (Brown et al., 2004; Doherty-King & Bowers, 2013; Moore et al., 2014).

Lack of self-efficacy.

The risk of patient injury during the promotion of mobility may have contributed to nurses' lack of self-efficacy. The potential risk of self-injury among nurses may also be a contributing factor to a lack of self-efficacy. Jolley et al. (2014) conducted a cross sectional study to describe clinician's knowledge of early mobility and barriers to providing early mobility. Among 17 nurses the most commonly reported barrier was the risk for self-injury (Jolley et al., 2014). The risk for self-injury or patient injury could have led to deferring basic mobility for hospitalized adults to physical therapists (Brown et al., 2007; Doherty-King & Bowers, 2013; Moore et al., 2014). In a descriptive study by Doherty-King & Bowers (2013) nearly half (n=25) of the nurse participants attributed the responsibility of promoting mobility to physical therapists, in part because they had concerns about potential self-injury and patient injury (Doherty-King & Bowers, 2013). This is concerning because nurses who no longer view the promotion of mobility as their responsibility may fail to advocate or plan for older adults'

mobility, resulting in the continued incongruence of mobility needed and promoted (Brown et al., 2007).

Lack of motivation/inertia.

Due to barriers to mobility promotion and previous practice habits, experienced nurses may have lost the motivation to promote the mobility of hospitalized patients. If there is a lack of motivation among experienced nurses, novice nurses may be socialized into old practice routines, in spite of existing research-generated knowledge to promoting sufficient mobility to prevent functional decline and adverse outcomes. In a number of studies, nurses expressed the attitude that promoting mobility would increase their workload, and that this could contribute to excess stress which may be a barrier to nurses promoting mobility (Barber et al., 2014; Hoyer et al., 2015; Jolley et al., 2014; Moore et al., 2014). In one study, nurses were more likely than physical therapists to hold the attitude that nurses were mobilizing patients once per day whereas physical therapists in this study thought nurses were mobilizing patients less frequently (Hoyer et al., 2015). If nurses overestimate the mobility interventions of their patients they may espouse the attitude that the promotion of mobility is not a problem, and may not view the promotion of mobility as a priority among other nursing care tasks. In addition, difficulty with prioritizing nursing care may be related to old practice routines that do not include mobility. Finally, nurses' perception that the promotion of mobility is not an organizational priority could cause inertia to changing practice routines (Barber, et al., 2014; Doherty-King & Bowers, 2011; Moore, 2014). A lack of agreement, outcome expectancy, self-efficacy and lack of motivation and previous practice habits could further influence the attitudes of the nurse.

Stereotyping.

Negative stereotyping of older adults could also fuel nurses' attitude barriers toward mobility promotion in hospitalized older adults (Brown et al., 2007; Cooper & Coleman, 2001; Garner, 1999). The exploration of nurses' attitudes while caring for hospitalized older adults revealed that nurses perceived deficits in their ability to promote mobility if their patients required extensive assistance (Cooper & Coleman, 2001). In addition, nurses caring for hospitalized older adults needing extensive assistance for mobility held the attitude that the patient was unmotivated (Cooper & Coleman, 2001). In another study 50% of nurses (n=10), and 78% of physicians (n=9) subscribed to attitudes that patients with advanced age may be less motivated to participating in the promotion of mobility (Brown, et al., 2007). In contrast to the stereotypical attitudes held by nurses and other members of the healthcare team, older adults were concerned that health providers lacked interest in getting them out of bed, and that improving their mobility did not seem to be a priority for their health care providers, including nurses. Older adults expressed that getting out of bed is important to them, and that participating in mobility promotion would be beneficial to their recovery (Brown et al., 2007).

External Barriers

Patient factors.

External barriers are grouped into patient factors, interdisciplinary factors, and environmental factors. A wide variety of potential patient factors that could be barriers to promoting mobility were described. Some studies described patient factors that included patient preference, motivation and physical and mental condition, the need for medical equipment, and the level of assistance needed (Brown et al., 2007; Lee & Fan, 2012; Leditschke et al., 2012; Moore et al., 2014). Other studies described factors such as patient motivation and condition, the

presence of dementia or delirium, sedation, and medical devices (Barber et al., 2014; Brown et al., 2007; Herbert, Weuve, Sherr, & Evans, 2013; Leditschke et al., 2012). These patient factors may require extensive and time-consuming assistance from nurses to promote mobility (Parke & Hunter, 2014).

Patient preference and motivation. Moore's study (2014) found that the perception of some healthcare providers is that hospitalized older adults are resistant to being mobilized, and would rather stay in bed for safety reasons (Moore et al., 2014). In another study the patient's motivation and the lack of knowledge of the importance of mobility by patient's family members was perceived to be a barrier to promoting mobility (Leditschke et al., 2012). Although nurses and physicians have cited a lack of patient motivation as a barrier to promoting mobility, older adult patients did not share that perception (Brown et al., 2007). Instead, older adults expressed concern that health providers lacked interest in getting them out of bed, and that improving their mobility did not seem to be a priority for their health care providers (Brown et al., 2007). In addition, patients frequently reported not wanting to "bother the nurse" which may show that older adults perceive nurses as "too busy" to assist them in mobility (Brown, et al., 2007). This viewpoint is echoed by physicians who attributed the "busyness" of nurses as a barrier to mobilizing patients, noting that bed rest was "easier" for nurses to deal with than the care tasks needed to provide mobility in hospitalized older adults (Brown et al., 2007). In one study, nurses acknowledged that patients may not be involved sufficiently in their plan of care to promote mobility (Burke & Doody, 2012).

Safety. The patient's safety and risk for injury may contribute to a decrease in patient motivation, and may have contributed to nurses' not viewing mobility as a priority (Doherty-King & Bowers, 2013). Health care providers in one study perceived that patients and their

families held beliefs that the patient would be safer in bed (Moore, et al., 2014). The role of limiting or inadvertently discouraging mobility in hospitalized patients could be the result of organizational and unit-based priorities such as initiatives to prevent patient falls (Brown et al., 2007). About 70% of patients (n=10) that participated in the study expressed fears of falling if mobility is promoted, which could be a factor in patient and family motivation (Brown et al., 2007). Another study found that self-reported fear of falling in hospitalized older patients was significantly associated with changes in the physical function from hospital admission to discharge (Boltz, Resnick, Capezuti, & Shuluk, 2013).

Patient condition. The unique aspects of a patient's condition and prognosis could complicate the promotion of mobility, making the process more time consuming and unsafe for both patients and nurses (Jolley, et al., 2014; Leditschke, et al., 2012). A patient's hemodynamic stability and vasopressor use may be a barrier to mobility if nurses' perceive the patient's condition as unstable (Lee & Fan, 2012). In addition, certain physiologic patient conditions may make nurses feel it is unsafe to promote mobility if patients have difficulty breathing, issues with bleeding, blood pressure irregularities, or have pulse abnormalities (Jolley, et al., 2014). Inadequate pain management that has also been reported as a barrier to promoting mobility in hospitalized older adults (Brown et al., 2007). Patients who have diminished trunk control, paralysis or restricted weight bearing will require nurses to use assistive devices and garner increased staff support, which may a barrier to mobility promotion (Barber et al., 2014; Doherty-King & Bowers, 2011; Engel et al., 2013; Leditschke et al., 2012). A study to decrease falls through an exercise program revealed that existing muscle weakness and frailty in hospitalized older adults may a barrier to mobility promotion (Haines, 2007). Once muscle atrophy and weakness sets in, it becomes more difficult to mobilize patients (Boltz, et al., 2013; Brown et al.,

2009; Haines, 2007) requiring more staff and assistive devices creating further barriers to promoting mobility (Brown et al., 2004; Brown et al., 2007; Doherty-King & Bowers, 2011).

Alzheimer's Disease, dementias, and delirium. Nurse-promoted mobility is further compounded by the presence of Alzheimer's Disease (AD) and other dementias and delirium in the hospitalized older adult (Herbert, et al., 2013). Studies have described a significant rise in the number of older Americans suffering with AD and other dementias (Hebert, et al., 2013) and increased hospital utilization by this population can be expected in the future. This growing population with cognitive impairment will require increased nursing knowledge of the unique barriers to mobility in this patient population (AOA, 2012; He et al., 2005). Patients who are unable to follow commands due to altered mental status may not cooperate with nurses during mobility interventions. In addition, patients may not be able to verbalize their needs or pain, and instead could exhibit disruptive behaviors, which could become barriers to nurses promoting mobility (Kovach, Kelber, Simpson & Wells, 2006). Studies show that nurses may not assess the care needs expressed through disruptive behavior in patients with confusion, contributing to the increased use of sedatives and psychotropic medication (Kovach, Griffie, Muchka, Moonan, & Weissman, 2000; Kovach et al., 2006; Prudent, et al., 2008). Sedation in response to disruptive behaviors may become a continued barrier to promoting mobility (Barber, et al., 2014; Brown, et al., 2007; Kovach et al., 2006).

Sedation. A variety of medications administered to hospitalized older adults have a sedation side effect, while others are administered for their sedative effect. Hospitalized older patients may receive prolonged therapeutic or intermittent sedation which may impede nurses' ability to promote mobility (Barber, et al., 2014; Jolley et al., 2014; Leditschke et al., 2012). In one study, nurses perceived the practices surrounding sedation as an aspect of unit-based culture

that was a barrier to mobility promotion, stating that patients receive too many opioids resulting in excessive drowsiness (Barber et al., 2014).

Medical devices. Hospitalized patients are frequently attached to a variety of medical devices. A tangled web of cords and tubing could make the portability of medical devices during the process of promoting mobility challenging for nurses to promote mobility safely (Brown et al., 2007; Doherty-King & Bowers, 2013). Depending on the patient's condition, intravenous devices, catheters, oxygen, femoral access catheters, and chest tubes may need to accompany the patient during mobility promotion (Brown et al., 2007; Leditschke et al., 2012). In one study, nurses rated the average time spent to promote mobility per patient between 16 and 45 minutes (Jolley, et al., 2014), which conceivably could be increased based on the presence of medical devices. While hospitalized older adults on a medical unit did not perceive the presence of medical devices as a barrier to being mobilized, one study found that 89% of both nurses (n=10) and resident physicians (n=9) believed that medical devices are a barrier to promoting mobility (Brown et al., 2007).

Interdisciplinary factors.

Communication and collaboration. Interdisciplinary factors may include issues with interdisciplinary verbal and written communication, making it difficult for nurses to use a coordinated effort to promote mobility in hospitalized patients, and extend the time of inactivity (Barber et al., 2014; Burke & Doody, 2012; Doherty-King & Bowers, 2011; Lee & Fan, 2012). Engel et al., (2013) found that some physicians do not adequately order physical therapist consultations, which could create an attitude barrier in nurses in regards to collaboration with other disciplines, and may impede nurses from promoting mobility in hospitalized older adults based on expert recommendations from the physical therapists (Engel, et al., 2013). Physical

therapists' expertise is in promoting movement to improve physical function to prevent disability in hospitalized patients. To overcome the barrier to the promotion of early mobility, some nurse-driven mobility protocols involve mobility order sets that allow nurses to place consults for physical therapists as appropriate (Drolet et al., 2013). Further, studies show that hospitalized older adults frequently have bed rest orders that may not be medically necessary (Brown et al., 2004). All activity orders remain exclusively prescribed by physician providers. Therefore, it is critical for nurses to communicate and collaborate with both, physicians and physical therapists. This should be mentioned earlier.

Documentation of mobility. Barriers may exist with the documentation of mobility activity in the electronic health record (EHR), although this is understudied. Studies show that nurses perceive that the EHR may not be user-friendly, or adequately support clinical practice (Stevenson & Nilsson, 2011). User-error regarding documenting in the EHR has been associated with unintended patient safety and quality care issues (Middleton et al., 2013). Interdisciplinary communication and collaboration could be impaired if there is limited EHR documentation about the patient's physical functioning, the goals for mobility, and the outcomes. This limitation could influence nurses' perception of self-efficacy, outcome expectancy and motivation.

Physician activity orders. The presence of conflicting or unnecessary bed rest orders, or the absence of activity orders may be barriers for nurse mobility promotion. Before nurses can get patients out of bed to ambulate or sit in the chair, physicians need to give an activity order. Little is known about the types of activity orders physicians give for patients with varying diagnoses or severity of illness, or if activity orders continue to be relevant. To the knowledge of this author the relationship between physician's activity order and nurse-promoted has not been studied. If physicians give a general 'up as tolerated' activity order nurses may promote mobility

based on the nurses' discretion. However, if activity orders are absent, or if there is a potentially unnecessary bed rest order, nurses—especially novice nurses—could be reluctant to communicate with the physician to obtain the activity order (Drolet et al., 2013). Studies found that bedside nurses may have the perception that that they are not empowered to question bed-rest orders or to advocate for the promotion of patient mobility unless this type of advocacy is made an expectation in a mobility protocol or program (Doherty-King & Bowers, 2011; 2013; Drolet et al., 2013; Padula et al., 2009). If perceived or real communication barriers exist between nurses and physicians about the patient's plan of care, attitudes toward the promotion of mobility may be affected (Moore et al., 2014).

Interdisciplinary role confusion. Possible role confusion about who is responsible to promote basic mobility may lead to attitude barriers (Doherty-King & Bowers, 2013; Moore, et al., 2014). Nurses may not be knowledgeable about the contributions made by the disciplines of medicine and physical therapy in promoting mobility, and those disciplines may not understand the role of nurses. This confusion may be fueled by what McGrath, Holewa, & McGrath (2006) called medico-centrism, which refers to medicine's control over the health care provided to hospitalized patients by nurses (McGrath et al., 2006). Role confusion about the focused contribution of physical therapists to mobility may also contribute to attitude barriers (Brown et al., 2007; Doherty-King & Bowers, 2013). For example, patients who had a physical therapy consultation during their hospital stay walked significantly less than those who did not ($P<.001$) (Fisher, et al., 2011). This occurred presumably because nurses abdicated the responsibility of mobility promotion to the physical therapist, overestimating the extent of the physical therapist's actual mobility promotion with the patient. An attitude on the part of nurses that the physical

therapist is covering all the mobility needs of the patient could result in insufficient mobility promotion.in insufficient mobility.

Environmental factors.

Environmental factors impairing nurses' mobility promotion include lack of time, resources and staff; organizational constraints; and perceived lack of departmental support. These external barriers could impair nurses' ability to promote mobility and may affect their self-efficacy, motivation and outcome expectancy. Studies show that some nurses and other providers may perceive organizational culture and unit-based culture as a barrier to promoting mobility (Barber et al., 2014; Moore, et al., 2014). A qualitative study to determine barriers to mobility promotion in intensive care patients used focus groups with nurses (n=6), physicians (n=12), and physical therapists (n=7). The study revealed that unit-based culture may not cultivate and support the patient care needed to promote evidence-based mobility (Barber et al., 2014). This is congruent with Lee and Fan (2012) who found that a lack of prioritization in the unit was a barrier to promoting mobility. Further, organizational and unit-based goals may compete for priority with the promotion of mobility (Moore et al., 2014).

Busy inpatient units have been described as chaotic settings that are riddled with frequent interruptions contributing to poor interdisciplinary communication, inefficiencies, and lack of care coordination (Catchpole, 2013; Ebright, et al., 2003). In the increasingly complex world of hospital nursing, it may be challenging for nurses to balance the promotion of mobility with other care tasks. Studies show that nurse-driven mobility requires adequate support staff and appropriate assistive equipment (Drolet et al., 2013; Engel, et al., 2013; Hoyer et al., 2015; Padula et al., 2009). Additional studies have identified that nurses and other members of the

healthcare team perceive a lack of leadership, or the need for a "champion" to promote a culture of mobility (Barber et al., 2014; Engel et al., 2013; Moore et al., 2014).

Inadequate staffing and lack of resources was found to decrease the feasibility of making mobility promotion a priority (Brown et al., 2007; Barber et al., 2014; Moore et al., 2014). This, in turn, may reflect negatively on organizational culture, and nurses may feel that the organization does not value, or support the promotion of mobility in hospitalized older adults, although there are no studies to support this claim. For example, nurses discussed that although they think their patients should be mobilized more, they are not making it a priority because of their overall nursing care task burden (Barber, et al., 2014; Doherty-King & Bowers, 2011). Limited space to facilitate mobility, lack of assistive equipment, or insufficient time to retrieve equipment are potential barriers to nurse-promoted mobility (Brown et al., 2007; Hoyer et al, 2015).

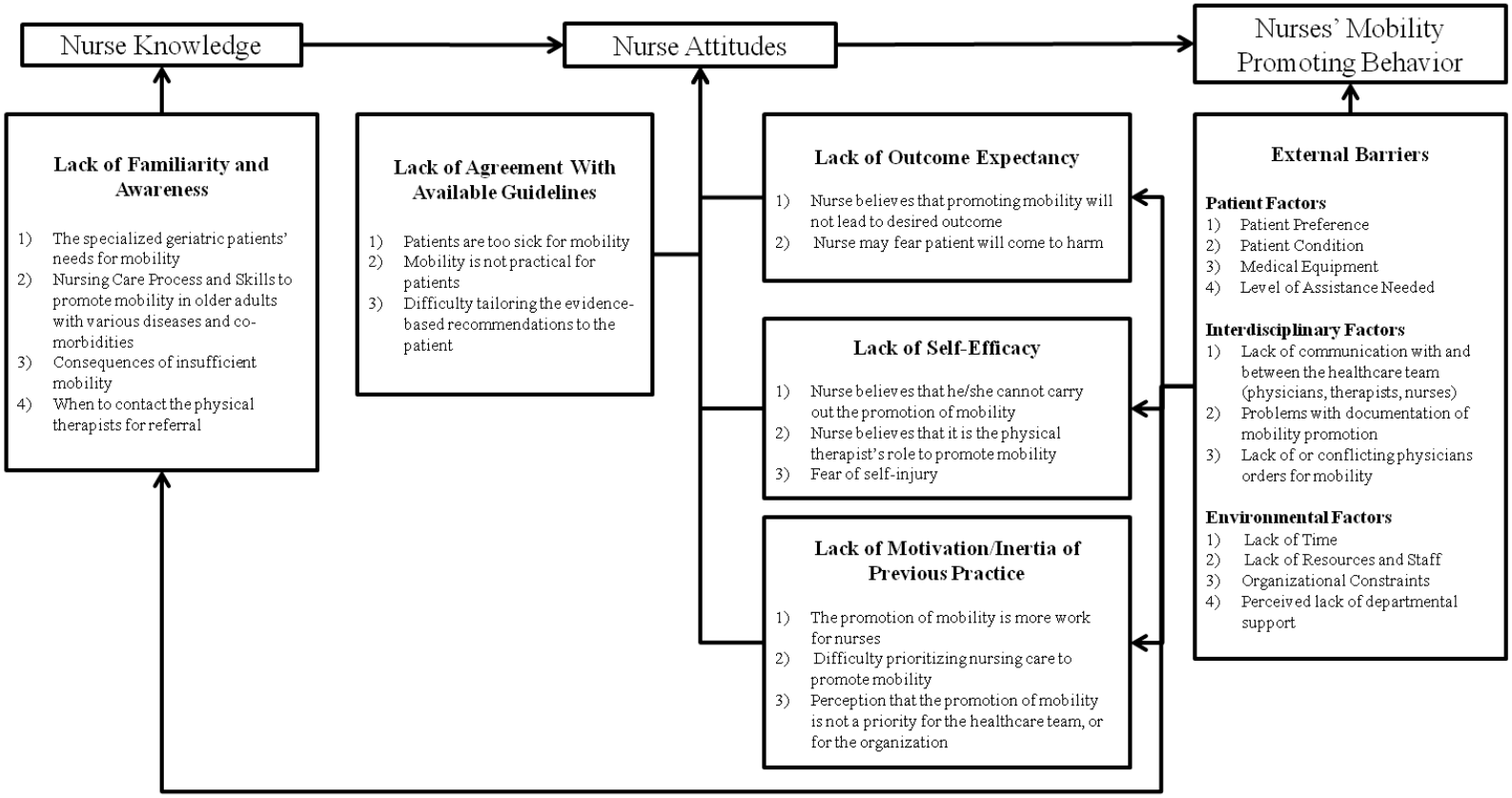
Studies show that the perception of barriers to promoting mobility varies among members of the interdisciplinary team, which may affect collaboration, and may hinder a concerted effort to promote mobility. A cross-sectional descriptive study compared the attitudes of physicians, nurses and physical therapists regarding barriers to promoting early mobilization of critically ill patients (Jolley et al., 2014). A total of 120 providers were surveyed, including physicians (n=91), nurses (n=17) and physical therapists (n=12). A list of barriers specific to each discipline was provided, and respondents could check all the answers that applied. Among nurse respondents, the highest rated barrier to nurses promoting mobility included risk for self-injury (71%), excess work stress (65%), nursing time (53%), nursing staffing (47%), prolonged work day (47%), and over-extension of usual work (47%). In contrast, staff safety was rated as the fifth highest concern among physicians (18%) among 13 barriers, with nursing time as the top

barrier (73%), followed by patient sedation (71%), and physical therapist time (67%). Among physical therapists, the highest rated barrier to mobilization was physical therapist time (50%) followed by physical therapist staffing (42%) and risk for self-injury (41%) (Jolley et al., 2014). Examining the barriers to nurse-promoted mobility promotion may be valuable to minimizing these barriers. The implementation of mobility protocols show that adequate staffing, smooth unit workflow, and optimization of interdisciplinary interaction and collaboration facilitate nurses in promoting basic mobility in hospitalized older adults in their care (Brown, et.al. 2004; 2007; 2009; Doherty-King & Bowers, 2013; Padula et al., 2009)

Discussion

Cabana's (1999) framework was adapted to synthesize the study findings of barriers to nurses promoting mobility in hospitalized older adults (Figure 2). Studies show that promoting mobility in hospitalized older adults is a complex process for nurses where nurse knowledge barriers, attitude barriers, and external barriers converge. Nurses may lack knowledge of the mobility needs of older adults or may not appreciate that early mobility can help a hospitalized older adult maintain vulnerable muscle strength and preserve function. The level of knowledge and skills necessary to assess mobility needs and plan nurse-driven mobility activities may be related to nursing experience. However, there are conflicting reports whether nurse-experience is a factor in the barriers that nurses may experience, and how nurses deal with these barriers. Nurses' attitudes toward the promotion of mobility may also be influenced by organizational and unit-based culture, that either supporting mobility or inherently contribute to nurses' barriers.

Figure 2 Literature Review Findings Organized with the Adapted Knowledge, Attitude and Behavior Framework from (Cabana et.al.1999, p. 1459).



Studies show that existing role confusion among nurses and other members of interdisciplinary healthcare teams may hinder communication and collaborative efforts necessary to coordinate the mobility of hospitalized older adults. While studies show that the implementation of mobility programs can be effective in creating positive outcomes for older patients through an increase in early and frequent mobility, reports of infrequent promotion of mobility in hospitalized older adult's shows that improved care coordination is still needed. Hospitalized older adults have complex nursing care needs due to illness diagnoses, comorbidities, and compromising symptoms. Medical devices or sedation can also complicate nurses' efforts to promote mobility. As the numbers of hospitalized older adults with AD, other dementias and delirium increase in the future, nurses need more knowledge and training to acquire skills to assess and manage this patient population, so that mobility can be facilitated.

Interestingly, the review of the literature did not shed light on the standards for the promotion of geriatric-specific mobility in hospitalized older adults. Although early and progressive mobility protocols are used in some settings, it is unclear what standards are used by hospitals to develop their protocols and programs. It is also unknown whether these standards are based on research-generated evidence, and if and how they guide the work of nurses. Further, the standards for mobility promotion in hospitalized older adults may vary between institutions, and between healthcare providers, which makes the synthesis of the literature difficult and makes replication of intervention studies improbable. The literature shows that the knowledge, attitude and external barriers encountered by nurses may affect the translation of evidence into clinical practice. Specifically, there may be relationship between these barriers and nurses' mobility promoting behavior.

Conclusion & Gaps in Knowledge

This literature review revealed that many studies have focused on describing the barriers to promoting mobility in intensive care units where there tends to be increased support for nurses to promote mobility, and a greater focus on rehabilitation compared to non-intensive care units. However, knowledge about barriers to mobility promotion in non-intensive care units is critically important because older adults who are frequently admitted to non-intensive care units need nurse-promoted mobility to stave off immobility-related functional decline and other negative health consequences. The promotion of mobility to prevent the functional decline of hospitalized older adults is imperative, yet there is evidence that nurses infrequently promote mobility in older adults on general medical acute care unit (Doherty-King et al., 2014; Yoon, et al., 2015).

Nurse's barriers in non-intensive care settings, and how these barriers influence the mobility-promoting behavior of nurses need to be identified and described in order to develop and implement effective tailored multicomponent mobility interventions. In particular, we do not sufficiently understand nurse knowledge and attitude barriers, and the perception of external barriers and how these barriers may influence the mobility promoting behavior of nurses. In addition, the differences between novice nurses and those with more experiences need to be examined in terms of their knowledge and attitude barriers and perceptions of external barriers. For example, studies show that novice nurses may struggle to overcome barriers to a greater extent compared to experienced nurses. This could impact nurse-promoted mobility. In addition, little is known about the how nurses perceive their organization's priority in promoting mobility in hospitalized older adults, and whether this influences nurses viewing the promotion of mobility as a nursing priority.

Chapter Summary

In the first manuscript of this chapter the Knowledge, Attitude and Behavior framework was described, and conceptual definitions provided. In addition, the application of this framework to study barriers to nurses' mobility-promoting behavior was discussed. Studies show that bedside nurses may encounter a convergence of barriers to promoting mobility in hospitalized older adults, which may contribute to the insufficient promotion of mobility (Doherty-King & Bowers, 2013; Hoyer et al., 2015, Brown et al., 2004; 2007). The adapted Knowledge, Attitude and Behavior Framework based on Cabana's (1999) work is a dynamic framework to explain how nurses' mobility-promoting behavior is influenced by both interpersonal barriers and external barriers.

The second manuscript in this chapter introduced the problem of the incongruence of mobility needed and mobility received in insufficient mobility in hospitalized older adults. Cabana's Knowledge, Attitude and Behavior Framework was utilized to organize the findings in the literature on the barriers that nurses may encounter in acute care as they promote mobility. Gaps in knowledge were discussed and recommendations for future studies were made.

CHAPTER 3

Chapter Introduction

This study was based on the premise that nurses may encounter both interpersonal (knowledge and attitude) and external (patient, interdisciplinary and environmental) barriers to promoting mobility in hospitalized older adults, which may contribute to older adults not receiving the mobility they need. Accordingly, the purpose of this study was to identify and describe the full spectrum of nurses' barriers including knowledge, attitudes and perceptions of external barriers, and how these barriers may influence the mobility-promoting behavior. Nurses' perception of the priority that organizations place on mobility, and the relationship of nurses' level of experience to nurses' priority for promoting mobility were also investigated.

Method

Research Design

A cross-sectional, descriptive-correlational design with convenience sampling was used to identify and describe the nurse's' knowledge, attitude and perception of external barriers, and to discover how these barriers were associated with the nurses' mobility-promoting behavior of hospitalized older adults in a non-intensive acute care setting. In addition, this study examined nurses' perception of the priority that organizations place on mobility, and the relationship of nurses' level of experience to nurses' priority for promoting mobility. A descriptive, correlational design was useful in describing variables, and describing the relationships between variables (Hulley et al., 2013). The advantages of a descriptive correlational design included that the measurements were made at one point in time and follow-up was not required. One disadvantage in using a descriptive correlational design was that while this design allowed for

the assessment of relationships between the variables, it did not allow for inferences about the causal relationships between the variables (Polit & Beck, 2012).

Research Questions and Hypotheses

The research questions that were addressed in this study include:

1. What are nurse knowledge barriers, attitude barriers, and perceptions of external barriers to promoting mobility?
2. What are the most common clinical barriers that nurses encounter to promoting mobility in patients?
3. What is the nurses' mobility-promoting behavior?
4. What are the nurses' perceptions of the organizational priority for promoting mobility in hospitalized older adults?
5. Do nurses view the promotion of mobility as a priority?
6. Is there a difference between level of nurse experience and the perception of organizational priority and self-priority regarding patient mobilization?
7. What is the relationship between the patient's measures of severity of illness and the nurses' mobility promoting behavior?

Hypotheses

The hypotheses for this study include:

(1) Nurse knowledge barriers, attitude barriers, and external barriers will be negatively associated with nurses' mobility promoting behaviors in hospitalized older adults.

(2) There will be a difference in mobility promoting behavior and knowledge, attitude and behavior between nurses with different levels of experience: Novice (≤ 1 year), advanced beginner (>1 to 5 years), Competent (>5 to 10 years), and expert (>10 years or more).

(3) Nurses' perception of the organizational priority to promote mobility will be positively associated with nurses' mobility-promoting behavior.

Setting

Two community-based hospitals in the Pacific Northwest was the setting for this study. Nurses from the following medical units in this hospital were invited to participate in this study: Stroke, cardiac, pulmonary, nephrology, oncology, and general medical. Hospitalized older adults are commonly admitted to these units for chronic or acute illness. Each of these units housed between 30 and 40 acute care beds. Nurses from intensive care and orthopedic units were excluded from this study because nurses may have access to greater resources and staff, more specific physician's orders for mobility, and these units may have an increased focus on rehabilitation.

Sample

Nurses were the target population in this study. The sample size was determined through a power analysis using G*Power software (2014) (Faul, Erdfelder, Lang, & Buchner, 2007; Faul, Erdfelder, Buchner, & Lang, 2009). Sample size calculation for linear multiple regression with fixed model, R^2 deviation from zero multiple regression was conducted a priori with an alpha level of 0.05, four predictor variables, medium effect size (F2= 0.15), and a statistical power level of 0.5. The required total sample size was 85. Examples of varying sample sizes in previous studies include a study in which the mobilization promoted by 15 nurses who cared for 47 patients for one 8-hour shift was observed (Doherty-King et al., 2014). In another study, a cross-sectional design to measure clinician attitudes and perceived barriers to promoting mobility in intensive care used a total sample of 120 clinicians of which 17 were nurses (Jolley et al., 2014). In another example, a cross-sectional study to identify barriers to promoting mobility

among physical therapists and nurses used a sample of 120 of which 82 were nurses (Hoyer et al., 2015). A total of 101 nurses were recruited for this study, and 85 completed the survey.

Inclusion/exclusion criteria.

Registered Nurses (RN) were chosen as the unit of study because they coordinate and plan the nursing care, including basic nurse-promoted mobility for hospitalized older adults. Participants were screened to ensure that they met the eligibility criteria: 1.) Participants needed to work at least 20 hours per week on one of the units. Nurses working night shift were excluded, because they do not routinely promote mobility.

2.) Participants had to be fluent in the English language, which was important to understanding the purpose of the study, and to give informed consent. For feasibility reasons and to limit confounding and Hawthorne effects, nurses completed self-recorded mobility logs on all adult patients (N=176) in their care during their shift. However only data on patient ages 65 and older (N=98) were included in this study. Data on patients admitted/transferred to the unit after the beginning of the shift, or patients discharged or deceased before the end of the shift were not be included.

Instruments

Overall Provider Barrier Scale

Nurse-knowledge barriers, nurse attitude barriers, and external barriers were the independent variables in this study and were measured with the electronic version of the modified Overall Provider Barrier Scale (Appendix A). The original Overall Provider Barrier scale is a validated 26-question 5-point Likert-scale with an internal consistency reliability Cronbach's alpha of 0.87. In addition, information about clinical barriers for each patient was obtained with the Self-Recorded Mobility Log (Appendix B), which is discussed on page 48.

Item consistency was considered adequate with the correlation coefficient between each item and the subscale and the Overall Provider Barrier scale at 0.40 for most items (Hoyer et al., 2015). The scale was validated on nurses, and contains 3 subscales including nurse knowledge (4 items), nurse attitude (9 items) and external barriers influencing nurse behavior (12 items) to promoting mobility in hospitalized patients. Discriminant validity psychometric characteristics were described as acceptable (Hoyer et al., 2015). The modified 29-item 5-point Likert Overall Provider Barriers scale used for this study showed adequate reliability with a Cronbach's alpha of .88.

Organizational priority for promoting physical mobility is also an independent variable. To capture perceptions of organizational priority, the following question was asked: "Promoting mobility in hospitalized older adults is a priority for the organization I work for;" This additional question speaks to how perceptions of organizational priority could influence the nurse's own prioritization of mobility promotion, and little is known about how this association may affect nurse's actual mobility-promoting behavior. Self-priority for promoting physical mobility is an additional variable. To capture nurses' self-priority to promote physical mobility, the following question was asked: "I view the promotion of physical activity in hospitalized older adults as a priority." A specific knowledge barrier to mobility promotion could be nurses' lack of knowledge on how to assess lower leg strength, which is an antecedent to promoting mobility. To describe the nurse's perception of their knowledge level, the following question was asked: "I know how to assess the lower leg strength of my older adult inpatients." Likert scales allow for degrees of opinion and work well to measure knowledge and attitudes, and how these could affect nurses' mobility promoting behaviors (Waltz, Strickland, & Lenz, 2010). Further, anonymity could reduce social pressure and elicit truthful answers from participants.

Self-Recorded Mobility Log

The electronic Self-Recorded Mobility Log was used to measure both the nurse's mobility-promoting behavior, as well as to provide information about clinical barriers for each patient and to provide a description of assistive devices used (Appendix B). Nurses' mobility-promoting behavior was the dependent variable in this study and was operationalized as the a) type of mobility promoted using ordinal scaling including walking in hall, walking in room, promoting reposition in bed, and sitting in the chair, and promotion of active/passive range-of-motion. Each instance of mobility that was promoted was documented in the Self-Recorded Mobility Log by asking nurses to select the type of mobility from a drop-down list. Nurses were able to add additional mobility-promotion instances, which were captured as frequency. If nurses selected "ambulation in hall" nurses entered the distance ambulated in feet. Nurses were educated to use markers (10 foot increments) in each unit's hallway to track the ambulation distances.

The Self-Recorded Nurse Mobility Log also measured the frequency of clinical barriers (independent variable) for each patient using a 5-point frequency response option (never, rarely, sometimes, often, and always). A measure of Cronbach's alpha of .90 was obtained establishing the reliability of this scale used in this study. In addition, nurses indicated the physicians' activity order, the presence of an order for physical therapy, whether the patient was at risk for falls, and the proxy measures for functional status. The following were included as possible control variables: 1.) a proxy measure of functional status available through nurses' assessment of mobility impairment, 2.) home use of assistive devices and 3.) the performance of the modified get-up-and-go test.

In summary, the online Overall Provider Barrier Scale and the Nurses' Self-Recorded Mobility Log were used to solicit clinically meaningful perceptions from nurses about the barriers to mobility-promotion encountered by nurses. Nurses reported that it was less burdensome to complete both the scale and the log at the same time without requiring follow-up. This approach minimized additional procedures to distribute, collect, store and score by hand the completed logs and surveys, thus potentially reducing opportunities for inaccuracies, potential breaches in confidentiality, and drop-outs.

Nurse demographics.

Studies show that differences in nursing care may exist among nurses with higher degrees (Aiken et al., 2003; Benner, Sutphen, Leonard, & Day, 2009; Blegen et al., 2013) and with specialty certifications (Kendall-Gallagher, Aiken, Sloane, & Cimiotti, 2011). One study found that there may be differences between novice and experienced nurses in terms of barriers related to knowledge and attitude, and barriers that influence nurse behavior in promoting therapeutic physical activity in hospitalized older adults (Hoyer et al., 2015). Accordingly, the percentages of nurse degrees and specialty certifications was reported. Nurse demographics included gender, age, race, unit, experience, education, and certifications.

Human Subject Considerations and Research Procedures

Internal Review Board (IRB) approval was obtained for this study, and a HIPAA certification waiving patient consent was obtained. Nurses (N=101) were recruited during informational meetings conducted by the researcher where informed consent was discussed and obtained if nurses expressed interest in participating. Hospital nurses' informal feedback was solicited initially to decide on the most feasible method to collect the data. Nurses indicated that the completion of an online, one-time survey towards the end of the shift was the most feasible

method to complete the survey. Nurses were trained on how to complete the online Self-Recorded Mobility Log and the Overall Provider Barrier Scale to ensure accuracy and completeness of data. Nurses were e-mailed a link to the survey with instructions on how to complete the survey. To encourage nurses to follow their "normal" practice routines for their shift nurses did not see the Self-Recorded Mobility Log or the Overall Provider Barrier Scale ahead of time. Nurses remained "on the clock" while completing the data collection to keep the burden on the nurse to a minimum, and prevent dropouts. Unit hallway markers placed in 10 foot increments were used to enable nurses to provide more accurate measurement of distance ambulated and mitigate recall bias.

Data Management Plan

Research Electronic Data Capture (REDCap) was used to distribute, manage and collect the survey and log data, and extract patient demographics and other clinically relevant information. REDCap is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources (Harris et al., 2009). Patient data, including age, gender, top three diagnosis, and length of stay, was collected and managed using REDCap electronic data capture tools hosted at the institution. A measure of the patient's co-morbidity was obtained through the All Patient Refined-DRG (APR-DRG) Severity of Illness Scale. Severity of illness could be correlated with nurse-barriers and low levels of mobility. The APR-DRGs is reported to be able to estimate the global impairment of older adults (Averill et al., 2003; Pilotto et al., 2011). All data was de-identified and entered into SPSS for data analysis. To protect nurse and patient

confidentiality the researcher did not have access to identifiable patient or nurse information. All electronic data was encrypted and stored in a firewall-protected database.

Data Analysis Plan

The data analysis plan is documented in Appendix F. Version 23 of SPSS software was used to analyze the data. Because missing values could affect statistical analyses and undermine the ability to make inferences, missing values were analyzed with Little's Missing Completely at Random (MCAR) test to determine potential reasons for the missing values. The hypothesis that data were missing completely at random was accepted and missing values were replaced using Expectation Maximization estimation (Pigott, 2001).

The data were cleaned and entered, and assumptions for statistical tests were checked. The distributions of all continuous variables were checked for skew, linearity and multicollinearity. Frequencies were used as one descriptive statistic. A skewness calculation was performed on each subscale (knowledge, attitude and behavior). The knowledge subscale skewness was estimated at .674 with .261 SE of skewness. The knowledge sub-scale was transformed for subsequent analysis. The attitude and behavior subscales did not show skewness. Other variables significant for skewness included distance ambulated, and variables related to patient proxy measures for function. Accordingly, non-parametric analyses were used, and medians and interquartile ranges were used to report descriptive results for questions 1-5 (Table 2) (Shadish, Cook, & Campbell, 2002). Descriptive statistics were used to summarize the sample characteristics. Multicollinearity checks were negative. Scatterplots revealed linear relationships between the variables (Shadish et al., 2002). Categorical/nominal variables included gender, hospital unit, education and certification.

Medians and interquartile ranges were used to report descriptive results for questions 1, 2, 4 and 5 (Appendix F). For question 3 nurses' mobility-promoting behaviors was reported using means, standard deviation and percentages. For question 6 to identify differences in mobility-promoting behavior between nurses with varying levels of experience, nurse experience was measured in years, and dichotomized: Novice (≤1-5 years); and Expert (>5 years). A Mann-Whitney *U*-test was used to compare the differences between the Novice and Expert nurses' perception of organizational priority and self-priority for promotion of mobility. For question 7 the correlation coefficient values (Spearman *rho)* between patient severity of illness, proxy-measures for functional status, and nurses' mobility-promoting behavior were reported.

Hierarchical regression was used to determine the relative contribution of barrier variables in predicting nurses' mobility promotion of hospitalized older adults (Hypothesis1). The order of entry of the variables was controlled based on theoretical considerations (Shadish et al., 2002). A three-step model was used to understand the unique contributions of the knowledge barriers, attitude barriers and external barriers on the nurse's mobility promoting behavior. Summary scores were calculated for type and frequency of nurse-promoted mobility and for distance ambulated. Nurse knowledge barriers was entered at step 1 to identify the contributions of this variable on mobility promoting behavior of nurses. Knowledge and attitude barriers was entered at Step 2. Nurse Knowledge, attitude and external barriers was entered at step 3.

A Kruskal-Wallis *H*-test (Hypothesis 2) was conducted to compare nurse knowledge, attitude and external barriers on the mobility-promoting behavior of for different groups of nurses: Novice (≤ 1 year); Advanced beginner (> 1 to 5 years); Competent (>5 to 10 years); and expert (> than 10 years). Correlation coefficient values (Spearman *rho*) between nurses'

perception of the organizational priority to promote mobility and nurses' mobility-promoting behavior were examined (Hypothesis 3).

To enhance internal validity, sample criteria was used. In addition, statistical methods were used to control for confounding variables such as bed rest orders, and variances in physician's activity orders (Polit & Beck, 2012; Shadish et al., 2002). Intrinsic sources of confounding variables were controlled by making sure that the sample was homogenous. Sample criteria were used, and outliers were identified. While statistical control was used for controlling confounding variables, the results need to be interpreted and viewed with caution (Shadish et al., 2002).

Limitations

There were limitations associated with the study design including sampling approach and sample size, methods and measurement. Systematic sampling error and sampling bias were a risk, which limits generalizability. One limitation was that causality cannot be inferred when descriptive-correlational study designs are used. In addition, there was a lack of control for all potentially confounding variables. Another limitation was that bias could have been introduced by using a small convenience sample from one geographic area which could have resulted in potentially confounding results (Polit & Beck, 2012). For these reasons, the results of this study have limited generalizability, and the findings will need to be viewed with caution.

An additional limitation was the use of Likert scales with uneven response options, which could contribute to raters responding towards the middle (neutral) of the scale in order to make his or her response appear less extreme leading to potentially confounding results (Waltz, Strickland, & Lenz, 2010). Yet another limitation included the possibility of inaccuracies during the completion of the Self-Recorded Mobility Log due to time constraints and other unit-based

variations, posing threats to internal and external validity. In addition, the Hawthorne effect or maturation (completing more than one log at one time) may also have introduced inaccuracies. (Yoon et al., 2015). However, direct observation could have increased the Hawthorne effect, and could have violated the privacy of other patients or nurses present that were not participants. Because this study sought to identify and describe nurse barriers, nurses may have had increased buy-in to report accurately on the self-recorded mobility log, and the survey. In addition, using a self-report made this study more feasible and limited costs.

Systematic error could be a limitation due to the potential recall-bias when using self-report to collect data (Yoon et al., 2015). Since there was a risk of mortality and differential dropout due to fatigue in completing the self-recorded logs, the number of nurses recruited for this study was increased accordingly. Because the purpose of this study was to describe nurses' barriers to promoting mobility in hospitalized older adults, data obtained from patients under 65 years old were excluded from the analysis because it was beyond the scope of this study. A between-group comparison of nurses' mobility-promoting behavior in older adults and younger adults could be valuable for a future secondary analysis exploring possible disparities in mobility promotion based on age of patient.

Convenient selection of the hospital improved the feasibility for the researcher to have access to train the nurse participants on how to complete the self-recorded log, and to frequently follow-up with nurses to promote completion of the survey. However, a limited geographic location limits the generalizability of study findings. A significant limitation in this study was that all the potential confounding variables could not be controlled for. For example, physician's activity orders may vary significantly from unit to unit. In specialized units physicians may give

more specific physical activity orders. Older adults on a specialty unit may be sicker and suffering with end-stage chronic illness that could contribute to nurses promoting less mobility.

Chapter Summary

The goal of this cross-sectional descriptive correlation study was to fill the gaps that currently exist in the literature about nurse knowledge, attitude and external barriers that could influence the promotion of mobility in hospitalized older adults. This chapter provided an overview of the sample, procedures used for data collection, and the instruments and data analysis techniques used in this study. Finally, this chapter discussed the limitations of this study.

CHAPTER 4

Study Findings

Chapter Introduction

This Chapter reports the results of this study. The study design, setting and participants are described. The measurement instruments and procedures for statistical analysis are explicated, and the study results are discussed. The full spectrum of nurses' barriers, including knowledge, attitude and the perception of external barriers, are identified and described, and the findings of the associations between these variables are discussed. The potential implications of the study findings are discussed and conclude this chapter.

Introduction

The prevention of functional decline is important because hospitalized older adults do not want to return home in worse condition than when they first arrived at the hospital (Boltz et al., 2010). It is well established that insufficient mobility is a significant contributor to hospital-acquired functional decline in older adults (Brown et al., 2009a, 2009 b; D'Ambruoso & Garrison et al., 2010; Inouye et al., 2000). Age-related musculoskeletal changes are accelerated in hospitalized older adults, increasing the risk for functional decline (Cruz-Jentoff et al., 2010; Pedersen et al., 2013). Hospital-acquired functional decline is alarming because escalating rates of hospitalization can be expected in the near future as the number of older adults in the U.S. is predicted to rise to well over 70 million by 2030 (AOA, 2012). A lack of sufficient mobility may result in muscle atrophy and muscle weakness which may have a cascading negative effect on the quality of life of older adults (Brown et al., 2004; 2009 a; 2009 b; Pedersen et al., 2013). Functional decline may lead to hospital readmissions, hospital-acquired conditions, and preventable nursing home admission, all of which place a financial burden on family and

healthcare systems (Brown et al., 2009a, 2009b; D'Ambruoso & Cadogan, 2012; Garrison et al., 2010; Inouye et al., 2000).

Background

While the promotion of mobility to prevent the functional decline of hospitalized older adults is imperative—and knowledge of the benefits of mobility promotion exists—there is evidence that nurses insufficiently promote mobility in older adults admitted to general medical inpatient hospital units (Brown et al., 2007; 2009a; Doherty-King et al., 2014; Pedersen et al., 2013; Yoon, et al., 2015). The geriatric population has complex nursing care needs as their natural age-related changes are complicated by illness, severity of illness, comorbidities, and the accompanying symptoms. Some studies suggest that promoting mobility in hospitalized older adults is a complex process for nurses and that nurse knowledge barriers, attitude barriers, and external barriers converge (Brown et al., 2007; Doherty-King & Bowers, 2013; Hoyer et al., 2015).

The adapted Knowledge, Attitude and Behavior Framework based on Cabana's (1999) work shows the interactive relationship between knowledge, attitude and external barriers that may influence behavior. Nurses may be confronted with interpersonal barriers including knowledge and attitude barriers, and external barriers that may influence their mobility promoting behavior. External barriers--such as patient, interdisciplinary and environmental factors--may contribute to insufficient promotion of mobility. Patient factors including the patient's condition, presence of medical devices, and patient preferences may also contribute to nurses' barriers to promoting mobility (Jolley, et al, 2014; Leditschke, et al., 2012; Lee & Fan, 2012). If clinical nursing practice behavior change is desired, nurses' perceptions of their

knowledge, attitude, and external barriers and how these may influence their behavior are important considerations (Hoyer et al., 2015; Knowles et al., 2015).

The knowledge and assessment skills nurses possess regarding the mobility needs of older patients and to plan nurse-promoted mobility activities may be related to nursing experience. However, there are conflicting reports as to whether nurse-experience is a factor in the barriers that nurses may experience, and how nurses deal with these barriers (Hoyer et al., 2015; Jolley et al., 2014). Nurses' attitudes toward the promotion of mobility may also be influenced by organizational factors and a unit-based culture that either supports or fails to support nurses' promotion of mobility (Lee & Fan, 2012; Moore, et al., 2014). Previous studies have focused on describing the barriers to promoting mobility in intensive care units (Barber et al., 2014; Engel et al., 2013; Jolley et al., 2014; Leditschke et al., 2012; Lee & Fan, 2012). Only limited studies have explored nurse's barriers in non-intensive care settings, and how these barriers influence the mobility-promoting behavior of nurses (Brown et al., 2007; Doherty-King & Bowers, 2013; Hoyer, et al., 2015).

The present study aimed to describe the relationship between nurses' barriers to promoting mobility and their mobility-promoting behavior in hospitalized older patients in non-intensive care units. The study was based on the premise that nurses encounter both interpersonal (knowledge and attitude) and external (patient, interdisciplinary and environmental) barriers. Examining the barriers to nurse-promoted mobility was one aim of this study. Nurses' perception of the priority that organizations place on mobility, and the relationship of nurses' level of experience to nurses' priority for promoting mobility were also investigated.

In addition to the exploratory questions described above, three hypotheses were tested:

Hypotheses

(1) Nurse-knowledge barriers, nurse attitude barriers, and external barriers will be negatively associated with nurses' mobility promoting behavior in hospitalized older adults.

(2) There will be a difference in mobility promoting behavior and knowledge, attitude and behavior between nurses with different levels of experience: Novice (≤ 1 year), advanced beginner (>1 to 5 years), Competent (>5 to 10 years), and expert (>10 years or more).

(3) Nurses' perception of the organizational priority to promote mobility will be positively associated with nurses' mobility-promoting behavior.

Methods

Setting and Sample

This cross-sectional descriptive correlation study was conducted in two community-based hospitals in the Pacific Northwest. Institutional Review Board approval was obtained prior to the beginning of the study. The convenience sample included nurses recruited from medical units including neurology, cardiac, pulmonary, nephrology, oncology, and general medical-surgical. Nurses completed an informed consent, and a HIPAA waiver was obtained for patients. Nurses (N=101) were screened to ensure that they met the eligibility criteria. Participants needed to be fluent in English, and work at least 20 hours per week. Nurses working in intensive care and orthopedic units or working night shift were excluded. For feasibility reasons and to limit confounding and Hawthorne effects, nurses completed self-recorded mobility logs on all adult patients (N=176) in their care during their shift.

Adult patients were included in this study as long as they were in the care of the nurse participant during their shift. Excluded from the study were patients admitted or transferred to

the unit after the beginning of the shift and adult patients discharged or deceased before the end of the shift. Because this study targeted nurses caring for hospitalized patients 65 years and older, data for patients under 65 were not included in this analysis. The criteria resulted in the completion of 98 nurse-reported patient mobility logs. The sample size was determined through a power analysis using G*Power software (2014) (Faul et al., 2007; 2009). Sample size calculation for linear multiple regression with fixed model, R^2 deviation from zero multiple regression was conducted a priori with an alpha level of 0.05, four predictor variables, medium effect size ($F^{2=}$ 0.15), and a statistical power level of 0.5 requiring a total sample size of 85.

Of 101 nurses recruited, two nurses were excluded as they had no patients; 2 nurses left their employment prior to completing the survey; and 1 nurse moved to the night shift. Eleven nurses did not complete the survey. Some of the nurses who did not complete the survey indicated that they were too busy. This resulted in eighty-five nurses completing the online survey (84%). Nurses in this study (N=85) completed a total of 98 mobility logs providing a self-report of the mobility they promoted for each of their patients during one shift.

Measures

Overall Provider Barrier Scale.

The 29-question Overall Provider Barrier scale contains 3 subscales including nurse knowledge (5 items), nurse attitude (10 items) and behavior subscales (14 items). The behavior subscale measures the external barriers that may be influencing nurse-promoted mobility (Hoyer et al., 2015). Response options on the five-point Likert scale were strongly disagree to strongly agree. Discriminant validity with a sample of nurses has been previously reported as acceptable and Cronbach's alpha was reported as 0.87 (0.83-0.90) (Hoyer et al., 2015). Three questions of interest were added to the scale: "Promoting mobility in hospitalized older adults is a priority for

the organization I work for" and "I know how to assess the lower leg strength of my older adult inpatients." The modified Overall Provider Barriers scale showed adequate reliability with a Cronbach's alpha of .88 and was used for this study. Nurses were instructed to select responses from the Overall Provider Barriers Scale that most accurately reflected their opinions based on their nursing experience during the past 2 weeks.

Self-Recorded Mobility Log.

The Self-Recorded Mobility Log was used to obtain the frequency of clinical barriers encountered by nurses to promoting mobility for each patient. To measure the clinical patient barriers that nurses encountered during their shift for a particular patient, a 12-question 5-point Likert scale (never, rarely, sometimes, often, and always) was created with a Cronbach's alpha reliability of .90. Nurses' mobility-promoting behavior was operationalized by both frequency and type of mobility, including ambulating in the hall (distance in feet) or room, repositioning in bed, performance of active or passive range-of-motion, and sitting in a chair. The following data were also collected: physicians' activity order, the presence of an order for physical therapist, whether the patient was at risk for falls, and the proxy measures for functional status.

Procedures

After IRB approval, nurses were recruited during informational meetings and informed consent was obtained. Nurses received 30 minutes of training on how to complete the online Self-Recorded Mobility Logs and the Overall Provider Barrier Scale to ensure accuracy and completeness of data. Nurses remained "on the clock" while completing the data collection to keep the burden on the nurse to a minimum, and prevent dropouts. Nurses used unit hallway markers placed in 10 foot increments to provide more accurate measurement of distance

ambulated and mitigate recall bias. In addition to the Self-Recorded Mobility Logs, nurses continued to document their usual mobility activities in the electronic health record.

Demographic data and a Basic Metabolic Index (BMI) were obtained for each patient from the chart. Body weight was converted to Kilograms (Kg), and height converted to Centimeters^2 (cm^2)$\cdot$ The formula used to calculate BMI is weight (Kg)/height (cm^2) (Jensen, et al., 2013). The All Patient Refined-DRG (APR-DRG) Severity of Illness Scale was used to obtain the patient's illness severity. The DRGs measure the case mix for inpatient admissions. This helps to define what a more or less "severe" case is. The All Patient Refined DRG (APR-DRG) There are four severity of illness subclasses: 1=minor; 2=moderate; 3=major; 4=extreme. Severity of illness relates to the physiologic decompensation or organ system loss that the patient experiences. Increased severity of illness, or risk of mortality are mostly determined by the interaction of the multiple diseases the patient has. Patients with increased severity of illness may have greater co-morbidities and may be more likely to have poor health outcomes (Averill et al., 2003 Beveridge et al., 2015). The APR-DRG has been used as a tool for grading the clinical and functional impairment of hospitalized older adults in order to identify patients with the risk for high healthcare consumption (Pilotto et al., 2011).

Data Analysis

All data was de-identified, and SPSS version 23 was used for data analysis. Little's Missing Completely at Random (MCAR) test for the Overall Provider Barrier Scale and the Frequency of Clinical Barriers Scale were not significant, and the hypothesis that data are missing completely at random was accepted (Little, 1988). Missing values were replaced using Expectation Maximization Estimation. The mean, standard deviation, frequencies and range of scores was used to summarize the sample characteristics, and nurse-promoted mobility. Some

variables were significant for skewness including the knowledge sub-scale, distance ambulated, and variables related to patient proxy measures for function. Accordingly, non-parametric analyses were used, and medians and interquartile ranges were used to report descriptive results.

A Mann-Whitney *U* test was calculated examining the difference between novice and expert nurses and the perception of organizational priority and self-priority to promoting mobility. Nurse experience was dichotomized into novice (≤5 years) and expert (>5 years). Correlation coefficients values (Spearman *rho*) were obtained to examine to what extent the patient's measure of the severity of illness are associated with the nurses' mobility-promoting behavior. The association between illness severity and nurses' promotion of mobility were also examined.

Hierarchical regression was used to determine the relative contribution of knowledge, attitude and external barriers in predicting the mobility nurses promoted in hospitalized older adults in their care (Hypothesis 1). A summary score was calculated for the distance ambulated and log transformed before entering into the hierarchical regression model. Summary scores were calculated for the frequency of ambulation in the hall, ambulation in the room, repositioning in bed, range-of-motion and promoting the sitting in the chair, and entered into the regression model. The knowledge subscale was log transformed before entering into the hierarchical regression model. The attitude and behavior sub-scales did not show skewness. The order of entry of the variables was based on theoretical considerations. Knowledge barriers was entered at step 1 followed by attitude barriers in step 2, and external barriers in step 3. Age, gender, and experience were tested for possible inclusion as covariates but were not significantly related to the depended variable. Tests for multicollinearity were conducted. Since the variance

inflation factor for all test of multicollinearity were less than 2.5, multicollinearity was not a problem (Marquard, 1970).

A Kruskal-Wallis H test was conducted to examine the differences in nurses' mobility-promoting behavior of four different groups of nurses with varying levels of experience: Novice (≤ 1 year), advanced beginner (>1 to 5 years), Competent (>5 to 10 years), and expert experience (> 10 years or more) (Hypothesis 2). A Spearman *rho* correlation coefficient was calculated to examine the relationship between nurses' perceptions of the organizational priority to promote mobility and nurses' mobility-promoting behavior (Hypothesis 3).

Results

Sample Characteristics

Nurses.

Nurse participant characteristics are shown in Table 1. The sample included nurses with a mean age of 39.65 (*SD*=11.611). Most nurses had a baccalaureate nursing degree (56.5%), and 32. 9% had worked as certified nursing assistants prior to being nurses. While some nurses held Advanced Cardiac Support Certifications (42.4%) none of the nurses in this study held a geriatric nurse certification. Fifty-eight percent of nurses had 5 years or greater experience as a nurse. About 32% had between 2-5 years of experience and only 8.2% had less than 1 year of experience.

Table 1
Nurse Characteristics (N=85)

Gender	Female: 85.9% Male: 14.1%
Age (mean):	39.65 (SD=11.611)
Ethnicity	Non-Hispanic: 83.5% Other: 14.5%
Race	White: 87.1% Other: 12.9%
Highest degree	ADN: 38.8% BSN: 56.5% Other: 4.7%
Previous CNA work	No: 61.1% Yes: 32.9%
Certifications	No: 57.6% Yes: 42.4%
Level of Experience	≤1 years: 8.2% ≥1-5 Years: 32.9% >5 Years: 24.7% >10 years: 34.1%
Hospital Unit	Nephrology: 4.7% General Medical: 9.4% Cardiac: 42.4% Neurology: 15.3% Pulmonary: 11.7% Oncology: 16.5%

Patients.

The nurses in this study cared for 98 patients aged 65 and older. Patient characteristics can be found in Table 2. The patients' mean age was 77.96 (SD = 7.57). Most patients were either overweight (38.8%) or obese (36.7%), and only 24.5% had a normal Basic Metabolic Index (BMI). The All Patient Refined-DRG (APR-DRG) Severity of Illness Scale was used to classify the illness severity of patients. Patients were in one of four severity of illness subclasses: Minor severity, moderate severity, major severity and extreme severity of illness.

Table 2
Patient Demographics (N=98)

Gender	Male: 59.2% Female: 40.8%
Age (mean):	77.96 (*SD*=7.56)
BMI	24.5% Normal BMI 18.5 to <25.0 Kg/m^2 38.8% Overweight: ≥25.0 Kg/m^2 36.7% Obese: ≥30.0 Kg/m^2
APR-DRG Severity of Illness: Mean=2.94 (*SD*=.771)	5.1% 1=Minor 17.3% 2=Moderate 56.1% 3=Major 21.4% 4=Extreme
Ethnicity	Non-Hispanic: 94.9% Other: 5.1%
Race	White: 88.8% Other: 8.1%

Description of Knowledge, Attitude and External Barriers

As seen in Table 3, the most common knowledge barriers included nurses perception that that they did not receive training on how to safely mobilize hospitalized patients. Only half of the nurses reported having knowledge on how to assess lower leg strength (57%). Nurses viewed the promotion as a priority, and overwhelmingly agreed that hospitalized patients who are mobilized three times daily may have better health outcomes (94%). However, some nurses felt that either a physical or occupational therapist should be the primary care provider to mobilize patients in the hospital (19%). While nurses agreed that the promotion of physical activity in hospitalized older adults is a priority in their organization, Table 3 shows that nurses rated their own view of promoting the physical activity in hospitalized older adults (81%) higher than the hospital's priority (52%). Some nurses felt that their patients were too sick to be mobilized, and reported lacking confidence, and feeling uncertain of when it was safe to promote mobility. However

very few nurses believed that promoting mobility could be potentially harmful to their patient. External barriers to promoting mobility included nurses' perception that nurse-to-patient staffing was inadequate to promote mobility (61%). Some nurses felt that increasing the frequency of mobility-promotion would increase their workload (89%), and that it may pose a greater risk for injury (54%). Interestingly nearly half of the nurses reported that they did not have sufficient time to promote mobility, yet nearly 65% of nurses reported to promoting mobility in their patients at least once daily.

Table 3 Knowledge, Attitude and External Barriers
Survey Response Option Frequency Distribution and Item Score (N=85)

Subscale	No.	Item	Response Option Distribution (N=85)					*Med.*	*Q1-Q3 Range*
			1	**2**	**3**	**4**	**5**		
Knowledge	2	I have received training on how to safely mobilize my inpatients.	1	8	7	53	16	4.00	(4.00-4.00)
	5	I understand which inpatients are appropriate to refer to physical therapy.	2	2	6	57	18	4.00	(4.00-4.00)
	6	I understand which inpatients are appropriate to refer to occupational therapy.	2	6	7	53	17	4.00	(4.00-4.00)
	25	Unless there is a contraindication, I educate my inpatients to exercise or increase their physical activity while on my hospital unit.	0	5	9	55	16	4.00	(4.00-4.00)
	29	I know how to assess the lower leg strength of my older adult inpatients.	3	20	13	45	4	4.00	(2.00-4.00)
Attitude	1	My inpatients are too sick to be mobilized [a].	12	38	19	15	1	4.00	(3.00-4.00)
	3	Increasing mobilization of my inpatients will be harmful to them. [a]	26	43	12	3	1	4.00	(4.00-5.00)
	4	A physical therapist or occupational therapist should be the primary care provider to mobilize my inpatients. [a]	4	44	21	13	3	4.00	(3.00-4.00)
	12	Increasing mobilizations of my inpatients will be more work for nurses. [a]	1	2	6	50	26	2.00	(1.00-2.00)
	13	Increasing mobilizations of my inpatients will be more work for physical and/or occupational therapists. [a]	2	27	21	30	5	3.00	(2.00-4.00)
	18	I believe that my inpatients who are mobilized at least three times daily will have better outcomes.	0	1	4	35	45	5.00	(4.00-5.00)
	19	I am not sure when it is safe to mobilize my inpatients. [a]	16	47	11	10	1	4.00	(3.00-4.00)
	21	I do not feel confident in my ability to mobilize my inpatients. [a]	15	49	10	10	1	4.00	(3.50-4.00)
	26	My patients have time during their day to be mobilized at least three times daily.	2	18	22	35	8	4.00	(3.00-4.00)
	27	Promoting mobility in hospitalized older adults is a priority for the organization I work for.	1	16	24	30	14	4.00	(3.00-4.00)
	28	I view the promotion of physical activity in hospitalized older adults as a priority.	0	4	10	57	14	4.00	(4.00-4.00)
Behavior/ External	7	We don't have the proper equipment and/or furnishings to mobilize my inpatients. [a]	11	28	24	15	7	3.00	(2.00-4.00)
	8	The physical functioning of my inpatients is regularly discussed between the patient's Healthcare providers (nurses, physicians, physical therapists, occupational therapists).	2	17	15	38	13	4.00	(3.00-4.00)
	9	Nurse-to-patient staffing is adequate to mobilize inpatients on my unit(s).	18	34	15	16	2	2.00	(2.00-3.00)
	10	My inpatients often have contraindications to be mobilized. [a]	3	28	25	29	0	3.00	(2.00-4.00)
	11	Unless there is a contraindication, my inpatients are mobilized at least once daily by nurses.	3	16	11	45	10	4.00	(3.00-4.00)
	14	My departmental leadership is very supportive of patient mobilization.	0	13	26	36	10	4.00	(3.00-4.00)
	15	Increasing the frequency of mobilizing my inpatients increases my risk for injury. [a]	5	20	14	36	10	2.00	(2.00-4.00)
	16	Inpatients who can be mobilized usually have appropriate physician orders to do so.	2	15	13	49	6	4.00	(3.00-4.00)
	17	My inpatients are resistant to being mobilized. [a]	3	15	26	38	3	3.00	(2.00-3.00)
	20	Family members of my inpatients are frequently interested to help mobilize them.	5	29	16	32	3	3.00	(2.00-4.00)
	22	I document the physical functioning status of my inpatients during my shift/work day.	0	4	9	55	17	4.00	(4.00-4.00)
	23	I do not have time to mobilize my inpatients during my shift/work day. [a]	3	13	29	34	6	3.00	(2.00-3.00)
	24	Unless there is a contraindication, I mobilize my inpatients at least once during my shift/work day.	1	8	15	51	10	4.00	(3.00-4.00)

Response options were as follows: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree.
[a] Response options were reverse coded for analyses.

Description of Clinical Patient Barriers to Mobility

The frequency of clinical patient barriers that nurses encountered during one shift to promoting mobility in hospitalized older patients is shown in Table 4. Nurses reported patient preference and patient condition as some of the most frequently encountered barriers to promoting mobility. Nurses also indicated that having conflicting priorities, searching for assistance, and high workload during their shift were barriers to mobilizing their patients.

Table 4
Frequency of Clinical Patient Barriers to Promoting Mobility (N=85)

	Median (Q1-Q3) Range
Searching for equipment	1.97 (1.00-3.00)
Not enough equipment	2.00 (1.00-3.00)
Knowledge of how to use equipment	1.00 (1.00-3.00)
Availability of staff	**3.00 (1.89-4.00)**
Searching for staff	**3.00 (1.96-4.00)**
Conflicting priorities	**3.00 (1.96-4.00)**
Workload	**3.00 (1.44-4.00)**
Patient condition	**3.00 (2.00-4.00)**
Patient preference	**3.00 (2.66-4.00)**
Patient family preference	2.00 (1.00-3.00)
No Activity order	2.00 (1.00-3.00)
Conflicting activity order	1.95 (1.00-3.00)

Response Options: 1-Never; 2-Rarely; 3-Sometimes; 4-Often; 5-Always

Self-Report of Nurse-Promoted Mobility

The nurses' self-report of type, frequency of the mobility promoted and distance ambulated in older patients during one shift can be viewed in Table 5. Nurses reported that they promoted ambulation in the hall for 19.4% of their patients. Of patients who ambulated, most were ambulated 200 feet or less during one shift. Nurses reported that 38.8% of patient ambulation occurred in the room, which was described as ambulating to the chair or bathroom. The most frequently promoted mobility activity of nurses was to promote sitting in the chair for 39.8% of patients. Nurses reported that they minimally promoted range-of-motion activities

Table 5
Nurse-Promoted (N=85) Mobility During One Day-Shift in 98 Patients

Type of Mobility	Frequency/Shift *Mean (SD)*	Mobility Activity in %
Walking in Hall	0.36 (.933)	19.4%
Walking in Room	1.13 (1.65)	38.8%
Bed Mobility	1.05 (1.64)	34.7%
Range-of-Motion	0.13 (.652)	5.1%
Sitting in Chair	0.93 (1.34)	39.8%
Total Distance in Feet	Percent Total Distance	
0	82.4%	
≤ 200 Ft.	9.3%	
200 < Distance ≤ 500 Ft.	7.1%	
> 500 Ft.	1%	

1=once/shift; 2=twice/shift; 3=three times/shift; 4=four times/shift; 5=five times/shift

Novice-Expert Differences in Perceptions of Mobility as a Priority

As seen in Table 6, novice nurses had significantly lower priority to promote mobility compared to expert nurses (U = 1,089.500, $p < .05$). There was no significant difference between nurses with novice or expert level experiences (U = 932.000, p > .05) and organizational priority.

Table 6
Mann Whitney *U* **Test Results Comparing Novice and Expert Nurses perception of Organizational and Self-Priority for Promotion of Mobility (N=85)

Variables	Experience	*Mean Rank*	*p**
Promoting Mobility is an Organizational Priority	Novice	41.37 (n=35)	.597
	Expert	44.14 (n=50)	
Promoting mobility is a priority for the nurse	Novice	36.87 (n=35)	.024*
	Expert	47.29 (n=50)	

*p<.05
Response options were as follows: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree.

The Relationship of Patient Factors to Nurse-Promoted Mobility

The relationship between severity of patient illness, functional status and nurses' mobility-promoting behavior is shown in Table 7. There was a weak but significant relationship between severity of illness and patient mobility impairment. Patients scoring more poorly on the timed up and go test were significantly less likely to ambulate in the room. Nurses reported that 30.6% of patients were unable to rise, and 34.7% of patients rose after the count of one, indicating difficulty to rise to a standing position. Patients at risk for falls had lower frequencies of ambulation in the room or in the hall. Patients at risk for falls had significantly greater mobility impairment. Nurses reported that nearly half (45%) of patients used an assistive device for mobility at home. Patients using assistive devices at home ambulated significantly less with shorter distances.

Table 7 Correlation Coefficients Values (Spearman *rho*) Between Patient Severity of Illness, Functional Status and Nurses Mobility-Promoting Behavior (N=85)

	Impaired Mobility	Assistive Device	TUG	Fall Risk	Freq. Walking in Hall	Distance Ambulated	Walking in Room	Bed Mobility	ROM	Sitting in Chair	Severity of Illness	BMI
Impaired Mobility		.437**	.332**	.428**	-.061	-.097	-.188	.157	.110	.043	.200*	-.303**
Assistive Device	.437**		.123	.145	-.204*	-.225*	.027	-.083	-.027	.230*	.025	-.237*
TUG	.332**	.123		.368**	-.155	-.190	-.388**	.042	.064	-.167	.084	-.215
Fall Risk	.428**	.145	.368**		-.196	-.234*	-.274**	.126	.098	.016	.011	.398**
Freq. Walking in Hall	-.061	-.204*	-.155	-.196		.939**	.247*	-.095	.143	.120	-.126	-.063
Distance Ambulated	.097	-.225*	-.190	-.234*	.939**		.285**	-.054	.137	.152	-.104	-.063
Walking in Room	-.188	.027	-.388**	-.274**	.247*	.285**		-.158	.020	.320**	-.085	-.047
Bed Mobility	.157	-.083	.042	.126	-.095	.054	-.158		.100	-.124	.085	.059
ROM	.110	-.027	.064	.098	.143	.137	-.020	.100		-.031	.008	-.225*
Sitting in Chair	.043	.230*	-.167	.016	.120	.152	.320**	-.124	-.031		-.007	.059
Severity of Illness	.200*	.025	.084	-.011	-.126	-.104	-.085	. 085	.008	-.007		-.033
BMI	-.303**	-.237*	-.215*	-.398**	-.063	-.063	-.047	.059	-.225*	.059	-.033	

p<0.01** *P*<0.05*

Nurse Barriers as Predictors of Nurses' Mobility Promotion

A hierarchical regression was calculated predicting nurses' mobility-promoting behavior based on their knowledge barriers, attitude barriers and external barriers. Nurse knowledge, attitude and external barriers were not significant predictors of distance or frequency ambulated, promoting range-of-motion, or promoting mobility in bed. Nurses' knowledge, attitude and external barriers were significant predictors of walking in the room and promoting patients to sit up in the chair. As shown in Table 8, when entered into the model alone, knowledge barriers accounted for 4.7% of the variance in walking in the room ($p = .047$) but was not a significant predictor of getting patients up to the chair ($p = .309$). Attitude barriers added 17.4% of variance to the model for walking in the room ($p < .001$) and 8.9% of the variance in getting patients up to the chair ($p = .013$). Step 3 of the models showed that 5.3% of the variance in walking in the room was uniquely accounted for by external barriers ($p < .001$) and 2.1% of the variance in getting patients up to the chair ($p = .014$). Knowledge barriers, attitude barriers and external barriers predicted 5.3 % of the variance in walking in the room ($p < .001$) and 2.1 % of the variance in getting patients up to the chair ($p = .014$).

Table 8 Hierarchical Regression Analysis of the Effect of Nurses' Knowledge, Attitude and External Barriers (N=85) on Nurse-Promoted Mobility in 98 Patients.

Walk in Room	***β***	***SE (β)***	***Standardized β***	***â***	***ΔR^2***	***p***
Model 1						
Knowledge Barriers	-3.004	1.489	-.216	-.216	.047	.047
(F (3,81) = 4.072, p < .001						
Model 2						
Knowledge Barriers	-6.096	1.534	-.439	-.439	.174	<.000
Attitude Barriers	-2.382	.556	.473	.473		<.000
(F (3, 81) = 11.630, p <.001						
Model 3						
Knowledge Barriers	-6.617	1.506	-.476	-.476	.053	<.001
Attitude Barriers	1.487	.653	.295	.295		.026
External Barriers	1.471	.604	.304	.304		.017
(F (3, 81) = 10.196, p < .001						

Up to Chair	*β*	*SE (β)*	*Standardized β*	*â*	*ΔR^2*	*p*
Model 1						
Knowledge Barriers	-1.402	1.369	-.112	-.112	.012	.309
(F (3,81) = 3.772, p < .05						
Model 2						
Knowledge Barriers	-3.395	1.489	-.270	-.270	.089	< .05
Attitude Barriers	1.536	.540	.337	.337		< .05
(F (3, 81) = 4.614, p < .05						
Model 3						
Knowledge Barriers	-3.694	1.496	-.294	-.294	.021	< .05
Attitude Barriers	1.022	.649	.225	.225		.119
External Barriers	.844	.600	.193	.193		.163
(F (3, 81) = 3.772, p < .05						

Differences in Nurse-Experience on Mobility Promotion

A Kruskal-Wallis H test (Table 9) showed that novice nurses performed significantly more range-of-motion than advanced beginners (p = .004), competent (p = .007), and expert level nurses (p = .010). There was also a statistically significant difference between the different levels of nurses' experience and promoting patients to sit in the chair with novice nurses (p = .034) and advanced beginners (p = .023) performing significantly more range-of-motion compared to expert nurses.

Table 9
Kruskal-Wallis H Test to Compare Differences in Knowledge, Attitude, and External Barriers on the Mobility Promoting Behavior of Four Different Groups of Nurses with Varying Levels of Experience (N=85)

	df	*X^2*	*p*
Walk in Room	3	3.334	.343
Bed Mobility	3	1.262	.738
Range-of-Motion	3	12.597	.006*
Up to Chair		13.395	.004*
Distance Ambulated	3	1.637	.651
Knowledge	3	6.241	.100
Attitude	3	5.859	.119
External	3	3.367	.338

P <.05*,

Association of Organizational Priority on Nurse-Promoted Mobility

Table 10 shows that nurses' who perceived that the promotion of mobility is a priority for the organization they work for tended to promote ambulation in the room to a greater extent. A moderate positive correlation was found between the distance ambulated in the hall and the frequency of ambulation in the room (*rho* (83) = .391, $p < .01$). The relationships between nurses' perception of organizational priority and distance ambulated, was not significant (*rho* (83) = .094, $p > .05$).

Table 10
Correlation Coefficient Values (Spearman *rho*) Between Nurses' Perceptions of the Organizational Priority to Promote Mobility and Nurses' Mobility Promoting Behavior (N=85)

	Organizational Priority	Distance Ambulated	Walking in Room	Repositioning in Bed	ROM	Sitting in Chair
Organizational Priority		.183	.220*	-.089	-.092	.138
Distance Ambulated	.183		.391**	-.013	.218*	.223*
Walking in Room	.220*	.391**		-.052	-.083	.302**
Repositioning in Bed	-.089	-.013	-.052		.090	-.005
ROM	-.092	.218*	-.083	.090		-.032
Sitting in Chair	.138	.223*	.302**	-.005	-.032	

$p<0.05$*, $p<0.01$**

Discussion

While the incongruence between mobility needed and occurring in hospitalized older adults has been studied for decades—and literature has pointed a critical finger at nurses for failing to promote mobility—little is known about whether the barriers that nurses encounter could explain nurses' practice behavior. The findings of this study suggest that nurse attitudes and external barriers, rather than nurse knowledge alone, may contribute to insufficient mobility promotion by nurses for hospitalized older adults. The results from this study are similar to findings of other studies that have examined barriers to mobility in hospitalized patients. While

some studies found that nurses may not view the mobility needs of hospitalized patients as a priority, nurses in this study did view the importance of mobility in hospitalized older adults as a priority (Hoyer et al., 2015; Lee & Fan, 2012; Moore et al., 2014). However, novice nurses had lower priority to promote mobility compared to more experienced nurses.

Despite considering mobility a priority, staffing concerns, heavy workload, increased risk for nurse injury and lack of time could have contributed to some nurses' attitude of not feeling confident to promote mobility, which may indicate a lack of self-efficacy. Some nurses also had a lack of outcome expectancy, with the view that patients were resistant to being mobilized, and that the promotion of mobility in patients could potentially cause the patient harm, which shows that a lack knowledge exists in some nurses. While nurses viewed the promotion of mobility as a priority, some nurses felt that either a physical or occupational therapists should be the primary care provider to mobilize patients in the hospital. The findings from this study suggest that the patient condition, potential resistance, coupled with fears about fall risk, may impact nurses' self-efficacy and outcome expectancy. These findings are congruent with previous studies that found that nurses perceive that the promotion of mobility may be a potential fall hazard (Brown, et al., 2007; Doherty-King & Bowers, 2011; 2013; Engel et al., 2013; Jolley et al., 2013; Moore et al., 2014). However, studies show that the promotion of mobility may contribute to preventing older patient falls (Quigley, Barnett & Friedman, 2016).

Nurses in this study reported that patient preference is also a barrier to promoting mobility, which could have been perceived by nurses as resistance to their efforts to promote mobility. This finding is similar to results from a previous study that found that nurses perceived patients as resistant to promoting mobility (Brown et al., 2007). Patient preferences or potential resistance to engage in the promotion of mobility is understudied. Nurses need to be

knowledgeable on how to involve patients and their families in the plan and goals of mobility promotion. (Burke & Doody, 2012; Moore et al., 2014).

This study found that patients with greater severity of illness were more likely to have impaired mobility. Although the severity of illness rating did not seem to influence nurses' mobility-promoting behavior, patients' physical function did have an influence on the nurse-promoted mobility. Patients who had difficulty rising from a seated to standing position, and patients who were deemed to be at risk for falls had significantly lower levels of ambulating in the room or in the hall. Interestingly, nurses who indicated that patients were at risk for falls also indicted that they had impaired mobility. It is unclear whether nurses inferred that patients had impaired mobility because they were classified as at risk for sustaining a fall, or because they actually had impaired mobility. In addition, patient's home-use of assistive devices may negatively impact the distance and frequency of ambulation in the hall.

Some nurses in this study viewed that the promotion of mobility should be the primary responsibility of physical or occupational therapists. This finding could be explained by the convergence of patient condition, difficulty with prioritizing mobility, inadequate staffing levels and uncertainty of when it is safe to mobilize patients. This finding is consistent with other studies where nurses deferred mobility due to a variety of factors (Brown et al., 2004; Doherty-King & Bowers, 2011; 2013; Moore et al., 2014). Congruent with other studies some nurses in this study perceived that increasing the mobility in their patients would increase their risk for self-injury (Jolley et al., 2014), and that it would be more work for them (Hoyer et al., 2015; Moore et al., 2014).

One seemingly ambiguous finding from this study was that while most nurses reported having received training on how to safely mobilize hospitalized patients, some nurses reported

they lacked knowledge of how to assess lower leg strength and how to determine when patients are safe to be mobilized. In addition, studies show that nurses lack knowledge on how to garner interdisciplinary guidance to promote mobility (Burke & Doody, 2012; Moore et al., 2014).

Consistent with findings from other studies, nurses in this study reported high workload staffing shortages, and time constraints as barriers to promoting mobility. Other studies show that nurses may lack knowledge on how to gain support from ancillary staff to assist in the promotion of mobility (Burke & Doody, 2012; Moore et al., 2014). These findings, along with the findings from this study about barriers, may imply the need for a microsystem analysis to identify specific unit-based issues in order to reengineer the workflow in acute care units. Future studies will need to be conducted and the results used to develop a multicomponent mobility intervention.

Only low levels of mobility was promoted in the patients in this study, which is a commonly reported finding in the literature (Boltz et al., 2010; D'Ambruoso & Cadogan, 2012; Fisher, et al., 2011; Garrison et al., 2010; Zisberg, et al. 2011). The state of the science shows that most researchers and clinicians are seeking to move beyond merely identifying that nurses are not doing their job, and instead are seeking to understand the contextual factors and barriers that could impede the work of nurses. This study found that nurses' perception of knowledge, attitude and behavior barriers were significant predictors of walking in the room and promoting patients to sit up in the chair. This study did not find that nurse knowledge, attitude and external barriers were predictors of distance or frequency ambulated, promoting range-of-motion, or promoting mobility in bed. However, it was evident that nurses perceived barriers to promote mobility.

Both novice and expert nurses in this study had positive perceptions of the organizational and departmental support and priority to mobilize hospitalized older adults. Nurses who perceived that the promotion of mobility is a priority for the organization tended to ambulate patients more frequently in the room. However, the quantity of mobility promoted by nurses overall was perplexingly low. While organizational support in general may be present, the development of a unit-based culture of mobility and the accompanying processes needs to be considered if sufficient mobility in older adults is to be promoted (Barber et al., 2014; Lee & Fan, 2012; Moore et al., 2014). Additional studies have identified that nurses and other members of the healthcare team perceive a lack of leadership or the need for a "champion" to promote a culture of mobility (Barber et al., 2014; Engel et al., 2013; Moore et al., 2014). The findings from this study show perplexingly low levels of mobility despite nurses' perception of high levels of organizational and departmental priority and support for the promotion of mobility. Future studies should investigate how unit-based culture and clinical nurse leadership at the bedside could better support mobility promotion.

To some extent the findings of this study concur with other studies that have found that nurses with less experience may perceive barriers to a greater degree (Hoyer et al., 2015). This study found that that novice nurse priority to promote mobility was lower compared to expert nurses. This could be related to less experience and lacking expertise in managing the workload, prioritizing, and coordinating patient care activities (Hafensteinsdóttir et al., 2013). However, an unexpected finding was that novice nurses promoted more range-of-motion compared to more experienced nurses. It could be that novice nurses, as more recent graduates, possess up-to-date knowledge about promoting range-of-motion.

In summary, nurses viewed the promotion of mobility as important, yet low levels of mobility in older patients was evident. Nurses perceived a number of barriers to promoting mobility: patient condition, patient resistance to mobility promotion efforts, the perception that patients could come to harm during mobilization, perceptions of heavy workload, difficulty prioritizing nursing care and time constraints, and staffing shortages. These barriers may contribute to nurses' attitudes, such as lack of self-efficacy, lack of outcome expectancy, and the mobility promoted. Some nurses also indicated an attitude of deferring their responsibility to mobilize older patients to physical therapy, which is problematic because not only may the cost for physical therapists to promote sufficient basic mobility in older adults be exorbitant for hospitals, physical therapists could never be scheduled often enough to provide sufficient mobility. Ultimately, promoting basic mobility is the responsibility of the nurse.

Implications

These findings have several implications. Nurses need to have increased knowledge and awareness of the mobility needs of hospitalized older adults. Hospital organizations need to be aware of the benefits of mobility and the consequences of immobility. Nurses, with support from the organization, should be involved in evaluating the current state of mobility practice and developing multi-component mobility interventions. Creating a unit-based culture to promote mobility may be an effective method to improve the level of nurse-promoted mobility for hospitalized older patients. (Drolet et al., 2013; Engel et al., 2013; Moore et al., 2014).

Greater patient involvement in their care is also required to plan and execute improved levels of mobility. Pragmatic patient-centered care approaches are needed to assess, plan and promote mobility. However little is known about barriers to mobility from the patient's perspective (Lee & Fan, 2012; Leditschke et al., 2012; Moore et al., 2014). Patient factors, in

addition to the complexity of the acute-care environment, may require a concerted interdisciplinary effort to promote mobility. Information technology including clinical decision support systems imbedded in the electronic health record, could facilitate communication and collaboration among members of the interdisciplinary healthcare team to plan and coordinate patient-centered approaches to mobility promotion. In addition, future studies should investigate the implications of clinical nurse leadership at the bedside to coordinate efforts to develop and implement a nurse-promoted multicomponent mobility intervention for hospitalized older adults (Brown et al., 2004; Brown et al., 2007; 2009a; 2009b; Doherty-King & Bowers, 2011; 2012).

Limitations

Inherent in this non-experimental study design are limitations including sampling approach and sample size, methods and measurement. Systematic sampling error and sampling bias were a risk, which limits generalizability. Another limitation is that causality cannot be inferred when descriptive-correlational study designs are used. In addition, there was a lack of control for all potentially confounding variables.

Hawthorne effect, maturation, or inaccuracies due to time constraints and interruptions are additional limitations. Some nurses may have felt that they should promote more mobility to provide favorable responses in the mobility log. While environmental markers were in place, and nurses were educated on how to use them to document the distance ambulated, there is the potential for recall-bias and over or under-estimation of the mobility promoted. In addition, nurses may have become fatigued from completing the mobility logs on each of their patients leading to inaccuracies.

A small convenience sample from one geographic region was utilized for this study so the findings may not be generalizable. Hospital unit-based culture and practices may vary, such

as work-flow patterns, which could have introduced biases. Another limitation is that the variability between patient's severity of illness, disease processes, and comorbidities were not controlled for. This variability may have influenced to what extent mobility was promoted.

The use of 5-point Likert scale response options for both the Overall Provider Barriers Scale and portions of the Self-Recorded Mobility Log may have resulted in raters answering towards the middle (neutral) of the scale, perhaps to make them seem less extreme (Waltz, Strickland, & Lenz, 2010). In summary, many potentially confounding variables in this study were not controlled for and therefore the generalizability is limited and study findings should be viewed with caution. While significant limitations exist, the findings from this study contribute to the evidence base in the literature that external barriers including patient factors, interdisciplinary factors, and environmental factors may play a significant role in the insufficient promotion of mobility in hospitalized older adults.

Conclusion

Higher rates of hospitalization can be expected as the number of older adult's increases. Hospitalized older adults are predisposed to muscle loss and weakness if they do not engage in sufficient mobility. As nurses care for hospitalized older adults the convergence of interpersonal, patient, and environmental complexities acting as barriers to mobility need to be considered. It is important to understand the needs of beginning, less experienced nurses to overcome the barriers to promoting mobility. However this study shows that even experienced nurses need the knowledge and support to overcome barriers to promoting mobility. Hospitals need to address the needs of the novice nurse while enhancing the practice of more experienced nurses in order to support nurse-promoted mobility. The findings from this study show that

nurses knowledge, attitude, and external barriers could play a role in the low levels of mobility in hospitalized older adults.

Chapter Summary

This chapter reported the design, methods, setting and participants of the study. The results of the nurses' barriers including knowledge, attitude and the perception of external barriers were reported and the findings of the associations of the variables were discussed. Limitations, implications, and recommendations for future research were presented. The findings of this cross-sectional descriptive correlation study filled gaps in knowledge and contributed to the literature on nurses' barriers to promoting mobility in hospitalized older patients.

CHAPTER 5

Chapter Introduction

This chapter provides a summary and discussion of the findings from this study. Implications for practice that could improve the mobility in hospitalized older adults will be discussed. A discussion of how the specific findings are consistent with the adapted Knowledge, Attitude and Behavior framework, and other research findings will be presented. The potential implications of the study findings for clinical practice, policy and education will be discussed, and recommendations to advance this field of science will be made.

Synthesis of Findings

Low levels of mobility in hospitalized older adults have been a vexing problem for decades. Findings from this study indicate that nurses generally believe that the promotion of mobility in hospitalized older adults is important, and that it could improve health outcomes. However, consistent with other literature, this study shows that several barriers may contribute to persistently low levels of nurse-promoted mobility for hospitalized older adults (Barber et al., 2014; Brown et al., 2007; Burke & Doody, 2012; Doherty-King & Bowers,2011; 2013; Hoyer et al., 2015; Lee & Fan, 2012; Moore, et al., 2014;). Despite having received training on how to safely mobilize inpatients, some nurses were unsure of when it was safe to promote mobility. Low levels of mobility-promotion may be related to concerns about falls. Hospitals have increased their vigilance in preventing falls in hospitalized older adults (Quigley, Barnett, & Friedman, 2016). The high severity of illness of many older hospitalized adults may increase the complexity of their care needs. The findings from this study suggest that some nurses had fears of causing patient harm and lacking knowledge of the appropriate timing to safely mobilize patients. This could be due in part to the emphasis on fall prevention (Boltz et al., 2013).

Ironically, early and consistent mobilization decreases fall rates (Quigley et al., 2016), while immobility rapidly decreases function (Cruz-Jentoft et al., 2010). The concern about causing patient harm may have contributed to nurses' lack of self-efficacy and lack of outcome expectancy which could be one explanation of why nurses have deferred mobility to other disciplines, and why sitting in the chair is the most frequent nurse-promoted mobility.

Theoretical Considerations

There is a recognition that nurses' knowledge and their attitudes influence nursing practice behaviors (Alanen et al., 2009; Doherty-King & Bowers, 2011; 2012; Hoyer et al., 2015; Moore et al., 2014; Ward, 2005). Obtaining a better understanding of the knowledge that nurses possess and the attitudes and beliefs they hold is important to discovering how their nursing practice behavior is affected by these factors (Knowles, et al., 2015). Cabana's framework advocates a sequence of behavior change that begins with removing knowledge barriers, which then contributes to removing attitude barriers and external barriers resulting in improvements in nurses' mobility-promoting behavior (Cabana et al., 1999).

Nurses' knowledge, attitude and behavior barriers were found to be predictors of nurses walking patients in the room (primarily to and from the bathroom), and promoting patients to sit up in the chair. The finding from this study are consistent with the adapted Knowledge, Attitude and Behavior framework suggesting that knowledge barriers could contribute to nurse attitude barriers and that external barriers feed into attitude barriers, further contributing to nurses' mobility-promoting behavior (Cabana et al., 1999). The findings that knowledge barriers and external barriers may be contributing to nurses' attitudes of lack of self-efficacy and lack of outcomes expectancy suggest that addressing knowledge barriers and external barriers simultaneously, could be a helpful intervention for improving nurse-promoted mobility in

hospitalized older adults. The findings regarding barriers in this study suggest that future research should focus on external barriers related to concepts of nursing workflow and unit-based culture. These factors may play a role in nurses' attitudes influencing their mobility promoting behavior.

Implications for Education, Clinical Practice, and Policy

Implications for Nursing Education

The advancement of nursing education may be critical to overcoming the nearly two-decade long research/translation gap in nursing practice. The finding that nurses promoted very low levels of mobility in older adults in their care suggests that there may be an education-to-practice gap specifically about mobility. This delay in implementing evidence-based practice may be contributing to nurses not being adequately prepared to care for hospitalized patients in the complex acute care setting, for example, promoting mobility in hospitalized older adults. Increasing the geriatric content in undergraduate nursing curriculum could be a helpful method to raise awareness of the mobility required for older adults to prevent functional decline. Novice nurses may need more knowledge and skills regarding how to collaborate with other disciplines, and plan the mobility activities. The study findings of novice nurses not viewing the promotion of mobility as high a priority as their more experienced counterparts suggest that nurse residency programs, and mentoring by nurses with geriatric expertise and a good understanding of the mobility needs of older adults could be a helpful modality to improve nurses' knowledge and give them skills to overcome potential barriers (Benner et al., 2010).

Reports show that less than 1% of Registered Nurses are certified in geriatrics, and only about 2.6% of Advance Practice Nurses possess a specialty geriatrics certification (IOM, 2008). The findings that not a single nurse in the study had a geriatric certification but were caring for

geriatric patients reflects this deficit. Supporting nurses to obtain a geriatric certification could be an intervention to improve their knowledge of mobility needs of older adults. In addition, nurses who have obtained a geriatric certification could become advocates for the mobility needs of this population and shift unit-based culture. Fortunately, some progress has been made over the years to incorporate geriatric content in the curriculum across about 94% of baccalaureate nursing schools (IOM, 2008). However, the findings of continued low levels of mobility may indicate that there is a gap in translating this knowledge into the practice of bed-side nurses. This may be related to the organizational and unit-based culture. Nursing students may need to understand the implications and ramifications of functional loss in the older adult to a greater extent. Practicing nurses can leverage this integrated knowledge in acute care settings as they advocate for the need for mobility in hospitalized older adults.

Implications for Clinical Practice

Care coordination for hospitalized patients has become increasingly complex for nurses (Ebright, et al., 2003, Potter, et al., 2005). Nurses in this study reported heavy workloads, conflicting priorities, staffing concerns and time-constraints as barriers to promoting mobility, which is consistent with previous studies that have reported that the promotion of mobility in complex hospital environments has been linked to problems with care-coordination (Brown et al., 2004; Brown et al., 2007; 2009a; 2009b; Doherty-King & Bowers, 2011; 2012). This study's findings suggest that nurse-led care coordination at the bedside could be a helpful modality to decrease existing barriers and improve nurse-promoted mobility in hospitalized older adults.

One solution to help nurses overcome barriers to promoting mobility in hospitalized older adults could be the development and implementation of innovative care coordination models. In collaboration with the American Nurses Association and the American Academy of Nursing, the

Care Coordination Task Force (CCTF) has proposed the development of innovative care coordination practice models (Lamb et al., 2015). Nurse care coordinators, such as Master's prepared Clinical Nurse Leaders, could specialize in geriatric care and facilitate the development and implementation of tailored mobility protocols and training programs to improve nurse's competence to plan the older adult's care, including overcoming the clinical barriers to the promotion of mobility (Harris et al., 2014). Clinical Nurse Leaders could champion the culture of mobility by forming collaborative partnerships with bed-side nurses, physical therapists and physicians.

Implications for Public and Private Policy

Improving the promotion of mobility in hospitalized older adults may require policy solutions that involve both the public and private sector (Hinshaw & Grady, 2011; Price, 2012). Public policy could offer incentives to hospitals to create hospital-based policies necessary to facilitate innovative nurse care-coordinator models (Price, 2012). The study findings of older adults receiving very low levels of mobility suggest that hospital policy and hospital system processes could be improved. Public policy makers, informed by research-generated evidence, could help make hospital organizations more aware that the insufficient promotion of mobility of older adults could lead to a variety of adverse health outcomes that not only place a financial burden on the patient and family, but also on the hospital organization. A finding in this study was that nurses perceived that they placed a higher priority on mobilizing older adult patients than their hospital organization did. While the pay-for-performance mandates of Hospital-Value-Based Purchasing (VBP), and the Hospital Readmission Reduction Program (HRRP) are making important contributions to holding hospitals accountable for the care that is provided to their patients, hospital administrators may not be aware of the important connection between the

hospital-based clinical policy necessary to improve the level of mobility provided to older adults and the support mechanism needed for nurses to overcome clinical barriers to creating a unit-based culture of mobility.

Limitations

Inherent in this study design is the inability to control for threats to internal and external validity, limiting the generalizability of the findings. Hawthorne effect, maturation, or inaccuracies due to time constraints and interruptions are additional limitations. Some nurses may have felt that they should promote more mobility to provide favorable responses in the mobility log. While environmental markers were in place, and nurses were educated on how to use them to document the distance ambulated there is the potential for systematic error in the form of over or under-estimation of the mobility promoted. In addition, nurses may have become fatigued from completing the mobility logs on each of their patients leading to inaccuracies and potential recall bias.

A small convenience sample from one geographic region was utilized for this study so the findings may not be generalizable. Hospital unit-based culture and practices may vary, such as work-flow patterns, which could have introduced biases. The nurses' work-flow routine and emphasis on the promotion of mobility may vary from unit to unit, and physicians could be more or less specific with physical activity orders. Another limitation is that the variability between patients' patient diagnoses, severity of illness, disease processes, and comorbidities were not controlled for. This variability may have influenced to what extent mobility was promoted.

The use of 5-point Likert scale response options for both the Overall Provider Barriers Scale and portions of the Self-Recorded Mobility Log may have resulted in raters answering towards the middle (neutral) of the scale, perhaps to make them seem less extreme (Waltz et al.,

2010). During informational meetings about the study it was emphasized that the researcher was attempting to capture the barriers nurses encountered to promoting mobility, and their mobility-promoting behavior during a "routine" work shift. Nurses were instructed to continue to provide patient care as they usually do. However, some nurses may have felt that they should promote more mobility. In summary, many potentially confounding variables in this study were not controlled for and therefore the generalizability is limited and study findings should be viewed with caution. While there are limitations to this study, the findings contribute to the evidence base in the literature that external barriers including patient factors, interdisciplinary factors, and environmental factors may play a significant role in the insufficient promotion of mobility in hospitalized older adults.

Future Research to Advance the Science

Understanding nurses' barriers to promoting mobility in hospitalized older adults has implications for future research that could bridge the gap between research-generated evidence and bedside nursing care. The findings from this study show perplexingly low levels of mobility despite nurses' perception of high levels of organizational and departmental priority and support for the promotion of mobility. Future studies should investigate how unit-based culture and clinical nurse leadership at the bedside could better support mobility promotion. In addition, the feasibility of a nurse-driven multicomponent mobility intervention for hospitalized older adults should be explored.

While this study—the first in a program of research to improve mobility in older adults across the care continuum—has focused on the perceptions of nurses, a next step could be to explore the perceptions of older patients regarding their perception of barriers to mobility and barriers to being involved in increasing their mobility. Although pragmatic patient-centered

care approaches are needed to assess, plan and promote mobility very little is known about older patients' knowledge of the significance of mobility during hospitalization, or the barriers that these patients may perceive to engage in mobility promotion. In addition, there are no studies that have examined the self-management behaviors of hospitalized older adults in having their basic mobility needs met. For example, it is unclear whether hospitalized older adult's prompt nurses for help in meeting their mobility needs or are aware of their role in having their needs met.

Patient factors, in addition to the complexity of the acute-care environment, may require a concerted interdisciplinary effort to promote mobility. Future research could investigate how information technology, such as the electronic health record, could facilitate communication among members of the interdisciplinary healthcare team. More research is needed to explore how nurses assess and document the physical function of hospitalized older adults and document mobility activities. It would be important to study how nurses use information technology to access clinical practice guidelines to help them determine the goals for patient mobility.

Conclusion

Higher rates of hospitalization can be expected as the number of older adults' increases. Hospitalized older adults are predisposed to muscle loss and weakness if they do not receive the mobility they need. As nurses care for hospitalized older adults they need to consider the convergence of interpersonal, patient, and environmental factors that act as barriers to mobility. Hospitals need to address the needs of the novice nurse while enhancing the practice of experienced nurses in order to support nurse-promoted mobility. The findings from this study show that nurses knowledge, attitude, and external barriers could play a role in the low levels of mobility in hospitalized older adults.

Chapter Summary

Nursing as a scientific discipline has an obligation to the public to engage in translational research to ensure the highest quality of nursing care possible. A holistic paradigm for patient care is the foundation of nursing practice. Because nurses have a comprehensive knowledge of their patients they are well positioned to advocate for their patient's mobility needs. Ultimately, nurses should lead the development of the standard of care to improve the promotion of basic mobility in hospitalized older adults. While no one should leave the hospital in worse condition than when they first arrived— literature confirms that older adults frequently sustain functional decline that is devastating to their independence and quality of life (Boltz & Capezuti, 2010; Brown 2009a; 2009b) After nearly eight decades of research related to the preservation of physical function through mobility, the findings from this study show that perplexingly low levels of mobility in hospitalized older adults persists. This failure necessitates an examination of some broad and specific issues.

National Consensus to Prevent Functional Decline

One strategy to begin a national dialogue to address the need to prevent functional decline in hospitalized older adults is for groups such as the American Nurses Association partnered with the American Hospital Association, the American Physical Therapy Association, and the Gerontological Society of America to hold a think tank that yields a consensus statement with specific action strategies. An important goal for this think tank should be the development of a standardized geriatric-focused mobility guideline that could be tailored to severity of illness. An inter-professional nurse-driven think-tank could advocate a comprehensive approach to nurse-promoted mobility in the hospital setting, while keeping the safety of nurses, healthcare workers, and patients in mind. This inter-professional approach could provide hospitals and

health care teams guidance to preventing functional decline of older adults during their hospitalization.

Role Clarification

Interdisciplinary collaboration is needed to improve the promotion of mobility in hospitalized older adults. Nurses are well positioned and capable of coordinating this collaboration. They have expert knowledge of the patient's medical progress, well-being and physical functioning. Nurses are trained to help restore and preserve the physical functional ability in their patients though basic mobility. In fact, basic mobility is often accomplished alongside of other, basic nursing care activities such as bathing and dressing, administering medications, promoting the sitting in the chair for meals, and ambulating in the hall after a quick visit to the restroom.

Nurses develop a holistic plan of care that focuses on all aspects of the patient's health, including the preservation of physical function for each of their patients. Physical therapists, in contrast, develop a specialized plan of care that treats specific physical impairments in hospitalized patients. Nurses are a constant, but physical therapists are only part of the care team if prescribed by the physician. A physical therapy order is not a guarantee that sufficient mobility will be promoted, as the physical therapist may only be with a patient for a limited number of therapy sessions. Physical therapists use part of the sessions to assess the need for an assistive device and make recommendations for rehabilitation post discharge including readiness and ability to participate in physical therapy upon discharge to a rehabilitation facility or to home.

Nurses are positioned at the forefront of promoting basic mobility. Even if prescribed by the physician, the short episodic mobility promoted by physical therapists is not sufficient to prevent functional decline in hospitalized older adults. The number of older adults in the United

States is predicted to nearly double from 43.1 million in 2012 to 79.7 million by 2040, and the number of older adults over the age of 85 will triple, and severity of illness of hospitalized older adults is greater. Despite this demographic shift, prescriptions for physical therapy will likely decline in the future due to the exorbitant cost for hospitals in retaining physical therapists with advanced degrees.

We know that the promotion of mobility has the potential to preserve a patient's independence, yet the nursing profession as a whole is not advocating for mobility sufficiently. As a profession, nursing is compelled to leverage our scientific knowledge to improve clinical practice and decrease hospital-related iatrogenic problems. This chapter discussed how the specific findings of this study are consistent with the adapted Knowledge, Attitude and Behavior framework. This chapter also presented the implications of this study for nursing education, clinical practice and public and private policy that could improve the mobility in hospitalized older adults. The limitations of this study were also discussed. Recommendations for future research to advance this field of science were made, and broad implications were given.

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APPENDICES

Appendix A

Overall Provider Barrier Scale*

Subscale	
Knowledge	2 I have received training on how to safely mobilize my inpatients. 5 I understand which inpatients are appropriate to refer to physical therapy. 6 I understand which inpatients are appropriate to refer to occupational therapy. 25 Unless there is a contraindication, I educate my inpatients to exercise or increase their physical activity while on my hospital unit.
Attitude	1 My inpatients are too sick to be mobilized. 3 Increasing mobilization of my inpatients will be harmful to them. 4 A physical therapist or occupational therapist should be the primary care provider to mobilize my inpatients. 12 Increasing mobilizations of my inpatients will be more work for nurses. 13 Increasing mobilizations of my inpatients will be more work for physical and/or occupational therapists. 18 I believe that my inpatients who are mobilized at least three times daily will have better outcomes. 19 I am not sure when it is safe to mobilize my inpatients. 21 I do not feel confident in my ability to mobilize my inpatients. 26 My patients have time during their day to be mobilized at least three times daily.
Behaviors	7 We don't have the proper equipment and/or furnishings to mobilize my inpatients. 8 The physical functioning of my inpatients is regularly discussed between the patient's healthcare providers (nurses, physicians, physical therapists, occupational therapists). 9 Nurse-to-patient staffing is adequate to mobilize inpatients on my unit(s). 10 My inpatients often have contraindications to be mobilized. 11 Unless there is a contraindication, my inpatients are mobilized at least once daily by nurses. 14 My departmental leadership is very supportive of patient mobilization. 15 Increasing the frequency of mobilizing my inpatients increases my risk for injury. 16 Inpatients who can be mobilized usually have appropriate physician orders to do so. 17 My inpatients are resistant to being mobilized. 20 Family members of my inpatients are frequently interested to help mobilize them. 22 I document the physical functioning status of my inpatients during my shift/work day. 23 I do not have time to mobilize my inpatients during my shift/work day. 24 Unless there is a contraindication, I mobilize my inpatients at least once during my shift/work day.
Other Questions of Interest	27 Promoting mobility in hospitalized older adults is a priority for the organization I work for. 28 I view the promotion of physical activity in hospitalized older adults as a priority. 29 I know how to assess the lower leg strength of my older adult inpatients. *Used with Permission (Hoyer et al., 2015).

Appendix B

Self-Recorded Nurse Log

Please Complete the Mobility Log for Each of your Patients

How frequently have you experienced any of the following as barriers in getting in the way of mobilizing your patient?	Please rate how frequently these things are barriers to mobilizing your patient: **1-Never** **2-rarely** **3-Sometimes** **4-Often** **5-Always**	Feel free to add comments if you would like to explain more:
1. Location of equipment	1 2 3 4 5	
2. Availability of equipment	1 2 3 4 5	
3. Knowledge of how to use equipment	1 2 3 4 5	
4. Availability of staff	1 2 3 4 5	
5. Searching for staff	1 2 3 4 5	
6. Conflicting priorities	1 2 3 4 5	
7. Workload	1 2 3 4 5	
8. Patient condition	1 2 3 4 5	
9. Patient preference	1 2 3 4 5	
10. Patient family preference	1 2 3 4 5	
11. No Activity order	1 2 3 4 5	
12. Conflicting activity order	1 2 3 4 5	
13. Other (Please describe):	1 2 3 4 5	

Type of mobility promoted?	**Frequency of mobility promoted per shift?**	**Person completing the mobility activity?**	**What assistive device were used**
Walking in hall .....1 Distance ambulated: in feet Walking in room.....2 Bed Mobility……3 Range-of Motion…….4 Up to chair……5	0 1 2 3 4 5 or more times	RN Aide Self Physical Therapist Other (please describe)	Walker Cane Crutches Lift Device Prosthetic Limb Wheel-Chair Gait-belt Other

Appendix C

Informed Consent

CONSENT TO PARTICIPATE IN A CLINICAL RESEARCH STUDY

TITLE OF STUDY: Barriers to Nurses' Promotion of Mobility in Hospitalized Adult Patients

PRINCIPAL INVESTIGATOR: Gordana Dermody, MSN, RN, CNL

24-HOUR EMERGENCY PHONE NUMBER: XXX-XXX-XXXX

INTRODUCTION

You are being asked to volunteer to take part in this research study because you are a hospital nurse and you provide nursing care to hospitalized adult patients. Nurses are encountering many barriers to promoting mobility in hospitalized adult patients. To understand the barriers that nurses encounter, you are invited to take part of this study which is a pilot study for a dissertation study.

Before deciding whether you want to participate in this research study or not, it is important that you read and understand the following explanation of the study procedures. This consent describes the purpose, procedures, benefits, risks, discomforts and precautions of the study. It also describes the alternative procedures, if any, that are available to you and your right to withdraw from the study at any time. No promises can be made about how you will be affected if you consent to be in the study.

WHY IS THIS STUDY BEING DONE?

This study is being done to learn more about the barriers that nurses encounter while they are addressing the mobility needs of their patients over the age of 18.

The specific aims are to:

1. Identify and describe the nurse knowledge, attitude, and external barriers, and the promotion of mobility.
2. Determine if differences exist between novice and experienced nurses' knowledge, attitude and external barriers, and the promotion of mobility.
3. Identify and describe if nurse knowledge, attitude, and external barriers predict nurses promotion of mobility.
4. Describe the nurse's perception of the organizational priority for promoting mobility in hospitalized adult patients.
5. Describe if nurses view the mobility promotion in hospitalized adult patients as a priority.

HOW MANY PEOPLE WILL TAKE PART IN THE STUDY?

A total of about 85 participants will take part in this study.

WHAT IS INVOLVED IN THE STUDY?

1) You are being asked to complete an online survey and a mobility log on each of your patients on one shift. This will take approximately 15-20 minutes of your time. You will be sent an e-mail link toward the end of one of your routine working shifts to complete the online survey and mobility logs. The shift will be selected based on our work schedule.

HOW LONG WILL YOU BE IN THE STUDY?

You will be in the study until the mobility logs are completed and the online survey is completed.

WHAT ARE THE RISKS OF THE STUDY?

Minimal risk is anticipated for this study.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
A breach in confidentiality is a potential risk of participating in this study.

WILL YOUR INFORMATION BE KEPT PRIVATE?
Your consent forms will be kept in a secure, locked location. Your demographic information will be de-identified and confidentially stored in a secure data base accessible only to the co-investigator. All data will be password protected. Your name or anything that could show who you are will not be put in any paper, poster or publication, and will not be shared with your employer, and will be locked in a 2X locked secure area.

WHAT ARE THE POSSIBLE BENFITS OF PARTICIPATING IN THIS STUDY?
There is no guarantee that you will benefit from your participation. You will have an opportunity to provide your feedback and views about the barriers you encounter as you are attempting to promote mobility in hospitalized adult patients. The information that you provide could inform future work that would: a) help to eliminate or lessen the barriers that nurse's encounter while promoting mobility in hospitalized adult patients. b) Contribute knowledge to help design a mobility program to increase nurse-driven promotion of mobility in hospitalized adult patients. c) Foster increased organization support of nurses as they promote mobility in adult patients; d) improve training & education for nurses; and/or e) provide extra support for new nurses.

WHAT OTHER OPTIONS ARE THERE?

- Not to participate in the study
- You will not be paid or receive other forms of gratuity for your participation in this study

The following people will have access to the de-identified data you provide:

- The primary investigator (Ms. Dermody)

WHAT ARE YOUR RIGHTS AS A PARTICIPANT?

Participation in this study is voluntary and refusal to participate will not affect your current employment or employee evaluation. There will be no penalty or loss of benefits as an employee to which you are otherwise entitled if you decide not to participate.

If you have any questions regarding this study you may contact Ms. Dermody at XXX-XX-XXXX at any time. Should you have further questions regarding your rights as a research participant or complaints regarding this research study you may contact the Institutional Review Board at 509-343-2121.

CAN I STOP PARTICIPATING IN THIS STUDY?

You may withdraw from this study at any time without prejudice or loss of benefits as an employee to which you are entitled**.**

PARTICIPANT CONSENT

I have read, or have had read to me, the information describing the study and it is written in a language that I understand. All of my questions have been answered to my satisfaction. I am signing this form voluntarily, indicating my willingness to be in this study. I understand that I am not giving up any of my legal rights by signing this form and I will receive a copy of this signed consent form.

Signature of Participant or Legally Authorized Representative	Printed Name	Date/Time
Signature of Person Obtaining Consent	Printed Name	Date
Signature of Investigator	Printed Name	Date

Appendix D

Nurse Instruction

Dear Nurse

Thank you for choosing to participate in this study. Here is what will happen next

- I will send you an e-mail link to the survey on the day you are working.
- Toward the end of your shift click on the link and follow the prompts.
- You will complete one mobility log for each of your patients you have cared for during your shift.
- **You will not complete a mobility log if:**
    - If your patient was discharged/deceased before the end of your shift.
    - If your patient was admitted or transferred after the beginning of your shift.
- If you have taken care of this adult patient (18 and older) for the duration of your shift (8-hour or 12-hour days), please complete one log. Be as candid as possible. Your information will be kept confidential. After you are done with one log click "add another log" for each other patient that you have.
- After completing the mobility logs, you will be asked to fill out a survey
- Please be very candid with all of your responses. The information you give is very important, and will be confidential.
- If you have questions or problems while you are filling out the survey, please contact me on my cell (XXX-XXX-XXXX).
- You will spend about 15-20 minutes of your time participating in this study, and you can stay on the clock while completing it.

Thank you being involved in nursing research.

Appendix E

Data Codebook

Nurse Demographics	
Hospital ID	1=Holy Family 2=Sacred Heart
Nurse Unit	1=Oncology 2=Cardiac 3=Neurology 4=General Medical 5=General Surgical 6=General Medical/Surgical 7=Pulmonary 8=Nephrology 9=Other
Years of experience	1=Novice (≤1 year) 2=Advanced Beginner (>1 to ≤ 5 years) 3=Competent (>5 to 10 years) 4=Expert (>10 year
Gender **Age (in years)**	1=Male 2=Female
Highest Degree	1=Associates degree 2=BSN 3=MN 4=DNP 5=PhD 6=Other
Certificates held	0=Not Documented 1=Yes 2=No
Previous work as a Certified Nurses' Aide	0=No 1=Yes 2=Not documented
Ethnicity	1=Non-Hispanic 2=Hispanic 3=Prefer not to answer 4=Other
Race	1=American Indian or Alaska Native 2=Asian 3=Black or African American 4=Native Hawaiian or other Pacific Islander 5=White 6=Other
Patient Demographics	
Gender	1=Male 2=Female
Age in years	1=18-64 years 2=65 and older
Top 3 diagnoses	ICD 10
APR-DRG-Severity of Illness Scale	1=minor 2=moderate

	3=major 4=extreme severity
BMI	**BMI Cut points:** Normal: 18.5 to <25.0 Kg/m^2 Overweight: ≥25.0 Kg/m^2 Obese: ≥30.0 Kg/m^2
Self-Recorded Mobility Log	
Mobility-promoting behavior:	0=None 1=Walking in hall • Distance ambulated in feet 2=Walking in room 3=Bed mobility 4=ROM 5=Up to chair
Frequency	0=None 1=Once per shift 2=two times per shift 3=three times per shift 4=four times per shift 5=five times or more per shift
Person completing the mobility	1=RN 2=Aide 3=PT 4=Other please describe 5= "self" (Patient)
Assistive devices used	1=Walker 2=Cane 3=Crutches 4=Lift Device 5=Prosthetic Limb 6=Wheel-Chair 7=Gait-Belt 8=Other
Frequency of Clinical Barriers experienced when promoting mobility for each patient. **1=Never** **2=Rarely** **3=Sometimes** **4=Often** **5=Always**	1= Location of equipment 2= Availability of equipment 3= Knowledge of how to use equipment 4= Availability of staff 5= Searching for staff 6= Conflicting priorities 7= Workload 8= Patient condition 9= Patient preference 10= Patient family preference 11= No Activity order 12= Conflicting activity order 13= Other (Please describe)
MD's Activity Order:	1=Bed rest 2=Conflicting (2 or more different orders) 3=Up adlib/as tolerated 4= Up with 1-2 assist
Physical Therapy Ordered	0=Not documented 1=Yes 2=No

Fall Risk	0=Unknown 1=Yes 2=No
Fall Risk Score	1=Low 2=Medium 3=High 4=N/A
Fall Risk Factors	1=Elderly 2=Illness 3=Medical 4=Surgical
Proxy-measures for functional status	Impairment of mobility 0=No 1=Yes Home use of Assistive devices 0=No 1=Yes Ability to perform modified get-up-and-go test 0=No rise 1=Rise with 1 2=Rise after1 3=Unable to
Timing, Procedures/Measures	
Informational meeting and informed consent • Information about the purpose of the study was presented. • Informed consent was obtained. • Nurse schedules and e-mail was obtained.	Researcher
Nurse education on how to complete the online survey and self-recorded log. • Patient eligibility to be included in the self-recorded nurse log was discussed.	Researcher
Data Collection • Survey and self-recorded mobility log • Data extraction (gender, age, Length of stay, top 3 diagnoses, APR-DRG)	Researcher Research Assistant Research Assistant
Data Management	Researcher
Data Analysis	Researcher

Appendix F

Data Analysis Table

Research Questions/Hypotheses	Unit of Analysis	Variable	Measurement Tool	Level of Measurement	Statistical Test
Descriptive Questions					
1. What are nurse knowledge barriers, nurse attitude barriers, and perceptions of external barriers to promoting mobility?	Nurse	Knowledge Attitude External	Barrier Scale	Approaches interval, will use if there is no skew.	Descriptive (Frequency, median, range, response option distribution) **Table 3**
2. What are the most common clinical barriers that nurses encounter to promoting mobility in patients?	Nurse	Barriers	Nurses log	Approaches interval, will use if there is no skew.	Descriptive (Frequency, median, range) **Table 4**
3. What are the nurses' mobility-promoting behaviors?	Nurses	-Frequency of ambulation -Distance (feet) of ambulation. - Type of ambulation (-Up to chair -Walk to Bathroom -ROM	Nurses log	Interval ordinal	Descriptive (Frequency, mean SD, %) **Table 5**

		"other" exercise promote)			
4. What are the nurses' perceptions of the organizational priority for promoting mobility in hospitalized older adults?	Nurses	organizational priority	1-item Likert	Approaches interval, will use if there is no skew	Descriptive (Frequency, median, range, response option distribution) **Table 3**
5. Do nurses view the promotion of mobility as a priority?	Nurses	DV: Self-priority	1-item Likert	Approaches interval, will use if there is no skew	Descriptive (Frequency, median, range, response option distribution) **Table 3**
6. Is there a difference between level of nurse experience and the perception of organizational priority and self-priority?	Nurse	IV: Nurse experience (novice ≤5 years; expert >5 years) DV: - organizational priority - Self-priority	dichotomized as novice and expert (nominal) interval interval	Interval Approaches interval, will use if there is no skew	Mann-Whitney *U*-Test **Table 6**
7. What is the patient's measure of co-morbidity (severity of illness) and how does this impact the nurses' mobility-promoting behavior?	Patients	Co-Variate: Co-morbidity	APR-DRG Severity of Illness Scale	Ordinal	Correlation Coefficient Values (Spearman *rho*) **Table 7**

Hypotheses					
1. Nurse knowledge barriers, nurse attitude barriers, and external barriers (IVs) will be negatively associated with nurses' mobility promoting behavior in hospitalized older adults (DVs).	Nurse subject	IV: Knowledge Attitude External DV: Mobility promoting behavior	Barrier Scale (interval) Mobility log (interval) Frequency of ambulation -Distance (feet) of ambulation. - Type of ambulation	Approaches interval. Will transform if Skewed Ordinal	Hierarchical regression **Step 1.** Knowledge Mobility promoting behavior of nurses **Step 2** Knowledge Attitude Mobility promoting behavior of nurses **Step 3.** Knowledge Attitude External Mobility promoting behavior of nurses **Table 8**
2. There will be a difference in mobility promoting behavior and knowledge, attitude and external barriers between nurses with different levels of experience.	Nurse subject	IV: Nurse Experience: **Novice** (≤ 1 year), **Advanced Beginner** (>1 to 5 years)	Survey	Interval	Kruskal-Wallis *H*-Test **Table 9**

		Competent (>5 to 10 years years) **Expert** (>10 years) DV: -Mobility promoting behavior Knowledge Attitude Behavior	 Self-recorded log Bariers	Approaches interval Interval	
3. Nurses' perception of the organizational priority to promote mobility will be positively associated with nurses' mobility-promoting behavior.	Nurses	IV: Nurse perception of organization's priority DV: Nurse Mobility-promoting behavior	Scale Self-recorded log	Approaches interval, will use if there is no skew. Interval Interval	Correlation coefficient values (Spearman *rho*) **Table 10**

Appendix G

CURRICULUM VITAE

Gordana Dermody, MSN, RN, CNL

Place of Birth: Stuttgart, Germany

Education

BSN, Saint Anthony College of Nursing, May 2002

MSN, Saint Xavier University, December 2011

Dissertation Title: Nurses' Barriers to Promoting Mobility in Hospitalized Older Adults

Publications:

Katsumata, A., **Dermody, G**., Kakuta, M. (2015). The Clinical Nurse Leader (CNL) (Japanese). *Japanese Journal of Nursing Administration*, 25 (12), 1098-1110 (Igaku Shoin, Tokyo).

Presentations:

Dermody, G. & Zimmermann, J. Promoting evidence-based Practice: Identifying the micro system barriers that Nurses Encounter in Promoting Mobility in hospitalized older patient. . AACN's 2016 CNL Summit (Poster Presentation).

Katsumata, A., **Dermody, G.,** Kakuta, M., Urata, K., Cadillo L.H. Laying the foundation: developing Clinical Nurse Leader (CNL) faculty for future implementation of CNL role in Japan. AACN's 2016 CNL Summit (Poster Presentation).

Dermody, G. Katsumata, A., Lizer, S., Thomas, T. *Fostering the Integration of the Clinical Nurse Leader Role in Japan through a Multidisciplinary Clinical Immersion Program in the United States*. Sigma Theta Tau 43rd Biennial Convention, (podium) as a part of a session entitled "Global Perspectives." Las Vegas (November, 2015).

Lizer, S., Katsumata, A. **Dermody, G.**, Doughty, A.S., Carson, E.M., Matheson, L., Nin, K., Sugimoto, K., Urata, K. *Creating a Legacy through Nursing Leadership, Innovation, and Global Connectivity***.** Sigma Theta Tau 43rd Biennial Convention, (poster) Las Vegas (November, 2015).

Katsumata, A., **Dermody, G**., Lizer, S., Nin, K., Urata, K., Hiagshi, T. (2015). *Implementing the Clinical Nurse Leader role in Japan.* Sigma Theta Tau 43rd Biennial Convention, (poster) Las Vegas (November, 2015).

Dermody, G. & Katsumata, A. (2015). *Caring for patients at the end-of-life: A case of moral distress.* Japan Nurses Association-Kumamoto Chapter, (invited presentation).

Dermody, G. & Katsumata, A. (2015). *The implementation of the Clinical Nurse Leader role in the Japanese healthcare context.* Japan Nurses Association-Kumamoto Chapter, (invited presentation).

Dermody, G. & Katsumata, A. (2015). *Transitions into practice and ethical dilemmas in acute care: Why am I a nurse?* Annual International Forum, Red-Cross International College of Nursing, Kyushu, (invited presentation).

Dermody, G. & Katsumata, A. (2015). *Implementation of the Clinical Nurse Leader role into the Red-Cross system in Japan: Creating the readiness for change* (2015). 5-Day seminar, Red-Cross International College of Nursing, Kyushu, (invited presentation).

Dermody, G. & Katsumata, A. (2015). *The significance of clinical microsystems in reducing falls in acute care settings.* Kyoto City Hospital, invited presentation).

Dermody, G. & Kakuta, M. (2015). *The future is now: A new nursing role to address gaps in care at the microsystem.* Kyoto University, Kyoto (invited presentation).

Dermody, G. & Katsumata, A. (2015). *A nurses' ethical dilemma in caring for a dying oncology patient.* University of Tsukuba, Oncology Nursing and Palliative Care Conference, Tokyo, (invited presentation).

Dermody, G., & Katsumata, A. (2015). *The role of the Clinical Nurse Leader in the continuum of care: From the acute care setting to the community setting*. University of Tsukuba International Lecture Series. (Invited Presentation).

Katsumata, A., **Dermody, G.,** Lizer, S., Nin, K., Sugimoto, K., Higashi, T. (June, 2015). Development of the Integrative Praxis Model for Nursing Self Actualization®: Integrative praxis through Global Nurse Initiative. International Council of Nurses Conference Seoul, Korea (Poster).

Katsumata, A., & **Dermody, G.,** (2015). *Implementing the CNL role in Japan.* AACN's 2015 CNL Summit (Poster).

Dermody, G., (2015). *Competent CNL: Here is how I translated my projects to a poster.* AACN/CNC CNL Research Symposium panel member (Invited Presentation).

Dermody, G., Katsumata, A. Bartlet, T. Thomas, T. (2015). *Creating an Immersion Experience to Promote Clinical Nurse Leader (CNL) Certification for Qualified Nursing Faculty*. AACN's 2015 CNL Summit (Podium Presentation).

Dermody, G., Katsumata, A., Lizer, S. (2014). *The Clinical Nurse Leader role: A 21st century approach to advancing nursing roles and creating safe work environments for nurses.* Tsukuba University Hospital, Tsukuba, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., & Lizer, S. (2014). *The Clinical Nurse Leader role: A new approach to improving patient outcomes.* Nanto City Hospital, Nanto City, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., Lizer, S. (2014*). The Clinical Nurse Leader role: Microsystem expert at the bedside.* Third Annual International Nursing and Medical Lecture Series, Toyama University, Toyama, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., Lizer, S. (2014). *The Clinical Nurse Leader role: A 21st century approach to redesigning healthcare.* International Forum, Red Cross Kyushu International College of Nursing, Kyushu, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., Lizer, S. (2014). *The Clinical Nurse Leader Role: Redesigning healthcare systems through transformational leadership at the bedside*. Kyoto University, Kyoto, Japan. (Invited Presentation).

Dermody, G., Katsumata, A., Thomas, P., & Lizer, S. (2014). *The Clinical Nurse Leader role: A 21st century approach to transforming healthcare systems.* Japanese Nursing Association, Kumamoto, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., Bartlet, T., Valko, R., Graham, B., Thomas, P., & Lizer, S. (2014). *The Clinical Nurse Leader role in acute care: Case studies.* Japanese Nursing association, Kumamoto, Japan. (Invited Presentation).

Dermody, G. Katsumata, A., & Lizer, S. (2014). *The Clinical Nurse Leader role: the newest addition to the advanced nursing roles in the U.S.* Faculty development lecture, Saint Mary's College of Nursing, Kurume, Japan. (Invited Presentation).

Carson, E., **Dermody, G**., Katsumata A., Matheson, L. (2014). *Introduction to American Nursing.* Kumamoto Health Sciences University, Kumamoto, Japan. (Invited Presentation).

Dermody, G., Katsumata, A., & Lizer, S. (2014). *The Clinical Nurse Leader role: a 21st century approach to transforming healthcare systems.* Kumamoto Red Cross Hospital, Kumamoto, Japan. (Invited Presentation).

Dermody, G. & Klein, C. (2014). The implementation of an integrative approach to reducing falls in a Magnet Designated Medical Center: The implications of clinical microsystems. American Nursing Association Quality Care Conference. (Podium)

Dermody, G. & Forsyth, K. (2014). Toward reduction of infection: Breaking the cycle of infection. Nursing development workshop Saint Luke Hospital, Angal, Nebbi District, Uganda.

Dermody, G. & Forsyth, K. (2014). The special needs of hospitalized older adults without family. Nursing development workshop Saint Luke Hospital, Angal, Nebbi District, Uganda.

Dermody, G. & Forsyth, K. (2014). Improving the effectiveness of nursing care through microsystem redesign. Nursing development workshop Saint Luke Hospital, Angal, Nebbi District, Uganda.

Forsyth, K. & **Dermody, G.** (2014). Advanced wound care principles for nurses. Nursing development workshop, Saint Luke Hospital, Angal, Nebbi District, Uganda.

Forsyth, K. & **Dermody, G.** (2014). Improving patient care planning through nursing assessment. Nursing development workshop, Saint Luke Hospital, Angal, Nebbi District, Uganda.

Tadria, H., **Dermody, G**., & Forsyth, K. (2014). Strengthening the infrastructure of nursing through the Mentoring and Empowerment Program for Young Women (MEMPRO): Female nurses as change agents in healthcare. Nursing development workshop, Saint Luke Hospital, Angal, Nebbi District, Uganda.

Lizer, S.K., Katsumata, A. T., Klein, C., & **Dermody, G.** (2012). *Professional nursing practice: An evolution* (Invited Presentation). Japanese Red Cross Kumamoto Hospital Nursing Leadership Development Seminar. Kumamoto, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., & Schneiderman, J. (2012). *Education and clinical practice of Advanced Practice Nurses in the United States.* Kumamoto Nurses Association Nursing Leadership Seminar (Invited Presentation). Kumamoto, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., & Schneiderman, J., Bonner, E., & Lepianka, C. (2012). *Advancing the role of nursing in healthcare in the United States.* The First Annual International Forum (Keynote). Japanese Red Cross Kyushu International College of Nursing, Fukuoka, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., & Schneiderman, J., Wagner, P., Anderson, C., & McLaughlin, R. (2012). Advancing nursing leadership: *Expanding the role of Advanced Practice Nurses, and nursing leadership development in the United States. A special seminar* (Invited Presentation). Kyoto University, Department of Human Health Science, Kyoto, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., & Schneiderman, J., Wagner, P., Anderson, C., & Carson, E. (2012). *Advancing the role of nursing in healthcare in the United States.* Staff Development Seminar (Invited Presentation), Kyoto University Hospital, Kyoto, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., & Schneiderman, J., Wagner, P., Anderson, C., McLaughlin, R & Carson, E. (2012). Advancing nursing leadership: *Expanding the role of Advanced Practice Nurses, and nursing leadership development and Expanding the role of Advanced Practice Nurses, and nursing leadership development and education in the United States*. Leadership Development Seminar (Invited Presentation), Kyoto University Hospital, Kyoto, Japan.

Lizer, S.K., Katsumata, A. T., Klein, C., **Dermody, G**., Wagner, P., Anderson, C., & McLaughlin, R. (2012). *Facilitation of interdisciplinary collaboration in the delivery of health care services for better patient outcomes.* A Special Lecture (Invited Presentation). Toyama University Hospital, Department of Family and Community Medicine, Toyama, Japan.

Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (2012). *The Evolution of a Nurse-Driven Mobility Initiative on a Certified Stroke Unit: Pioneering the CNL Role in a Magnet Designated Medical Center*. Poster study with discussion at the 19th National Evidence-Based Practice Conference, University of Iowa.

Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (2012). *The Evolution of a Nurse-Driven Mobility Initiative on a Certified Stroke Unit: Pioneering the CNL Role in a Magnet Designated Medical Center*. Poster Presentation at the Annual Clinical Nurse Leader Summit, Florida.

Regional/State/Local

Dermody, G. Katsumata, A., Lizer, S., Bartley, T. Thomas, T. (2015). *Fostering the Integration of the Clinical Nurse Leader Role in Japan through a Multidisciplinary Clinical Immersion Program in the United States.* Nurses Expo, Rockford, IL. (Poster).

Katsumata, A., **Dermody, G**., Lizer, S., (2015). *Implementing the Clinical Nurse Leader role in Japan.* Nurses Expo, Rockford, IL. (Poster).

Lizer, S., Katsumata, A. **Dermody, G.**, Doughty, A.S., Carson, E.M., Matheson, L., Nin, K., Sugimoto, K., Urata, K. (2015). *Creating a Legacy through Nursing Leadership, Innovation, and Global Connectivity***.** Nurses Expo, Rockford, IL (Poster).

Katsumata, A.T., RN; Lizer, S.K., **Dermody, G., Frichtl**, M.J., Doughty, A.S., PhD; Carson, E.M., Klein, C., Piccione, J., Burch, T.A. (2014). *Creating a Legacy through Nursing Leadership, Innovation and Global Collaboration I*. Nurses Expo Rockford, IL. (Poster)

Dermody, G., Hardacre, C., Stucker, K., & Klein, C. (2013). *The implementation of an integrative approach to reducing falls in a Magnet Designated Medical Center: The implications of clinical microsystems.* Advocate Research Symposium, Chicago, IL. (Podium Presentation).

Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (2011). *The Clinical Nurse Leader Role Collaboration at the Point-of-Care to Improve Mobility Promotion in Stroke Patients.* (Invited CNL association continuing education presentation). National podcast (Invited Presentation).

Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (2011). *The Value of a Nurse-Driven mobility Initiative on a Certified Stroke Unit.* Patient case presentation: OSF Saint Anthony Medical Center Rockford, IL. (Invited Presentation).

Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (9/2011). *The Value of Early and Frequent Mobilization in Patients with Stroke.* Nurses Improving Care for Health-system Elders (NICHE): OSF Saint Anthony Medical Center Rockford, IL. (Invited presentation).

Lizer, S.K., Katsumata, A.T., **Dermody, G.,** Frichtl, M.J., Doughty, A.S., Carson, E.M., Klein, C.; Burch, T.A., (2014). *Creating a Legacy through Nursing Leadership, Innovation and Global Collaboration II.* Nurses Expo Rockford, IL. (Poster).

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Dermody, G., Hamilton, P., Kruse, G., Lizer, S. (3/2012). *The Evolution of a Nurse-Driven Mobility Initiative on a Certified Stroke Unit: Pioneering the CNL Role in a Magnet Designated Medical Center*. Nurses Expo, Rockford, IL (Poster).