All ETDs from UAB

UAB Theses & Dissertations

2019

Work Engagement Of Hospital Nurses And Patients' Ratings Of Nurse Communication, Overall Hospital Rating And Likelihood To Recommend The Hospital To Others

Apryl S. Lewis
University of Alabama at Birmingham

Follow this and additional works at: https://digitalcommons.library.uab.edu/etd-collection

WORK ENGAGEMENT OF HOSPITAL NURSES AND PATIENTS' RATINGS OF
NURSE COMMUNICATION, OVERALL HOSPITAL RATING AND LIKELIHOOD
TO RECOMMEND THE HOSPITAL TO OTHERS

by

APRYL SHENAE LEWIS

PATRICIA PATRICIAN, CHAIR
ANDRES AZUERO
MARTHA DAWSON
LORI LOAN
REBECCA MILTNER

A DISSERTATION

Submitted to the graduate faculty of The University of Alabama at Birmingham,
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

BIRMINGHAM, ALABAMA
2019

WORK ENGAGEMENT OF HOSPITAL NURSES AND PATIENTS' RATINGS OF
NURSE COMMUNICATION, OVERALL HOSPITAL RATING AND LIKELIHOOD
TO RECOMMEND THE HOSPITAL TO OTHERS

APRYL SHENAE LEWIS

DOCTOR OF PHILOSOPHY OF NURSING

ABSTRACT

Significance/Background: Work engagement may play a key role in quality patient

outcomes. The inpatient hospital experience is a U.S. healthcare system priority with one

component of the patients' hospital experience focused on hospital staff-to-patient

communication. Nurses are the main communicators of vital information about inpatient

care and recovery and, therefore, play a critical role in achieving high scores on patient

experience measures. Past studies show a relationship between high levels of nurse work

engagement and positive patient outcomes, such as quality of health services, but it is

unknown if hospital nurses' work engagement is associated with patients' hospital

experience ratings.

Purpose: The purpose of the study is to explore the association between hospital nurses'

work engagement and the patients' ratings of nurse communication, overall hospital stay,

and likelihood to recommend the hospital to others.

Methods: Using a cross-sectional and correlational design, 448 registered nurses from 43

inpatient units participated in the study along with ratings from 1,259 Hospital Consumer

Assessment of Healthcare Providers and Systems (HCAHPS) surveys. Hospital and

nurse control variables were in the analysis, as well as a mediation analysis with practice environment.

Findings: Participants had an average aggregated level of engagement (4.01). Work engagement only accounted for approximately 5% (*Pseudo R^2* = 0.05) of the variance in patient ratings of nurse communication and no apparent relationship was observed between WE and patient ratings of the overall hospital and likelihood of recommending the hospital to others. Control variables of Magnet-designation and married status were found to influence patient ratings of the overall hospital (Magnet *p-value* = 0.00, married *p*-value = 0.01). Inconsistent mediation was found between the variables of RN communication and practice environment.

Discussion: It is important for nurses to know the positive outcomes associated with work engagement. Although this study did not show relationships of work engagement to selected patient ratings, the concept has been shown to be important to patient outcomes and should be considered for future research.

Keywords: work engagement, nurses, patient hospital ratings, HCAHPS, practice environment

DEDICATION

      This dissertation is first dedicated to God. Let me be an example of the glorious and marvelous works that are possible through God. Thank you Lord for choosing me to accomplish this work! Second, I dedicate this dissertation to every African who was brought to America to endure 400 years of slavery. Without your sacrifice, I could not have earned my PhD and I honor your sacrifice. Third, I dedicate this dissertation to my wonderful and supportive husband Marshall and to our kids, Marlee and Marshall. I am forever grateful for your love and support. Last (but certainly not least), I dedicate this dissertation to every patient who has experienced being in a hospital and for every nurse who has cared for a patient. May this work serve you and create a better hospital environment for all.

ACKNOWLEDGMENTS

Thank you to my Emory family. Thank you Dr. Gullatte for being my "professional Barbie"and for modeling such excellence in leadership and just being a good person. Thank you, Marianne Baird, for cheering me on during this process. Thank you, Dr. Sharon Pappas, Redge Hanna, and Jay Trivedi for your support of me in my research and belief in me. Thank you for every patient who completed a survey to help describe patient experience. Thank you to the nurses who participated in this research. Your participation helped me to learn and will help our profession grow and be better.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AD	Associate Degree Nurse
BSN	Baccalaureate Degree Nurse
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CIOMS	Council for International Organizations of Medical Sciences
CMS	Center for Medicare and Medicaid Services
CNE	Chief Nurse Executive
GDP	Gross Domestic Product
GFI	Goodness of Fit
HCAHPS	Hospital Consumer Assessment of Healthcare Providers and Systems
HLM	Hierarchical Linear Modeling
IFI	Incremental Fit Index
IRB	Institutional Review Board
JD-R	Job Demands and Resources
LTR	Likelihood to Recommend
MSN	Master Degree Nurse
NSI	Nursing Solutions Incorporated
PES-NWI	Practice Environment Scale and Nurse Work Index
PI	Principal Investigator
QR	Quick Response

RCT	Randomized Control Trials
RMSEA	Root Mean Square Error of Approximation
RN	Registered Nurse
RN-MD	Registered Nurse to Medical Doctor
RQ	Research Question
SEM	Structural Equation Modeling
URL	Universal Resource Locator
U.S.	United States
UWES	Utrecht Work Engagement Survey
VBP	Value-Based Purchasing
WE	Work Engagement

CHAPTER ONE

The purpose of Chapter one is to describe the problem, background, significance, conceptual/theoretical framework and overview of the research methodology for the study on work engagement of hospital nurses and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others. The contents of this chapter provide support for the need to conduct the research study.

Introduction

Top priorities in today's healthcare environment include delivery of safe and quality care that leads to excellent patient outcomes (Bargagliotti, 2012). Nurses, often the staff most directly involved in the delivery of this care, play a key role in achieving patient-centered outcomes in hospitals (Chau et al., 2015). An additional priority in United States (U.S.) healthcare systems is not only to have good quality and excellent patient outcomes, but also to deliver care in a cost effective manner. Healthcare spending in the U. S. is at an all-time high. The Gross Domestic Product (GDP) for healthcare in the U.S. is 18%, which, for example, includes Medicare payments totaling $110 billion on inpatient services in 2014 (Medicare Payment Advisory Commission, 2016). Although the U.S. has the highest healthcare costs as a percentage of the GDP in the world, its health outcomes are not better than those in other developed countries (The Commonwealth Fund, 2019).

In an effort to control costs as well as place a high priority on patient health outcomes, the U.S. government enacted Value-Based Purchasing (VBP) as a mechanism to pay hospitals for high performance in patient health outcomes (Centers for Medicaid and Medicare Services, 2012). As a result of VBP, hospitals not meeting health outcome-related measures, such as high performance on patient hospital rating scores, incur a 2% reduction in payment. In 2013, over half of all hospitals in the VBP program lost some portion of Medicare reimbursement, with an estimated total reduction in payment of $963 million (Center for Medicaid and Medicare Services, 2015; Herman, 2013).

Hospitals across the nation are evaluated on their patient experience performance by the Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS) survey. Many items on this survey relate to communication (Wolosin, 2012). Since nurses are the main communicators of vital information about inpatient care and recovery, they play a critical role in achieving successful patient-centered outcomes. Additionally, the nursing practice environment has been shown to affect patient ratings on the HCAHPS (Kutney-Lee, McHugh, Sloane, Cimiotti, Flynn, Neff & Aiken, 2009). The nursing practice environment encompasses the aspects within the workplace that either assist or impede nurses in their everyday work (Lake, 2002; Shang, Friese, Wu, & Aiken, 2013). Although favorable nursing practice environments yield positive HCAHPS ratings, the specific mechanisms which facilitate the positive outcomes are unknown. Subsequently, it's unclear if nurse-patient interactions, such as effective nursing communication, affect the patient experience perception.

Work engagement, "a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004, p. 5), may be one such driver of nursing care focused on clear communication. As nurses have a critical impact on health outcomes and patient experience, the level of work engagement of those nurses is important to both patients and organizations (Chau et al., 2015; Freney & Fellenz, 2013; Hakanen & Schaufeli, 2012; Halbesleben, Shanine, & Wheeler, 2013; Innstrand, Langballe, & Falkum, 2012; Salanova, Lorente, Chambel, & Martinez, 2011; Van Bogaert, Clark, Willems, & Mondelaers, 2013; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Higher levels of nurse work engagement have been linked to organizational success, better work performance, lower patient mortality rates, increased organizational financial profits, and improved patient safety and quality outcomes (Bargagliotti, 2012; Laschinger, Wilk, & Greco, 2009; Salanova, 2005; Simpson, 2009; Wong, Laschinger & Cummings, 2010). Specific examples of patient outcomes associated with work engaged nurses include 1) low mortality; 2) low patient complications; and, 3) nurse-perceived quality of patient care, which includes less unfinished patient care and an absence of patient safety related problems (Blizzard, 2005; Wong, Laschinger & Cummings, 2010). Specific examples of patient improved quality outcomes associated with work engaged nurses and other occupations include: 1) high reported organizational success and profitability; 2) high worker effectiveness; 3) high customer loyalty (hotel and restaurant workers); and, 4) positive patient perceived staff-customer interactions (Harter, Schmidt, Killam, & Agrawal, 2009; Laschinger, Wilk, & Greco, 2009; Salanova, 2005).

3

With the convergence of high-cost care, measures to control costs and incentives for U. S. organizations to maximize patient health outcomes, there is a need to explore factors that impact aspects of the patients' hospital experience. Specific to inpatient hospital care, nurses generally spend the most time with patients and play a key role in achieving patient-centered health outcomes, including prevention of pressure ulcers, falls, restraints, and from infections obtained via indwelling catheters (Chau, Lo, et al., 2015). Nurses impact positive patient-centered outcomes by lessening the occurrence of pressure ulcers, falls, restraints, and catheter-related infections (Chau, Lo, et al., 2015). With the many hours a nurse spends interacting with a hospitalized patient, the work engagement of the nurse may influence the patients' perceptions of the hospital stay. Highly work engaged nurses are fully immersed in work roles, have a positive attitude, have positive work intentions, exhibit positive work behaviors and have an overall passion for work (Rivera, Fitzpatrick, & Boyle, 2011; Van Beek et al., 2012). Based on these attributes, one would expect the work engaged nurse to have some effect on the patients' ratings of their hospital stay. For this reason, it is important to explore whether nurse work engagement has an association with hospitalized patients' ratings of nurse communication, their overall hospital stay and the likelihood to recommend the hospital to others.

Problem Statement

Work engagement of nurses is important for its positive impact on organizational financial profits, but more importantly, for better patient outcomes (Bargagliotti, 2012; Laschinger, Wilk, & Greco, 2009; Salanova, 2005; Simpson, 2009; Wong, Laschinger & Cummings, 2010). However, it is unknown if hospital nurses' work engagement has an

association with patients' perceptions of aspects of the hospital experience. For this reason, it is important to explore the association between nurse work engagement and patients' ratings of nurse communication, the overall hospital stay, and likelihood of the patient recommending the hospital to others.

<div align="center">Background and Significance of the Problem</div>

Each year in the U.S. an estimated 35 million people, approximately 10% of the population, are admitted to hospitals (American Hospital Association, 2017). The experience of being hospitalized has been associated with many negative feelings for patients, including confusion, a loss of control, decreased capabilities, and a loss of dignity (Oflaz, 2010; Seedhouse, 2002; Whitehead, 2008). Poor communication by nursing staff was consistently a central reason for patients feeling disempowered through a lack of information, inadequate time to ask questions, and a lack of communication regarding patients' health progress (Doherty, 2005; Nordgren, 2001). Unsurprisingly, the experience of lacking information has been associated with a negative patient attitude towards treatments as well as a feeling of suspicion toward the nurse (Valimaki, 1998). High severity of illness and high intensity of care also have been associated with low patient perceived ratings of hospital care (Wennberg, Bronner, Skinner, Fisher & Goodman, 2009).

Considering the many physical and emotional challenges patients may face when admitted to hospitals, nurses are in a prime position to support them. With the many hours a hospitalized patient has interacting with a nurse, the work engagement of the nurse may influence the hospital experience for the patient. Attributes of the work engaged nurse include being fully immersed in work roles, having a more positive

attitude, having positive work intentions, exhibiting positive work behaviors and having an overall passion for work (Rivera et al., 2011;Van Beek et al., 2012). In fact, at least four studies supported positive perceived high quality of patient care as a result of work engaged nurses' (Mahiro, Takshi, & Satoko, 2014; Van Bogaert et al., 2013; Van Bogaert et al., 2013; Freney & Fellenz, 2013).

Work engaged nurses have been shown to benefit not only hospitalized patients, but also their respective hospital organizations. At least two studies noted the benefits as in-role performance, extra-role performance, and organizational citizenship (Halbesleben et al., 2013; Salanova et al., 2011). In-role performance includes completion of work expected and extra-role performance is the act of going above and beyond minimum role/job expectations (Halbesleben et al., 2013; Salanova et al., 2011). Organizational citizenship is described as an employee who has a desire to do what is right for the organization, as well as help others in the organization without being asked. Based on the challenges experienced by hospitalized patients, the ability for engaged nurses to potentially influence their hospital stay, and the positive gains hospital organizations have experienced, it is important to know if there is an association between nurse work engagement and the patients' perception of their hospital experience.

It is essential to mention the unclear terminology between work engagement and employee engagement. Additionally, there is a lack of clarity among the terms of patient experience and patient satisfaction as well as numerous definitions of both (Wolf, Niederhauseer, Marshburn, & LaVela, 2014). In addition to the various definitions of these concepts, i.e. work versus employee engagement and patient experience versus satisfaction, there are several different instruments to measure them. In this study,

concepts are clarified as follows. William Kahn set the foundation for the general meaning of engagement and subsequent authors have worked to untangle the meanings of work and employee engagement (Jeve, Oppenheimer, & Konje, 2015; Kahn, 1990). Work engagement is distinct from employee engagement, as work engagement refers to the connection with work tasks and related interactions (Jeve, Oppenheimer, & Konje, 2015). This is different from employee engagement which is better represented as the attitude an employee holds toward organizational features. These differences are observed in instruments used to measure work engagement versus employee engagement (Graffingna, 2017; Jeve, Oppenheimer, & Konje, 2015). Work engagement instruments tend to capture a worker's investment of herself into the work role, whereas, employee engagement instruments focus on work conditions and not the work task.

Although often used interchangeably, patient experience and patient satisfaction do have clear and separate definitions. Patient experience describes all aspects of care that happened during the healthcare encounter (Agency for Healthcare Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015; The Beryl Institute, 2017; The Health Foundation, 2013). These items can include, but are not limited to communication with their doctors and nurses, understanding their medication instructions, and coordination of healthcare needs (Centers for Medicare and Medicaid Services, 2015). Alternatively, patient satisfaction is concerned with what the patient expected associated with the health visit, as well as the manner in which things were handled (Agency for Healthcare Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015). For the purposes of this proposed study, work engagement and elements of patient experience will be examined.

Purpose

The purpose of this study was to explore the associations between nurse work engagement and the patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

Study Aims and Research Questions (RQ)

The aims and research questions for the study are as follows:

Aim 1: To determine, by unit and hospital, the level of nurse work engagement; the nursing practice environment scores; and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ1: At the unit and hospital levels, what is the level of nurse work engagement, nursing practice environment scores, and patients' ratings of nurse communication, overall hospital rating, and likelihood to recommend the hospital to others?

Aim 2: To determine the association of nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ2a: What is the association between nurse work engagement and patients' ratings of nurse communication?

RQ2b: What is the association between nurse work engagement and patients' ratings of the overall hospital stay?

RQ2c: What is the association between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Aim 3: To determine if nurse work engagement predicts the patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others when controlling for hospital characteristics (case mix index and unit specialty type) and nurse characteristics (i.e., age, gender, magnet status (magnet or non-magnet hospital), employment status (full-time, part-time), education status (diploma, ADN, BSN, MSN), marital status (married, not married), primary shift worked (day, evening, night shift), and primary shift length (8 hours, 10 hours, 12 hours).

RQ3a: Does nurse work engagement predict the patients' ratings of nurse communication, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

RQ3b: Does nurse work engagement predict patients' ratings of the overall hospital stay, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

RQ3c: Does nurse work engagement predict patients' ratings of the likelihood to recommend the hospital to others, when controlling for unit characteristics (case mix

9

index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

Aim 4: To determine whether nursing practice environment mediates the relationships between nurse work engagement and: a) patients' ratings of nurse communication, b) overall hospital stay, and c) likelihood to recommend the hospital to others.

RQ4a: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of nurse communication?

RQ4b: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the overall hospital stay?

RQ4c: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Conceptual Framework

The conceptual model for this study is the Work Engagement, Patient and Organization Outcomes Model. This model is primarily based on the job demands-resources model (JD-R) (Bakker & Demerouti, 2007), which demonstrates the demands and resources of a job and how they relate to the work experience of an employee. The JD-R model describes physical, psychological, social, and organizational aspects of work, such as the physical and mental cost and effort associated with work. Schaufeli, based on

work engagement research, revised the model to visually show how the JD-R concepts

relate to work engagement. The revision of the JD-R model included the addition of

work engagement and outcomes (Schaufeli, 2014).

The proposed model builds on past research concerning positive outcomes

associated with work engagement. The adapted model enhances the previous models as

it shows additional detail regarding the constructs within work engagement and how they

are critical to the facilitation of positive patient and organization outcomes. More

specifically, work engagement which is characterized by vigor, absorption, and

dedication influences the nurse-patient interaction which may influence the perception by

the patient. The influence of work engagement on the patients' perception may impact

the organization outcome. Additionally, the Donabedian Structure, Process, and

Outcomes (Donabedian, 1966) model is incorporated to help describe the process

interaction among the variables. The Donabedian framework includes the concepts of

structure, process and outcomes (Gardner, Gardner, & O'Connell, 2014). The framework

is linear and demonstrates how structure can influence process and process can influence

outcomes. For the purpose of this research, process is replaced with context, which

further may explain why and how nurse work engagement may influence patient ratings

and perceptions. Based on the potential influence of patient unit specialty, case-mix

index, and nurse characteristics on the patient and organizational outcomes, they are

included in the models as controls. Figure 1 shows the visual display of the Work

Engagement Patient and Organization Outcomes model.

Figure 1

Work Engagement, Patient and Organization Outcomes Model
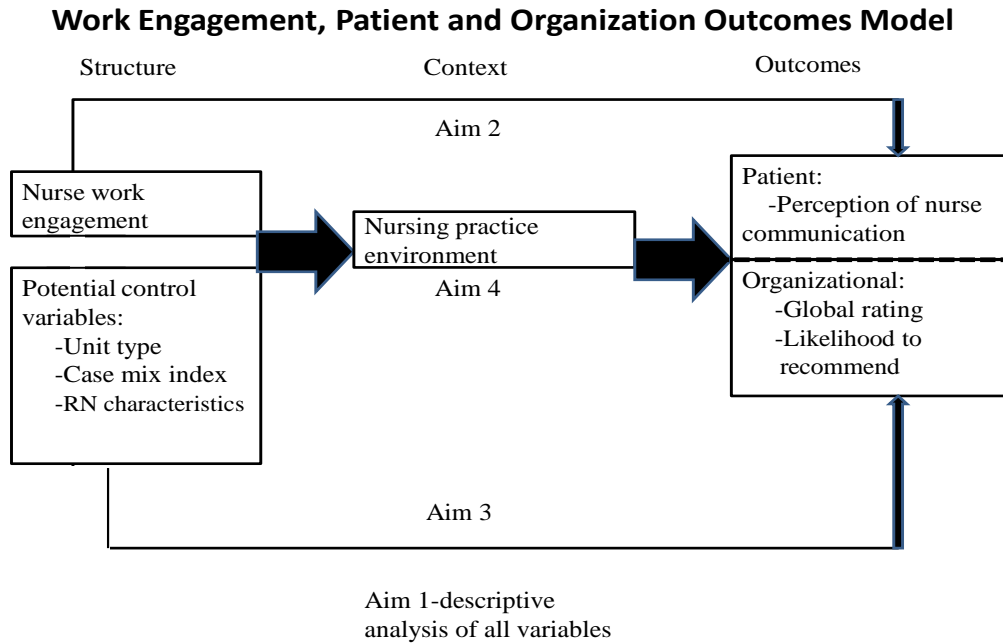
Figure 1. Work Engagement, Patient and Organization Outcomes Model

Overview of Research Design and Methods

A cross-sectional, correlational study examined associations among the level of nurse work engagement and the rating of a hospitalized patients' experience of nurse communication, and the patients' overall rating of care, and the likelihood of recommending the hospital to others. The setting for the study is the inpatient hospital with seven hospitals and forty-seven eligible units. The target population for this study is inpatient registered nurses (RNs) who work in a seven hospital Southeast hospital system. All analyses were conducted using the R studio software version 3.1.3.

Definitions of Key Terms

Independent Variable

The following section provides a list of key terms used throughout the chapters:

Work Engagement is described as "a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004, p. 5). The subscales of work engagement include vigor, dedication and absorption. "Vigor is characterized as having high energy, resilience, persistence and a willingness to invest one's effort in work even when faced with challenges" (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002, p. 74). Dedication is described as enthusiastic and connecting work with significance, pride, challenge and inspiration. "Absorption is described as being fully engrossed in one's work, also associated with fully concentrated on work and the feeling of time passing by with a hard time detaching from work" (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002, p. 74).

Dependent Variables

Patient Outcome: Patient's Perception of Nurse Communication includes the patient's perception of how nurses show behaviors such as respect and dignity which includes proper manners and social interactions. It also includes, careful listening as well as simple explanation of related medical care (Press Ganey, 2014).

Organizational Outcomes:

Patient's Overall Rating of Hospital Stay is a synopsis of the care encountered during the hospital stay (Press Ganey, 2014).

Likelihood to Recommend is the patient decision as to whether they relay to others their perception of a good overall hospital experience (Press Ganey, 2014).

Mediator

Nursing Practice Environment encompasses the aspects within the workplace that either assist or impede nurses in their everyday work (Lake, 2002; Shang, Friese, Wu, & Aiken, 2013).

Control Variables

Case Mix Index a description of severity of patient diseases and health issues in a medical care environment which is used to allocate resources to care for and treat patients in the group (Center for Medicare and Medicaid Services, 2015; Hornbrook, 1985).

Unit Type is the unit's descriptor of the type of patient population hospitalized by medical diagnosis (e.g., medical, surgical, cardiac, etc.)

Nurse Characteristics are the demographic and work related details that describe the nurse participants.

Other Relevant Definitions

Utrecht Work Engagement Survey (UWES-9) is a nine-item empirical tool that has been used in many studies to measure work engagement (Schaufeli & Bakker, 2004).

Employee Engagement a psychological state in which employees feel that they have a vested interest in the organization's success and they are willing and motivated to perform to levels that exceed those in their job description (Jeve, Oppenheimer, & Konje, 2015; Kahn, 1990).

Patient Experience describes patient-health care entity personnel interactions and includes key aspects of care that happened during the healthcare encounter (Agency for

Healthcare Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015; The

Beryl Institute, 2017; The Health Foundation, 2013).

Patient Satisfaction is concerned with what the patient anticipated and expected

associated with the health visit, as well as, the manner in which things were handled

(Agency for Healthcare Research and Quality, 2017; Beattie, Murphy, Atherton, &

Lauder, 2015).

Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS) is a survey

available to the public that includes patient views of inpatient services (Center for

Medicare and Medicaid Services, 2015).

Centers for Medicare and Medicaid Services (CMS) is a U.S. government agency that

handles the Medicare program and coordinates with state agencies to handle Medicaid

programs and services (Centers for Medicare and Medicaid Services, 2015).

Practice Environment Survey of the Nursing Work Index (PES-NWI) is an instrument

which measures the nursing practice environment and includes factors which influence

the nurse's skillful practice and deliverance of care (Lake, 2002).

Value-Based Purchasing (VBP) is a mechanism to pay hospitals for high performance in

patient health outcomes (Centers for Medicare and Medicaid Services, 2012).

Summary

In the first chapter the problem, significance, background, conceptual framework,

aims, research questions and analysis approaches were presented. The study explored the

associations between hospital nurse work engagement and the patient perception of the

hospital experience. In chapter two, a literature review is provided to further give support

for the study.

CHAPTER 2

The purpose of Chapter Two was to review and analyze the literature relevant to the significance of work engagement, selected inpatient hospital ratings, and related concepts. This chapter presents the theoretical framework for the study on work engagement of hospital nurses and patient ratings of nurse communication, overall hospital stay and likelihood to recommend the hospital to others. An overview of the chapter includes the following concepts: 1) work engagement, 2) patient experience selected ratings (nurse communication, overall hospital stay and likelihood to recommend the hospital to others), 3) differences between work engagement and employee engagement, and 4) differences between patient experience and patient satisfaction. There are four main sections to Chapter 2. The four sections are 1) The concepts, 2) work engagement literature analysis, 3) patient experience literature analysis, and 4) the conceptual framework. The contents of this chapter provides the need to conduct this research study.

Section one introduces the concepts of work engagement and the selected patient experience ratings of nurse communication, overall hospital stay and likelihood to recommend the hospital to others. The introduction includes basic definitions as well as the importance of the concepts to the inpatient hospital environment. In addition to basic

definitions, the relevance for each concept is described. Within the description of the concepts, closely related concepts of employee engagement and patient satisfaction will be compared and contrasted to the main variables of work engagement and patient experience, respectively.

Section two analyzes the literature on work engagement of nurses. The analysis includes information on the aspects that relate to nurse work engagement such as nurse characteristics, resources, practice environment, individual versus group work engagement, work engagement subscales, outcomes, and intervention studies. A summary of section two concludes by identifying gaps in the literature and confirming the importance of conducting research that focuses on the work engagement of hospital nurses and associated patient quality outcomes.

Section three covers the analysis of literature on selected patient experience ratings of nurse communication, overall rating of the hospital and likelihood to recommend. The analysis includes information on patient expectations, nurse characteristics, practice environment, communication, patient decision making, selected patient experience subscales and outcomes of patient experience. A summary of section three identifies gaps in the literature along with restating the importance of conducting research focusing on potential relationships between quality outcomes, such as patient experience, in conjunction with nurse workforce related factors, such as work engagement (You et al., 2012).

Finally, section four provides an overview of the conceptual framework for the study. The Work Engagement, Patient and Organization Outcomes Model will display the proposed connections between the selected study variables. An overview of the

background models and evolution of the Work Engagement, Patient and Organization Outcomes Model will be described. The adapted model builds on past research associating positive outcomes with work engagement. The model will also show the potential influence work engagement may have on patients' ratings of the overall hospital and the likelihood that patients may recommend the hospital to friends and family.

Work Engagement of Hospital Nurses and Patient Ratings of Nurse Communication, Overall Hospital Stay and Likelihood to Recommend the Hospital to Others

Work engagement is defined as "a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004, p. 5); it refers to being fully aware and with all one's attention turned toward actions and presence of people, things, and occurrences (Schaufeli, Martinez, Salanova, & Bakker, 2002). Specific to healthcare work environments, nurse work engagement is linked to Magnet accredited hospitals and professional practice environment essentials which are both associated with high quality care, positive impact on nurses, lower patient mortality, high patient satisfaction, and nurses' perception of high quality care of patients (Fasoli, 2010).

Patient experience is defined as patients' perceptions of patient-health care personnel interactions and includes key aspects of care that happened during the healthcare encounter (Agency for Healthcare Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015; The Beryl Institute, 2017; The Health Foundation, 2013). The Center for Medicare and Medicaid Services (CMS) created a hospital quality initiative to stimulate and support improvements in the quality of care hospitals deliver. Nurse communication, overall rating of the hospital and likelihood to recommend the

hospital to others are three of the nine domains captured in CMS's quality initiative (Medicare.gov, 2017).

Significance of Work Engagement and Concepts of Interest

Work engagement is rooted in positive psychology. Positive psychology is significantly focused on strengthening and supporting people, helping them flourish in the environments in which they live and work (Seligman, 2018; Seligman & Csikszentmihalyi, 2000). More importantly, the foundation of positive psychology is based upon the principle that individuals want to engage in work and activities that enrich and justify their existence (Penn Arts & Sciences, 2017; Seligman, 2018). There are a number of reasons why work engagement is important to nurses, patients, and healthcare organizations. Work engagement is a predictor of employee performance and commitment (Freeney & Fellenz, 2013). More specifically, outcomes that are positively associated with nurse work engagement are low nurse turnover intention, organizational commitment, and beneficial service climate in hospitals (Keyko, Cummings, Yonge, & Wong, 2016; Simpson, 2009). Nevertheless, at least three literature reviews on nurse work engagement recommended further study to gain an enhanced knowledge of positive organizational outcomes as a result of work engaged nurses, with a specific focus on quality of care outcomes indicators (Garcia-Sierra, Fernandez-Castro, & Martinez-Zaragoza, 2015; Keyko, Cummings, Yonge, & Wong, 2016; Simpson, 2009).

Although researchers agree that work engagement yields positive outcomes, there is a documented lack of engagement in U.S. workers. This lack of engagement, or disengagement, is defined as a state in which a person distances herself from assigned duties with an unenthusiastic approach (Demerouti, 2002). A 2015 national poll

indicated approximately 68% of U.S. workers are disengaged from their work (Gallup News, 2016). Within nursing, a national survey conducted by *NurseWeek* and the American Organization of Nurse Executives discovered that only 18% of nurses are actively engaged in their work (Fasoli, 2010; NurseWeek, 2015). If the same level of engagement existed for the total number of nurses in the United States, only 360,000 of the more than three million nurses are engaged in the work they do every day (Health Resources and Services Administration, 2015). Furthermore, additional sources note that 15 of every 100 nurses are considered disengaged, with the estimated cost of $22,200 per disengaged nurse (Dempsey & Reilly, 2016; Schaufenbuel, 2013). Based on this estimated cost, a hospital with 100 nurses would stand to lose $333,000 each year in productivity. Large hospital systems with 15,000 nurses would lose as much as $50 million annually (Dempsey & Reilly, 2016; Schaufenbuel, 2013). The productivity losses are attributed to peer-to-peer complaints about work, a lack of teamwork, poor attitude about work-related duties, sick call-ins, and a failure to exceed work expectations when most needed (Dempsey & Reilly, 2016; Grissinger, 2017; Rosenstein & O'Daniel, 2005; Leonard & Frankel, 2011; The Joint Commission, 2008). The noted costs of disengagement do not include additional related costs associated with nurse turnover.

Costs related to nurse turnover are high. The average cost of turnover for a nurse ranges from $36,900 up to $57,300. A recent survey notes that the current rate of turnover is 16.4% which equates to a loss of approximately $4.9 million to $7.6 million for a hospital annually (Nursing Solutions Incorporated Nursing Solutions, 2015). In addition to concerns about disengaged worker-associated turnover, there is also speculation that low engagement is associated with low job satisfaction (Giallonardo,

Wong, & Iwasiw, 2010). It is thought that job satisfaction affects a nurse's job performance and, in turn, negatively affects the quality of health services provided (AbuAlRub, 2009; Chien & Yick, 2016; Orgambidez-Ramos, & de Almeida, 2017). However, studies found reduced nurse turnover intentions as a consequence of high levels of work engagement (Brunetto, et al., 2013; Laschinger, Grau, Finegan, & Wilk, 2012; Shahpouri, Namdari, & Adebi, 2016; Van Bogaert, Wouters, Willems, Mondelaers, & Clarke, 2013). In fact, a study of new graduate nurses indicated high work engagement levels were associated with low intention of turnover (Laschinger, et al., 2012). This was observed not only in new graduate nurses, but also in studies of nurses in different geographic locations such as Belgium and the U.S. (Brunetto, et al., 2013; Van Bogaert, et al., 2013).

Work Engagement Versus Employee Engagement

It is important to mention the lack of clear terminology between work engagement and employee engagement. There are varied definitions of the concepts as well as many different instruments used to measure them (Kular, 2007; Macy & Schneider, 2008). In order to provide clarity in the proposed study the concepts are clarified as follows. Work engagement refers to the connection with work tasks and related interactions (Jeve, et al., 2015), whereas employee engagement is the employee's emotional investment in the employer and the employer's priorities (Jeve, et al., 2015; Kular, 2007). In an effort to describe the subtle differences between work engagement and employee engagement, the following aspects will be examined: 1) an overview of the attributes; 2) the differences between the definitions; 3) an overview of measurement instruments and finally, 4) a sample of questions from the instruments.

One of the most widely used and accepted definitions of work engagement is from Schaufeli and Bakker, who describe engagement as "a positive, fulfilling work-related state of mind characterized by vigor, dedication and absorption" (2004, p. 5). As confirmed by recent studies, Schaufeli and Bakker's definition of work engagement remains the most relevant and therefore will be used for this study (Bailey et al., 2015: White, Butterworth, & Wells, 2017). Distinct attributes of work engagement include passion, commitment, and personal investment with work tasks specific to the job (Bakker, Shimazu, Demerouti, Shimada & Kawakami, 2014; Dalal, Brummel,Wee & Thomas, 2014; Macy & Schneider, 2008; May, Gilson, & Harter, 2004; Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Additionally, work engaged staff are thought to be more equipped to handle high job demands effectively as opposed to their non-engaged counterparts.

Last, engaged workers are considered active rather than passive in their approach to work tasks. In contrast, distinct attributes of employee engagement include 1) an employee's commitment to the organization; 2) an employee's commitment to the organizational focus; 3) an employee's satisfaction with the organization; 4) an employee's concern regarding resource availability, clarity of expectations, and their capacity to develop in the organization; 5) an employee's satisfaction with their manager, work group, job, and characteristics of the work environment (Macy & Schneider, 2008); 6) an employee's loyalty to the organization; and last, 7) the employee's satisfaction with the conditions under which they work (Jeve, et al., 2015; Kular, 2007). While the concept of work engagement focuses on the work task itself, employee engagement emphasizes the organization and the organization's attributes.

In addition to the various ways engagement has been defined, there are also multiple ways the concept has been measured. The Gallup questionnaire and the Utrecht Work Engagement Survey (UWES-9) are referenced as the most frequently used instruments to measure employee engagement and work engagement, respectively (Jeve, et al., 2015). The Press Ganey employee engagement survey is another instrument used by organizations to measure employee engagement. Due to proprietary reasons, limited information is available regarding the entire list and number of questions on the Press Ganey survey. The main differences in the Gallup and Press Ganey surveys as compared to the UWES-9 instrument are the items on the questionnaires. For example, an item from the Gallup questionnaire is *'Do you know what is expected of you at work?'* (Gallup, 2010). Additionally, an example item on the Press Ganey survey is *'I get the tools and resources I need to provide the best care/service for our clients/patients'* (Press Ganey, 2016). That is, the items on these employee engagement surveys are very different from an example question from the UWES-9 instrument *'I am enthusiastic about my job'* (Schaufeli & Bakker, 2004). The employee engagement surveys are focused on resources and expectations at work, whereas the work engagement survey focuses on how the individual feels about the work itself. One source notes the distinction in measurement of work engagement is the detail associated with work tasks. The study goes on to indicate that the Gallup instrument is an inappropriate instrument to measure work engagement, as the focus of the instrument is to measure work conditions and not the work task itself (Jeve et al., 2015). Table 1 displays the overall differences between work engagement and employee engagement.

Table 1

Work Engagement Versus Employee Engagement

	Work Engagement	Employee Engagement
Definitions	"A positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption"[d]	The emotional commitment the employee has to the organization and its goals.[a,b]
Example measurement tools	Utrecht Work Engagement Survey (UWES-9)	Commercial tools (Press Ganey, Gallup) Collective Engagement Instrument
Example items on instrument	UWES-9 "I am enthusiastic about my job" "When I get up in the morning, I feel like going to work" " I am immersed in my work"	Gallup Q12 Employee Engagement Survey[c] "Do you know what is expected of you at work?" "Do you have the materials and equipment to do your work right? " "At work, do you have the opportunity to do what you do best every day?"
Attributes	Passion, commitment and personal investment with work tasks. Equipped to handle high job demands effectively.	Commitment to the organization, satisfaction with the organization, focus on resources, and expectations. Satisfaction with manager, work group and conditions under which they work.

[a]Jeve, Oppenheimer & Konje (2015); [b]Gallup (2010); [c] Kular, (2007); [d]Schaufeli & Bakker, (2004)

Significance of Patient Ratings of Nurse Communication, Overall Hospital Stay and

Likelihood to Recommend the Hospital to Others

Patient experience, one of many national hospital performance metrics, is most

often evaluated by the Hospital Consumer Assessment of Healthcare Providers and

Systems (HCAHPS) survey (Centers for Medicare and Medicaid Services, 2015). There

are six subscales and four individual questions on the HCAHPS patient experience

survey: 1) nurse communication; 2) doctor communication; 3) responsiveness of hospital

staff; 4) pain management; 5) communication about medications 6) discharge

information; 7) cleanliness of hospital environment; 8) quietness of hospital environment;

9) overall rating of hospital; and 10) willingness to recommend the hospital (U.S.

Department of Health and Human Services, Medicare.gov, 2017). Although the

HCAHPS patient experience survey has multiple domains, three are of importance to this

study: nurse communication, overall rating of the hospital, and the likelihood of

recommending the hospital to others. Many items on this survey relate to communication

(Wolosin, 2012), and since nurses are the main communicators of vital information about

inpatient care and recovery, they play a critical role in achieving successful patient

experience metrics. What drives effective nursing communication in support of patient

experience, however, is unclear.

Patient Priorities for Care and Patient Experience versus Patient Satisfaction

As one study notes, "Patient priorities for care include respect, courtesy,

competence, efficiency, patient involvement in decisions, time for care, availability of

nurses and other hospital personnel, information, exploring patient needs and

communication" (Robinson, Callister, Berry, & Dearing, 2008, p. 602). Nurses play the

most important role in influencing patient perceptions (Small & Small, 2011). The

Institute of Medicine's 2001 *Crossing the Quality Chasm* report advises patient-centered

care as a key strategy for health system quality improvement (Institute of Medicine,

2001). Patient-centered care is associated with core elements of 1) having a high regard

or reverence for patients and families; 2) showing respect; 3) providing details about

patient related care; 4) encouraging patient and family involvement in care; 5)

establishing partnership between healthcare team members and patients/families; and 6)

working together toward patient and family goals (Institute for Patient- and Family-

Centered Care, 2010). These elements are important, as patient- and family- centered

care has been associated with positive health outcomes for hospitalized patients.

Furthermore, the Institute for Healthcare Improvement (2014) identified that the

engagement of the hearts and minds of staff is a key driver for patient- and family-

centered care. Literature suggests hospital staff and particularly nursing staff have the

most influence over the patient's willingness to recommend a hospital to others; however,

the specific components of the nursing characteristics which contribute to this influence

are unclear (Otani, Waterman, Faulkner, Boslaugh, & Clairborne, 2010).

It is important to address the use of the terms patient experience and patient

satisfaction. Although often used interchangeably, patient experience and patient

satisfaction do have clear and distinct definitions. Patient experience describes all

aspects of care that happened during the healthcare encounter (Agency for Healthcare

Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015; The Beryl

Institute, 2017; The Health Foundation, 2013). These aspects of care can include, but are

not limited to, patients' communication with their doctors and nurses, patients'

comprehension of their medication instructions, and nurses' coordination of patients'

healthcare needs (Centers for Medicare and Medicaid Services, 2015). Alternatively,

patient satisfaction is concerned with what the patient expected associated with the health

visit, as well as, the manner in which things were handled (Agency for Healthcare

Research and Quality, 2017; Beattie, Murphy, Atherton, & Lauder, 2015). For the

purposes of this proposed study, nurse work engagement and patient experience ratings

of nurse communication, overall rating of the hospital, and the patient's likelihood of

recommending the hospital to others will be examined.

Significance of Work Engagement, Nurse Communication, Overall Hospital Stay,

Likelihood to Recommend the Hospital to Others

In the hospital setting, of all medical professionals, nurses generally spend the

most time with patients and usually have an overall influence over patients' opinion of

the quality of care they receive. Considering the quantity of time nurses spend with

patients, it is concerning that few nurses are actually engaged in their work.

Additionally, healthcare spending in the U.S. is high and hospital organizations are being

held accountable to deliver a high standard of quality care, which includes positive

patient experience. Patient experience includes many aspects of a patient's health

encounter. For this study, nurse communication, overall rating of the hospital and

likelihood to recommend portions of patient experience will be examined. In addition to

the high priority patients place on wanting to be treated well, organizations are now

obligated to meet high quality standards, such as patient experience outcomes.

Analysis of the Literature: Nurse Work Engagement

The literature review on work engagement of nurses describes a brief overview of what is known in the literature as well as gaps yet to be explored. The review includes aspects that relate to nurse work engagement such as nurse characteristics, resources, practice environment, individual versus group work engagement, work engagement subscales, outcomes, and intervention studies. First, the review examines nurse characteristics that are known to precede nurse work engagement. Next, the resources which support work engagement in nurses will be described. Examples of resources include items such as adaptability, self-imposed setting of personal limits, and quality of work life. Third, the practice environment aspects such as leadership support, nurse-to-physician relationships, and organizational factors and how they support the presence of nurse work engagement will be presented. This review reveals a number of practice environment aspects that are less well known in their association with nurse work engagement. They include, but are not limited to, factors such as teamwork, rewards, and professional development support. Next, the existing literature on individual versus group engagement will be examined. Additionally, a review of the work engagement subscales will be summarized. Finally, the review shows the limited number of studies examining outcomes related to the presence of nurse work engagement. A summary of the existing knowledge versus the gaps in knowledge for nurse work engagement will be provided.

Nurse/Employee Characteristics and Work Engagement

Employee characteristics such as good health, high personal values, connection to meaningful work, age, length of time in the profession, having feelings of joy, and connection to the belief in the integrity of high organization values were noted to be

antecedents to work engagement in multiple studies. Specific to good health, those who

self-rated as being in good health had high levels of work engagement (Fiabane et al.,

2012; Setti & Argentero, 2011). A general description of employees who had high

personal and ethical work standards, in concert with high values held by the organization,

was associated with the presence of work engagement (Bjarnadottir, 2011; Setti &

Argentero, 2011; Vinje & Mittlemark, 2008). One's own connectedness to the

meaningfulness they perceive in the work they do was found as an antecedent to work

engagement within the employee internal characteristics. Descriptions of the work-

engaged employee in several studies included intrinsic motivation toward work, self-

transcendence, feeling that work is meaningful, and meaningfulness experienced along

with values (Bjarnadottir, 2011; Palmer, Quinn-Griffin, Reed, & Fitzpatrick, 2010; Van

Beek et al., 2012; Vinje & Mittlemark, 2008).

Length of time and experience in the nursing profession is known to be connected

with the presence of work engagement. In fact, time in nursing was described in three

studies. This was mostly found in the demographics and descriptive statistics results,

noting correlations between the longer length of time a nurse has been practicing in the

profession and his/her high level of engagement (Bjarnadottir, 2011; Hagedorn Wonder,

2012; Rivera et al., 2011). Two of the three studies included a qualitative design and

were conducted in Magnet-designated facilities, or those known for high quality care and

positive nurse work conditions (Hagedorn Wonder, 2012). Only one study found that

length of time in the profession was not an antecedent to work engagement of nurses.

This study and an organization that collects data on nursing engagement found that

nurses with low tenure were more engaged compared to those who were employed for a

greater number of years (Dempsey, 2018; Havens et al., 2013). The antecedent of tenure

was variable, however, based on the age of the nurse. A single study noted that nurses

who are 36 years of age or older had higher levels of engagement compared to younger

nurses, regardless of tenure (Rivera et al., 2011). Conversely, a Saudi Arabian study

noted that young nurses ranging from 21 to an unidentified age were found to be more

engaged (Aboshaiqah, Hamadi, Salem, & Zakari, 2016). The age of the nurses ranged

from 21-59, however the exact age or definition of young nurse was not defined. This

study also found that nurses with at least a bachelor's degree had high levels of work

engagement, as did married nurses. Nurses who held religious beliefs were also highly

engaged (Bussing, Lotzke, Glocker, & Heusser, 2015).

High job involvement and feelings of joy at work were also associated with high

levels of work engagement (Kuhnel et al., 2009; Vinje & Mittlemark, 2008).

Descriptions of these characteristics included the employee believing that the

organization does what it intends to do based on its mission, and that it essentially fulfills

its mission (Collini, Guidroz, Perez, & Lisa, 2015; Wang & Liu, 2015). Two of the

studies included other healthcare workers in addition to nurses. A similar characteristic

of empowerment, which can both be structural and psychological, was found to be linked

with work engagement of nurses several times in the literature (Adriaenssens, DeGucht,

Van Der Doef, & Maes, 2011; DiNapoli, O'Flaherty, Musil, Clavelle, & Fitzpatrick,

2016; Garcia-Sierra et al., 2015; Hu, Schaufeli, & Taris, 2017; Laschinger, 2012).

Structural empowerment is defined as the amount of accessibility to needed workplace

resources such as support and opportunities for growth and learning (Kanter, 1993;

Laschinger, 2012). Psychological empowerment within a work context is defined as an

employee's emotional investment required for accomplishment of work role responsibilities (DiNapoli, O'Flaherty, Musil, Clavelle, & Fitzpatrick, 2016; Spreitzer, 1995). Finally, various other nurse characteristics such as working eight-hour shifts, dayshift, and rotating shifts, and having attributes such as social intelligence, emotional intelligence, and a sense of organizational justice were also associated with the presence of high work engagement scores (Adriaenssens et al., 2011; Wang & Liu, 2015; Walker & Campbell, 2013; Wonder, 2013; Zhu, Liu, Guo, Zhao, & Lou, 2015).

Personal resources and work engagement. Several studies focused on nurses' personal resources and the positive relationship with their level of work engagement (Bjarnadottir, 2011; Gillet et al., 2013). One of those studies was a qualitative study which showed that personal resources such as adaptability, and self-imposed setting of personal limits supported the presence of work engagement in nurses. Setting of personal limits was exhibited by keeping work-related conditions in perspective to overall life and not taking work-related issues to other aspects of an employee's life such as home life (Bjarnadottir, 2011). Quality of work life as a personal resource, which is described as work satisfaction, psychological well-being, and happiness were noted to precede work engagement (Gillet et al., 2013).

A number of intervention studies included actions to improve work engagement among nurses. Although at least 17 international studies include interventions that positively impacted work engagement of workers, only five of those studies include nursing and other healthcare workers (Biggs, Brough & Barbour, 2014; Bishop, 2013; Briner & Walshe, 2015; Calitz, 2010; Chen, Westman & Eden, 2009; Cifre, Salanova, & Rodriguez-Sanchez, 2011; Hengel, Blatter, Joling, van der Beek, & Bongers, 2012;

Imamura, Kawakami, Furukawa, Matsuyama, Shimazu, Umanodan, et al., 2015; Naruse, Taguchi, Kuwahara, Nagata, Sakai, Watai & Murashima, 2015; Nielsen, Taris, & Cox, 2010; Ouweneel, Le Blanc & Schaufeli, 2013; Rigotti,Otto, Mohr, & Perko, 2014; Sodani, Yadigari, Shfia-Abadi, and Mohammadi, 2011; Strijk, Proper, van Mechelen, van der Beek, 2013; Van Berkel, Boot, Proper, Bongers & Van der Beek , 2014; Vuori, Toppinen-Tanner, & Mutanen, 2012; White & Waldron, 2014;). The five studies used interventions such as personal resource building, increase in work resources, caring-based resources, and healthy lifestyle resources (Bishop, 2013; Naruse et. al., 2014; Ouweneel, Le Blanc, & Schaufeli, 2013; Strijk , Proper, van Mechelen, & van der Beek, 2013; White & Waldron, 2014; White, Wells, & Butterworth, 2014). Personal resource building includes actions to increase one's self-perceived positive attributes, resilience, and optimism (Ouweneel, Le Blanc, & Schaufeli, 2013). Three intervention studies yielded high work engagement among nurses. The studies included a three-day retreat facilitated by nursing leadership and staff driven use of a program named the Productive Ward (Bishop, 2013; White, Wells, & Butterworth, 2014; White, Butterworth & Wells, 2017). One of the studies involved a three day retreat for nurses included time for focusing on why the nurses entered the profession, and a time of reflection on caring for self, family, and patients. Although not an intervention study, Lawrence (2011) found that critical reflective practice is a personal resource used by nurses as a way to be mindful of self within practice situations. Reflective practice was shown to be an associated antecedent to work engagement (Lawrence, 2011). Only one study showed an improvement in work engagement in those with self-reported low engagement. This study used an online intervention that included participant assignments in happiness-

related activities, work-related goal setting, and personal resource skills building (Ouweneel, Le Blanc, & Schaufeli, 2013).

A healthy lifestyle was also associated with the presence of work engagement of nurses. One of the studies focused on health lifestyle and health promotion as interventions to positively impact work engagement (Strijk, Proper, van Mechelen, & van der Beek, 2013). The study utilized interventions such as massage, music, and humor therapy as a way for nurses to de-stress. The study also included a six-month intervention of yoga, aerobic exercise, individual coaching visits, and free fruit. The individual coaching sessions focused on healthy everyday life behavior goal setting, feedback, and pinpointing solutions to overcome work related challenges (Strijk , Proper, van Mechelen, & van der Beek, 2013). Although the study sought to increase work engagement, the interventions yielded no increase in work engagement (Strijk , Proper, van Mechelen, & van der Beek, 2013).

Nurse Practice Environment and Work Engagement of Nurses

More than nine studies describe associations between the nurses' work atmosphere and nurse work engagement. These aspects of the practice environment include leadership styles of the manager, nurse-to-physician relationships, and organizational support as well as positive relationships with other staff. Leadership types such as authentic leadership, the presence of supervisor support, and the nurses' perception of a favorable, supportive relationship with the nurse manager were shown to predict work engagement of nurses (Bamford et al., 2013; Laschinger, 2012; Othman & Nasurdin, 2013; Rivera et al., 2011; Salanova et al., 2011; Sohrbizadeh & Sayfouri, 2014; Van Bogaert et al., 2013; Van Bogaert, Clark, Willems, & Mondelaers, 2013; Wang &

Liu, 2015; Wong, Laschinger, & Cummings, 2010). Additionally, transformational

leadership was positively associated with high work engagement of nurses (Enwereuzor,

Ugwu & Eze, 2016). Additional relational elements that supported the presence of work

engagement included positively rated nurse-to-physician relationships, physician support

in the work environment, and positive peer-to-peer relations (Havens, Warshawsky, &

Vasey, 2013; Van Bogaert et al., 2013; Van Bogaert et al., 2013; Wang & Liu, 2015).

Organizational support within the practice environment is associated with the

work engagement of nurses. Specifically, the "six areas of worklife described as control,

workload, community, rewards, fairness, and values" are known to support the presence

of nurse work engagement (Bamford et al., 2013, p.536; Laschinger, 2012; Laschinger &

Finegan, 2005; Strumwasser & Virkstis, 2015). In addition to these worklife aspects, the

overall support of the organization and presence of a positive service climate

environment facilitated work engagement. A positive service climate, known as a unit-

level service climate, refers to an environment of shared perception of practices, work-

related events, and the way people act (Abdelhadi & Drach-Zahavy, 2011). A good unit-

level service climate is associated with positive employee recognition and thought to

support successful patient service. In these environments that support the presence of

nurse work engagement there is a general consensus of a correct way to conduct oneself

regardless of setting or patient diagnosis or specialty type (Abdelhadi & Drach-Zahavy,

2011; Van Bogaert et al., 2013). Similar to the unit-level service climate environment, a

patient-centered environment, which is described as a whole person approach with an

emphasis on understanding the patient's perspective on their illness, is associated with

the presence of work engagement (Abdelhadi & Drach-Zahavy, 2011). Finally,

organizations that demonstrated an ability to fulfill their organizational mission were

perceived as providing organizational support, and supported the presence of work

engagement of nurses (Collini, Guidroz, Perez, & Lisa, 2015; Wang & Liu, 2015).

Practice environment aspects associated with nurse work engagement that are less

known in the literature include teamwork, workload, skill mix, staff-facilitated process

improvement, decision authority, skill discretion, good work procedures, goal orientation,

rewards, professional development opportunities, and time off. These practice

environment aspects preceding work engagement were not found repeatedly but were

seen as antecedents at least four times in the literature. Nurse employees who had high

levels of teamwork in their work areas reported high work engagement (Brunetto et al.,

2013; Xanthopoulou et al., 2009). Workload was inversely associated with work

engagement. Low workload was linked with high work engagement while high workload

was associated with low work engagement (Fiabane et al., 2012; Freeney & Tiernan,

2009). Specific to decision authority and nurse involvement in shared decision making,

one study found a positive association between participation of nurses in shared

governance and work engagement (Siller, Dolansky, Clavelle, & Fitzpatrick, 2016).

Last, there was one study which indicated a good practice environment was positively

associated with high levels of work engagement in nurses, however the specific aspects

of the practice environment were not revealed (Li, Li, & Wan, 2019). Although the study

did not describe the specific aspects of the practice environment that were associated with

work engagement, they used the practice environment scale (PES) scale which includes

subscales which measure nurse the perception of the following: manager's ability and

leadership, collegial nurse-physician relations, nurse participation in hospital affairs, staffing-resource adequacy, and foundation for quality of care (Lake, 2002).

A limited number of randomized control trials (RCT) include practice environment-related factors that impact work engagement of nurses. One of the RCT studies used a skill mix program in a pre-and-post intervention design. The study found that adding non-nursing personnel to work with registered nurses had a positive impact on work engagement scores (Naruse et al., 2015). Another RCT study found that sending a sample of nurses to a three-day caring retreat yielded high work engagement among nurses (Bishop, 2013). The third RCT found that staff-driven quality improvement projects positively impacted the work engagement of nurses at the unit-level (Bishop, 2013; White, Wells, & Butterworth, 2014). The Productive Ward study used Lean process improvement methodology. Lean is a problem solving approach that focuses on eliminating the use of wasteful efforts and resources to create a defect free product or experience (Lean, 2015). A literature review conducted on the Productive Ward project, showed that out of 96 studies, 10 featured interventions directly impacting work engagement of nurses in a positive manner (White & Waldron, 2014). Finally, the intervention of having time off, described as having 2-4 days off per week, was found as an antecedent to work engagement in two studies, one conducted with public service workers and the other with nurses (Kuhnel, Sonnentag, & Westman, 2009; Sonnentag, 2003).

*Individual Versus Group Work Engagemen*t

Although work engagement represents how an individual feels about their work, it is both an individual and group phenomenon (Jeve, et al., 2015; Schaufeli & Bakker,

2004). In fact, differences in work engagement can be found at the individual, group, and organizational levels (Schaufeli & Bakker, 2004). An example of the individual and group phenomenon of work engagement can be found when some workers, groups or departments of an organization are more engaged than others (Bakker, Demerouti, Taris, Schaufeli, & Schreurs , 2003; Jeve et al., 2015; Salanova, Agut, & Peiró, 2005; Schaufeli & Bakker, 2004; Schaufeli & Schreurs, 2003; Taris, Kompier, DeLange, Schaufeli, & Schreurs, 2003). Interestingly, it has been found that individual level engagement of team members is associated with the collective level of engagement of a team or group. Based on these findings individual and group level engagement were thought to have a synergistic effect on one another. These finding were discovered in studies of students and working couples (Bakker, Demerouti, & Schaufeli, 2005; Salanova, Llorens, Cifre, Martinez & Schaufeli, 2003). For instance, a group of students who had a group task to complete under tight time constraints had high group-level engagement. Additionally, in working couples, it was found that the engagement of one partner was contagious to the other partner (Bakker, Demerouti, & Schaufeli, 2005). It is worth noting that group engagement has positively impacted group performance outcomes, as evidenced by the proficiency, adaptability, and proactivity of the group (Jeve et al., 2015).

Work Engagement Subscales

The subscales of work engagement include vigor, dedication and absorption. In the words of one group of researchers, "Vigor is characterized as having high energy, resilience, persistence and a willingness to invest one's effort in work even when faced with challenges" (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002, p. 74). Dedication is described as being enthusiastic and connecting work with significance,

pride, challenge, and inspiration. The remaining subscale is absorption, which is described as being fully engrossed in one's work, also associated with fully concentrating on work and feeling the passage of time yet having difficulty detaching from work.

Past studies examined work engagement as a one dimensional versus a three dimensional concept with a variety of research topics (Schaufeli & Bakker, 2004). Study topics which examined relationships with work engagement as a one-dimensional concept include: 1) organizational justice; 2) transformational leadership; 3) quality of work-life; 4) performance process; 5) moral distress; and 6) critical reflective practice. Alternately, study topics which examined relationships with work engagement as a multi-dimensional concept include: 1) extra-role performance; 2) self-efficacy; 3) financial returns, and, 4) symptoms of anxiety and depression. Interestingly, high levels of vigor and dedication were found to lessen the presence of depressive symptoms and anxiety in nurses (Innstrand, Langballe & Falkum, 2012). These same two dimensions, when coupled with the presence of transformational leadership, were also associated with extra-role performance of hospital nurses (Salanova, Lorente, Chambel & Martinez, 2011). Additionally, high levels of vigor and absorption were associated with high financial returns in the fast-food industry (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2009). Having detail about the specific dimensions of work engagement may help to provide actionable data for improving work engagement (Jeve, et al., 2015).

Work Engagement Outcomes

Nineteen studies identified work engagement outcomes, the details regarding those studies are as follows. The themed outcomes are categorized as follows: outcomes for patients, outcomes for organizations, and outcomes for nurses and other workers.

Clearly, one of the important aspects of nurse work engagement is the potential gain that patients receive. Various benefits for patients from healthcare workers' perspectives have been expressed in at least seven studies. Most nursing studies focused on the perceived quality of care that patients received as a direct consequence of being cared for by work-engaged nurses (Freney & Fellenz, 2013; Van Bogaert et al., 2013; Van Bogaert et al., 2013; Van Bogaert, Heusden, Timmermans, & Franck, 2014). Specifically, one study measured positive attitudes from nurses toward patients and the nurses' patient-centered care approach (Mahiro, Takshi, & Satoko, 2014). Additionally, two studies found high patient-rated satisfaction with hospital nursing care was associated with highly engaged nurses (Bacon & Mark, 2009; Pearson, Needleman, Beckman, & Han, 2016). Another study found that in settings with favorable nurse-patient staffing ratios, nurses with high levels of engagement were associated with high ratings of patient safety (Brooks, Hatfield, Plover, Dierkes, Davis, Hedgeland, Sanders, Visco, Holland, Ballinghoff, Del Guidice & Aiken, 2019). Only one study found a contradictory association with work-engaged nurses and patient quality of care (Van Bogaert et al., 2017). In this study it was found that work-engaged nurses had a less direct impact on the patient quality of care received.

Benefits experienced by organizations have been reported in several papers. These associated consequences of work engagement included in-role performance, organization citizenship, extra-role performance, financial returns, and work effectiveness (Halbesleben & Wheeler, 2008; Halbesleben et al., 2013; Salanova et al., 2011; Sohrabizadeh & Sayfouri, 2014; Wong, Laschinger, & Cummings, 2010; Xanthopoulou et al., 2009). Specific to financial returns, the more engaged workers

were, the higher the financial returns received (Xanthopoulou et al., 2009). In-role

performance, defined as completion of work expected, as well as extra-role performance

and organizational citizenship, were observed in engaged workers (Halbesleben &

Wheeler, 2008; Halbesleben et al., 2013; Salanova et al., 2011; Sohrabizadeh & Sayfouri,

2014; Wong, Laschinger, & Cummings, 2010). Organizational citizenship and extra-role

performance were attributed to employees who had a desire to do what is right for the

organization, going above and beyond, to help others in the organization without being

asked. They also performed above minimum role/job expectations. Particularly, one of

the articles reported voice behavior as a component of organizational citizenship (Wong,

Laschinger, & Cummings, 2010). This component of voice behavior, could be important

to patient quality of care and error reporting, as it is a display of a worker's willingness to

not only go the extra mile for their organization, but to also speak up with ideas and

opinions that might better a situation. Examples of voice behavior were noted as

expression of helpful recommendations to others, suggesting changes toward

improvement of group performance, and speaking up with opinions that might be

different from others' (Wong, Laschinger, & Cummings, 2010).

Research findings from a Portuguese study support the impact of both relational

job characteristics and affective organizational commitment on work engagement

(Santos, Chambel, & Castanheira, 2015). Relational job characteristics involve nurses'

contact with patients and impact on their lives. The study noted that having a more

engaged work-force supports benefits for the patient, nurse, and hospital (Santos,

Chambel, & Castanheira, 2015). An additional study found that work engagement

positively affects work effectiveness (Laschinger, Wilk, & Greco, 2009). Work

effectiveness is important as it represents the achievement of work-related objectives and doing the right thing.

Organizational outcomes associated with nurse work engagement are found in at least seven studies. These studies showed reduced turnover intentions for work-engaged nurses. A longitudinal study of healthcare, education, government, banking, manufacturing, telecommunications, and retail workers found a positive relationship between engaged workers and reduced turnover intentions (Halbesleben et al., 2013). This was also observed in at least two studies with both newly graduated nurses and seasoned nurses in different geographic locations (Van Bogaert et al., 2013; Walker & Campbell, 2013). Reduced turnover intentions were observed in both Belgian, Chinese, and American work-engaged nurses (Brunetto et al., 2013; Van Bogaert et al., 2013; Wan, Li, Zhou & Shang, 2018). However, Australian acute care nurses in the same study did not have the same results against turnover intentions as work-engaged participants from the Belgian and U.S. studies (Brunetto et al., 2013). Finally, an organization-related outcome mentioned in only one reference is work safety. Lowe (2012) examined how job, work surroundings, administration, and workplace aspects sway amounts of engagement amid healthcare workers and found that highly engaged workers were associated with proactive efforts toward a culture of safety. The proactive efforts included ensuring safety toward co-workers, conducting activities to improve patient safety, and reporting medication errors.

Work engagement outcomes associated with nurses were found in several studies. Those studies supported a connection between work engagement and health benefits, less occurrence of burnout, and less presence of compassion fatigue for work-engaged nurses

than for other employees. At least four studies described protective benefits for work-engaged nurses and other employees in the form of fewer reported symptoms of depression (Hakanen & Schaufeli, 2012; Innstrand et al., 2012; Laschinger & Finegan, 2005; Van Bogaert et al., 2013). Two of the four studies were longitudinal studies, which showed that engaged workers did not continue to report symptoms of depression over time (Hakanen & Schaufeli, 2012; Innstrand et al., 2012). Overall, work engagement supported positive health benefits of low anxiety, fewer reports of depressive symptoms, and a reduced risk of poor physical and mental health. Work engagement is considered a proactive condition to help combat issues such as burnout (Innstrand et al., 2012). One study noted that engaged workers showed a decreased occurrence of burnout as well as less compassion fatigue (Mason, 2014).

Work Engagement Literature Review Summary

Research on the factors that influence work engagement is fairly robust. Factors that are associated with high engagement of nurses includes leadership, employee characteristics, empowerment, and good work environment conditions (Bamford, Wong, & Laschinger, 2013; Brunetto et al., 2013; Enwereuzor, Ugwu & Eze, 2016; Giallonardo, Wong, & Iwasiw, 2010; Gillet, Fouquereau, Bonnaud-Antignac, Mokounkolo, & Colombat, 2013; Hagedorn Wonder, 2012; Laschinger & Finegan, 2005; Rivera, Fitzptrick, & Boyle, 2011; Li, Li, & Wan, 2019; Salanova, Lorente, Chambel, & Martinez, 2011; Siller, Dolansky, Clavelle, & Fitzpatrick, 2016; Van Bogaert, Wouters, Willems, Mondelaers, & Clarke, 2013). The noted results span geographic locations, age groups, tenure, settings, and nursing specialties. Among the approaches used to conduct the research were qualitative studies, many observational studies, and a limited number of

intervention studies. Although a number of research studies describe positive outcomes

(i. e. low mortality, low patient complications, nurse-perceived quality of care, high

reported organizational success/profitability, high worker effectiveness and positive

patient perceived interactions with staff) associated with work-engaged nurses, there is a

lack of detailed description regarding specific associations of nurse-related characteristics

with work engagement leading to positive outcomes for both patients and organizations

(Bargagliotti, 2012; Harter, Schmidt, Killam, & Agrawal, 2009; Laschinger, Wilk, &

Greco, 2009; Salanova, 2005; Simpson, 2009; Wong, Laschinger & Cummings, 2010).

There is also some disagreement within the existing literature regarding the presence of

highly engaged nurses and associated patient outcomes, such as patient satisfaction

(Bacon & Mark, 2009; Van Bogaert et al., 2017).

While there is evidence that supports positive benefits of work engagement for

nurses, patients, and organizations, there is a deficient amount of specific research on

engagement of hospital nurses and the relationship to patient quality outcomes such as

patient experience. Therefore, because of this gap in the literature, it is important to

conduct research which focuses on the work engagement of hospital nurses and

associated patient quality outcomes.

Analysis of the Literature: Patient Ratings of Nurse Communication, Overall Hospital

Rating and Likelihood to Recommend the Hospital to Others

Both quality patient care outcomes and the nurses who are part of delivering the

care are important to the healthcare industry. Not only are quality patient care outcomes,

such as patient experience, important to the healthcare industry, they are important to the

patient. Specifically, the quality of patient care can influence patient compliance with

prescribed treatment, improvement of health, and keeping healthcare costs controlled (Otani, Waterman, Faulkner, Boslaugh, & Clairborne, 2010). Over thirty articles were included in patient experience literature review and placed in sub-categories of patient expectations, nurse characteristics, practice environment, communication, patient decision making, selected patient experience subscales and outcomes of patient experience. Studies that focused on patient experience included details about patient ratings of their experience. Unfortunately, less favorable ratings from patients were associated with nurse workforce factors. In fact, one study found that ratings from hospitalized patients were not favorable for items such as pain management and adequate communication from the doctor and the nurse (You et al., 2012). Additionally, the study found the patients' willingness to suggest the hospital to their loved ones was rated unfavorably (You et al., 2012). An overview of the selected patient experience ratings of nurse communication, overall rating of the hospital and likelihood to recommend will be presented.

Patient Experience: Patient Priorities for Care

Patient priorities for care include "respect, courtesy, competence, efficiency, patient involvement in decisions, time for care, availability of nurses and other hospital personnel, information, exploring patient needs and communication" (Robinson, Callister, Berry, & Dearing, 2008, p. 602). Other patient priorities noted in the literature include communication, personable relations, competence, and partnership in health management and decisions (Jennings, Heiner, Loan, Hemman, & Swanson, 2003; Little et al., 2001; Wensing, Jung, Mainz, Olesen, & Grol, 1998). Importantly, communication was noted as a patient priority in multiple studies. Details regarding communication

included being kept informed, attentive interest in patient questions, clear explanations of

medical problems and management, and respect (Jennings, et al., 2003; Little, et al.,

2001; Wensing, et al., 1998). Close to communication were personable relations with

healthcare staff. Personable relations included being treated like one matters, caring

behaviors, personalized care, and friendly behaviors. Some patients shared undesirable

experiences of rudeness and impatience from staff. Patients also shared negative

experiences of feeling like they were treated as a number rather than a person (Jennings

et al., 2003). Competence was also noted as a patient priority. Patients expressed the

importance for staff to know patients' lives are in the healthcare team's hands (Jennings,

et al., 2003). This included competence in use of the healthcare teams' knowledge and

skills (Jennings et al., 2003; Wensing, et al., 1998). The last patient priority theme was

partnership in health management and decisions. Patients held a high priority in being

considered as part of the healthcare team in decision making. Patients expressed the

desire to be part of the decision-making process in their care and included in discussions

regarding their health problem. This included agreement between the patient and the

healthcare team regarding the patient diagnosis or medical problem (Little, et al., 2001).

Other priorities which were mentioned in silos included health promotion,

exploring patient needs, and effective processes for healthcare encounters. Health

promotion was listed as a patient priority in a study which focused on patient priorities in

a primary care setting. The patients described health promotion as receiving information

from clinicians on how to stay healthy and reduce medically related risks (Little, et al.,

2001). Exploring patient needs was also important to patients. This was described as

exploring patients' wishes and needs related to their healthcare and management. The

last patient priority focus was the importance of effective processes for healthcare encounters. This included 1) seeing the same clinicians in each encounter; 2) adequate resources and staffing to meet healthcare needs; 3) access to records; 4) respect of personal time; and finally, 5) effective coordination of care (Jennings et al., 2003).

Nurse Characteristics and Patient Ratings of Their Healthcare Experience

Specific to nursing characteristics, one study showed a relationship between poor ratings of service and patient quality of care with nurse workforce characteristics such as low work role happiness, nurse burnout, and intent to vacate the job (Aiken et al., 2012). The study measured quality of care by the patients' satisfaction with nursing care and their eagerness to suggest the hospital to others (Aiken et al., 2012). The study included surveys from over 131,000 patients from more than 1,100 hospitals in Europe and the United States, and patients' perceptions were similar in both regions. An additional study noted negative patient-rated experience as a result of perceived lack of nurse reliability, responsiveness, assurance and empathy (Uzun, 2001). Last, one source found foreign-educated nurses were negatively and significantly associated with the poor patient experience ratings of nurse communication, communication about medication administration, communication regarding care post hospitalization, overall rating of the hospital, and a low likelihood that the patient would recommend the hospital to others (Mazurenko, 2016). The three studies have in common the lack of patient priorities (Robinson, Callister, Berry, & Dearing, 2008) which was found to negatively affect patient ratings.

Conversely, four studies found positive associations between nursing related care and inpatient perception (Larrabee, & Bolden, 2001; Larrabee, Ostrow, Wiothrow,

Janney, Hobbs, & Burant, 2004; Manookian, Cheraghi, & Nasrabadi, 2014; Uzun, 2001).

An Iranian study found that nurses' commitment to care, as well as their kindness, was

associated with an inpatient perception of dignity (Manookian, Cheraghi, & Nasrabadi,

2014). In line with these positive nursing care effects, nurse reliability and empathy were

both associated with favorable patient satisfaction ratings (Uzun, 2001). Furthermore,

patient descriptions of effective nurse-to-physician collaboration and, nurse

responsiveness to patient needs, including provision of pain relief and accurate

information, were associated with favorable patient-rated hospital stays (Larrabee, &

Bolden, 2001; Larrabee et al., 2004).

Nurse characteristics: work personnel factors. Several work personnel-related

factors influencing patient experience were listed infrequently in the literature. These

included: employee engagement, quality of physician communication, the manner in

which staff assisted patients with pain management, the extent to which hospital workers

communicated regarding new medications, teamwork, and responsiveness of non-nursing

hospital employees and, at discharge, provision of key information. Each of these factors

had a positive association with the patient perception of the overall rating of the hospital

(Kalisch, Curley, & Stefanov, 2007; Press Ganey, 2016; Westbrook, Babkus, & Grant,

2014).

Nurse Communication and Patient Ratings of Their Healthcare Experience

Communication is also known to be associated with aspects of the patient

experience. Five articles associated hospital staff communication with the hospitalized

patients' experience (Doherty & Doherty, 2005; Ferri, Muzzalupo, & DiLorenzo, 2015;

Manookian, Cheraghi, & Nasrabadi, 2014; Nordgren & Bengt, 2001; Williams & Irurita ,

2004). An Australian qualitative study found that the lack of interpersonal

communication with patients inhibited their emotional comfort while hospitalized

(Williams & Irurita, 2004). This was also consistent with Italian and British studies. The

Italian study found a lack of communication regarding explanation of procedures and

consent was associated with an inpatient perception of lack of dignity (Ferri, Muzzalupo,

& DiLorenzo, 2015). The British study found poor nurse communication was associated

with the patient perception of feeling disempowered during the hospital stay (Doherty &

Doherty, 2005). Conversely, both studies found the presence of interpersonal interactions

supported emotional comfort and dignity (Ferri, Muzzalupo, & DiLorenzo, 2015;

Williams & Irurita , 2004). The interpersonal interactions that patients valued from all

staff were described as providing information, non-verbal interactions such as eye

contact, compassionate behavior, close spatial positioning, sensitive tone of voice,

gentleness and concern through touch, active listening, kindness, warm attitudes, and

smiling. Verbal therapeutic interactions included engaging in chitchat, use of

encouraging comments, respectful communication, continuous and frequent contact and

exceeding expectations, which was described as attending to little things (Ferri,

Muzzalupo, & DiLorenzo, 2015; Manookian, Cheraghi, & Nasrabadi, 2014; Williams &

Irurita, 2004). Particularly, respectful communication by nurses was noted in three

studies and associated with an inpatient perception of self-determination and dignity

(Ferri, Muzzalupo, & DiLorenzo, 2015; Manookian, Cheraghi, & Nasrabadi, 2014;

Nordgren & Bengt, 2001).

Practice Environment and Patient Experience Aspects

Practice environment factors and nurse staffing were also associated with aspects

of the patient experience. Patients reported excellence in care and patient contentment in

the presence of low patient-to-nurse ratios and good work environments (Aiken &

Sermeus, 2012). Additionally, three studies found inadequate nurse staffing was

associated with inpatients' perception of disempowerment and lack of dignity (Doherty &

Doherty, 2005; Jha, Orav, Zheng, & Epstein, 2008; Manookian, Cheraghi, & Nasrabadi,

2014). One of the studies indicated the low nurse staffing was associated with patients'

perception of feeling disempowerment related to long waits for nurses to fill requested

needs, as well as an inability to feel involved due to a lack of continuity of care from

having many different nurses (Doherty & Doherty, 2005).

Five studies found associations between hospital work environments and positive

patient- rated experiences (Aiken & Sermeus, 2012; Pearson, Needleman, Beckman &

Han, 2016; Press Ganey, 2015; Stimpfel, Sloane, Mchuch, & Aiken, 2016; You et al.,

2013). Good environments were described as having, high-rated nursing practice

environment measures, low patient-to-nurse ratios, high nurse-assessed hospital patient

safety, and low nurse burnout. Notably, Magnet-accredited hospitals are linked with

better-quality patient outcomes, which include low patient death and high work

fulfillment (Aiken et al., 1999; Aiken, Smith, & Lake, 1994; McHugh, et al.2013;

Gokenbach & Drenkard, 2011; Kelly, McHugh, & Aiken, 2011). One of the sources

found that good work environments were more influential than staffing in regard to

association with high patient experience ratings (Press Ganey, 2015). Another study

found an intervention focused on frontline nursing staffs' active work in change

processes towards work environment and a number of patient care outcomes showed

significant improvements in patients' ratings of nurse courtesy, respect, and careful listening (Pearson, Needleman, Beckman & Han, 2016). In contrast, another study found both good nursing work environments and adequate nurse staffing were needed for high patient experience ratings (Aiken & Sermeus, 2012).

Cleanliness of the environment as well as the patients' perception that a pleasant environment was provided were positively associated with a favorable patient overall rating of the hospital (Larrabee, & Bolden, 2001; Westbrook, Babkus, Grant, & 2014). Last, hospitals known to operate through a philosophy of compassionate practices, in which they reward staff for compassionate patient-related acts as well as support employees in a compassionate manner, significantly and positively influenced patient ratings of the hospital as well as likelihood to recommend (McClelland, & Vogus, 2014).

Patient and Organizational Outcomes: Aspects of the Patient Experience

Many patient experience instruments note sub-dimensions of this concept through subscales. There are six subscales and four individual questions on the Healthcare Consumer Assessment of Hospital Providers and Systems (HCAHPS) patient experience survey: 1) nurse communication; 2) doctor communication; 3) responsiveness of hospital staff; 4) pain management; 5) communication about medications 6) discharge information; 7) cleanliness of hospital environment; 8) quietness of hospital environment; 9) overall rating of hospital; and 10) willingness to recommend the hospital (U.S. Department of Health and Human Services, Medicare.gov, 2017). One study found that predictors of willingness to recommend and overall hospital rating was based on exceptional performance on ratings on the following subscales: 1) nurse communication; 2) doctor communication; 3) responsiveness of hospital staff; 4) pain management; and 5)

communication about medications (Rothman, Park, Hays, Edwards, & Dudley, 2008, p.

2218). Alternately, another study found doctor communication, nurse communication,

pain control, physical environment, and nursing services were the predictors of overall

rating and willingness to recommend the hospital (Arah et al., 2006). A more recent

study that compared HCAHPS data from two separate hospitals found that the scales for

communication with doctors, communication with nurses and pain management, had the

most influence on overall rating of the hospital and willingness to recommend the

hospital to others (Westbrook, Babakus, & Grant, 2014). It was also noted that overall

rating of the hospital positively influenced the patients' willingness to recommend the

hospital to others. Among all of the studies communication with doctors, nurses, and

pain management were found to influence the overall hospital and recommendation of the

hospital to family and friends.

   Likelihood to recommend the hospital to others: patient decision making. There

are many different influences on patients' choice of healthcare providers and systems.

Three of the major sources of influence include word of mouth, physician advice, and

insurance providers (Bahadon et al., 2016; HealthLeaders, 2015). In fact, the

aforementioned sources are more likely to influence patient choice of providers than

quality data from Medicare or popular press (Bahadon et al., 2016; Emmert, Meszmer, &

Schlesinger, 2018; HealthLeaders, 2015). One report indicated that less than 13% of

patients view quality data when making decisions about what providers to use

(HealthLeaders, 2015). Interestingly, when patients do access on-line data, they are just

as likely to use a commercial website as they would a government site (Emmert,

Meszmer, & Schlesinger, 2018; Emmert & Schlesinger, 2017; Yaraghi, Wang, Gao, &

Agarwal, 2018).   It is also thought that patients make provider decisions based on hospital reputation as well as recommendations of family and friends (HealthLeaders, 2015). Additional factors that influenced patients' choice included facilities/physical assets, physicians and employees, location, services, price and promotion (Bahadon et al., 2016). Although word of mouth, physician advice, and insurance-directed providers are likely the top influencing sources for patient choice of healthcare providers, there remains a lack of consensus in the literature.

Patient Ratings Summary

Research has focused on the overall quality of care ratings from patients, more than on the specifics of what comprises quality of care (Otani, Waterman, Faulkner, Boslaugh, & Clairborne, 2010). In fact, findings from one study suggest that nursing care attributes are more influential than non-nursing staff care attributes in patient perception of overall quality of care. However, this study also found that non-nursing staff care attributes influenced the patient's eagerness to suggest the hospital to others (Otani, Waterman, Faulkner, Boslaugh, & Clairborne, 2010). This information is important to healthcare stakeholders and may likely encourage hospital managers to improve staff care attributes identified by patients versus making improvements based on the managers' priorities. However, it remains unclear which parts of quality care are affected the most by nursing care attributes and what aspects of care delivery influence quality care the most. It would be of interest to learn whether nurse work engagement affects patient experience. Quality outcomes, such as patient experience, in conjunction with nurse workforce related factors, such as work engagement, have been understudied (You et al.,

2012). Therefore, this study sought to add understanding of the relationship between nurse workforce-related factors and patient experience.

Conceptual Framework

The conceptual model that supports this study is the Work Engagement Patient and Organization Outcomes Model. The model was adapted from the Work Engagement Model developed by Wilmar Schaufeli (2014), who is internationally known for his research on work engagement. The adapted model builds on past research associating positive outcomes with work engagement. Specifically, the adapted model shows the potential influence work engagement may have on patients' ratings of the overall hospital and the likelihood that patients may recommend the hospital to friends and family. Based on its influence on work engagement and patient experience ratings, nursing practice environment is also included in the adapted model. Additionally, nurse characteristics and patient related variables of unit type/specialty and acuity/case mix index are added based on their influence on patient experience ratings. Last, the Donabedian Structure, Process, and Outcomes (Donabedian, 1966) model is incorporated to help describe the process interaction among the variables. An overview of the background models and evolution of the Work Engagement Patient and Organization Outcomes Model will be described.

Background Model: Schaufeli's Work Engagement Model

Schaufeli's Work Engagement Model is based on Demerouti and colleagues' Job Demands-Resources model of burnout (JD-R) (Demerouti, Bakker , Nachreiner &

Schaufeli, 2001). The Work Engagement Model emerged from additional research by

Schaufeli which separated work engagement as a distinct concept from burnout. Most of

the early literature on work engagement is associated with burnout (Schaufeli, Salanova,

Gonzalez, & Bakker, 2002). As the burnout and work engagement literature has evolved,

work engagement is understood in the literature in two ways (Van Bogaert, Wouters,

Willems, Mondelaers, & Clarke, 2013). One view positions work engagement and

burnout on one continuum and relating to each other as antipodes. The other perspective

is that work engagement is a separate concept from burnout. When it is understood as a

distinct concept, although work engagement is often negatively correlated with burnout,

the absence of burnout does not constitute the existence of work engagement (Schaufeli

et al., 2002).

   The JD-R model as a foundation of the work engagement model. The JD-R model

includes the demands and resources of a job and how they relate to the work experience

of an employee (Demerouti, Bakker , Nachreiner & Schaufeli, 2001). Although first used

to describe burnout when it was introduced over two-and-a-half decades ago, the JD-R

model has since been used to inform hundreds of empirical studies and the work of

government agencies and international occupational health and safety agencies regarding

work wellbeing (Bakker & Demerouti, 2016). The general premise of the JD-R model is

based on two categories of working conditions identified as job demands and job

resources (Bakker & Demerouti, 2016). These two broad categories are known to apply

to various occupational roles but specifically to workers who work with things,

information, and people (Demerouti, et al., 2001). The JD-R model describes physical,

psychological, social, and organizational aspects of work, such as the physical and mental

cost and effort associated with work (Demerouti, et al., 2001). More descriptively, job

demands include aspects such as work time constraints and limitations, as well as mental

and physical challenges related to work (Demerouti, et al., 2001). Furthermore, work

resources are described as control, autonomy, support, value fit, trust, and congruence

between personal and organizational values (Bakker & Demerouti, 2016).

Adaptations to the JD-R model to create work engagement model. The Work

Engagement Model includes job challenges and demands and resources from the JD-R

model. Schaufeli enhanced the JD-R model to include leadership, personal resources,

work engagement, and outcomes (Schaufeli, 2014). In this model, the job resources and

demands are captured together in one domain to suggest that some combination of the

two entities leads to work engagement (Schaufeli, 2014). Different from the JD-R model,

the work engagement model includes leadership. Leadership overlays the domains of the

JD-R model as a potential mediator to work engagement and personal resources

(Schaufeli, 2014).

Heavily noted in the literature as an antecedent to work engagement, leadership

includes support felt from the leader as well as the style of leadership, which usually is

transformational and authentic (Bamford et al., 2013; Laschinger, 2012; Othman &

Nasurdin, 2013; Rivera et al., 2011; Salanova et al., 2011; Sohrbizadeh & Sayfouri, 2014;

Van Bogaert et al., 2013; Van Bogaert, Clark, Willems, & Mondelaers, 2013; Wang &

Liu, 2015; Wong, Laschinger, & Cummings, 2010). Additionally, the connection of

leadership and personal resources with a balance of job challenges and work resources

leads to work engagement. Individual resources, thought to be associated with work

engagement, are described as personal stability, extroverted personality, optimism, confidence, and having high work standards (Bjarnadottir, 2011; Collini, Guidroz, Perez, & Lisa, 2015; Palmer, Quinn-Griffin, Reed, & Fitzpatrick, 2010; Rivera et al., 2011; Setti & Argentero, 2011; Van Beek et al., 2012; Vinje & Mittlemark, 2008 ; Wang & Liu, 2015). All of the descriptors of personal resources are positive employee attributes. The final portion of the model shows a direct connection between work engagement and outcomes. That is, work-engaged employees influence outcomes specific to the patient, nurse, and organization.

Work Engagement Patient and Organization Outcomes Model

The Work Engagement Patient and Organization Outcomes Model seeks to offer a deeper examination of the relationship between nurse work engagement and patient and organizational outcomes. The adapted model shows additional variables to consider when examining any relationship between nurse work engagement and patient outcomes. With the inclusion of practice environment, context (structure, process and outcomes), and patient and nurse-related control variables, a more exact relationship among these elements may be discovered.

The model begins with nurse work engagement. The nurse work engagement constructs of vigor, dedication and absorption are associated with the engaged worker's in-role performance, organization citizenship, and extra-role performance (Halbesleben et al., 2013; Salanova et al., 2011). These components are important when it comes to the interaction of the patient and the nurse, in that they are associated with completion of work expected, a desire to do what is right for the organization, going above and beyond

56

to help others in the organization without being asked, and performing above minimum role/job expectations. Behaviors associated with the aforementioned work components are those which characterize work engagement, such as high personal and work ethic values, connection of meaningful work, having feelings of joy, and connection to the belief in the integrity of high organization values (Bjarnadottir, 2011; Collini, Guidroz, Perez, & Lisa, 2015; Palmer, Quinn-Griffin, Reed, & Fitzpatrick, 2010; Setti & Argentero, 2011; Van Beek et al., 2012; Vinje & Mittlemark, 2008; Wang & Liu, 2015).

Additionally, high job involvement, social intelligence, and emotional intelligence are linked to work engagement (Adriaenssens et al., 2011; Kuhnel et al., 2009; Vinje & Mittlemark, 2008; Walker & Campbell, 2013; Wang & Liu, 2015; Wonder, 2013; Zhu, Liu, Guo, Zhao, & Lou, 2015). Social intelligence, the ability to get along well with others and elicit their cooperation, could be considered an important skill to have when working with patients (Social Intelligence Theory, 2004). Furthermore, emotional intelligence is another important skill as it represents the capacity to be aware and in control of one's expression of emotions and to handle interpersonal relationships judiciously and empathetically (Psychology Today, 2017). The combined richness of the many described characteristics and behaviors associated with work engagement translates through nurse-to-patient interaction and may influence the patient's ratings of nurse communication. In addition, based on past research that supports work-engaged employees' influence on organizational outcomes, the work-engaged nurse may also influence patient ratings of the overall hospital and their willingness to recommend the hospital to others.

The Donabedian Structure, Process, and Outcomes (Donabedian, 1966) model is incorporated to help describe the interactions among the variables. The Donabedian framework includes the concepts of structure, process and outcomes (Gardner, Gardner, & O'Connell, 2014). The framework is linear and demonstrates how structure can influence process and process can influence outcomes. Practice environment is included in the model based on the impact it has on both the work engagement of the nurse and the ratings of hospitalized patients (Aiken & Sermeus, 2012; Doherty & Doherty, 2005; Havens, Warshawsky, & Vasey, 2013; Jha, Orav, Zheng, & Epstein, 2008; Manookian, Cheraghi, & Nasrabadi, 2014; Van Bogaert et al., 2013; Van Bogaert et al., 2013; Wang & Liu, 2015) . For the purpose of this research, process is thought to be contextual features of the work environment within which care processes take place, which may further explain why and how nurse work engagement may influence patient ratings and perceptions. Due to the potential influence of patient unit specialty, case-mix index, and nurse characteristics on the patient and organizational outcomes, they are included in the model.

In the last part of the Work Engagement Patient and Organization Outcomes Model, the influence of the work-engaged nurse-to-patient interaction along with the documented association of work engagement and financial organizational success, will be explained. With regard to inpatient hospital care, not only are nurses the largest hospital staff group, they also are the main communicators to patients and generally spend the most time with patients (Chau et al., 2015). For this reason, there is a likelihood the nurse may influence the patient's perception of the entire hospital stay. Few studies support organizational gains as a result of work engagement. However, work

engagement has been positively correlated with self-rated performance, which may be important for an organization, in that it would support the assertion that employees are productive (Lorente, 2014). Another source notes increased financial profits as a result of highly engaged workers (Xanthopoulou et al., 2009). Finally, one study found that the extra-role performance as rated by managers of engaged workers was high and exceeded contributions of employees who indicated a high satisfaction with their jobs (Eldor & Harpaz, 2016). Work engagement may indeed influence patients' ratings of the hospital and impact organizational outcomes such as the likelihood of patients recommending their hospital. Figure 5 shows the Work Engagement, Patient and Organization Outcomes Model.

Work Engagement, Patient and Organization Outcomes Model
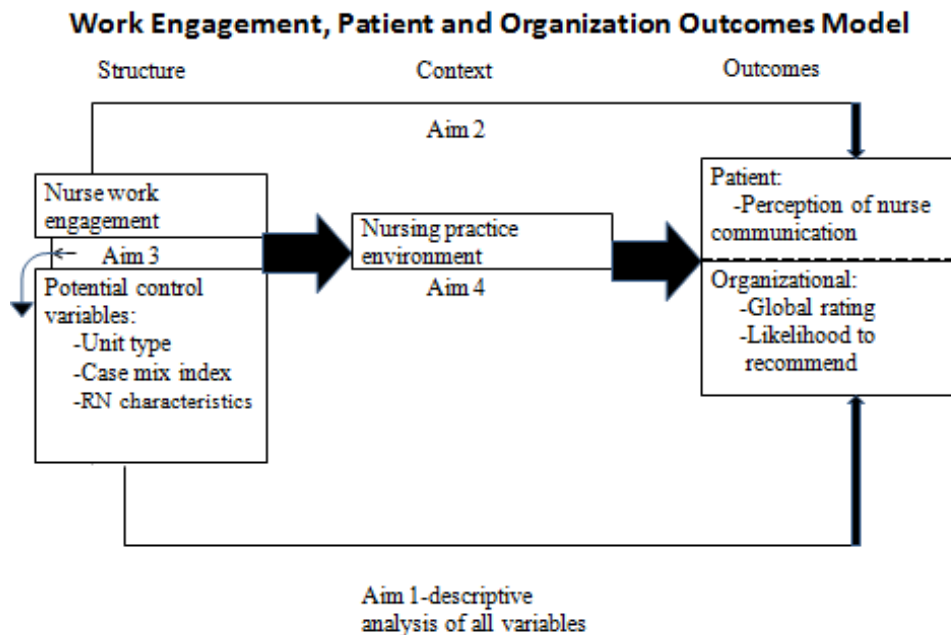
Figure 5. Work Engagement, Patient and Organization Outcomes Model

Summary

Chapter Two presented a comprehensive review of the current state of literature for both nurse work engagement and patient experience. In addition to the evidence presented through the literature reviews, the conceptual frameworks show the evolution of work engagement and the current need for the proposed study. The gaps in the previous research on nurse work engagement and patient experience justify the need for the current study. Chapter Three will provide detail for the research methods that will be used to address the research questions and aims.

CHAPTER 3

The purpose of Chapter 3 is to describe: 1) the research study sample, 2) instruments, 3) data collection, 4) data analysis plan, 5) study reliability and validity, 6) informed consent, and 7) human subjects' protection.

Healthcare organizations are responsible for delivering safe, quality nursing care with the expectation of exceptional patient outcomes (Bargagliotti, 2012). Specifically in hospitals, nurses spend the most time with patients and thus, nurses play a key role in achieving patient-centered outcomes in hospitals (Chau et al., 2015). Additionally, United States (U.S.) healthcare systems are expected to provide excellent patient outcomes in a cost effective manner. Healthcare spending in the U. S. is at an all-time high. The Gross Domestic Product (GDP) for healthcare in the U.S. is 18%, which, for example, includes Medicare payments totaling $110 billion for inpatient services in 2014 (Medicare Payment Advisory Commission, 2016). Although the U.S. has the highest GDP in the world, its health outcomes are not better than those in other developed countries.

In response to high healthcare costs and a desire to place a high priority on patient health outcomes, the U.S. government enacted Value-Based Purchasing (VBP) as a mechanism to pay hospitals for high performance in patient outcomes (Centers for

Medicare and Medicaid Services, 2012). As a consequence of VBP, hospitals not

meeting outcome measures, such as patient experience, incur a 2% reduction in Medicare

payment. In fact, in 2013 over half of all hospitals in the VBP program lost some portion

of Medicare reimbursement, with an estimated total reduction in payment of over $900

million (Centers for Medicare and Medicaid Services, 2015; Herman, 2013).

Centers for Medicare and Medicaid Services (CMS) evaluates and reimburses

hospitals nationwide based on a number of quality indicators. One of these indicators is

patient experience, as measured nationally by the Hospital Consumer Assessment of

Healthcare Providers and Systems (HCAHPS) survey (CMS, 2015). Communication

from healthcare providers, including nurses, is central to numerous items on the survey

(Wolosin, 2012). Since nurses are the main communicators to patients and families of

vital information about care and recovery, they play a critical role in achieving successful

patient experience scores on HCAHPS (Gormley, Costanzo, Goetz, Isreal, Hill-Clark,

Pritchard, & Staubach, 2019; Kennedy, Craig, Wetsel, Reimels, & Wright, 2013).

Despite the important role nurses have in patient communication, the specific factors that

influence nursing communication are unknown. Additionally, the nursing practice

environment has been shown to affect patient ratings on the HCAHPS (Kutney-Lee et al.,

2009). While favorable nursing practice environments yield positive HCAHPS ratings,

the specific mechanisms that facilitate these positive outcomes are unknown.

Consequently, it is unclear whether nurse-patient interactions, such as effective nursing

communication, affect the patient experience perception.

A concept that has shown promise in nurse-rated quality of patient care and

positive nurse attitudes toward their patients is work engagement (Freney & Fellenz,

2013; Mahiro, Takshi, & Satoko, 2014; Van Bogaert et al., 2013; Van Bogaert et al., 2013). Work engagement, defined as "a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004, p. 5), may be one precursor of effective nurse-to patient communication. The level of work engagement of nurses may be central to both the experience of patients (Kutney-Lee, McHugh, Sloane, Cimiotti, Flynn, Neff & Aiken, 2009) and the effectiveness of organizations (Chau et al., 2015; Freney & Fellenz, 2013; Hakanen & Schaufeli, 2012; Halbesleben, Shanine, & Wheeler, 2013; Innstrand, Langballe, & Falkum, 2012; Salanova, Lorente, Chambel, & Martinez, 2011; Van Bogaert, Clark, Willems, & Mondelaers, 2013; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Nurse work engagement has been linked to organizational success, better work performance, lower patient mortality rates, increased organizational financial profits, and improved patient safety and quality outcomes (Bargagliotti, 2012; Carathon, Hatfiend, Plover, Dierkes, Davis, Hedgeland, Sanders, Visco, Holland, Ballinghoff, Guidice, & Aiken, 2018; Simpson, 2009).

As a result of the measures to control costs and incentives to U.S. hospitals to improve performance in patient outcomes, there is a need for studies to explore factors that impact patients' hospital experience and subsequent ratings on HCAHPS. In the inpatient setting, nurses generally spend the most time with patients and play a key role in whether or not patients have a good experience with their care (Chau, et al., 2015). Based on the centrality of communication to the patients' hospital ratings, this study will explore whether nurse work engagement has any association with hospitalized patients' ratings of nurse communication as well as their hospital experience overall. Furthermore,

due to the influence that the nursing practice environment exerts on HCAHPS ratings, this study will examine the effects of the nursing practice environment on the relationships between nurse work engagement and patient ratings of aspects of their care. Additionally, because HCAHPS ratings are influenced by patient related factors (severity of illness and intensity of care) this study adds, a control for patient-related factors (case mix index and unit specialty type). A cross-sectional, correlational design is used to address the aims and research questions of the proposed study.

Study Aims and Research Questions (RQ)

The aims and research questions for the study are as follows:

Aim 1: To determine, by unit and hospital, the level of nurse work engagement; the nursing practice environment scores; and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ1: At the unit and hospital levels, what is the level of nurse work engagement, nursing practice environment scores, and patients' ratings of nurse communication, overall hospital rating, and likelihood to recommend the hospital to others?

Aim 2: To determine the association of nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ2a: What is the association between nurse work engagement and patients' ratings of nurse communication?

RQ2b: What is the association between nurse work engagement and patients' ratings of the overall hospital stay?

RQ2c: What is the association between nurse work engagement and patients'
ratings of the likelihood to recommend the hospital to others?

Aim 3: To determine if nurse work engagement predicts the patients' ratings of nurse
communication, overall hospital stay, and likelihood to recommend the hospital to others
when controlling for hospital characteristics (case mix index and unit specialty type) and
nurse characteristics (i.e., age, gender, magnet status (magnet or non-magnet hospital),
employment status (full-time, part-time), education status (diploma, ADN, BSN, MSN),
marital status (married, not married), primary shift worked (day, evening, night shift),
and primary shift length (8 hours, 10 hours, 12 hours).

RQ3a: Does nurse work engagement predict the patients' ratings of nurse
communication, when controlling for unit characteristics (case mix index and unit type),
and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital],
employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN],
marital status [married, not married], primary shift worked [day, evening, night shift],
and primary shift length [8 hours, 10 hours, 12 hours])?

RQ3b: Does nurse work engagement predict patients' ratings of the overall hospital
stay, when controlling for unit characteristics (case mix index and unit type), and nurse
characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment
status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status
[married, not married], primary shift worked [day, evening, night shift], and primary shift
length [8 hours, 10 hours, 12 hours])?

RQ3c: Does nurse work engagement predict patients' ratings of the likelihood to
recommend the hospital to others, when controlling for unit characteristics (case mix

index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

Aim 4: To determine whether nursing practice environment mediates the relationships between nurse work engagement and: a) patients' ratings of nurse communication, b) overall hospital stay, and c) likelihood to recommend the hospital to others. Path analysis via structural equation modeling (SEM) robust to non-normality was used to address aim 4.

RQ4a: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of nurse communication?

RQ4b: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the overall hospital stay?

RQ4c: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Sample

The target population for the study is registered nurses (RNs) who work in an inpatient hospital setting. The inclusion criteria for this convenience sample of hospital-based RNs are: 18 and older, and those who work at least 80% of the time in direct care with patients. Exclusion criteria include nurses who are formally designated as leaders

by job title such as, but not limited to, nurse managers, nurse executives, charge nurses

who are not assigned to patients 80% of the time and unlicensed personnel who have the

name nurse in their title. Hospital nurses who work in procedural, critical care,

emergency department, labor and delivery and non-bedded units (patient locations which

are not inpatient) were excluded.   Direct care advanced practice nurses were also

excluded from the study. In addition to the nurse data, hospital acquired patient hospital

experience survey data were also used and is described as follows.

        The patient survey data, was obtained from the hospital. The data were available,

relatively, in real time with surveys available approximately 24-48 hours after a patients'

stay. The data were de-identified and linked to the patient's hospital unit of discharge via

the patient financial identification number. The financial identification number was not

included in the aggregate unit level report and therefore was anonymous upon data

retrieval. The hospital samples 100% of patients and has a range of 18% to 28% survey

response rate across the hospitals. Thirty percent of patients receive paper surveys and

the rest of patients receive electronic (email) surveys. The only patients who do not

receive surveys are those who are deceased upon discharge and those who were re-

admitted within the last month. The data were retrieved by the patient discharge date

which was matched with the same time of the nurse work engagement survey. A period

of one month after the data collection ended was allotted for any additional surveys that

may have come with a discharge date during the data collection time frame. The case

mix index data were obtained from the hospital and was de-identified and linked to the

patient's hospital unit.

Sample size calculations for hierarchical modeling statistical analysis plan are suggested as 30-50 groups for a small to medium effect size (Maas & Hox, 2005). For the study the number of groups (hospital units) is 54, which falls within the range of an adequate sample size for a two-level model (patient/nurses as level 1 and units as level 2).

Study Setting, Access to Study Site, and Recruitment Strategies

Nurse participants were recruited from an academic hospital system that comprises five hospitals in central Georgia. Across the hospitals there were fifty-four units and approximately three thousand nurses. Meetings were requested with: 1) the chief nurse executive (CNE) officer and the nurse research council chair to give information about the study and to request permission to conduct the study within their healthcare system; 2) the department and unit-level managers of each hospital to provide information about the study; 3) the hospital volunteer program manager to request assistance with posting research study flyers in each unit of each hospital; 4) the manager of the data analytics office to gain access to the patient case mix index information and finally, 5) the manager of the service performance office to gain access to the HCAHPS anonymous inpatient experience survey.

Gaining buy-in/support for the study at all levels (administrator, manager, and staff nurse), as well as identifying barriers and accelerators for study participation from study population community representatives (staff nurses), has shown to positively impact the success of recruiting an adequate number of participants (Drews, et al.; Fuqua, et al, 2005). For this reason, prior to recruitment, recruitment strategy forums were held prior to the study. During the sessions, potential nurse participants were asked how they would prefer to receive the study link as well as to identify barriers to completing the

survey. Additionally, the researcher asked unit-level nurses the best locations to post the

study flyer and reminder cards on the units. The recruitment strategies were determined

based on the input from the meetings with nurses. Recruitment strategies included: a

weekly study participation invitation email, flyers, word of mouth, and reminder cards.

For participant convenience in accessing the survey by mobile phone, a Quick Response

(QR) code was included on the flyers and reminder cards. The QR code allowed for

quick and easy access to the survey, versus having to log into an email account to access

the survey link. A text to short code number was also provided for nurses to receive an

automated link to the survey. All flyer, email, and reminder card messages were

Institutional Review Board (IRB) approved. Once IRB approval was received to conduct

the study, the researcher worked with hospital administrative support staff at the system

level to have the invitation email distributed via the email list serve of RNs at each

hospital. A designated hospital volunteer assisted the researcher to post flyers and

reminder cards on each unit at their respective hospital at the preferred location indicated

at the forum.

    The study flyer and email invitation contained a description of the study purpose,

potential implications for nursing practice, as well as the plan for unit-level data to be

given back to the units as information that can be used toward future quality-related

projects and improvements. The study flyer and email invitation contained a message

that participants were not to complete the study during work time and that accessing the

link served as consent to participate in the survey. Additionally, the principal

investigator's contact information was provided in the flyer and email. A weekly follow-

up email was sent to the Chief Nurse Executives' administrative assistant, unit and

department level managers, and the unit volunteers to address any questions related to the

study. A weekly reminder email was sent via the hospital system administrative staff to

nurse participants inviting them to participate in the survey. The recruitment period

started on January 1, 2019, and remained open to February 28, 2019. The patient data

were acquired from the hospital during the same time period. The reminder cards were

sent by email and placed on units every one to two weeks during the enrollment period.

The researcher visited the units' day, night, and weekend huddles to encourage

participation and remind potential participants where and how to access the study survey.

Table 2 lists A the hospital units, bed size, unit type and number of nurses.

Table 2

List of Eligible Hospital Units, Bed Size, Unit Type and Number of RN's

Unit	Number of Beds	Unit Type	Number of RN's
Hospital A	61	Unit Type	108
Unit a1	36	Medical	51
Unit a2	12	Surgical	47
Unit a3	13	Obstetrics	10*
Hospital B (3 units)	56	Unit Type	44
Unit b35	14	Orthopedics	7*
Unit b36	23	Orthopedics	10*
Unit b37	19	Orthopedics	27
Hospital C (15 units)	384	Unit Type	450
Unit c4	26	Cardiovascular	38
Unit c5	12	Medical/Surgical	32
Unit c6	34	Medical/Surgical	41

Unit c7	38	Cardiology/Coronary	52
Unit c8	50	Medical/Surgical	44
Unit c9	24	Nephrology	28
Unit c10	50	Medical	46
Unit c11	24	Nephrology	19
Unit c12	26	Oncology	34
Unit c13	9	Obstetrics	2*
Unit c14	21	Obstetrics	52
Unit c15	18	Obstetrics	35
Unit c16	8	Obstetrics	14
Unit c38	25	Medical/Surgical	7*
Unit c39	19	Medical/Surgical	6*

Hospital D (14 units)	304	Unit Type	361
Unit d21	19	Medical/Surgical	42
Unit d22	20	Telemetry	43
Unit d23	22	Medical/Surgical	33
Unit d24	22	Telemetry	19
Unit d25	22	Medical/Surgical	13
Unit d26	18	Vascular Surgery	10
Unit d27	22	Urology/Renal	38
Unit d28	21	Orthopedics	34
Unit d29	28	Medical/Surgical	33
Unit d30	23	Medical/Surgical	11*
Unit d31	23	Medical	6*
Unit d32	21	Medical	29
Unit d33	21	Oncology	22
Unit d34	22	Medical/Surgical	28

Hospital E (16 units)	477	Unit Type	750
Unit e40	24	Medical	40
Unit e41	16	Medical	26
Unit e42	10	Medical	19
Unit e43	23	Surgical	35
Unit e44	48	Oncology	77
Unit e45	24	Cardiology/Coronary	43
Unit e46	22	Cardiology	25
Unit e47	31	Medical	41
Unit e48	22	Medical/Surgical	40
Unit e49	40	Transplant	45
Unit e50	16	Medical/Surgical	26
Unit e51	48	Medical	51
Unit e52	30	Surgical	78
Unit e53	22	Oncology	52
Unit e54	18	Surgical	29
Unit e55	24	Oncology	38
Unit e57	24	Neuro-Sciences	39
Unit e58	11	Medical/Surgical	9*
Unit e59	24	Medical/Surgical	37
Totals	1282		1713

(*= unit had open vacancies for RN positions, number reflects current number of RN's)

Data Collection

Data collection from nurse participants included the use of demographic items,

Utrecht Work Engagement Survey (UWES-9) questionnaire as well as the Practice

Environment Survey of the Nursing Work Index (PES-NWI) questionnaire. The demographic questions include: unit location (unit specialty), magnet status (magnet or non-magnet hospital), employment status (full-time, part-time), education status (ADN, BSN, MSN), marital status, primary shift worked (day, evening, night shift), and primary shift length (8 hours, 10 hours, 12 hours). The UWES-9 Survey will be used to assess the level of work engagement of nurses. The PES-NWI will be used to assess the nurse perception of the nursing practice environment.

Data collection for the patient experience data were acquired from the HCAHPS data by way of a service performance office-designated staff member and included a unit-level monthly summary of individual patient surveys received during the time of the study. The HCAHPS data were aggregated by month and unit. The case mix index was retrieved from the hospital system's office of Data Analytics. The HCAHPS and case mix index data were available from hospital real time and available within the enrollment time frame at the unit level.

Research Study Variables and Instruments

The study variables included hospital nurse demographics, nurse work engagement levels, practice environment, unit case mix index, unit specialty type, unit-level inpatient ratings of nurse communication, and patient overall hospital ratings, including patients' likelihood to recommend the hospital to others. Three self-report questionnaires, a hospital nurse demographic survey and the Utrecht Work Engagement Survey 9 (UWES-9) and the Practice Environment Survey of the Nursing Work Index (PES-NWI) were administered to nurses (see Appendix C, D and E for surveys).

Selected HCAHPS inpatient hospital ratings were retrieved from the study hospitals'

service performance office (see Appendix F inpatient hospital rating questions).

Nurse data-nurse demographic survey. A nine-item survey was administered to

assess nurse demographics: unit location (unit specialty), age, gender, magnet status

(magnet or non-magnet hospital), employment status (full-time, part-time), education

status (diploma, ADN, BSN, MSN), marital status, primary shift worked (day, evening,

night shift), and primary shift length (8 hours, 10 hours, 12 hours) (Appendix C). There

is no specific validity and reliability assessment measures for the nurse demographic

survey. The demographics were chosen based on basic relevant details applicable to

work engagement and the study aims.

Nurse data-work engagement survey. Hospital nurse work engagement were

measured with the UWES-9, a 9-item self-report instrument. The UWES-9 has three

subscales (vigor, dedication and absorption) and is scored on a 6-point Likert scale, from

0-never to 6-always (Appendix D). Both validity and reliability of the UWES-9 have

been assessed. A confirmatory factor analysis (CFA) was performed to assess validity

(Van Bogaert, et al., 2013). The results of the CFA (Appendix F) showed a comparative

fit index (CFI) of .917, incremental fit index (IFI) of .918, and the root mean square error

of approximation (RMSEA) of .060, which are acceptable for demonstrating validity.

UWES-9 was assessed for reliability using internal consistency, represented by

Cronbach's alpha. The Cronbach's alpha was reported as .86, .87, and .80 respectively

for the UWES-9 subscales of vigor, dedication and absorption (Van Bogaert et al.,

2013).

Nurse data-nursing practice environment survey. Practice environment of the nurses was measured with the PES-NWI, a 31-item self-report instrument. The PES-NWI has five subscales (nurse participation in hospital affairs, nursing foundations for quality of care, nurse manager ability, leadership, and support of nurses, staffing and resource adequacy, and collegial nurse-physician relations) and is scored on a 4-point Likert scale, from 1-strongly disagree to 4-strongly agree. Both validity and reliability of the PES-NWI have been assessed. A confirmatory factor analysis (CFA) was performed to assess validity (Swiger, Raju, Breckenridge-Sproat, & Patrician, 2017). The results of the CFA (Appendix G) showed a comparative fit index (CFI) of .87 and the root mean square error of approximation (RMSEA) of .070, which are acceptable for demonstrating validity. PES-NWI was assessed for reliability using internal consistency, represented by Cronbach's alpha. The Cronbach's alpha was reported as .83, .80, .84, .80, and .71 respectively for the PES-NWI subscales of nurse participation in hospital affairs, nursing foundations for quality of care, nurse manager ability, leadership, and support of nurses, staffing and resource adequacy, and collegial nurse-physician relations (Lake, 2002). The Cronbach's alpha was reported as .82 for the PES-NWI composite score.

Patient data-patient experience survey. The selected patient experience ratings were measured by the HCAHPS survey. The patient experience data were retrieved from the HCAHPS survey, a 32-item survey with seven subscales, two of which will be used for this study: a multi-item subscale of nurse communication and two single item global hospital rating (overall rating of care and likelihood to recommend the hospital) (Appendix F). Validity and reliability assessment for the HCAHPS includes a CFA for validity and an assessment of internal consistency reliability using Cronbach's alpha. For

the CFA validity assessment of the HCAHPS, a hypothesized relationship was set up in a

model which suggested patient perception of quality communication by the nurse

positively impacts their overall global rating of the hospital (Westbrook, Babakus, &

Grant, 2014). A second hypothesis was suggested that the patients' overall quality

perception of the hospital positively impacts their willingness to recommend the hospital

(Westbrook, Babakus, & Grant, 2014). The CFA (Appendix F) selected fit indexes

were a RMSEA of .062, GFI (goodness of fit) of .95, NFI (normed fit index) of .98,

NNFI (nonnormed fit index) of .98, and CFI of .99, indicating a good fit and acceptable

thresholds of validity for the nurse communication items and global rating questions

(Polit & Yang, 2016; Westbrook et al., 2014). The validity findings support the

convergent validity, which represents construct validity of the nurse communication as

well as the global rating multi-item subscales. The internal consistency reliability

coefficient (coefficient alpha/Cronbach's alpha) for the multi-item measure nurse

communication section was .77 (Westbrook, Babakus, & Grant, 2014). Table 3 displays

the conceptual definitions, instruments and scoring for nurse and hospital variables.

Table 4 displays the conceptual definitions, instruments and scoring for patient ratings.

Table 3

Variable, Conceptual Definition, Measurement Instrument, and Empirical Indicator-Nurse and Hospital

Variable	Conceptual Definition	Instrument	Scoring
Work engagement	"a positive, fulfilling work-related state of mind characterized by vigor, dedication, and absorption" (Schaufeli & Bakker, 2004. p. 5).	Utrecht Work Engagement Survey (UWES-9)	Unit/Hospital average of composite (overall and subscales) UWES-9 score
Practice Environment	The nursing practice environment encompasses the aspects within the workplace that either assist or impede nurses in their everyday work (Lake, 2002; Shang, Friese, Wu, & Aiken, 2013).	Practice Environment Scale (PES-NWI)	Unit/Hospital composite score (favorable, unfavorable or mixed)
Case Mix-Index	A description of severity of patient diseases and health issues in a medical care environment which is used to allocate resources to care for and treat patients in the group (Center for Medicare and Medicaid Services, 2015; Hornbrook, 1985).	Case Mix-Index	Unit/Hospital n/a (score is given to researcher for unit/hospital case mix-index)
Unit Type	The unit's descriptor of the type of patient population hospitalized by medical diagnosis.	Demographic Survey	Unit type n/a
Nurse Characteristics	The demographic and work related details that describe the nurse participants in the study.	Demographic Survey-The demographic detail descriptions include unit location (unit specialty), age, gender, magnet status (magnet or non-magnet hospital), employment status (full-time, part-time), education status	n/a

	(diploma, ADN, BSN, MSN), marital status, primary shift worked (day, evening, night shift), and primary shift length (8 hours, 10 hours, 12 hours).		

Table 4

Variable, Conceptual Definition, Measurement Instrument, and Empirical Indicator-Patient Ratings Data

Variable	Conceptual Definition	Instrument	Scoring
Nurse Communication	The patient's perception of how nurses show behaviors such as respect and dignity which includes proper manners and social interactions. Careful listening as well as simple explanation of related medical care (Press Ganey, 2014).	Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS)	Unit/Hospital top box ratings percentage for nurse communication (the score represents the percentage of patients who gave the top box rating)
Overall Rating of Hospital	A synopsis of the care encountered during the hospital stay (Press Ganey, 2014).	Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS)	Unit/Hospital top box ratings percentage for overall rating of hospital
Likelihood to Recommend the Hospital to others	The patient decision as to whether they relay to others their perception of either a bad or good overall hospital experience (Press Ganey, 2014).	Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS)	Unit/Hospital top box ratings percentage for likelihood to recommend (the score represents the percentage of patients who gave the top box rating)

Data Collection and Security

Nurse Data Collection

The nurse participants received the survey via email, QR code, or through the URL survey link on the flyer. The administrative assistant to the Chief Executive Nurse Officer holds an email list serve for all nurses who work at each hospital within the healthcare system. The email message and flyer were sent to the administrative assistant and emails came from her to participants on the researchers' behalf. No direct list of emails was issued to the researcher. The original email message was the first information seen upon accessing the link to provide information about the study and indicated that accessing the survey link served as consent to participate in the study. The researcher used a survey-generating application, Survey Monkey, to house the survey results, create the URL link, issue the QR code, and store the survey results. The survey was anonymous, and access to the survey results were password protected. Only the PI and the dissertation committee will had access to the survey data. Data stored with Survey Monkey is password protected, with data storage centers in the United States which are monitored by twenty-four hour per day by cameras, visitor logs, and data center entry requirements, with redundant internal and external power supplies and back-up power with diesel generators and back up batteries (Survey Monkey, 2017).

Hospital Acquired Patient Survey Data

The researcher notified the Office of Service Performance of the unit and hospital level data needed based on the location identified by the nurse participants from the nurse

demographic survey. The Office of Service Performance sent an electronic file of the

patient survey data. The patient survey is anonymous and only listed with the number of

responses as well as the ratings provided by patients at the hospital and unit levels. Only

the PI and the dissertation committee will had access to the electronic file. The file was

stored on a password protected data server.

<div align="center">Reliability and Validity of Proposed Study</div>

The purpose of the study was to explore the association between nurse work

engagement and the hospitalized patients' perception of the inpatient experience of nurse

communication, the overall hospital rating and the likelihood to recommend the hospital

to others. Having an adequate tool to measure work engagement operationally is

essential to accurately assess levels of work engagement. An important aspect of

evaluating a measurement instrument is to understand its validity and reliability (Polit &

Yang, 2016). All instruments (Appendix C, D, and E) for the proposed study have been

shown as psychometrically valid and reliable (Lake, 2002; Van Bogaert, et al., 2013;

Westbrook, et al., 2014). In addition to the use of valid and reliable instruments, the

proposed study supports validity in the following ways. The plan to use multiple

hospitals (five hospitals included) supports the external validity of the study for

generalizability. The generalizability is based on the variety of hospitals sizes, Magnet

status, and multiple specialties including women's health services, oncology, transplant,

neurology, urology, ear/nose/throat, cardiology, orthopedics and general medical/surgical

units.

Human Subjects Protection

When considering nurses as research subjects, a researcher must be sensitive to nurses as a vulnerable population. According to Shamoo and Resnick (2009), nurses fall within a subordinate population in their role as employees. The Belmont Report considers nurse workers vulnerable with regard to questions of justice in the selection of subjects as well as their potential political and economic disadvantages (Levine et al., 2004). Additionally, guidelines established by the Council for International Organizations of Medical Sciences (CIOMS) protect nurses based on their potential insufficient power or inability to protect their own interests (Levine et al., 2004). Risks for hospital-employed nurses as subjects can be centered around peer pressure, effects on employee benefits, and threats to job retention and advancement (Rogers, 2005).

Although the study is of minimal risk to the participant, provisions were placed to protect nurses as human subjects. Protection of privacy and maintenance of confidentiality are planned from the time of enrollment through the dissemination of the results. One strategy for protecting nurse participants is ensuring they know their rights as participants (Griffiths, 2006). Specifically, nurses' right to refuse participation in the study will be explicitly addressed in the email invitation and flyer. The email invitation and flyer fully disclosed the storage of the data, efforts to keep information confidential, and who will have access to the data. Another safeguard strategy to help protect privacy and confidentiality included the use of complete anonymity of the participants to the researcher and her organization (Ferguson, Myrick, & Olive, 2006). Neither the PI nor the organization was able to connect any survey response to a specific participant. Only

82

the participants knew they participated in the study, which minimized any concern regarding fear of judgment based on responses to the survey.

The use of an email participant invitation and URL-based survey served as a way to minimize risks of harm and discomfort to the participants (Kralik, Warren, Price, Koch, & Pignone, 2005). Using email as a recruiting tool may allow participants to communicate at their own pace and at a time convenient for them (Kralik et al., 2005). Having a hospital volunteer distribute the study flyer was another strategy to protect nurse participants by placing a barrier between the researcher and the recruiter of participants (Loftin, Campanella, & Gilbert, 2011). Finally, the basic elements of informed consent were included in the email invitation and flyer, such as the study purpose, risks and benefits, the voluntary nature of participation, plans for confidentiality, and the researcher's contact information for questions.

Informed Consent

Because of the necessity to maintain participants' confidentiality, a signed consent form was not used. The completion of the survey implied consent. In order to keep the participant informed of her rights to participate or not, a cover letter provided information about the study and indicated that all participation was voluntary and confidential (Appendix A). Explicit written communication in the cover page of the survey acknowledged that no identifiable information was collected and that the participant could withdraw from the study at any time. Additionally, there was detailed written communication that clearly notes participation in the study had no bearing on participants' employment status with the study site organization.

Data Analysis Plan

All analysis was conducted using the R Studio software version 3.1.3 (R Core Team, 2014). Descriptive statistics provide description summary of participant demographics and are displayed as mean and standard deviation for continuous variables (i.e., age). Categorical variables are displayed as frequencies and percentages (i.e., gender, hospital location by site name, employment status, education level, marital status, and time and hours of participants' work shift). Additional descriptive analysis included tally scores on the instruments, and calculation of subscale scores. The HCAHPS' nurse communication and likelihood to recommend are measured by the top box/highest rating choice frequency. The HCAHPS measure of overall rating of hospital is a continuous measure and will be included with the other continuous variables for mean and standard deviation. Missing data were included as the data are missing at random. Based on the robust nature of Hierarchical Linear Model (HLM), missing data were permitted to be included (Tabachnick & Fidell, 2013). The analysis strategies for each aim are addressed below.

Aim 1: To determine, by unit and hospital, the level of nurse work engagement; the nursing practice environment scores; and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others. Aim one will be analyzed with descriptive data and includes an analysis of the unit level scores.

Aim 2: To determine the association of nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

Use of HLM via a logistic regression model was used to analyze aim 2. Use of this

analysis method will evaluate relationships between nurse work engagement level and

patients' ratings of nurse communication, overall hospital stay, and likelihood to

recommend the hospital to others (Field & Field, 2012). Table 5 displays the hierarchal

data levels and the HLM equations for research questions 2a-c.

Table 5

Work Engagement, Practice Environment and Control Variables that affect patient ratings of nurse communication, overall rating of the hospital and likelihood to recommend

Hierarchical Level	Level Detail	Variables
Level-2	Unit Level	Unit work engagement and all below
Level-1	Patient rating Level	Predictor variable Work engagement level of the RN

There will be models for the nurse communication, overall rating of care and the likelihood to recommend. The HLM equations will be listed per research question as follows:

RQ2a: What is the association between nurse work engagement and patients'

ratings of nurse communication?

Model equation (logit* random intercepts model):

$Y_{ij} = B_0 + \beta_{0j} + B_1 X_j$

$Y_{ij=}$ log odds of high perceived nurse communication rating for the ith patient measured (level-1, patients), nested within the *j*th unit (level 2, units)

B0 = overall intercept

$\beta_{0j=}$intercept for the *j*th level-2 unit

$X_{j=}$ average RN work engagement for the nurses in unit *j* (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j

*For generalized linear mixed models, unlike normal linear mixed models, it's

customarily to omit an error term

RQ2b: What is the association between nurse work engagement and patients'

ratings of the overall hospital stay?

Model equation (random intercepts model):

$$Y_{ij} = B0 + \beta_{0j} + \beta_{1j}X_{ij} + r_{ij}$$

$Y_{ij=}$ rating of overall hospital stay for the ith patient measured (level-1, patients), nested within the *j*th unit (level 2, units)

B0 = overall intercept

$\beta_{0j=}$intercept for the *j*th level-2 unit

$X_{j=}$ average RN work engagement for the nurses in unit *j* (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j
$r_{ij=}$random error

RQ2c: What is the association between nurse work engagement and patients'

ratings of the likelihood to recommend the hospital to others?

Model equation (logit* random intercepts model):

$$Y_{ij} = B0 + \beta_{0j} + \beta_{1j}X_{ij}$$

$Y_{ij=}$ log odds of hospital recommendation to others for the ith patient measured (level-1, patients), nested within the *j*th unit (level 2, units)

B0 = overall intercept

$\beta_{0j=}$intercept for the *j*th level-2 unit

$X_{j=}$ average RN work engagement for the nurses in unit j (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j

*For generalized linear mixed models, unlike normal linear mixed models, it's customarily to omit an error term

Aim 3: To determine if nurse work engagement predicts the patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others when controlling for hospital characteristics (case mix index and unit specialty type) and nurse characteristics (i.e., age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours].

A linear regression model will explore the nurse work engagement predictor variable in relation to the outcome variable of patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others when controlling for hospital characteristics (case mix index and unit specialty type) and nurse characteristics. Control variables are hospital characteristics-case mix index and unit specialty type and nurse characteristics). This will be done by use of HLM as the nurses are nested within the units. The unit level aggregate for HCAHPS data will be analyzed the same.

   Justification for use of HLM. Hierarchical Linear Model (HLM) will be used, as it allows for more than one level of nesting, as proposed in this study for nurses nested at the unit level and patient experience HCAHPS scores being nested at the unit level (Woltman, Feldstain, MacKay, & Rocchi, 2012). The unit level groups will be modeled

as a within-covariance matrix with an additional model that includes the between

covariance matrix data. Each level one data (e.g. each nurse work engagement score and

patient experience survey score) will be identified by a level two data (e.g. unit level)

(Woltman, et al., 2012). Each level two cluster's slope (e.g. unit level) will be identified

and analyzed separately. With HLM both the within group and between group

regressions are accounted (Woltman, et al., 2012). This is important as it will show if

there is a relationship between nurse work engagement and the selected HCAHPS scores

(nurse communication, overall rating of the hospital, and likelihood of recommending the

hospital to others).

Regression allows researchers to examine how variables relate to each other, the

strength of the relations, the relative predictive power of an independent variable on a

dependent variable, and the unique contributions of one or more independent variables

when controlling for one or more covariates. Specifically, HLM is used when

assumptions of independence of participants is violated. If regular regression were used

in this type of analysis, it would likely produce bias estimates and inaccurate standard

errors (Tabachnick & Fidell, 2013). There are a number of advantages to using HLM

with the planned research. One advantage is that nursing environments in hospitals have

natural clusters or structural hierarchies (Adewale, et al., 2007). Specific to this study,

the nurse work engagement scores are clustered to the unit level. This average of nurse

work engagement may have an effect above and beyond the patient outcome of patient

experience, and for that reason use of HLM is advantageous. This benefit of HLM

separates the effects of individual work engagement from the effects of the unit average.

In this context, the interpretation of effects matches the analytical treatment of the effects in the HLM.

A second advantage is the data are intra-cluster dependent, which means the responses are in a cluster (Adewale, et al., 2007; Tabachnick & Fidell, 2013). In this case, the responses are clustered at the unit level. This means the responses are likely to be more alike among nurses within the unit because they work together and; share similar experiences, and especially since patients are grouped by similar diagnosis/specialty and may be more likely to have similar responses. The non-independence violates the assumptions of regular regression model where most often participant responses are more likely independent (Adewale, et al., 2007; Tabachnick & Fidell, 2013).

The third advantage to using HLM is related to its fit to real-world situations from which the data for this study will be drawn. Use of HLM can foster an understanding of cross-level effects and how they differ within level effects, which helps the researcher arrive to a deeper understanding of the real world. Last, the use of HLM permits predication of individual scores adjusted for group differences, as well as prediction of group scores, which are adjusted for individual differences within the groups/hospital units. If this were done without use of HLM, type I errors would be inflated based on there being too many degrees of freedom which are not independent (Adewale, et al., 2007; Woltman, Feldstain, MacKay, & Rocchi, 2012). The following HLM equations show the data analysis detail for the research questions under aim 3.

RQ3a) Model equation (logit* random intercepts model) for nurse communication:
$Y_{ijk} = B_0 + \beta_{0j} + B_1 X_{1j} + B_2 X_{2j} + B_3 X_{3j} + B_3 X_{4j} + B_5 X_{5j} + B_6 X_{6j} + B_7 X_{7j} + B_8 X_{8j} + B_9 X_{9j} + B_{10} X_{10j} + B_{11} X_{11j} + B_{12} X_{12j}$

$Y_{ijk=}$ log odds of high perceived nurse communication rating for the ith patient measured (level-1, patients), nested within the *j*th unit (level 2, units)

B0 = overall intercept
$\beta_{0j=}$intercept for the *j*th level-2 unit

$X_{1j=}$ case mix index for unit *j* (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j

$X_{2j=}$ Unit specialty type for unit *j* (level-2 predictor) [this can be multi category]

$B_{2=}$ regression coefficient associated with the X_{2j}

$X_{3j=}$ average age for the nurses in unit *j* (level-2 predictor)

$B_{3=}$ regression coefficient associated with the X_j

$X_{4j=}$ Percent of male nurse in unit *j* (level-2 predictor)

$B_{4=}$ regression coefficient associated with the X_{2j}

$X_{5j=}$ Magnet indicator in unit *j* (level-3 predictor)

$B_{5=}$ regression coefficient associated with the X_j

$X_{6j=}$ Percent of nurses working part time for unit *j* (level-2 predictor)

$B_{6=}$ regression coefficient associated with the X_{2j}

$X_{7j=}$ Percent of nurses in unit *j* with BSN as highest education level (level-2 predictor) (Reference: <BSN)

$B_{7=}$ regression coefficient associated with the X_j

$X_{8j=}$ Percent of nurses in unit *j* with MSN as highest education level (level-2 predictor)

(Reference: <BSN)

$B_{8=}$ regression coefficient associated with the X_{2j}

$X_{9j=}$ Percent of married/partnered nurses in unit *j* (level-2 predictor)

$B_{9=}$ regression coefficient associated with the X_j

$X_{10j=}$ Percent of nurses working night shifts for unit j (level-2 predictor)

$B_{10=}$ regression coefficient associated with the X_{2j}

$X_{11j=}$ Average shift length for the nurses in unit j (level-2 predictor)

$B_{11=}$ regression coefficient associated with the X_j

$X_{12j=}$ average RN work engagement for the nurses in unit j (level-2 predictor)

$B_{12=}$ regression coefficient associated with the X_j

*For generalized linear mixed models, unlike normal linear mixed models, it's

customarily to omit an error term

RQ3b) Model equation (random intercepts model) for hospital stay:

$Y_{ijk} = B0 + \beta_{0j} + \beta_{1j}X_{ij} + B_2X_{2j} + B_3X_{3j} + B_3X_{4j} + B_5X_{5j} + B_6X_{6j} + B_7X_{7j} + B_8X_{8j} + B_9X_{9j} + B_{10}X_{10j} + B_{11}X_{11j} + r_{ijk}$

$Y_{ijk=}$ rating of overall hospital stay for the ith patient measured (level-1, patients), nested within the jth unit (level 2, units)

$B0$ = overall intercept

$\beta_{0j=}$ intercept for the jth level-2 unit

$X_{j=}$ case mix index for unit j (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j

$X_{2j=}$ Unit specialty type for unit j (level-2 predictor)

$B_{2=}$ regression coefficient associated with the X_{2ij}

$X_{3j=}$ average age for the nurses in unit j (level-2 predictor)

$B_{3=}$ regression coefficient associated with the X_j

$X_{4j=}$ Percent of male nurse in unit j (level-2 predictor)

$B_{4=}$ regression coefficient associated with the X_{2j}

$X_{5j=}$ Magnet indicator in unit j (level-3 predictor)

$B_{5=}$ regression coefficient associated with the X_j

$X_{6j=}$ Percent of nurses working part time for unit j (level-2 predictor)

$B_{6=}$ regression coefficient associated with the X_{2j}

$X_{7j=}$ Percent of nurses in unit j with BSN as highest education level (level-2 predictor) (Reference: <BSN)

$B_{7=}$ regression coefficient associated with the X_j

$X_{8j=}$ Percent of nurses in unit j with MSN as highest education level (level-2 predictor)

(Reference: <BSN)

$B_{8=}$ regression coefficient associated with the X_{2j}

$X_{9j=}$ Percent of married/partnered nurses in unit j (level-2 predictor)

$B_{9=}$ regression coefficient associated with the X_j

$X_{10j=}$ Percent of nurses working night shifts for unit j (level-2 predictor)

$B_{10=}$ regression coefficient associated with the X_{2j}

$X_{11j=}$ Average shift length for the nurses in unit j (level-2 predictor)

$B_{11=}$ regression coefficient associated with the X_j

$X_{12j=}$ average RN work engagement for the nurses in unit j (level-2 predictor)

$B_{12=}$ regression coefficient associated with the X_j

$r_{ijk=}$ random error

RQ3c) Model equation (logit* random intercepts model) for likelihood to recommend hospital to others:

$Y_{ijk} = B_0 + \beta_{0j} + B_1X_{1j} + B_2X_{2j} + B_3X_{3j} + B_3X_{4j} + B_5X_{5j} + B_6X_{6j} + B_7X_{7j} + B_8X_{8j} + B_9X_{9j} + B_{10}X_{10j} + B_{11}X_{11j}$

$Y_{ijk=}$ log odds of hospital recommendation to others for the ith patient measured (level-1, patients), nested within the jth unit (level 2, units)

B0 = overall intercept

$\beta_{0j=}$ intercept for the jth level-2 unit

$X_{1j=}$ case mix index for unit j (level-2 predictor)

$B_{1=}$ regression coefficient associated with the X_j

$X_{2j=}$ Unit specialty type for unit j (level-2 predictor) [this can be multi category]

$B_{2=}$ regression coefficient associated with the X_{2j}

$X_{3j=}$ average age for the nurses in unit j (level-2 predictor)

$B_{3=}$ regression coefficient associated with the X_j

$X_{4j=}$ Percent of male nurse in unit j (level-2 predictor)

$B_{4=}$ regression coefficient associated with the X_{2j}

$X_{5j=}$ Magnet indicator in unit j (level-3 predictor)

$B_{5=}$ regression coefficient associated with the X_j

$X_{6j=}$ Percent of nurses working part time for unit j (level-2 predictor)

$B_{6=}$ regression coefficient associated with the X_{2j}

$X_{7j=}$ Percent of nurses in unit j with BSN as highest education level (level-2 predictor) (Reference: <BSN)

$B_{7=}$ regression coefficient associated with the X_j

$X_{8j=}$ Percent of nurses in unit j with MSN as highest education level (level-2 predictor)

(Reference: <BSN)

$B_{8=}$ regression coefficient associated with the X_{2j}

$X_{9j=}$ Percent of married/partnered nurses in unit j (level-2 predictor)

$B_{9=}$ regression coefficient associated with the X_j

$X_{10j=}$ Percent of nurses working night shifts for unit j (level-2 predictor)

$B_{10=}$ regression coefficient associated with the X_{2j}

$X_{11j=}$ Average shift length for the nurses in unit j (level-2 predictor)

$B_{11=}$ regression coefficient associated with the X_j

$X_{12j=}$ average RN work engagement for the nurses in unit j (level-2 predictor)

$B_{12=}$ regression coefficient associated with the X_j

*For generalized linear mixed models, unlike normal linear mixed models, it's customarily to omit an error term

RQ3a: Does nurse work engagement predict the patients' ratings of nurse communication, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

To investigate if nurse work engagement predicts top-box patients' ratings of nurse communication (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff characteristics summarized at the unit level: average age (recoded to indicate a 5 year change), gender (recoded to indicate a 10% change in percentage of males), magnet status, employment status (recoded to indicate a 10% change in percentage of full-time nursing staff), education status (with two indicator variables, recoded to indicate a 10% change in ADN-trained and MSN-trained percentage of nursing staff, respectively), marital status (recoded to indicate a

10% change in percentage of married nursing staff), primary shift worked (recoded to indicate a 10% change in percentage of day shift nursing staff), and primary shift length (recoded to indicate a 10% change in percentage of nursing staff on 12-hour shifts). The third Block included work engagement. This analysis will show the final fitted generalized linear mixed model (with random effect for unit) including the three Blocks. To obtain odds ratios, the estimated coefficient values (Bs) were exponentiated. To aid in interpretation, pseudo effect sizes were computed using ordinary linear models. These pseudo effect sizes included (Efron's) pseudo adjusted-R^2 to determine the proportion of variability of the binary outcome explained sequentially by the Blocks, and pseudo Eta^2 to determine the individual predictors more relevant in the final model.

RQ3b: Does nurse work engagement predict patients' ratings of the overall hospital stay, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

The same analysis will be used for research question 3a will be used for question 3b. To investigate if nurse work engagement predicts top-box patients' ratings of the overall hospital stay (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff characteristics summarized at the unit level in the same manner as research question 3a. The third Block included work

engagement. This analysis will show the final fitted generalized linear mixed model (with random effect for unit) including the three Blocks.

RQ2c: Does nurse work engagement predict patients' ratings of the likelihood to recommend the hospital to others, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

The same analysis will be used for research question 3a and b was used for question 3c. To investigate if nurse work engagement predicts top-box patients' ratings of the likelihood to recommend the hospital to others (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff characteristics summarized at the unit level in the same manner as research questions 3a and b. The third Block included work engagement.

Analysis of aim 4 of was achieved as follows:

Aim 4: to determine whether nursing practice environment mediates the relationships between nurse work engagement and: a) patients' ratings of nurse communication, b) overall hospital stay, and c) likelihood to recommend the hospital to others. Path analysis via structural equation modeling (SEM) robust to non-normality was used to address Aim 4.

Analysis technique: Path analysis via structural equation modeling (SEM) robust to non-

normality was used to explore the practice environment predictor variable in relation to

the associations between nurse work engagement and patients' ratings of nurse

communication, overall hospital stay, and likelihood to recommend the hospital to others.

The following shows the analysis detail by research question.

RQ4a: Does the nursing practice environment mediate relationships between nurse

work engagement and patients' ratings of nurse communication?

Given a, b, c as effects from each variable (see Figure 2), the direct effect is represented

as the relationship of nurse work engagement to patient ratings of RN communication (c).

The indirect effect, also known as the mediated effect, is represented as the relationship

of nurse work engagement to patient ratings of RN communication through practice

environment (a*b). The total effect of work engagement and patient ratings of RN

communication is the sum of the direct and indirect effects (c + a*b).
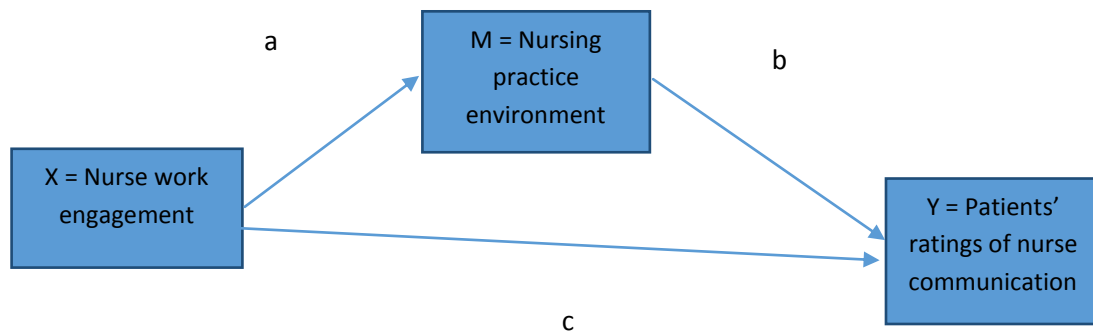
Figure 2. Mediation path diagram RN Communication

The same analysis was conducted to evaluate the effect of the nursing practice environment on associations between nurse work engagement and patients' ratings of the overall hospital stay.

RQ4b: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the overall hospital stay?

Given a, b, c as effects from each variable (see Figure 3), the direct effect is represented as the relationship of nurse work engagement to patients' ratings of the overall hospital stay (c). The indirect effect, also known as the mediated effect, is represented as the relationship of nurse work engagement to patient ratings of the overall hospital stay through practice environment (a*b). The total effect of work engagement and patient ratings of the overall hospital stay is the sum of the direct and indirect effects (c + a*b).
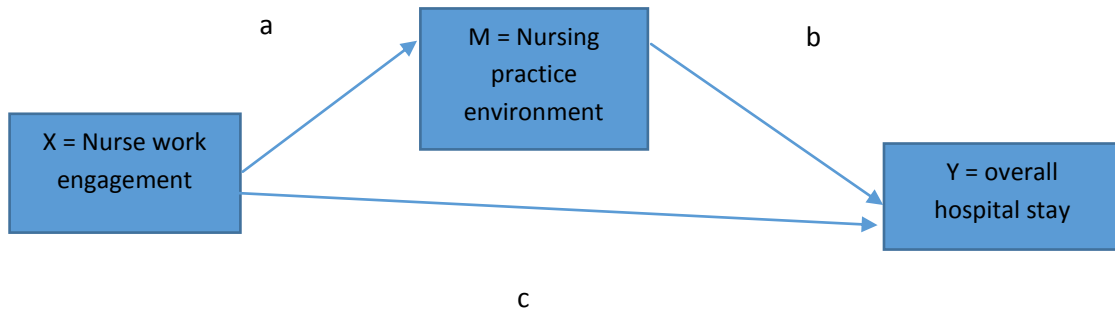
Figure 3. Mediation Path Diagram Overall Rating of the Hospital

RQ4c: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Given a, b, c as effects from each variable (see Figure 4), the direct effect is represented as the relationship of work engagement to patient ratings of the likelihood to recommend the hospital to others (c). The indirect effect, also known as the mediated effect, is represented as the relationship of work engagement to patient ratings of the likelihood to recommend the hospital to others through practice environment (a*b). The total effect of work engagement and patient ratings of the likelihood to recommend the hospital to others is the sum of the direct and indirect effects (c + a*b).
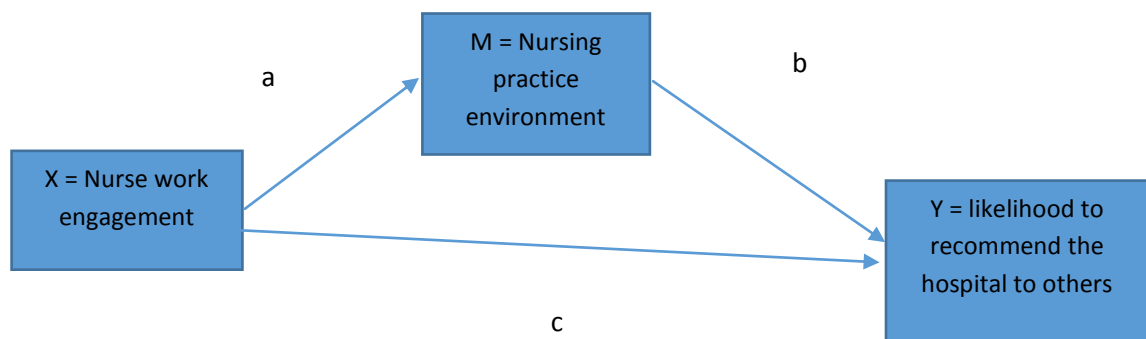
Figure 4. Mediation Path Diagram Likelihood to Recommend the Hospital to Others

Timeline

Contact with the hospital CNE, nurse research council chair, department and unit directors, service performance director, and coordinator for volunteer services will be initiated in late 2018. The estimated time of completion for recruitment and data collection is by spring of 2019. Based on the aforementioned reference for sample size, calculations for hierarchical modeling statistical analysis plan are suggested as 30-50 groups (Maas & Hox, 2005). Data analysis will be concluded by summer of 2019. Appendix B displays the planned timeline for recruitment, data collection, and analysis.

Summary

The purpose of Chapter Three was to describe the proposed research study sample, informed consent, instruments, reliability, validity, data collection, data analysis plan and protection of human subjects. A description was provided of the convenience sampling plan from the setting of a central Georgia healthcare system with sample inclusion and exclusion criteria. The detail related to the inclusion of a cover letter prior to the participants' access to the survey were described. The details of data collection instruments for nurse participants were described in terms of demographic questions, UWES-9 questionnaire and the Practice Environment Survey of the Nursing Work Index (PES-NWI) questionnaire. Data collection for the patient experience data, will be acquired from the HCAHPS data from the Service Performance Office. Data collection for the case mix index will be obtained from the Data Analytics department. All instrument psychometrics were provided and support the validity and reliability of the instruments. Finally, the data analysis plan was described. The next chapter will describe the findings of the planned research.

CHAPTER 4

Results

The purpose of this study was to explore the associations between nurse work engagement and the patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others. This chapter provides the results of the study.

Sample Characteristics

The sample consisted of 43 inpatient units, which included 448 registered nurses. The majority of the sample were women with a mean age of 44 (see Table 6). The age range of the participants was from 22-73. The sample was well educated, with 268 (60%) who held a bachelor's degree; more than half were married and worked more than 30 hours per week. Over half of the sample worked for Magnet-designated hospitals, with nearly three quarters who worked 12-hour dayshifts. Although 448 nurses participated in the study, only 404 nurses identified their hospital location, and only 288 reported their unit location. The 404 nurses' data were able to be used for the descriptive statistics analysis (aim 1) and the 288 were used for the associations, prediction and mediation analysis (aims 2-4). The sample of patients who completed the selected HCAHPS survey questions was 1,259. The response rate of the entire sample was 26% (1713 eligible participants of which 448 participated). The unit level response rate ranged from 6-57% of eligible participants.

Responses from participants who identified their unit location versus those who did not. It was important to describe the comparison of responses from the 288 participants who reported their unit location versus the 160 participants who did not disclose their unit location. The reason this was important is because the unit identification was needed in order to provide unit level data. A *t*-test was run on all quantitative variables (age, UWES sum score, vigor UWES subscale, dedication UWES subscale, absorption UWES subscale, PES-NWI sum score, RN participation PES-NWI subscale, RN quality PES-NWI subscale, RN manager PES-NWI subscale, Staffing PES-NWI subscale, and RN-MD collegial relationship PES-NWI subscale) to observe response differences between those participants who identified their unit location and those who did not. All quantitative variables are similar except age (*p*-value = 0.000) and RN-MD collegial relationships (*p*-value = 0.002). Nurses who did not report their unit location were older (48.81,$\pm$6.38 SD) than those who identified their unit (40.85,$\pm$6.38 SD). Additionally, the nurses who not report their unit location had a higher mean for the PES-NWI subscale of RN-MD collegial relationships (3.20,$\pm$3.13SD) than those who identified their unit (2.95,$\pm$3.13SD) . Table 6 shows the results of the t-tests.

Table 6

Results from Independent samples t-tests for quantitative variables

Variable	M	Included (unit)		Not Included (unit)	
		SD	M	SD	*p*
Age	40.85	6.3782	48.81	6.3782	0.000
UWES	3.99	0.6388	4.05	0.6388	0.523
Vigor	3.60	1.0906	3.72	1.0906	0.276
Dedication	4.45	0.0668	4.46	0.0668	0.947
Absorption	3.89	0.8364	3.98	0.8364	0.404
PES-NWI	2.98	1.5021	2.88	1.5021	0.134
RN Participation	3.05	1.7455	2.91	1.7455	0.082
RN Quality	3.23	1.2214	3.15	1.2214	0.223
RN Manager	3.13	1.8600	2.96	1.8600	0.064
Staffing	2.73	0.4667	2.77	0.4667	0.641
RN and MD relations	2.95	3.1252	3.20	3.1252	0.002

Chi-square tests were run for all of the categorical variables. The categorical variables included: gender, employment, education, marital status, shift, hours, and Magnet status. Gender, employment, marital status, shift, and hours each have a *p*-value less than alpha (.05). Both the independent *t*-tests and chi-square tests support that there is very little difference between the participants who indicated their unit location. Although age, nurse-physician collegial relationships, gender, employment, marital status, shift, and hours were less than alpha, the difference between the groups is little because all other variables were not significant and had little difference between those participants who identified their units versus those who did not. Table 6 shows the

results of the *t*-tests. Based on the hierarchal linear modeling analysis only those who

identified their unit location will be included for the subsequent research questions.

Table 7

Results from Chi-Squares for Test Categorical Variables

	N	%	p-value
Gender	432	99.08%	0.010
Female	418	93.00%	
Male	22	7.00%	
Employment	432	99.08%	0.011
≥30 hours/week	381	87.00%	
≤30 hours/week	59	13.00%	
Education	446	99.99%	0.296
BSN	268	60.00%	
MSN	60	13.00%	
ADN	47	10.00%	
BS	24	5.00%	
MS	23	5.00%	
Diploma	12	3.00%	
PhD or DNP	14	3.00%	
Marital	427	99.08%	0.009
Married	243	56.00%	
Single	194	44.00%	
Shift	434	99.08%	0.000
Day	324	73.00%	
Night	110	25.00%	
Evening	7	2.00%	
Hours	432	99.08%	0.000
12 hour	321	73.00%	
8 hour	66	15.00%	
12 & 8 hour	8	2.00%	
Other	45	10.00%	

Table 7

Results from Chi-Squares for Test Categorical Variables

	N	%	p-value
Magnet			
Magnet	216	53.00%	
Non-Magnet	188	47.00%	

In addition to examining the differences between participants who identified their location and those who did not, a Shapiro-Wilk test was conducted to determine the normality of the sample distribution. This analysis included the quantitative variables age, UWES, and PES-NWI. The *p*-values were all less than .05 showing that the distribution of the quantitative variables is significantly different from a normally distributed sample. Based on normality assumptions, non-parametric tests will be performed. Additionally, interpretation of results may not accurately represent the nursing population. Table 8 shows the results of the Shapiro-Wilks test.

Table 8

Shapiro-Wilks Test for Normality for Quantitative Variables (N=448)

Variable Name	W	P-Value
Age	0.9606	0.0
UWES	0.9860	0.0
Vigor	0.9841	0.0
Dedication	0.9525	0.0
Absorption	0.9729	0.0
PES-NWI	0.9616	0.0
RN Participation	0.9464	0.0
RN Quality	0.9380	0.0
RN Manager	0.8857	0.0
Staffing	0.9310	0.0
Collegial RN-MD	0.8772	0.0

The goal of Aim 1 was to determine, by unit and hospital, the level of nurse work engagement; the nursing practice environment scores; and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ1: At the unit and hospital levels, what is the level of nurse work engagement, nursing practice environment scores, and patients' ratings of nurse communication, overall hospital rating, and likelihood to recommend the hospital to others?

The continuous variables for aim one are UWES and the PES-NWI. The data reflects the count of participants who responded to the item, mean, standard deviation, minimum and maximum score. Both the composite scores and subscale scores were reported for the UWES and the PES-NWI. The work engagement level of the participants was considered to be average at 4.01. The highest subscale rating for the UWES was dedication at 4.46, and the lowest was vigor at 3.65. The average PES-NWI composite mean was 2.94, which is considered above average. The highest subscale rating for the PES-NWI was 4.01 nurse quality, and the lowest was staffing at 2.74.

RN hospital work engagement. By hospital, the hospital with the highest UWES score was hospital E at 4.16, and the lowest was hospital C at 3.82. The highest subscale rating was dedication, found at hospital A at 4.63. The lowest subscale rating was vigor at hospital C which was 3.44.

By unit, the unit with the highest UWES score was unit e40 (medical) at 5.00 and the lowest at unit c16 (obstetrics) at 3.03. The highest subscale rating was dedication,

found to be 5.17 for unit e59 (cardiovascular). The lowest subscale rating was vigor at

unit c12 (oncology), which was 2.58.   The unit with the highest composite PES-NWI

score was held by unit e40 (medical) at 3.60 and the lowest at unit c13 (obstetrics) at

2.08. The highest unit PES-NWI subscale was collegial relationships between RN and

MD at unit e47 (medical) at 4.00, and the lowest was at unit c13 (obstetrics) for ratings of

nurse manager at 1.60.

PES-NWI composite and favorable, unfavorable and mixed scoring. The overall

PES-NWI composite mean was 2.94. The highest composite PES-NWI score was held

by hospital D at 3.13 and the lowest was hospital C at 2.73. The highest PES-NWI

subscale was collegial relationships between RN's and MD's was at hospital E at 3.87

and the lowest was at hospital C for staffing at 2.53. The highest subscale score among

the sample was for nursing foundations for quality of care at 3.19 and the lowest with

staffing and resource adequacy at 2.74. By hospital the highest to lowest composite

scores were: Hospital D at 3.13, Hospital E at 3.12, hospital A at 3.02, hospital B at 2.98

and hospital C at 2.73.   The unit with the highest composite score was unit e40 (medical)

at 3.60 and the lowest was unit c13 (obstetrics) at 2.08. Among the highest to lowest

subscales across units, unit e47 (medical) had the highest subscale at 4.00 for nurse-to-

physician collegeial relationships and unit c11 (renal) at 1.63 with the lowest for staffing.

The PES-NWI scores can also be reported as favorable, unfavorable and mixed

(Lake & Friese, 2006). Reporting of the PES-NWI as favorable, unfavorable and mixed

helps with simple interpretation of the results (Lake & Friese, 2006). The aggregated

participant responses were reported as an overall sample mean, hospital mean, and unit

mean. By using the mean values above 2.5, the units can be rated as favorable,

unfavorable or mixed (Lake & Friese, 2006). Favorable represents at least 4 of the PES-

NWI subscales are above the 2.5 mean value. Mixed represents at least 1-3 subscales are

above the above the 2.5 mean value. Unfavorable shows zero subscales above the above

the 2.5 mean value. Based on the data, the PES-NWI subscales for all hospitals in the

study was considered favorable. Among the units only 7 rated the PES-NWI subscales as

mixed (c4-cardiothoracic, c5-medical-surgical, c8-medical-surgical, c11-renal, c-13-

obstetrics, c38-medical-surgical, and d33-oncology) and only one as unfavorable (c12-

oncology). Tables 9-18 show the PES-NWI results.

Table 9

Hospital A Unit level Age and UWES

Hospital A	N	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Hospital	41	46.31 (9.37)	4.07 (0.76)	3.75 (1.03)	4.63 (0.96)	3.84 (1.33)
Unit a1	9	44.00 (5.05)	4.50 (0.70)	4.16 (0.80)	4.95 (1.04)	4.07 (0.49)
Unit a2	7	46.29 (10.45)	3.11 (0.83)	3.00 (1.41)	4.09 (1.08)	3.66 (0.43)
Unit a3	3	47.00 (9.90)	4.93 (0.70)	4.47 (0.80)	5.33 (1.04)	4.06 (0.49)
No unit	21	46.90 (10.37)	4.10 (0.74)	3.83 (0.90)	4.64 (0.91)	3.84 (0.70)

Table 10
Hospital A Unit level PES-NWI

Hospital A	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Hospital	41	3.02 (0.62)	3.05 (0.81)	3.17 (0.54)	3.37 (0.79)	2.64 (0.97)	3.44 (0.62)
Unit a1	9	3.36 (0.65)	3.24 (0.73)	3.36 (0.49)	3.13 (0.96)	2.53 (1.03)	3.41 (0.52)
Unit a2	7	2.67 (0.64)	2.52 (0.82)	3.02 (0.62)	3.17 (0.48)	2.14 (1.07)	3.10 (0.71)
Unit a3	3	3.37 (0.65)	3.47 (0.73)	3.41 (0.49)	3.43 (0.96)	2.96 (1.03)	3.61 (0.52)
No unit	21	3.11 (0.61)	3.16 (0.83)	3.19 (0.54)	3.45 (0.82)	2.80 (0.85)	3.51 (0.65)

Table 11

Hospital B Unit level Age and UWES

Hospital B	N	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Hospital B	12	50.00 (10.65)	3.89 (0.92)	3.56 (1.14)	4.23 (0.89)	3.83 (0.99)
Unit b35	7	41.71 (9.47)	4.22 (0.89)	3.95 (0.94)	4.85 (0.91)	3.85 (0.93)
Unit b37	4	44.75 (14.36)	3.77 (0.65)	3.33 (1.31)	4.16 (0.64)	3.83 (0.33)
No unit	2	51.50 (3.54)	3.44 (1.49)	3.67 (1.39)	3.67 (1.39)	3.00 (1.86)

Table 12

Hospital B Unit level PES-NWI

Hospital B	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Hospital B	12	2.98 (0.73)	3.11 (0.87)	3.13 (0.61)	3.07 (0.78)	2.83 (0.90)	3.42 (0.81)
Unit b35	7	3.19 (0.74)	3.20 (0.75)	3.24 (0.60)	2.94 (1.03)	2.60 (0.89)	2.57 (0.52)
Unit b37	4	2.86 (0.83)	2.94 (1.18)	2.91 (0.68)	3.15 (0.50)	2.62 (1.16)	3.16 (1.26)
No unit	2	2.58 (0.91)	2.50 (0.87)	2.94 (0.61)	2.70 (0.81)	2.63 (0.80)	3.00 (0.71)

Table 13

Hospital C Unit level Age and UWES

Hospital C	*N*	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Hospital	135	42.52 (13.41)	3.82 (1.13)	3.44 (1.26)	4.26 (1.14)	3.75 (1.32)
Unit c4	13	49.18 (17.43)	4.06 (1.41)	3.74 (1.65)	4.46 (1.57)	3.97 (1.24)
Unit c5	18	39.11 (11.43)	3.43 (0.89)	2.80 (0.87)	4.04 (0.95)	3.44 (1.53)
Unit c6	15	40.75 (11.43)	3.91 (0.58)	3.79 (1.06)	4.53 (0.65)	3.42 (1.20)
Unit c7	8	35.86 (14.04)	4.28 (1.05)	4.05 (1.03)	4.67 (1.13)	4.08 (1.12)
Unit c8	3	28.67 (2.89)	3.63 (0.45)	3.56 (0.51)	4.56 (0.69)	2.78 (1.84)
Unit c9	4	50.00 (12.03)	4.15 (1.51)	4.08 (1.03)	5.00 (1.12)	3.89 (2.36)
Unit c10	5	35.00 (14.97)	3.94 (1.08)	3.17 (1.29)	3.87 (1.26)	4.07 (1.23)
Unit c11	3	46.33 (0.58)	3.74 (0.83)	3.56 (1.07)	3.89 (0.84)	3.78 (0.69)
Unit c12	4	50.25 (14.59)	3.28 (1.67)	2.58 (1.83)	3.66 (1.96)	3.58 (1.40)
Unit c13	6	37.67 (12.11)	3.89 (1.17)	3.50 (1.31)	4.50 (0.86)	3.66 (1.48)
Unit c15	5	25.20 (3.84)	3.36 (0.39)	2.80 (0.30)	3.73 (0.55)	3.53 (0.38)
Unit c16	7	43.86 (10.75)	3.03 (1.56)	2.71 (1.47)	3.19 (1.62)	3.19 (1.64)
Unit c38	6	46.17 (16.55)	3.85 (1.98)	3.56 (1.85)	4.28 (1.89)	3.72 (2.24)

111

Hospital C	N	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Unit c39	6	35.50 (8.04)	4.39 (0.70)	3.88 (1.11)	4.94 (0.68)	4.33 (0.60)
No unit	33	48.94 (11.48)	4.01 (1.17)	3.66 (1.36)	4.35 (1.06)	4.01 (1.26)

Table 14

Hospital C Unit level PES-NWI

Hospital C	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Hospital	135	2.73 (0.64)	2.79 (0.77)	3.01 (0.64)	2.87 (0.94)	2.53 (0.95)	2.74 (0.90)
Unit c4	13	2.61 (0.86)	2.74 (0.97)	3.24 (0.86)	3.00 (1.10)	2.44 (1.27)	2.03 (1.07)
Unit c5	18	2.71 (0.50)	2.78 (0.66)	3.05 (0.53)	3.00 (0.83)	2.36 (0.94)	2.46 (0.92)
Unit c6	15	2.93 (0.49)	2.79 (0.61)	3.13 (0.65)	3.09 (0.92)	2.80 (0.80)	2.87 (0.69)
Unit c7	8	3.09 (0.68)	3.17 (0.80)	3.24 (0.67)	2.95 (0.94)	2.81 (0.80)	3.13 (0.97)
Unit c8	3	2.68 (0.23)	2.78 (0.29)	3.33 (0.47)	2.60 (0.20)	1.75 (0.43)	2.33 (0.33)
Unit c9	4	2.82 (0.75)	3.17 (0.68)	3.26 (0.28)	3.33 (0.50)	2.33 (1.15)	3.00 (0.88)
Unit c10	5	2.82 (0.51)	2.86 (0.55)	3.24 (0.56)	3.20 (0.46)	2.20 (1.02)	2.66 (0.94)
Unit c11	3	2.68 (0.36)	2.88 (0.47)	2.78 (0.00)	3.47 (0.76)	1.63 (0.88)	2.33 (0.88)
Unit c12	4	2.22 (0.66)	2.30 (0.93)	2.28 (0.65)	2.25 (0.96)	2.31 (0.55)	2.25 (0.88)
Unit c13	6	2.08 (0.59)	2.33 (1.14)	2.88 (0.77)	1.60 (0.45)	1.88 (0.82)	2.57 (0.75)
Unit c15	5	3.17 (0.44)	3.44 (0.75)	3.33 (0.44)	2.88 (0.46)	2.85 (0.38)	3.20 (0.45)
Unit c16	7	2.93 (0.42)	3.00 (0.46)	3.25 (0.34)	2.91 (0.58)	2.86 (0.98)	2.81 (0.77)

Hospital C	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Unit c38	6	2.45 (1.01)	2.48 (1.04)	2.56 (1.04)	2.40 (1.10)	2.46 (0.89)	2.94 (1.31)
Unit c39	6	3.56 (0.19)	3.67 (0.23)	3.44 (0.60)	3.92 (0.11)	3.50 (0.42)	3.22 (0.58)
No unit	33	2.67 (1.26)	2.63 (0.76)	2.98 (0.58)	2.75 (1.01)	2.74 (0.88)	2.99 (0.82)

Table 15

Hospital D Unit level Age, UWES, and PES-NWI

Hospital D	N	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Hospital D	53	43.28 (14.95)	3.99 (0.97)	3.60 (1.11)	4.46 (1.02)	3.95 (1.04)
Unit d21	9	42.56 (16.63)	3.98 (1.12)	3.70 (1.36)	4.33 (1.11)	3.89 (1.05)
Unit d24	3	38.00 (20.78)	4.19 (0.63)	3.56 (0.69)	5.11 (0.84)	3.89 (0.38)
Unit d25	4	41.50 (4.43)	3.53 (0.51)	2.92 (0.32)	3.42 (0.74)	4.25 (0.69)
Unit d26	4	41.75 (11.62)	4.15 (0.36)	3.92 (0.17)	4.50 (0.43)	4.11 (0.77)
Unit d27	4	42.00 (24.04)	4.92 (0.71)	4.58 (0.92)	5.08 (0.63)	5.08 (0.69)
Unit d31	3	40.33 (24.21)	4.44 (0.44)	3.89 (0.51)	5.00 (0.33)	4.44 (0.51)
Unit d33	4	31.00 (9.20)	3.81 (0.68)	3.25 (0.74)	4.66 (0.54)	3.50 (1.11)
Unit d34	4	27.50 (4.43)	3.11 (0.40)	2.66 (0.38)	3.56 (0.69)	2.83 (0.43)
No unit	13	52.00 (13.84)	4.05 (1.20)	3.82 (1.36)	4.67 (1.28)	3.91 (1.23)

Table 16

Hospital D Unit level PES-NWI

Hospital D	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Hospital D	53	3.13 (0.56)	3.31 (0.59)	3.34 (0.58)	3.16 (0.89)	2.76 (0.89)	3.18 (0.80)
Unit d21	9	2.82 (0.60)	2.99 (0.64)	3.13 (0.52)	2.73 (0.79)	2.44 (0.89)	2.93 (1.12)
Unit d24	3	3.18 (0.43)	3.44 (0.69)	3.37 (0.55)	3.40 (0.69)	2.92 (0.63)	2.89 (0.19)
Unit d25	4	3.22 (0.40)	3.11 (0.40)	2.94 (1.08)	3.40 (0.85)	2.81 (0.94)	3.00 (0.50)
Unit d26	4	3.41 (0.44)	3.44 (0.43)	3.58 (0.50)	3.90 (0.20)	3.06 (1.09)	3.58 (0.50)
Unit d27	4	3.19 (0.41)	3.39 (0.53)	3.78 (0.24)	3.40 (1.07)	3.19 (0.63)	3.50 (0.58)
Unit d31	3	3.49 (0.51)	3.66 (0.58)	3.66 (0.58)	3.66 (0.58)	3.25 (0.25)	3.66 (0.58)
Unit d33	4	2.68 (0.79)	3.11 (0.90)	3.19 (0.46)	2.53 (1.27)	2.13 (0.92)	2.42 (0.92)
Unit d34	4	2.84 (0.35)	3.14 (0.48)	3.07 (0.28)	3.20 (0.53)	2.31 (1.03)	2.67 (0.58)
No unit	13	3.32 (0.62)	3.60 (0.52)	3.46 (0.56)	3.30 (1.02)	2.98 (0.93)	3.82 (0.35)

Table 17

Hospital E Unit level Age, UWES, and PES-NWI

Hospital E	*N*	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Hospital	136	42.69 (13.08)	4.16 (0.87)	3.78 (1.07)	4.62 (0.97)	4.09 (0.92)
Unit e40	6	59.00 (7.54)	5.00 (0.54)	4.56 (0.50)	5.33 (0.53)	5.00 (0.75)
Unit e41	9	42.57 (5.74)	4.37 (1.09)	4.11 (1.24)	4.82 (1.20)	4.19 (1.12)
Unit e43	15	37.00 (14.45)	4.39 (0.95)	3.33 (1.03)	4.57 (0.74)	4.00 (1.33)
Unit e44	10	39.10 (15.61)	4.43 (1.05)	4.23 (1.26)	4.77 (1.36)	4.30 (0.94)
Unit e45	7	41.71 (14.33)	4.22 (0.60)	3.95 (0.85)	4.86 (0.69)	3.86 (0.72)
Unit e47	4	26.00 (2.83)	4.67 (1.18)	4.42 (1.42)	5.00 (1.36)	4.58 (1.17)
Unit e49	11	41.10 (11.18)	3.71 (0.72)	3.33 (1.01)	4.13 (0.86)	3.79 (0.67)
Unit e50	7	33.71 (4.96)	4.25 (0.81)	3.57 (1.03)	4.81 (0.81)	4.24 (0.90)
Unit e51	3	43.33 (20.03)	3.70 (0.61)	3.33 (0.33)	4.22 (1.07)	3.56 (0.51)
Unit e52	5	44.20 (8.23)	3.56 (0.14)	3.20 (0.45)	3.87 (0.30)	3.60 (0.43)
Unit e53	4	38.00 (7.00)	4.56 (0.62)	4.00 (0.27)	5.00 (0.82)	4.67 (0.88)
Unit e54	4	39.50 (10.34)	3.61 (0.69)	3.08 (1.13)	4.00 (0.47)	3.75 (0.57)
Unit e55	8	33.83 (13.17)	3.96 (0.55)	3.58 (0.75)	4.25 (0.56)	4.04 (0.74)

Table 17

Hospital E Unit level Age, UWES, and PES-NWI

Hospital E	N	Age M (SD)	UWES M (SD)	UWES-Vigor M (SD)	UWES-Dedication M (SD)	UWES-Absorption M (SD)
Unit e57	14	32.75 (8.51)	4.00 (1.11)	3.40 (1.63)	4.72 (1.19)	3.97 (0.88)
Unit e58	6	55.33 (9.29)	4.28 (1.03)	3.94 (1.32)	5.00 (0.79)	3.89 (1.22)
Unit e59	4	40.00 (16.17)	4.31 (0.23)	3.50 (1.15)	5.17 (0.67)	4.25 (0.69)
No unit	26	51.54 (11.26)	4.14 (0.95)	3.71 (0.99)	4.47 (1.11)	4.22 (0.97)

Table 18

Hospital E Unit level PES-NWI

Hospital E	N	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Hospital	136	3.12 (0.50)	3.15 (0.61)	3.36 (0.48)	3.24 (0.79)	2.97 (0.82)	3.87 (0.86)
Unit e40	6	3.60 (0.07)	3.41 (0.46)	3.84 (0.13)	3.77 (0.48)	3.50 (0.47)	3.87 (0.30)
Unit e41	9	3.04 (0.55)	2.81 (0.73)	3.04 (0.70)	3.33 (0.77)	3.25 (0.52)	3.26 (0.86)
Unit e43	15	3.12 (0.46)	3.27 (0.62)	3.25 (0.47)	3.29 (0.53)	2.83 (0.47)	3.19 (0.60)
Unit e44	10	3.02 (0.31)	2.99 (0.43)	3.44 (0.30)	3.28 (0.82)	2.75 (0.92)	3.33 (0.35)
Unit e45	7	2.87 (0.86)	3.20 (0.92)	3.24 (0.51)	2.94 (0.89)	2.61 (1.05)	2.57 (1.10)
Unit e47	4	3.52 (0.38)	3.59 (0.36)	3.48 (0.46)	3.55 (0.41)	3.33 (0.63)	4.00 (0.00)
Unit e49	11	2.88 (0.54)	2.71 (0.65)	3.19 (0.43)	2.85 (0.87)	2.65 (0.92)	3.21 (0.86)
Unit e50	7	3.34 (0.34)	3.20 (0.51)	3.68 (0.34)	3.63 (0.45)	3.54 (0.53)	3.24 (0.92)
Unit e51	3	3.30 (0.31)	3.29 (0.42)	3.63 (0.28)	3.67 (0.58)	3.17 (0.14)	3.00 (0.67)
Unit e52	5	3.54 (0.23)	3.38 (0.77)	3.42 (0.62)	3.90 (0.12)	2.95 (1.04)	3.40 (0.89)
Unit e53	4	3.52 (0.87)	3.28 (1.02)	3.28 (0.26)	2.55 (1.15)	2.81 (0.52)	3.08 (0.83)
Unit e54	4	3.18 (0.21)	3.08 (0.47)	3.33 (0.47)	3.70 (0.38)	2.81 (0.90)	3.67 (0.47)
Unit e55	8	2.97 (0.46)	3.09 (0.55)	3.11 (0.49)	3.05 (0.97)	2.56 (0.87)	2.33 (1.01)

119

Table 18

Hospital E Unit level PES-NWI

Hospital E	*N*	PES-NWI M (SD)	PES-NWI-NP M (SD)	PES-NWI-Qu M (SD)	PES-NWI-NM M (SD)	PES-NWI-STAFF M (SD)	PES-NWI-RN/MD M (SD)
Unit e57	14	2.94 (0.53)	3.21 (0.60)	3.32 (0.52)	3.08 (0.79)	2.90 (0.81)	2.11 (0.93)
Unit e58	6	3.52 (0.64)	3.57 (0.84)	3.75 (0.43)	3.73 (0.48)	2.54 (0.78)	3.78 (0.54)
Unit e59	4	3.15 (0.59)	3.28 (0.68)	3.36 (0.22)	3.30 (0.99)	2.93 (1.26)	3.25 (0.58)
No unit	26	3.05 (0.55)	2.97 (0.59)	3.35 (0.49)	3.04 (0.89)	2.99 (0.98)	3.19 (0.74)

Patient ratings

The hospital with the highest ratings for all three HCAHPS ratings of RN communication, overall hospital rating and likelihood to recommend was hospital B (the orthopedic specialty hospital). The hospital with the lowest ratings for all three HCAHPS ratings was hospital C (multiple specialties).

Two units held the highest ratings for all three HCAHPS ratings of RN communication, overall hospital rating and likelihood to recommend. Those units were unit c38 (medical-surgical) and e54 (oncology). Unit e50 (medical) had the lowest ratings across all three HCAHPS questions as follows: RN communication at 26.7 top-box ratings, overall hospital rating at 16.7 top-box ratings and likelihood to recommend at 33.3 top-box ratings. Tables 19-23 shows the HCAHPS ratings by unit.

Table 19

Hospital A Unit level RN Communication, Overall Rating of Hospital and Likelihood to Recommend (N total number of people who responded to the question, % top box-total percentage of the N who gave the highest rating)

Hospital A	N	RN Comm % top-box	N	Overall Hosp % top-box	N	LTR % top-box
Unit a1	33	76.2	33	81.8	33	84.8
Unit a2	91	81.5	90	80.0	91	87.9

Table 20

Hospital B Unit level RN Communication, Overall Rating of Hospital and Likelihood to Recommend (N total number of people who responded to the question, % top box-total percentage of the N who gave the highest rating)

Hospital B	RN Comm		Overall Hosp		LTR	
	N	% top-box	*N*	% top-box	*N*	% top-box
Unit b35	47	90.8	46	84.8	46	82.6
Unit b37	70	87.6	70	94.3	70	87.1

Table 21

Unit level RN Communication, Overall Rating of Hospital and Likelihood to Recommend (N total number of people who responded to the question, % top box-total percentage of the N who gave the highest rating)

Hospital C	N	RN Comm % top-box	N	Overall Hosp % top-box	N	LTR % top-box
Unit c4	35	81.9	35	85.7	35	91.4
Unit c5	44	77.3	45	84.4	45	75.6
Unit c6	32	78.1	31	61.3	32	65.6
Unit c7	45	71.9	45	62.2	45	66.7
Unit c8	56	82.1	57	75.4	57	86.0
Unit c9	9	63.0	9	77.8	9	77.8
Unit c10	14	76.2	14	50.0	14	71.4
Unit c11	5	53.3	5	40.0	5	40.0
Unit c12	16	62.5	16	62.5	16	62.5
Unit c13	49	65.3	49	61.2	49	65.3
Unit c15	26	75.3	26	53.8	26	57.7
Unit c16	5	100	5	40.0	5	60.0
Unit c38	3	100	3	100	3	100
Unit	8	83.3	8	75	8	62.5

Table 22

Hospital D Unit level RN Communication, Overall Rating of Hospital and Likelihood to Recommend (N total number of people who responded to the question, % top box-total percentage of the N who gave the highest rating)

		RN Comm		Overall Hosp		LTR
Hospital D	***N***	**% top-box**	***N***	**% top-box**	***N***	**% top-box**
Unit d21	33	90.8	33	87.9	33	84.8
Unit d24	52	71.4	51	70.6	51	70.6
Unit d25	37	94.6	37	94.6	32	86.5
Unit d26	7	89.7	7	85.7	7	85.7
Unit d27	29	86.2	29	86.2	29	89.7
Unit d31	15	73.3	15	73.3	15	73.3
Unit d33	18	85.2	18	77.8	18	83.3
Unit d34	40	84.8	31	79.5	33	84.6

Table 23

Hospital E Unit level RN Communication, Overall Rating of Hospital and Likelihood to Recommend (N total number of people who responded to the question, % top box-total percentage of the N who gave the highest rating)

Hospital E	N	RN Comm % top-box	N	Overall Hosp % top-box	N	LTR % top-box
Unit e40	9	85.2	9	88.9	9	88.9
Unit e41	7	89.7	7	100.0	7	100.0
Unit e43	22	87.7	22	81.8	22	86.4
Unit e44	20	73.3	20	75.0	20	80.0
Unit e45	37	88.2	37	94.6	37	97.3
Unit e47	17	49.0	17	52.9	16	50.0
Unit e49	37	76.6	37	70.3	37	81.1
Unit e50	5	26.7	6	16.7	6	33.3
Unit e51	93	81.6	93	81.7	93	80.6
Unit e52	13	89.7	13	92.3	13	84.6
Unit e53	15	57.8	15	66.7	15	80.0
Unit e54	9	100.0	9	100.0	9	100.0
Unit e55	22	87.9	22	72.7	22	72.7
Unit e57	28	90.5	27	96.3	28	96.4
Unit e58	4	100.0	4	75.0	4	75.0
Unit e59	14	83.3	14	92.9	14	85.7

Aim 2 results

The goal of Aim 2 was to determine the association of nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ2a: What is the association between nurse work engagement and patients' ratings of nurse communication?

RQ2b: What is the association between nurse work engagement and patients' ratings of the overall hospital stay?

RQ2c: What is the association between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Table 21 shows the results of the analysis which indicate a relationship of small magnitude between work engagement and patient ratings of nurse communication, ($B= -0.39$, $OR = 0.67$, $p=0.06$). The direction of this small relationship is negative, meaning as work engagement increases, nurse communication ratings decrease. Work engagement only accounts for approximately 5% (*Pseudo R^2 = 0.05*) of the variance in patient ratings of nurse communication. Figure 6 shows a plot with the association and direction of the relationship.

Table 24

Logistic Regression Model of Nurse Work Engagement and Patient Ratings of RN Communication, Overall Rating of the Hospital and the Likelihood to Recommend

Predictors	B	SE (B)	p	OR	95% CI		Effect Size
					Lower	Upper	Psuedo R^2 (Efron's)
Ratings of Nurse Communication							
Intercept	3	0.85	<.001	-	-	-	
Work Engagement	- 0.394	0.213	0.064	0.67	0.44	1.02	0.05
Ratings of Overall Hospital Stay							
Intercept	0.99	1.12	0.377	-	-	-	
Work Engagement	0.06	0.28	0.831	1.06	0.61	1.85	<0.01
Ratings of Overall Hospital Stay							
Intercept	1.52	0.99	0.126	-	-	-	
Work Engagement	-0.033	0.25	0.89	0.96	0.59	1.57	<0.01
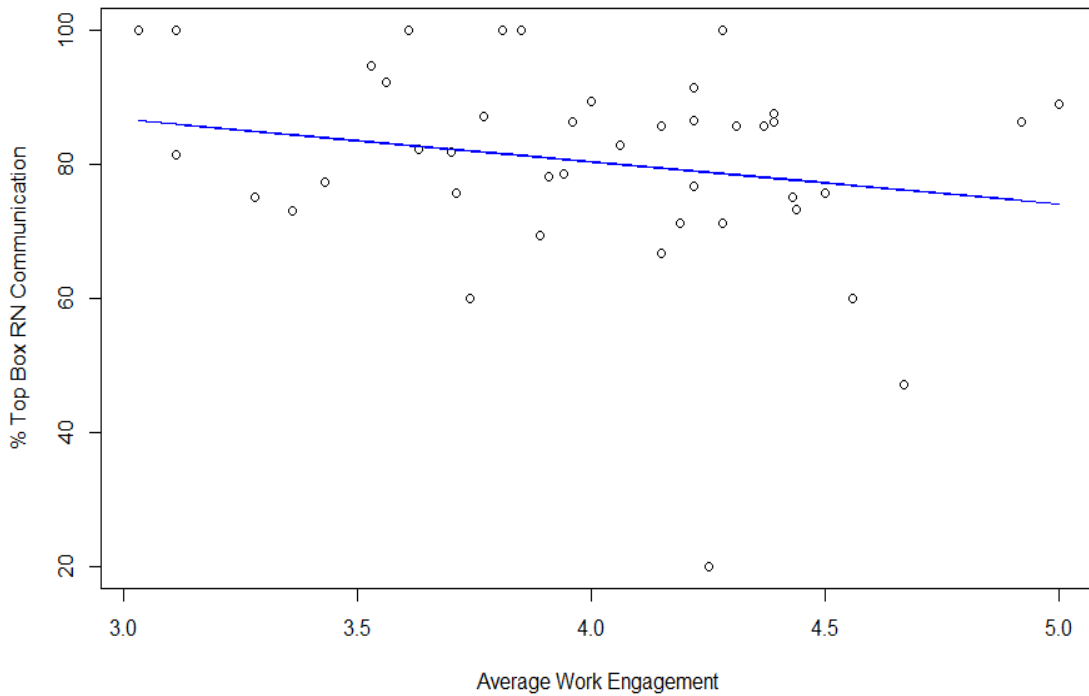
Figure 6. Plot showing the association of RN work engagement and ratings of RN communication

The patient rating of the overall hospital also has no apparent relationship with work engagement of hospital nurses (*B= 0.06, OR = 1.06, p=0.28*). Figure 7 shows a plot with the association and direction of the relationship of work engagement and ratings of the overall hospital stay. Last, the likelihood of a patient recommending the hospital to others appears to be not related with work engagement (*B= - 0.03, OR = 0.96, p=0.89*). Additionally, work engagement accounts for less than 1% (Pseudo R2 < 0.01) of the variance in patient ratings' of overall hospital rating and the likelihood to recommend the hospital to others. Figure 4 shows a plot with the association and direction of the relationship of work engagement and ratings of the likelihood to

128

recommend the hospital to others.
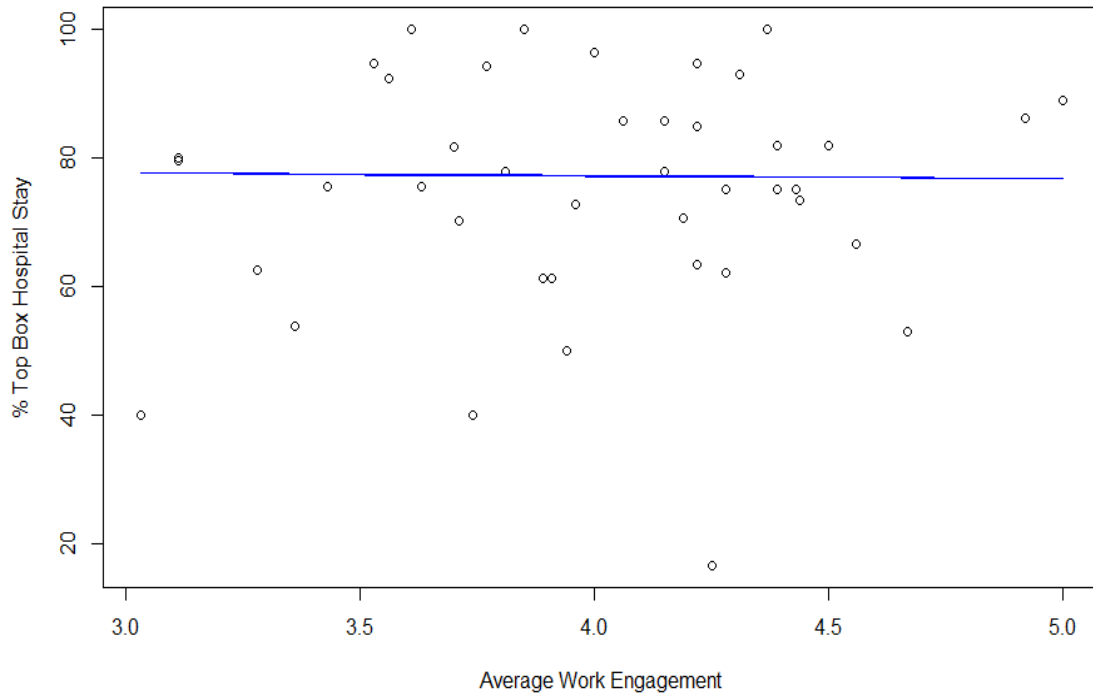
Figure 7. Plot Showing the Association of RN Work Engagement and Ratings of the

Overall Hospital Stay.
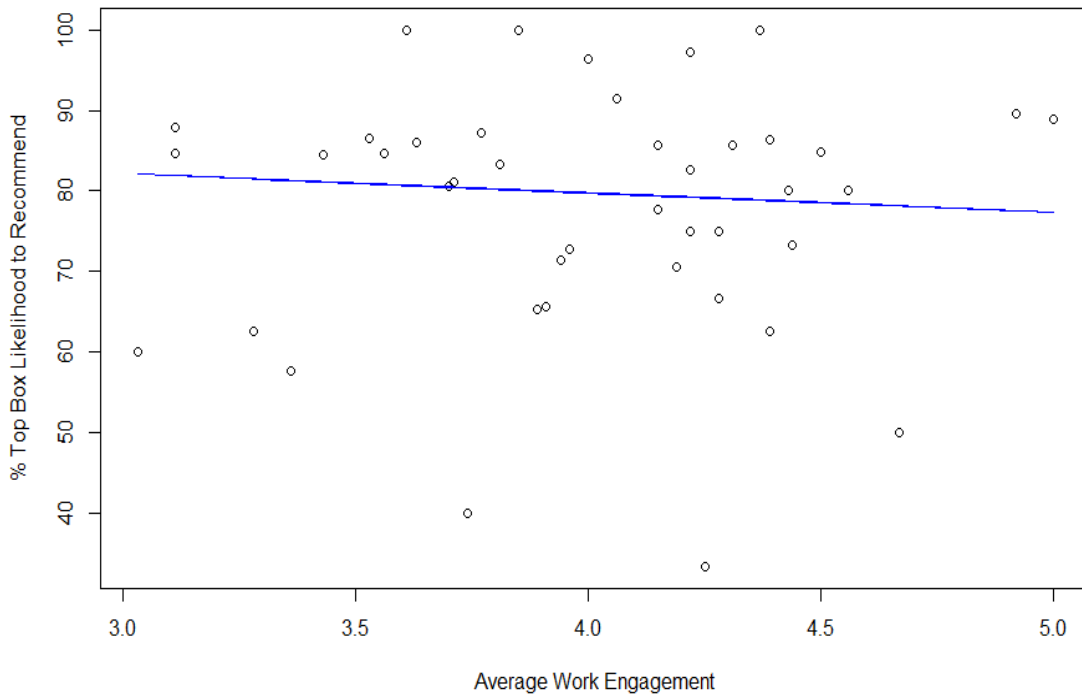
Figure 8. Plot Showing the Association of RN Work Engagement and Ratings of the

Likelihood to Recommend the Hospital to Others.

The results of the analysis indicate that at the weighted mean for work

engagement (WE) (WE= 3.88), the estimated top-box percentage of patient ratings of RN

communication is 81%. At the weighted mean plus 1 point, the estimated proportion of

top-box responses is 74%. Similarly, at the weighted mean for work engagement, the

estimated top-box percentage of patient ratings is 77%. At the weighted mean for work

engagement plus 1 unit, the estimated proportion of the top box responses for overall

rating of the hospital would be 78%. Last, at the weighted mean of work engagement,

the estimated top box percentage for the rating of likelihood to recommend is 77%. At

the weighted mean plus 1 point the estimated top-box percentage for patient ratings of

130

likelihood to recommend is 79%.   Table 25 shows the model predicted proportion of the

top-box hospital ratings.

Table 25

Model Predicted Proportion of Top Box Responses

Model Predicated proportion of Top Box Responses		
Outcomes	At Mean WE	At Mean WE +1
	Estimate (SE)	Estimate (SE)
Ratings of Nurse Communication	0.81 (0.02)	0.74 (0.04)
Ratings of Overall Hospital Stay	0.77 (0.02)	0.78 (0.05)
Likelihood to Recommend	0.77 (0.02)	0.79 (0.04)

Note. Weighted mean work engagement (WE) = 3.88, weighted standard deviation (SD) = 0.46.

Aim 3 results

The goal of aim three was to determine if nurse work engagement predicts the

patients' ratings of nurse communication, overall hospital stay, and likelihood to

recommend the hospital to others when controlling for hospital characteristics (case mix

index and unit specialty type) and nurse characteristics (i.e., age, gender, magnet status

[magnet or non-magnet hospital], employment status [full-time, part-time], education

status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift

worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours].

Aim 3 Research Question Results

RQ3a: Does nurse work engagement predict the patients' ratings of nurse

communication, when controlling for unit characteristics (case mix index and unit

type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet

hospital], employment status [full-time, part-time], education status [diploma, ADN,

BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

To investigate if nurse work engagement predicts top-box patients' ratings of nurse communication (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff characteristics summarized at the unit level: average age (recoded to indicate a 5 year change), gender (recoded to indicate a 10% change in percentage of males), magnet status, employment status (recoded to indicate a 10% change in percentage of full-time nursing staff), education status (with two indicator variables, recoded to indicate a 10% change in ADN-trained and MSN-trained percentage of nursing staff, respectively), marital status (recoded to indicate a 10% change in percentage of married nursing staff), primary shift worked (recoded to indicate a 10% change in percentage of day shift nursing staff), and primary shift length (recoded to indicate a 10% change in percentage of nursing staff on 12-hour shifts).

The third Block included work engagement. Table 26 shows the final fitted generalized linear mixed model (with random effect for unit) including the three Blocks. To obtain odds ratios, the estimated coefficient values (Bs) were exponentiated. To aid in interpretation, pseudo effect sizes were computed using ordinary linear models. These pseudo effect sizes included (Efron's) pseudo adjusted-R^2 to determine the proportion of variability of the binary outcome explained sequentially by the Blocks, and pseudo Eta^2 to determine the individual predictors more relevant in the final model.

132

Table 26

Nurse Work Engagement and Patient Ratings of RN Communication with Control Variable Case-Mix Index, Unit Specialty Type and Nurse Characteristics

Block	Factors	B	SE (B)	p	OR	95% CI Lower	95% CI Upper	Sequential Change Delta Psuedo R^2 (Efron's)	Sequential Change Efron's Pseudo R^2	Effect Size Pseudo Eta^2
1	Intercept	0.05	2.00	0.98	-	-	-			< 0.01
1	Case mix index	0.05	0.18	0.77	1.05	0.74	1.49			0.19
	Unit Type									
1	Medical	0.15	0.39	0.71	1.16	0.54	2.51			
1	Med-Surg	0.65	0.37	0.08	1.91	0.93	3.95			
1	Nephrology	-0.05	0.54	0.92	0.95	0.33	2.71			
1	Obstetrics	-0.04	0.46	0.92	0.96	0.39	2.34			
1	Oncology	0.42	0.47	0.37	1.52	0.61	3.80			
1	Orthopedics	0.90	0.49	0.06	2.47	0.95	6.40			
1	Surgical	-0.03	0.40	0.93	0.97	0.44	2.13			

1	Cardiology	-	-	-	-	-	-	0.13	0.13	
2	Age (5)	0.08	0.10	0.41	1.08	0.90	1.31			0.05
2	Percent Male (10)	-0.20	0.13	0.14	0.82	0.63	1.07			0.02
2	Magnet	-0.40	0.25	0.10	0.67	0.41	1.08			0.05
2	Full-time (10)	0.13	0.08	0.11	1.13	0.97	1.32			0.07
2	Master's Education (10)	0.01	0.06	0.92	1.01	0.89	1.14			< 0.01
2	Associate Education (10)	-0.11	0.09	0.24	0.90	0.76	1.07			0.07
2	Married (10)	0.05	0.05	0.22	1.06	0.97	1.15			0.02
2	DayShift (10)	0.02	0.04	0.67	1.02	0.94	1.11			< 0.01
2	12 Hours (10)	0.03	0.06	0.62	1.03	0.92	1.16	0.06	0.19	0.02
3	Work Engagement	-0.24	0.29	0.40	0.78	0.44	1.39	-0.02	0.17	0.02

Note. Overall test for unit type $p = 0.2996$, * $p < 0.05$

The first Block including unit characteristics explained 13.0 % of the variability

of top-box ratings of nurse communication (*Efron's pseudo R^2 = 0.13*). The second Block

including nursing staff characteristics summarized at the unit level explained an

additional 6% of the variability of top-box ratings of nurse communication beyond that

explained by the first Block (*Delta Efron's pseudo R^2 = 0.06*). The third block consisting

of work engagement resulted in a negative change in proportion of variability explained

(*Delta Efron's pseudo R^2 = - 0.02*), indicating negligible contribution of work

engagement to explaining top-box ratings of nurse communication beyond the

contribution of the predictors in the previous Blocks. The full model explained 17.0 % of

the variability of top-box ratings of nurse communication (*Efron's pseudo R^2 = 0.17*).

Confidence intervals and p-values for all predictor effects indicated uncertainty of

estimates beyond the sample as hypothetical true null values for all effects could not be

statistically ruled out (i.e., tests were "non-significant").

In terms of individual predictors in Block 1, case mix index had an estimated

OR=1.05 (*95%CI* = 0.74 - 1.49), which indicated that patients in units with higher case

mix index reported slightly higher ratings of nurse communication; that is, an increase of

1 in case mix index was associated with 1.05 times the odds of top-box response, given

that all other variables in the model are held constant. However, the estimated effect size

for case mix index was trivial (*pseudo Eta^2 <0.01*). Model-estimated proportions of top-

box response by unit type are presented in Table 27. The unit type with the highest

estimated proportion of top-box responses was orthopedics at 0.89, while nephrology,

obstetrics, and surgical had the lowest estimated proportions of top-box responses at 0.76.

The estimated effect size for unit type was medium (*pseudo Eta² =0.19*, Table 21),

however this could be partially the result of the number of coefficients required to fit this

predictor (7 coefficients).

Table 27

Model-Estimated Proportions of Patients' Top-Box Ratings of Nurse Communication by Unit Type

Unit Type	Response	SE	95% Confidence Interval	
			Lower	Upper
Cardiology	0.77	0.05	0.68	0.86
Medical	0.79	0.05	0.70	0.88
Med-Surg	0.86	0.03	0.80	0.92
Nephrology	0.76	0.08	0.59	0.92
Obstetrics	0.76	0.06	0.64	0.88
Oncology	0.83	0.05	0.73	0.94
Orthopedics	0.89	0.04	0.81	0.97
Surgical	0.76	0.05	0.67	0.85

In terms of the nursing staff characteristics in Block 2, as per the estimated ORs

and effect sizes (Table 27) all of these predictors had small effects. Within Block 2, the

predictors with the largest effect sizes were the percentage of full-time staff (*pseudo Eta²*

=0.07), and the percentage of staff with ADN education (*pseudo Eta² =0.07*). Higher

percentage of full-time staff and lower percentage of ADN-educated staff were associated

with increases in the proportion of top-box response: a 10% increase in the percentage of full-time staff was associated with 1.13 times the odds of top-box response (OR=1.13, $95\%\ CI = 0.97 - 1.32$). A 10% increase in the percentage of staff with ADN education was associated with 0.90 times the odds of top-box response (OR=0.90, $95\%CI = 0.76 - 1.07$).

Lastly, work engagement (the only predictor in Block 3) had a small effect size (*pseudo Eta*^{2} =0.02) conditional on the other predictors included in the model. Higher levels of work engagement were associated with lower proportion of top-box responses. An increase of 1 in work engagement was associated with 0.78 times the odds of top-box response (OR=0.78, 95% $CI = 0.44 - 1.39$). The model-estimated proportion of the overall hospital rating top-box response at the weighted mean work engagement (weighted by the number of patient surveys) of 3.88 was 0.77 (SE=0.02), and the estimated proportion at the mean + 1 was 0.78 (SE=0.05), indicating that conditional on the other variables in the model, the effect of work engagement on proportion of top-box response was small, even for a large increase in work engagement (weighted work engagement SD= 0.46).

RQ3b: Does nurse work engagement predict patients' ratings of the overall hospital stay, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

137

To investigate if nurse work engagement predicts top-box patients' ratings of the overall hospital stay (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff characteristics summarized at the unit level in the same manner as research question 3a. The third Block included work engagement. Table 28 shows the final fitted generalized linear mixed model (with random effect for unit) including the three Blocks.

Table 28

Nurse Work Engagement and Patient Ratings of the Overall Hospital Stay with Control Variable Case-Mix Index, Unit Specialty Type and Nurse Characteristics

Block	Factors	B	SE (B)	p	OR	95% CI		Sequential Change		Effect Size
						Lower	Upper	Delta Psuedo R^2 (Efron's)	Efron's Pseudo R^2	Pseudo Eta^2
1	Intercept	2.09	1.91	0.27	-	-	-			
1	Case mix index	0.06	0.17	0.71	1.07	0.76	1.49			< 0.01
	Unit Type									0.24
1	Medical	-0.38	0.36	0.29	0.68	0.33	1.39			
1	Med-Surg	0.30	0.36	0.40	1.35	0.67	2.71			
1	Nephrology	-0.01	0.52	0.99	0.99	0.36	2.75			
1	Obstetrics	-0.49	0.43	0.26	0.61	0.26	1.43			
1	Oncology	-0.17	0.45	0.70	0.84	0.35	2.02			
1	Orthopedics	0.65	0.50	0.19	1.92	0.73	5.08			
1	Surgical	-0.60	0.39	0.12	0.55	0.26	1.17			
1	Cardiology	-	-	-	-	-	-	0.18	0.18	
2	Age (5)	0.09	0.09	0.30	1.10	0.92	1.30			0.04
2	Percent Male (10)	-0.13	0.12	0.28	0.88	0.69	1.12			0.01
2	Magnet	-0.68	0.23	0.00**	0.50	0.32	0.80			0.15
2	Full-time (10)	-0.02	0.07	0.75	0.98	0.85	1.13			0.01
2	Master's Education (10)	-0.02	0.06	0.69	0.98	0.87	1.09			0.01
2	Associate Education (10)	0.06	0.08	0.44	1.07	0.91	1.26			0.01
2	Married (10)	0.11	0.04	0.01*	1.11	1.03	1.21			0.12

Table 28

Nurse Work Engagement and Patient Ratings of the Overall Hospital Stay with Control Variable Case-Mix Index, Unit Specialty Type and Nurse Characteristics

Block	Factors	B	SE (B)	p	OR	95% CI Lower	95% CI Upper	Sequential Change Delta Psuedo R^2 (Efron's)	Sequential Change Efron's Pseudo R^2	Effect Size Pseudo Eta^2
2	DayShift (10)	-0.02	0.04	0.58	0.98	0.90	1.06			0.01
2	12 Hours (10)	-0.06	0.06	0.33	0.95	0.85	1.06	0.10	0.28	0.02
3	Work Engagement	-0.26	0.27	0.35	0.77	0.45	1.32	-0.01	0.27	0.03

Note. Overall test for unit type p = 0.0586, * p < 0.05

The first Block including unit characteristics explained 18.0 % of the variability of top-box ratings of the overall rating of the hospital (*Efron's pseudo R^2* = 0.18). The second Block including nursing staff characteristics summarized at the unit level explained an additional 10% of the variability of top-box ratings of the overall hospital beyond that explained by the first Block (Delta *Efron's pseudo R^2* = 0.10). The third block consisting of work engagement resulted in a negative change in proportion of variability explained (*Delta Efron's pseudo R^2* = - 0.01), indicating negligible contribution of work engagement to explaining top-box ratings of the overall hospital beyond the contribution of the predictors in the previous Blocks. The full model explained 27.0 % of the variability of top-box ratings of the overall hospital (*Efron's pseudo R^2* = 0.27). P-values for both Magnet hospital units and those with a large proportion of nurses who were married were significant (Magnet *p-value* = 0.00, married

p-value = 0.01). This may suggest that Magnet or non-Magnet designated hospital units

and marital status statistically influence patient ratings of the overall hospital. All other

confidence intervals and p-values for the other predictor effects indicated uncertainty of

estimates beyond the sample as hypothetical true null values for all effects could not be

statistically ruled out (i.e., tests were "non-significant").

In terms of individual predictors in Block 1, case mix index had an estimated

OR=1.07 (*95%CI* = 0.76 - 1.49), which indicated that patients in units with higher case

mix index reported slightly higher ratings of the overall hospital; i.e., an increase of 1 in

case mix index was associated with 1.07 times the odds of top-box response, given that

all other variables in the model are held constant. However, the estimated effect size was

for case mix index was trivial (*pseudo Eta^2* <0.01). Model-estimated proportions of top-

box response by unit type are presented in Table 29. The unit type with the highest

estimated proportion of top-box responses was orthopedics at 0.87, while surgical had the

lowest estimated proportions of top-box responses at 0.66. The estimated effect size for

unit type was medium (*pseudo Eta^2* =0.24, Table 23), however this could be partially the

result of the number of coefficients required to fit this predictor (7 coefficients).

Table 29

Model of Estimated Proportions of Overall Rating of the

Hospital by Specialty Group

			95% Confidence Interval	
	Response	SE	Lower Bound	Upper Bound
Cardiology	0.78	0.04	0.70	0.87
Medical	0.71	0.05	0.60	0.81
Med-Surg	0.83	0.03	0.76	0.90
Nephrology	0.78	0.08	0.63	0.93
Obstetrics	0.69	0.07	0.56	0.81
Oncology	0.75	0.06	0.63	0.87
Orthopedics	0.87	0.05	0.78	0.96
Surgical	0.66	0.05	0.55	0.77

In terms of the nursing staff characteristics in Block 2, as per the estimated ORs and effect sizes (Table 29) all of these predictors had small effects. Within Block 2, the predictors with the largest effect sizes were the Magnet hospital units (*pseudo Eta^2* =0.15), and the percentage of staff who are married (*pseudo Eta^2* =0.12). Magnet hospital units and higher percentage of married staff were associated with increases in the proportion of top-box response: a 10% increase in the percentage of married staff was associated with 1.11 times the odds of top-box response (*OR*=1.11, *95%CI* = 1.13 – 1.21).

Lastly, work engagement (the only predictor in Block 3) had a small effect size (*pseudo Eta*^{2} =0.03) conditional on the other predictors included in the model. Higher levels of work engagement were associated with lower proportion of top-box responses. An increase of 1 in work engagement was associated with 0.77 times the odds of top-box response (*OR*=0.77, 95%CI = 0.45 – 1.32). The model-estimated proportion of the overall rating of the hospital top-box response at the weighted mean work engagement (weighted by the number of patient surveys) of 3.88 was 0.81 (*SE*=0.02), and the estimated proportion at the mean + 1 was 0.77 (*SE*=0.05), indicating that conditional on the other variables in the model, the effect of work engagement on proportion of top-box response was small, even for a large increase in work engagement (weighted work engagement *SD*= 0.46).

RQ2c: Does nurse work engagement predict patients' ratings of the likelihood to recommend the hospital to others, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status [married, not married], primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])?

To investigate if nurse work engagement predicts top-box patients' ratings of the likelihood to recommend the hospital to others (the binary outcome variable) when controlling for unit and nurse characteristics, a hierarchical approach for model building was used by entering the predictors in 'Blocks'. The first Block included unit characteristics (case mix index and unit type). The second Block included nursing staff

characteristics summarized at the unit level in the same manner as research questions 3a

and b. The third Block included work engagement. Table 30 shows the final fitted

generalized linear mixed model (with random effect for unit) including the three Blocks.

Table 30

*Nurse Work Engagement and Patient Ratings of the Likelihood to Recommend the
Hospital to Others with Control Variable Case-Mix Index, Unit Specialty Type and Nurse
Characteristics*

						95% CI		Sequential Change		Effect Size
Block	Factors	B	SE (B)	p	OR	Lower	Upper	Delta Psuedo R^2 (Efron's)	Efron's Pseudo R^2	Pseudo Eta^2
1	Intercept	1.97	1.97	0.32	-	-	-			
1	Case mix index	0.31	0.18	0.08	1.37	0.96	1.95			0.08
	Unit Type									0.11
1	Medical	0.04	0.38	0.91	1.04	0.50	2.18			
1	Med-Surg	0.33	0.36	0.36	1.39	0.68	2.85			
1	Nephrology	0.20	0.54	0.71	1.23	0.42	3.57			
1	Obstetrics	-0.21	0.45	0.64	0.81	0.33	1.95			
1	Oncology	0.05	0.46	0.91	1.05	0.42	2.61			
1	Orthopedics	0.47	0.47	0.32	1.60	0.63	4.04			
1	Surgical	0.05	0.41	0.90	1.05	0.47	2.37			
1	Cardiology	-	-	-	-	-	-	0.16	0.16	
2	Age (5)	0.02	0.09	0.79	1.02	0.86	1.22			<0.01
2	Percent Male (10)	-0.13	0.12	0.30	0.88	0.69	1.12			0.04
2	Magnet	-0.23	0.24	0.35	0.80	0.50	1.28			0.02
2	Full-time (10)	-0.10	0.07	0.17	0.90	0.78	1.04			0.06

Table 30

Nurse Work Engagement and Patient Ratings of the Likelihood to Recommend the Hospital to Others with Control Variable Case-Mix Index, Unit Specialty Type and Nurse Characteristics

Block	Factors	B	SE (B)	p	OR	95% CI		Sequential Change		Effect Size
						Lower	Upper	Delta Psuedo R^2 (Efron's)	Efron's Pseudo R^2	Pseudo Eta^2
2	Master's Education (10)	-0.01	0.06	0.91	0.99	0.89	1.11			<0.01
2	Associate Education (10)	-0.02	0.09	0.82	0.98	0.83	1.16			0.01
2	Married (10)	0.08	0.04	0.05	1.09	1.00	1.18			0.09
2	DayShift (10)	-0.04	0.04	0.37	0.96	0.89	1.04			0.02
2	12 Hours (10)	0.01	0.06	0.82	1.01	0.90	1.14	0.01	0.17	<0.01
3	Work Engagement	-0.19	0.29	0.52	0.83	0.47	1.46	-0.03	0.14	0.01

Note. Overall test for unit type p = 0.8139, * p < 0.05

The first Block including unit characteristics explained 16.0% of the variability of top-box ratings of the likelihood of recommending the hospital to others (*Efron's pseudo R^2 = 0.16*). The second Block including nursing staff characteristics summarized at the unit level explained an additional 1% of the variability of top-box ratings of the likelihood of recommending the hospital to others beyond that explained by the first Block (*Delta Efron's pseudo R^2 = 0.01*). The third block consisting of work engagement resulted in a negative change in proportion of variability explained (Delta *Efron's pseudo*

$R^2 = -0.03$), indicating negligible contribution of work engagement to explaining top-box ratings of the likelihood of recommending the hospital to others beyond the contribution of the predictors in the previous Blocks. The full model explained 14.0 % of the variability of top-box ratings of the likelihood of recommending the hospital to others (*Efron's pseudo R^2 = 0.14*). Confidence intervals and p-values for all predictor effects indicated uncertainty of estimates beyond the sample as hypothetical true null values for all effects could not be statistically ruled out (i.e., tests were "non-significant").

In terms of individual predictors in Block 1, case mix index had an estimated *OR*=1.37 (*95%CI = 0.96 - 1.95*), which indicated that patients in units with higher case mix index reported slightly higher ratings of the overall hospital; i.e., an increase of 1 in case mix index was associated with 1.37 times the odds of top-box response, given that all other variables in the model are held constant. However, the estimated effect size was for case mix index was trivial (*pseudo Eta^2 = 0.08*). Model-estimated proportions of top-box response by unit type are presented in Table 31. The unit type with the highest estimated proportion of top-box responses was orthopedics at 0.84, while obstetrics had the lowest estimated proportions of top-box responses at 0.73. The estimated effect size for unit type was medium (*pseudo Eta^2 =0.11*, Table 30), however this could be partially the result of the number of coefficients required to fit this predictor (seven coefficients).

Table 31

Model of Estimated Proportions of Likelihood to Recommend

The Hospital to Others By Specialty Group

	Response	SE	95% Confidence Interval	
			Lower Bound	Upper Bound
Cardiology	0.77	0.05	0.68	0.86
Medical	0.78	0.05	0.69	0.87
Med-Surg	0.82	0.03	0.76	0.89
Nephrology	0.81	0.07	0.66	0.95
Obstetrics	0.69	0.07	0.56	0.81
Oncology	0.73	0.06	0.61	0.85
Orthopedics	0.84	0.05	0.74	0.94
Surgical	0.78	0.05	0.69	0.87

In terms of the nursing staff characteristics in Block 2, as per the estimated ORs and effect sizes (Table 30) all of these predictors had small effects. Among Block 2, the predictors with the largest effect sizes was the percentage of staff who are married (*pseudo Eta^2* =0.09). Higher percentages of married staff were associated with increases in the proportion of top-box response: a 10% increase in the percentage of married staff was associated with 1.08 times the odds of top-box response (*OR*=1.08, *95%CI* = 0.99 – 1.17).

Lastly, work engagement (the only predictor in Block 3) had a small effect size

(*pseudo Eta^2* =0.01) conditional on the other predictors included in the model. Higher

levels of work engagement were associated with lower proportion of top-box responses.

An increase of 1 in work engagement was associated with 0.83 times the odds of top-box

response (*OR*=0.83, 95%CI = 0.47 − 1.46). The model-estimated proportion of the overall

rating of the hospital top-box response at the weighted mean work engagement (weighted

by the number of patient surveys) of 3.88 was 0.77 (*SE*=0.02), and the estimated

proportion at the mean + 1 was 0.79 (*SE*=0.04), indicating that conditional on the other

variables in the model, the effect of work engagement on proportion of top-box response

was small, even for a large increase in work engagement (weighted work engagement

SD= 0.46).

Aim 4 results

The goal of Aim 4 was to determine whether nursing practice environment

mediates the relationships between nurse work engagement and : a) patients' ratings of

nurse communication, b) overall hospital stay, and c) likelihood to recommend the

hospital to others. Path analysis via structural equation modeling (SEM) robust to non-

normality was used to address Aim 4.

RQ4a: Does the nursing practice environment mediate relationships between nurse work

engagement and patients' ratings of nurse communication?

Table 32 shows the model estimates in original units and as standardized coefficients, and

Figure 9 shows the estimated standardized path coefficients. Table 32 also shows the

estimates of indirect effect and total effect. Given a, b, c as effects from each variable

(see Figure 9), the direct effect is represented as the relationship of nurse work engagement to patient ratings of RN communication (c). The indirect effect, also known as the mediated effect, is represented as the relationship of nurse work engagement to patient ratings of RN communication through practice environment (a*b). The total effect of work engagement and patient ratings of RN communication is the sum of the direct and indirect effects (c + a*b).

The direct effect of work engagement to patient ratings of RN communication was -0.282 which shows a medium effect size. The indirect or mediated effect of work engagement to patient ratings of RN communication through practice environment was 0.056 which is a small effect size. The total effect of work engagement and patient ratings of RN communication is the sum of the direct and indirect effects is -0.226 which is a small-to-medium effect size. These results suggest an inconsistent mediation pattern. This means that the mediator acts as a suppressor variable. Simply explained, the direct effect of work engagement to patient ratings of RN communication is negative meaning the higher the work engagement the lower the patient ratings. However in this mediation model, the effect of work engagement on practice environment is positive, meaning the higher the work engagement the more favorably rated the practice environment.

Table 32

*Nurse Work Engagement and Patient Ratings of RN Communication Mediation with
Practice Environment*

	Estimate	Std. Err	z-value	p-value	Standardized
Regressions					
RN comm. & Work Engagement	-8.625	3.949	-2.184	0.029	-0.282
Prac Env. & Work Engagement	0.389	0.091	4.277	0.00	0.503
RN comm. & Prac Env.	4.422	6.142	0.72	0.472	0.112
Variances					
RN comm.	189.793	66.982	2.834	0.005	0.94
Prac Env.	0.097	0.023	4.288	0.000	0.747
R-Square					
RN comm.	0.06	-	-	-	-
Prac Env.	0.253	-	-	-	-
Defined Parameters					
Indirect Effect	1.721	2.419	0.712	0.477	0.056
Total Effect	-6.903	4.187	-1.649	0.099	-0.226

Furthermore the effect of practice environment on patient ratings of RN communication
is positive, which makes the indirect effect positive. Therefore the total effect of work
engagement on patient ratings of RN communication is reduced as the direct and indirect
effects go in different direction. Typically, with inconsistent mediation, the direct effect
is larger than the total effect, which is the case with this data. The data provided
moderate support to the hypothesis that the relationship between work engagement and

patient ratings of RN communication were mediated by practice environment. However,

the mediation pattern between the variables.
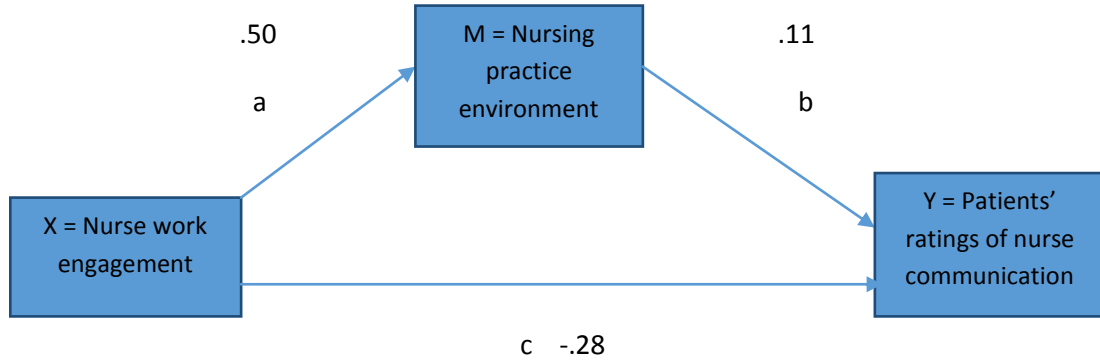
Figure 9. Mediation Path Diagram Ratings Nurse Communication with Aim 4 Results

The same analysis was conducted to evaluate the effect of the nursing practice

environment on associations between nurse work engagement and patients' ratings of the

overall hospital stay.

RQ4b: Does the nursing practice environment mediate relationships between

nurse work engagement and patients' ratings of the overall hospital stay?

Table 33 shows the model estimates in original units and as standardized coefficients, and

Figure 10 shows the estimated standardized path coefficients. Table 33 also shows the

estimates of indirect effect, and total effect. Given a, b, c as effects from each variable

(see Figure 10), the direct effect is represented as the relationship of nurse work

engagement to patients' ratings of the overall hospital stay (c). The indirect effect, also

known as the mediated effect, is represented as the relationship of nurse work

engagement to patient ratings of the overall hospital stay through practice environment

(a*b). The total effect of work engagement and patient ratings of the overall hospital stay

is the sum of the direct and indirect effects (c + a*b).

The direct effect of work engagement to patient ratings of the overall hospital stay

was 0.095, which shows a small effect size. The indirect or mediated effect of work

engagement to patient ratings of the overall hospital stay through practice environment

was 0.012, which is also a small effect size. The total effect of work engagement and

patient ratings of the overall hospital stay is the sum of the direct and indirect effects is -

0.108, which is a small effect size. These results suggest an inconsistent mediation

pattern. This means that the mediator acts as a suppressor variable. Simply explained,

the direct effect of work engagement to patient ratings of the overall hospital stay is

negative meaning the higher the work engagement, the lower the patient ratings.

However, in this mediation model, the effect of work engagement on practice

environment is positive, meaning the higher the work engagement the more favorably

rated the practice environment.

Table 33

Nurse Work Engagement and Patient Ratings of the Overall Hospital Stay

Mediation with Practice Environment

	Estimate	Std. Err	z-value	p-value	Standardized
Regressions					
Overall Hospital Stay & Work Engagement	3.652	6.677	0.547	0.584	0.095
Prac Env. & Work Engagement	0.389	0.091	4.277	0.00	0.503
Overall Hospital Stay & Prac Env.	1.223	8.407	0.145	0.884	0.025
Variances					
Overall Hospital Stay	312.763	89.094	3.51	0.000	0.988
Prac Env.	0.097	0.023	4.288	0.000	0.747
R-Square					
Overall Hospital Stay	0.012	-	-	-	-
Prac Env.	0.253	-	-	-	-
Defined Parameters					
Indirect Effect	0.476	3.268	0.146	0.884	0.012
Total Effect	4.128	5.451	0.757	0.449	0.108

Furthermore, effect of practice environment on patient ratings of the overall hospital stay is positive, which makes the indirect effect positive. Therefore, the total effect of work engagement on patient ratings of the overall hospital stay is reduced as the direct and indirect effects go in different directions. Typically, with inconsistent mediation, the direct effect is even larger than the total effect, which is the case with this data. The data provided moderate support to the hypothesis that the relationship between work engagement and patient ratings of the overall hospital were mediated by practice environment. However, the mediation analysis showed an inconsistent mediation pattern between the variables.
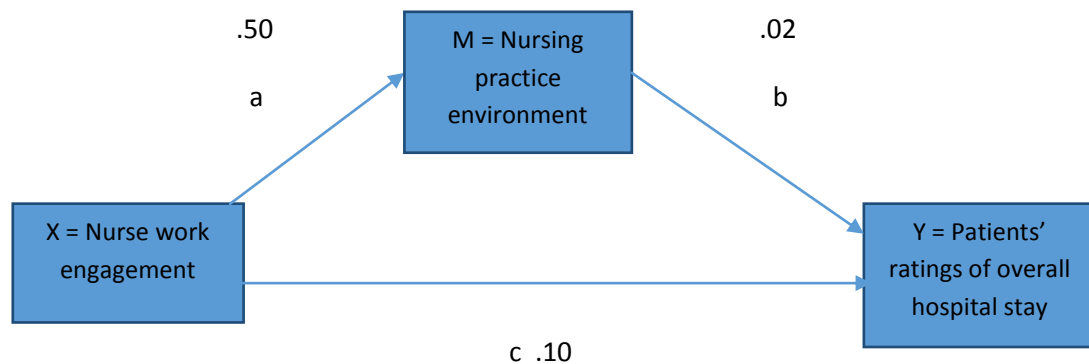
Figure 10. Mediation Path Diagram Ratings Overall Hospital with Aim 4 Results

The same analysis was conducted to evaluate the effect of the nursing practice environment on associations between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others.

RQ4c: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others?

Table 34 shows the model estimates in original units and as standardized coefficients, and Figure 11 shows the estimated standardized path coefficients. Table 34 also shows the estimates of indirect effect and total effect. Given a, b, c as effects from each variable (see Figure 11), the direct effect is represented as the relationship of work engagement to patient ratings of the likelihood to recommend the hospital to others (c). The indirect effect, also known as the mediated effect, is represented as the relationship of work engagement to patient ratings of the likelihood to recommend the hospital to others through practice environment (a*b). The total effect of work engagement and patient ratings of the likelihood to recommend the hospital to others is the sum of the direct and indirect effects (c + a*b).

The direct effect of work engagement on patient ratings of the likelihood to recommend the hospital to others was 0.095, which shows a small effect size. The indirect or mediated effect of work engagement on patient ratings of the likelihood to recommend the hospital to others through practice environment was -0.049, which is also a small effect size. The total effect of work engagement and patient ratings of likelihood to recommend the hospital to others is the sum of the direct and indirect effects is 0.047 which is a small effect size. These results suggest an inconsistent mediation pattern. This means that the mediator acts as a suppressor variable. Simply explained, the direct effect of work engagement to patient ratings of the likelihood to recommend the hospital to others is negative meaning the higher the work engagement the lower the patient ratings. However in this mediation model, the effect of work engagement on practice environment is positive, meaning the higher the work engagement the more favorably rated the practice environment.

155

Table 34

Nurse Work Engagement and Patient Ratings of the Likelihood to Recommend the

Hospital to Others (LTR) Mediation with Practice Environment

	Estimate	Std. Err	z-value	p-value	Standardized
Regressions					
LTR & Work Engagement	3.07	5.000	0.614	0.539	0.095
Prac Env. & Work Engagement	0.389	0.091	4.277	0.00	0.503
LTR & Prac Env.	-4.024	7.486	-0.537	0.591	-0.097
Variances					
LTR	212.862	58.134	3.816	0.000	0.991
Prac Env.	0.097	0.023	4.288	0.000	0.747
R-Square					
LTR	0.009	-	-	-	-
Prac Env.	0.253	-	-	-	-
Defined Parameters					
Indirect Effect	-1.566	2.912	-0.538	0.591	-0.049
Total Effect	1.504	4.632	0.325	0.745	0.047

Furthermore, the effect of practice environment on likelihood to recommend the hospital

to others is positive, which makes the indirect effect positive. Therefore, the total effect

of work engagement on patient ratings of likelihood to recommend the hospital to others

is reduced as the direct and indirect effects go in different directions. Typically, with

inconsistent mediation, the direct effect is larger than the total effect, which is the case

with this data. The data provided moderate support to the hypothesis that the relationship

between work engagement and patient ratings of the likelihood to recommend the

hospital to others was mediated by practice environment. However, the mediation

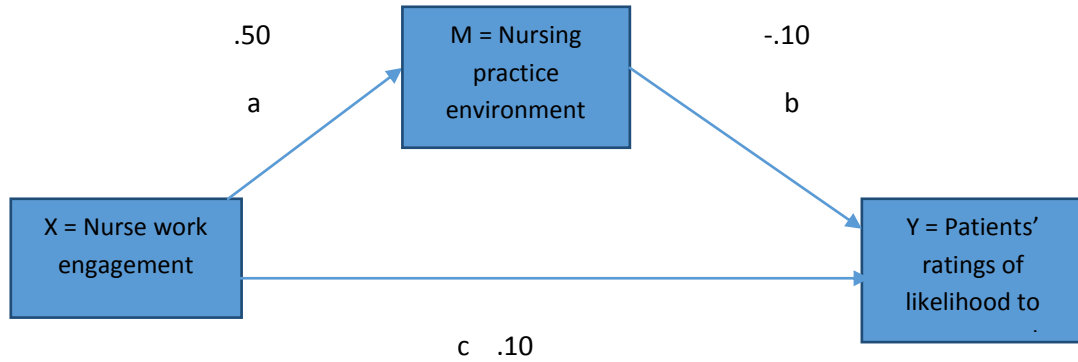analysis showed an inconsistent mediation pattern between the variables.

Figure 11. Mediation Path Diagram Ratings Likelihood to Recommend with Aim 4
Results

CHAPTER 5

DISCUSSION

The purpose of Chapter 5 is to discuss the findings, limitations and future

implications of this research study. First a discussion of the demographic data will be

presented. Next, a discussion of the findings for work engagement, patient ratings and

practice environment will be provided. Third, study aims and additional analysis

conducted are reviewed. Last, a conclusion discussing the limitations, implications for

nursing practice and recommendations for future research are presented.

A cross-sectional, correlational design was used to explore the association

between nurse work engagement and patients' ratings of nurse communication, the

overall hospital stay, and likelihood of the patient recommending the hospital to others.

To explore the goals of the study, the Utrecht Work Engagement Survey (UWES),

Practice Environment Survey (PES-NWI) and a short demographic survey were

administered. Additionally, the Hospital Consumer Assessment of Providers and

Hospital Systems (HCAHPS) was used to obtain selected patient ratings. To explore the

goal, 448 registered nurses from 43 inpatient units completed the surveys. The sample of

patients who completed the selected HCAHPS survey questions was 1,259.

Discussion Demographic Data

The participants were majority female (93%) with an average age of 44. More than half the sample held a baccalaureate degree (60%), were married, and worked full-time. Over half of the sample worked for Magnet designated hospitals and with approximately 75% of the sample who worked 12-hour dayshifts. The sample represented is similar to national data in age, gender, full-time employment and baccalaureate degree preparation (Health Resources and Services Administration, 2015). The demographic data that were different from national data, were related to Magnet-designated hospitals/units represented. In this study, 3 of the 5 hospitals are Magnet-designated, with 26 out of the 44 units representing Magnet-designated nurses. Currently only about 7-8% of U.S. Hospitals are Magnet-designated (Kelly, McHugh & Aiken, 2011).

DISCUSSION OF RESEARCH VARIABLES

Work Engagement

The average work engagement of hospital nurses represented in this study was 4.01. On the UWES work engagement scale, scores between 2.89 and 4.66 are considered average engagement (Schaufeli & Bakker, 2004). Within the sample there were no units with a low engagement level (<2.88) (Schaufeli & Bakker, 2004). Conversely, 4 out of 43 units had high engagement (> 4.67). The four units with the highest engagement represented a count of 17 nurses. When considering 17 nurses against the remainder of the sample 431, only about 5% of the nurses are considered to be

engaged at a high level. These data are different from prior sources which note that about 18% of nurses are actively and highly engaged in their work (Fasoli, 2010; NurseWeek, 2015).

Additionally, these data differ in the estimated number of nurses considered disengaged in their work. This sample had no nurses with low engagement, whereas prior sources have estimated those with low engagement or disengagement at about 15% (Dempsey & Reilly, 2016; Schaufenbuel, 2013). Interestingly, the 3 of the 4 units with the highest engagement among the sample were from Magnet-designated hospitals. This finding was similar to a past study which reports Magnet-designated hospitals have nurses with high levels of engagement (Hagedorn Wonder, 2012). However, when the total number of Magnet-designated units from this study (N=26) is considered; it might be expected to see a higher number of units from this sample with high levels of engagement as per the findings in Hagedorn Wonders' study.

Specific to work engagement and some of the demographic data of the sample, differences were found in this study compared to prior studies related to educational degree, marital status and time of shift. The findings from this study were contrary to prior studies which indicated those who were married as well as those who also held bachelor's degrees have high levels of engagement (Aboshaiqah, Hamadi, Salem, & Zakari, 2016). The majority of this study's sample were married and had a bachelor degree, however only had an average level of work engagement. Additionally, the majority of the sample in this study worked dayshift. Prior studies showed those who work dayshift tend to have high engagement (Adriaenssens et al., 2011; Walker & Campbell, 2013; Wang & Liu, 2015; Wonder, 2013; Zhu, Liu, Guo, Zhao, & Lou, 2015).

This study yielded different results in that, although the majority of the sample worked dayshift they were only engaged to an average degree.

Only the demographics of age and 12-hour shifts were in agreement with findings from past studies. Although prior studies are mixed regarding the impact of age on work engagement (Aboshaiqah, Hamadi, Salem, & Zakari, 2016 ; Rivera et al., 2011), this study's results were consistent with past data which notes nurses closer to the age of 21 have high engagement. The average age of nurses in this study was twice the age of the prior study mentioned with only average engagement. Specific to 12-hour shifts, the data found in this study are consistent with past data that showed those who work 8-hour shifts have high engagement where those who work longer than 8-hour shifts are less engaged comparatively (Adriaenssens et al., 2011; Walker & Campbell, 2013; Wang & Liu, 2015; Wonder, 2013; Zhu, Liu, Guo, Zhao, & Lou, 2015).

DISCUSSION OF FINDINGS BY AIMS

Aim 1

Aim 1: To determine, by unit and hospital, the level of nurse work engagement; the nursing practice environment scores; and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ1: At the unit and hospital levels, what is the level of nurse work engagement, nursing practice environment scores, and patients' ratings of nurse communication, overall hospital rating, and likelihood to recommend the hospital to others?

The level of work engagement among the sample in this study is average at 4.01. This is consistent with past data which indicates there is an opportunity for nurses to be highly engaged, however this study found an even lower percentage than previous studies regarding the number of nurses who are actively engaged in their work, approximately 5% (Fasoli, 2010; NurseWeek, 2015).

The practice environment score of the overall sample is 2.94, which is just above the mid-point of the 1-4 range of ratings (1= strongly disagree to 4 = strongly agree). This may suggest there is opportunity for improvement across all five practice environment subscales with regards to 1) participation and decision-making in hospital affairs, 2) basic structures which facilitate provision of quality care to patients, 3) opportunities for better relationships with nurse managers and leaders, 4) staffing and resources, and, 5) opportunities for more collegial relationships with nurse managers and leaders. The highest subscale score among the sample was for nursing foundations for quality of care at 3.19 and the lowest was staffing and resource adequacy at 2.74. These numbers are close to those reported in previous studies. Specifically for the composite score, the data from this study is higher than reported in a past study (Lake & Friese, 2006).

The highest subscale rating indicates the participants mostly agree with fundamental aspects of nursing quality care such as high regard for high standards, good levels of patient continuity of care, programs for preceptorship of new RNs, opportunities for staff development, continuing education and active involvement in performance improvement programs. The biggest opportunity reported is with staffing which

indicates the participants are not in agreement with: 1) the number of staff available to get the work done to provide quality care, 2) the number of support services which might allow for more time with patients, and 3) the amount of time permitted to discuss patient care problems peer-to-peer. These numbers are close to those reported in previous studies. Specifically for nurse quality, the results of this study are similar to past studies which also rate the subscale of nurse quality the highest among other scales (Lake & Friese, 2006; Shang, Friese, Wu & Aiken, 2013). Additionally, specific to staffing, the result of this study is also similar to past studies which also rate this subscale of staffing among the lowest as compared to the other subscales (Lake & Friese, 2006; Shang, Friese, Wu & Aiken, 2013).

The patient ratings ranged from 16.7-100% of ratings at the top-box for each respective selected HCAHPS score (RN communication, overall rating of the hospital and likelihood to recommend). Although performance-related measures for top-box ratings are relative to the unit specialty type, access to top-box scores by specialty were not available on the publicly reported website. Since the scores were not available by specialty, the overall national scores by question were used to discuss the research data findings. For some of the units in the study the performance exceeded the national data, however for other units the performance was lower than the near worst national performance. The following is information about the national data as compared to the highest and lowest performing study units.

Specific to RN communication, 5 of the units outperformed the national data with a score of 100% top-box ratings. Those units were: unit c38 (medical-surgical [100%]),

163

unit c16 (obstetrics [100]), unit d25 (medical-surgical [94.6%]), unit e54 (oncology [100%]), and unit e58 (medical-surgical [100]). Three of the units were from Magnet designated hospitals (unit d25, unit e54, and unit e58), and two were not (unit c38 and unit c16). The national top-box performance for communication with nurses' ranges from the near worst performance at 71% up to the near best performance of 91% (Centers for Medicare and Medicaid Services, 2019). The 50th percentile rank top-box score is 80 (Centers for Medicare and Medicaid Services, 2019). These findings are mixed when compared to performance associated with Magnet-designated hospitals. The units that are Magnet associated are consistent with high-performance patient outcomes (Aiken et al., 1999; Aiken, Smith, & Lake, 1994; Gokenbach & Drenkard, 2011; Kelly, McHugh, & Aiken, 2011 McHugh, et al.2013). The units that are from non-Magnet facilities are atypical as, even though they were not Magnet associated, they outperformed national near best highest performance.

Specific to the rating of the overall hospital, 10 of the units outperformed the national data with scores ranging from 88.9 to 100% top-box ratings. Those units were: unit b37 (orthopedics [94.3%]), unit c38 (medical-surgical [100%]), unit d25 (medical-surgical [94.6%]), unit e40 (medical [88.9%]), unit e41 (medical [100%]), unit e45(cardiology/coronary [94.6%]), unit e52 (oncology [92.3%]), unit e54 (oncology [100%]), unit e57(medical-surgical [96.3%]) and unit e59 (cardiovascular [92.9%]). Nine of the ten units were from Magnet-designated hospitals unit b37 (orthopedics), unit d25 (medical-surgical), unit e40 (medical), unit e41 (medical), unit e45 (cardiology/coronary), unit e52 (oncology), unit e54 (oncology), unit e57 (medical-surgical), and e59 (cardiovascular) and one was not (unit c38 [medical-surgical]).

The national top-box performance for the rating for overall hospital is at the near worst performance of 58% up to the near best performance of 88% (Centers for Medicare and Medicaid Services, 2019). The 50th percentile rank top-box score is 73 (Centers for Medicare and Medicaid Services, 2019). The findings for the overall rating of the hospital are consistent with past studies on Magnet-associated facilities, in that these findings had more Magnet-associated units with high-performing outcomes for patient ratings of the overall hospital.

Specific to the likelihood to recommend the hospital to others, 8 of the units outperformed the national data with scores ranging from 88.9 to 100% top-box ratings. Those units were: unit c4 (cardio-thoracic [91.4%]) unit c38 (medical-surgical [100%]), unit d27 (urology/renal [89.7%]), unit e40 (medical [88.9%]), unit e41 (medical [100%]), unit e45 (cardiology/coronary [97.3%]), unit e54 (oncology [100%]), and unit e57 (medical-surgical [96.4%]). Six of the eight units were from Magnet-designated hospitals as follows, unit d27 (urology/renal), unit e40 (medical), unit e41 (medical), unit e45 (cardiology/coronary), unit e54 (oncology), and unit e57 (medical-surgical), and two were not (unit c4 [cardio-thoracic] and unit c38 [medical-surgical]). Again, the findings for the overall rating of the hospital are consistent with past studies on Magnet-associated facilities, in that these findings had more Magnet-associated units with high-performing outcomes for patient ratings of the overall hospital.

The national top-box performance for likelihood to recommend the hospital ranges from 55% near worst performance to 88% near best performance (Centers for Medicare and Medicaid Services, 2019). The 50th percentile rank top-box score is 72

(Centers for Medicare and Medicaid Services, 2019). The findings for the overall rating of the hospital and the patient rating of likelihood to recommend are consistent with past studies on Magnet- associated facilities, in that these findings had more Magnet-associated units with high- performing outcomes for patient ratings of the overall hospital.

Interestingly, two of the units exceeded the national ratings for all three questions (RN communication, overall rating of the hospital and likelihood to recommend). Those units outperformed the near best and highest publicly reported ratings for all three HCAHPS ratings. Those units were unit c38 (medical-surgical) and e54 (oncology) at 100% of all ratings selected at top-box (highest choice/rating available). These ratings were 9-28% higher in top-box ratings as compared to national data (Centers for Medicare and Medicaid Services, 2019). Conversely, one unit had the lowest rating across all three HCAHPS questions as follows: RN communication at 26.7% top-box ratings, overall hospital rating at 16.7% top-box ratings and likelihood to recommend at 33.3% top-box ratings.   This unit was a medical unit (e50) located at one of the Magnet-designated hospitals. These ratings were 21.7- 44.1% lower than the near worst performance top-box ratings as compared to national data (Centers for Medicare and Medicaid Services, 2019). Again, these findings are mixed when compared to typical performance associated with Magnet-designated hospitals.

Aim 2

To determine the association of nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to

others. RQ2a: What is the association between nurse work engagement and patients'
ratings of nurse communication?

Surprisingly, the results of the analysis indicate a relationship of small magnitude
between work engagement and patient ratings of nurse communication, (*B= -0.39, OR =
0.67, p=0.06*). The direction of this small relationship is negative, meaning as work
engagement increases, nurse communication ratings decrease. This data were contrary to
prior studies which showed that high levels of engagement parellel positive patient
outcomes (Blizzard, 2005; Harter, Schmidt, Killam, & Agrawal, 2009; Laschinger, Wilk,
& Greco, 2009; Salanova, 2005; Wong, Laschinger & Cummings, 2010). This is the first
study that specifically examined work engagement of hospital nurses and the specific
rating of nurse communication. It might be assumed that attributes of high work
engagement such as high personal and work ethical values, connection of meaningful
work, having feelings of joy, and connection to the belief in the integrity of high
organizational values would positively correlate with patient ratings. However, the
results of this study showed very little relationship between work engagement and how
often a patient perceives the nurse to be courteous, respectful, listening carefully and
explaining things in a way the patient can understand. Furthermore, the relationship
shown is opposite from past positive correlations among work engagement and other
patient outcome variables.

RQ2b: What is the association between nurse work engagement and patients'
ratings of the overall hospital stay? In this study, the patient rating of the overall hospital
also had no apparent relationship with work engagement of hospital nurses (*B= 0.06, OR
= 1.06, p=0.28*). This again was a departure from past research which suggests that

nursing care attributes are more influential than non-nursing staff care attributes in the patients' perception of overall quality of care (Otani, Waterman, Faulkner, Boslaugh, & Clairborne, 2010).

While work engagement was not shown to have an association with patient ratings of overall care, two concepts still stand. First, although a number of research studies describe positive outcomes associated with work-engaged nurses, there is a lack of detailed description regarding specific associations of nurse-related characteristics with work engagement and leading to positive outcomes for both patients and organizations. Second, work engagement benefits experienced by organizations have been reported in several papers. These associated consequences of work engagement included in-role performance, organizational citizenship, extra-role performance, financial returns, and work effectiveness (Halbesleben & Wheeler, 2008; Halbesleben et al., 2013; Salanova et al., 2011; Sohrabizadeh & Sayfouri, 2014; Wong, Laschinger, & Cummings, 2010; Xanthopoulou et al., 2009). Although in this study there was no association, the findings might help to direct and more specifically target drivers of patient ratings of the overall hospital. Although, for this study population there was no association between work engagement of hospital nurses and the patient ratings, perhaps it may look differently in other samples, settings, and possibly in tandem with other variables.

RQ2c: What is the association between nurse work engagement and patients' ratings of the likelihood to recommend the hospital to others? In this study, the likelihood of a patient recommending the hospital to others appears not related with work engagement (*B=- 0.03, OR = 0.96, p=0.89*). This was also surprising as past studies have noted less favorable ratings from patients were associated with nurse workforce

factors (You et al., 2012). Additionally, past research suggests hospitals known to operate through a philosophy of compassionate practices, in which they reward staff for compassionate patient-related acts as well as support employees in a compassionate manner, significantly and positively influenced patient ratings of the hospital as well as likelihood to recommend (McClelland, & Vogus, 2014). While there was no association found between work engagement and patient ratings of the overall likelihood to recommend the hospital to others, compassionate practices are connected to nurses who deliver care to patients. If the work engagement of the nurse has no association with the likelihood of the patient recommending the hospital to others, there is likely some aspect of the nurse-patient interaction which drives the ratings.

Aim 3

The goal of Aim 3 was to determine if nurse work engagement predicts the patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others when controlling for hospital characteristics (case mix index and unit specialty type) and nurse characteristics (i.e., age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status, primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours].

RQ3a: Does nurse work engagement predict the patients' ratings of nurse communication, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status, primary shift worked [day, evening, night shift], and primary shift length

[8 hours, 10 hours, 12 hours])? This study found the following results: 1) unit characteristics explained 13.0 % of the variability of top-box ratings of nurse communication (*Efron's pseudo R^2* = 0.13); 2) nursing staff characteristics summarized at the unit level explained an additional 6% of the variability of top-box ratings of nurse communication beyond that explained by the unit characteristics (Delta *Efron's pseudo R^2* = 0.06); and, work engagement resulted in a negative change in proportion of variability explained (Delta *Efron's pseudo R^2* = - 0.02), indicating negligible contribution of work engagement to explaining top-box ratings of nurse communication beyond the contribution of the unit and nurse predictors. The full model explained 17.0 % of the variability of top-box ratings of nurse communication (*Efron's pseudo R^2* = 0.17).

The first finding of unit characteristics, case mix index had an estimated OR=1.05 (*95%CI* = 0.74 - 1.49), which indicated that patients in units with higher case mix index reported slightly higher ratings of nurse communication; that is, an increase of 1 in case mix index was associated with 1.05 times the odds of top-box response, given that all other variables in the model are held constant. This finding is counter to past research which suggests high severity of illness and high intensity of care are associated with low patient perceived ratings of hospital care (Wennberg, Bronner, Skinner, Fisher & Goodman, 2009).

Specific to the second finding of nurse characteristics, all nurse characteristics had ORs and small effects. The predictors with the largest effect sizes were the percentage of full-time staff (pseudo Eta^2 =0.07), and the percentage of staff with ADN

170

education (pseudo Eta^2 =0.07). This meant that the higher percentage of full-time staff

and lower percentage of ADN-educated staff were associated with increases in the

proportion of top-box response: a 10% increase in the percentage of full-time staff was

associated with 1.13 times the odds of top-box response (OR=1.13, *95%CI* = 0.97 –

1.32). A 10% increase in the percentage of staff with ADN education was associated with

0.90 times the odds of top-box response (OR=0.90, *95%CI* = 0.76 – 1.07). This finding

is consistent with past data that indicates nurses with baccalaureate degrees are associated

with better patient outcomes (Aiken, Sloane & Griffiths, 2017; Aiken, Smith, & Lake,

1994; Estabrooks, Midodzi, Cummings, Ricker & Giovanetti, 2005; Kutney-Lee, Sloane

& Aiken, 2003; McHugh, Kelly, Smith, Wu, Vanak & Aiken, 2013). The majority of this

sample held a baccalaureate degree which may explain the influence over the patient

ratings for RN communication.

The third finding for research question 3a suggests work engagement had a small

effect size (pseudo Eta^2 =0.02) conditional on the other predictors included in the model.

Higher levels of work engagement were associated with lower proportion of top-box

responses. An increase of 1 in work engagement was associated with 0.78 times the odds

of top-box response (OR=0.78, 95%CI = 0.44 – 1.39). This is consistent with the

findings in Aim 2 which indicated a very small and inverse relationship between work

engagement of hospital nurses' and ratings of RN communication.

RQ3b: Does nurse work engagement predict patients' ratings of the overall

hospital stay, when controlling for unit characteristics (case mix index and unit type), and

nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital],

employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status, primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])? This study found the following results: 1) unit characteristics explained 18.0 % of the variability of top-box ratings of the overall rating of the hospital (*Efron's pseudo R^2* = 0.18); 2) nursing staff characteristics summarized at the unit level explained an additional 10% of the variability of top-box ratings of the overall hospital beyond that explained by the first Block (Delta *Efron's pseudo R^2* = 0.10); and, 3) work engagement resulted in a negative change in proportion of variability explained (Delta *Efron's pseudo R^2* = - 0.01), indicating negligible contribution of work engagement to explaining top-box ratings of the overall hospital beyond the contribution of the unit and nurse predictors. The full model explained 27.0 % of the variability of top-box ratings of the overall hospital (*Efron's pseudo R^2* = 0.27). P-values for both Magnet hospital units and those with a large proportion of nurses who were married were significant (Magnet p-value = 0.00, married p-value = 0.01). This may suggest that Magnet designated hospital units and those with married nurses may influence higher patient ratings of the overall hospital.

The first finding of unit characteristics, case mix index had an estimated OR=1.07 (*95%CI* = 0.76 - 1.49), which indicated that patients in units with higher case mix index reported slightly higher ratings of nurse communication; specifically, an increase of 1 in case mix index was associated with 1.07 times the odds of top-box response, given that all other variables in the model are held constant. This finding is contrary to past research which suggests high severity of illness and high intensity of care

are associated with low patient perceived ratings of hospital care (Wennberg, Bronner, Skinner, Fisher & Goodman, 2009).

Specific to the second finding of nurse characteristics, all nurse characteristics had ORs and small effects. The predictors with the largest effect sizes were Magnet hospital units (pseudo Eta^2 =0.15), and the percentage of staff who are married (pseudo Eta^2 =0.12). This meant Magnet hospital units and higher percentage of married staff were associated with increases in the proportion of top-box response: a 10% increase in the percentage of married staff was associated with 1.11 times the odds of top-box response (OR=1.11, $95\%CI = 1.13 - 1.21$). Specific to Magnet hospitals, this finding is consistent with past data that indicates Magnet-accredited hospitals are linked with better-quality patient outcomes, which include low patient death and high work fulfillment (Aiken et al., 1999; Aiken, Smith, & Lake, 1994; Gokenbach & Drenkard, 2011; Kelly, McHugh, & Aiken, 2011; McHugh, et al.2013). The majority of the sample for this study work for Magnet-designated hospitals. There was no information to support the influence of being married.

The third finding of work engagement, work engagement had a small effect size (pseudo Eta^2 =0.03) conditional on the other predictors included in the model. Higher levels of work engagement were associated with lower proportion of top-box responses. An increase of 1 in work engagement was associated with 0.77 times the odds of top-box response (OR=0.77, $95\%CI = 0.45 - 1.32$). This is consistent with the findings in Aim 2 which indicated a no relationship between work engagement of hospital nurses' and ratings of the overall hospital.

RQ2c: Does nurse work engagement predict patients' ratings of the likelihood to recommend the hospital to others, when controlling for unit characteristics (case mix index and unit type), and nurse characteristics (age, gender, magnet status [magnet or non-magnet hospital], employment status [full-time, part-time], education status [diploma, ADN, BSN, MSN], marital status, primary shift worked [day, evening, night shift], and primary shift length [8 hours, 10 hours, 12 hours])? This study found the following results: 1) unit characteristics explained 16.0 % of the variability of top-box ratings of the likelihood of recommending the hospital to others (*Efron's pseudo R^2* = 0.16); 2) nursing staff characteristics summarized at the unit level explained an additional 17% of the variability of top-box ratings of the likelihood of recommending the hospital to others beyond that explained by the first Block (Delta *Efron's pseudo R^2* = 0.17); and, 3) work engagement resulted in a negative change in proportion of variability explained (Delta *Efron's pseudo R^2* = - 0.03), indicating negligible contribution of work engagement to explaining top-box ratings of the likelihood of recommending the hospital to others beyond the contribution of the unit and nurse predictors. The full model explained 14.0 % of the variability of top-box ratings of the likelihood of recommending the hospital to others (*Efron's pseudo R^2* = 0.14).

Specific to the first finding, case mix index had an estimated OR=1.37 (*95%CI* = 0.96 - 1.95), which indicated that patients in units with higher case mix index reported slightly higher ratings of the overall hospital; an increase of 1 in case mix index was associated with 1.37 times the odds of top-box response, given that all other variables in the model are held constant. Again, this finding differs from to past research which

suggests high severity of illness and high intensity of care are associated with low patient perceived ratings of hospital care (Wennberg, Bronner, Skinner, Fisher & Goodman, 2009).

Specific to the second finding, nursing staff characteristics, as per the estimated ORs and effect sizes, had small effects. The predictors with the largest effect sizes were the percentage of staff who are married (*pseudo Eta^2* =0.09). Higher percentages of married staff were associated with increases in the proportion of top-box response: a 10% increase in the percentage of married staff was associated with 0.98 times the odds of top-box response (*OR*=0.98, *95%CI* = 0.83 – 1.16). Again, there was no information from this study that can help explain this finding. This finding may deserve specific future research to understand its implications.

Specific to the third finding, work engagement had a small effect size (*pseudo Eta^2* =0.01) conditional on the other predictors included in the model. Higher levels of work engagement were associated with lower proportion of top-box responses. An increase of 1 in work engagement was associated with 1.01 times the odds of top-box response (*OR*=1.01, 95%CI = 0.90 – 1.14). This is consistent with the findings in aim 2 which indicated a no relationship between work engagement of hospital nurses' and ratings of the likelihood to recommend the hospital to others.

Aim 4

The goal of Aim 4 was to determine the effect of the nursing practice environment on associations between nurse work engagement and patients' ratings of nurse

175

communication, overall hospital stay, and likelihood to recommend the hospital to others.

RQ4: Does the nursing practice environment mediate relationships between nurse work engagement and patients' ratings of nurse communication, overall hospital stay, and likelihood to recommend the hospital to others? Specific to RN communication, the findings suggest a small negative inverse relationship between work engagement and patient ratings of RN communication was mediated by practice environment. Simply explained, the direct effect of work engagement on patient ratings of RN communication is negative, meaning the higher the work engagement the lower the patient ratings. This is consistent with the findings in Aim 2, which indicated no relationship between work engagement of hospital nurses' and patient ratings of RN communication. Specific to practice environment as a mediator, in this mediation model, the effect of work engagement on practice environment is positive, meaning the higher the work engagement the more favorably rated the practice environment. This is consistent with the literature, in that, factors that are associated with high engagement of nurses includes leadership, employee characteristics, empowerment, and work environment conditions (Bamford, Wong, & Laschinger, 2013; Brunetto et al., 2013; Giallonardo, Wong, & Iwasiw, 2010; Gillet, Fouquereau, Bonnaud-Antignac, Mokounkolo, & Colombat, 2013; Hagedorn Wonder, 2012; Laschinger & Finegan, 2005; Rivera, Fitzptrick, & Boyle, 2011; Salanova, Lorente, Chambel, & Martinez, 2011; Van Bogaert, Wouters, Willems, Mondelaers, & Clarke, 2013). These factors are associated with practice environment. Additonally, the effect of practice environment on patient ratings of RN communication is positive. This again is consistent with the literature, in that, patients reported excellence in care and patient contentment in the presence of good work environments

176

(Aiken & Sermeus, 2012). Good environments were described as having, high-rated

nursing practice environment measures, low patient-to-nurse ratios, high nurse-assessed

hospital patient safety, and low nurse burnout (Aiken & Sermeus, 2012). Also in line

with past studies this finding is consistent whereas, good hospital work environments

were associated with positive patient- rated experiences (Aiken & Sermeus, 2012;

Pearson, Needleman, Beckman & Han, 2016; Press Ganey, 2015; Stimpfel, Sloane,

Mchuch, & Aiken, 2016; You et al., 2013).

Good environments were described as having, high-rated nursing practice

environment measures, low patient-to-nurse ratios, high nurse-assessed hospital patient

safety, and low nurse burnout. Unfortunately, in this mediation model, the total effect of

work engagement on patient ratings of RN communication is small as the direct and

indirect effects cancel each other out. Once again, although high levels of nurse work

engagement have been linked to organizational success, better work performance, lower

patient mortality rates, increased organizational financial profits, and improved patient

safety and quality outcomes (Bargagliotti, 2012; Laschinger, Wilk, & Greco, 2009;

Salanova, 2005; Simpson, 2009; Wong, Laschinger & Cummings, 2010); in this study,

there was only a small negative inverse relationship between work engagement and RN

communication.

Specific to work engagement and the patient ratings of the overall hospital, this

study found a direct effect of work engagement on patient ratings of the overall hospital

stay to be 0.095, which shows a small effect size. This means the relationship of work

engagement to patient ratings of the overall hospital stay is negative; in other words the

higher the work engagement is, the lower the patient ratings are. This is slightly

inconsistent with the findings in Aim 2, which indicated no relationship between work

engagement of hospital nurses' and patient ratings of the overall hospital. These findings

are similar to the negative small inverse relationship between work engagement and RN

communication. This is also inconsistent with past literature which indicates positive

associations between nursing-related care and ratings of the inpatient perception

(Larrabee, & Bolden, 2001; Larrabee, Ostrow, Wiothrow, Janney, Hobbs, & Burant,

2004; Manookian, Cheraghi, & Nasrabadi, 2014; Uzun, 2001). Specific to practice

environment as a mediator, in this mediation model, the effect of work engagement on

practice environment is positive, meaning the higher the work engagement the more

favorably rated the practice environment. Additionally, the effect of practice environment

on patient ratings of the overall hospital stay is positive. Again, unfortunately, the total

effect of work engagement on patient ratings of the overall hospital stay is small as the

direct and indirect effects cancel each other out. However, specific examples of patient

outcomes associated with work engaged nurses include: 1) low mortality, 2) low patient

complications, and 3) nurse-perceived quality of patient care, which includes less

unfinished patient care and an absence of patient safety- related problems (Blizzard,

2005; Wong, Laschinger & Cummings, 2010); even when medicated by practice

environment, there was only a small negative inverse relationship between work

engagement and patient ratings of the hospital.

Last, specific to the mediation model with work engagement, practice

environment and patient ratings of the likelihood to recommend, the findings suggest the

178

relationship between work engagement and patient ratings of the likelihood to recommend the hospital to others were mediated by practice environment. Similar to the previous two analyses for mediation, these results show an inconsistent mediation. In simple terms, the direct effect of work engagement to patient ratings of the likelihood to recommend the hospital to others is negative meaning the higher the work engagement the lower the patient ratings. This is again consistent with the findings of this study, although it is inconsistent with past literature on work engagement.

LIMITATIONS AND STRENGTHS

Every study has limitations based on the methodology, sampling techniques, and data collection efforts. There were four main limitations in this study: 1) The cross-sectional, correlational design, 2) use of a convenience sample, 3) data collected for one hospital system, and 4) the opportunity to request more specific demographic details. Specific to the use of a cross-sectional, correlational design, there are a few limitations. First, there is a lack of control with the use of a cross-sectional, correlational design, in that there is no randomization (Polit & Beck, 2017). The participants self-select in the study and may not represent the variables selected in the study. Second, with the use of a cross-sectional, correlational design, one cannot determine any cause and effect between the variables (Polit & Beck, 2017). Last, with the lack of control and randomization, one cannot assume the groups used in the study compare to other groups specific to work engagement (Polit & Beck, 2017).

Specific to convenience sampling, a challenge is that participants may not accurately reflect the population (Polit & Beck, 2017). There could also be bias, as a

participant may enter the study based on self perception of having a particular

characteristic that is a main focus of the study (Polit & Beck, 2017). Specific to the study

geographic location and hospital setting the results may not be generalizable to other

settings and geographic locations. This study was limited to one hospital setting in one

region of the United States.

Last, specific to one aspect of the demographic data collection, additional

demographic details may have warranted more information towards the study findings.

One example is the lack of demographic detail on the number of foreign-educated nurses.

The eligible population used in this study is extremely diverse in non-native U.S.-born

nurses. Based on the potential diversity in the demographics, additional detail in the

demographic questions may have provided the number of foreign-educated nurses. This

information may have been important, as one source found foreign-educated nurses were

negatively and significantly associated with poor patient experience ratings of nurse

communication, communication about medication administration, communication

regarding care post hospitalization, overall rating of the hospital, and a low likelihood

that the patient would recommend the hospital to others (Mazurenko, 2016). Regardless

of their level of work engagement, there may be factors associated with communication

that may be impacted based on the inclusion of foreign-educated nurses, which were not

able to be examined.

Although there were a few limitations to this study, there were a number of

strengths as well. First, the study was extremely feasible in that there was no cost to use

the instruments nor the web-based survey. Second, there was very little burden to the

participants and multiple options for participants to access the surveys. Third, the

partnership with key stakeholders helped with recruiting ideas and options to encourage

participants to take the survey. Last, although the study was limited to one region of the

U. S. there were a variety of hospitals and units represented in the study which may help

some of the findings to be applicable to other settings.

IMPLICATIONS FOR NURSING

It is important for nurses to know the positive outcomes associated with work

engagement and for them to know where their engagement level lies. Although this

study did not show relationships of work engagement to selected patient ratings, other

studies found work engagement is important to patient outcomes. It is also important for

nurses to be self-aware that their levels of engagement affect their daily encounters with

patients. Nurses are called to deliver safe and, quality care that leads to excellent patient

outcomes (Bargagliotti, 2012). Nursing is still the most trusted profession and are most

directly involved in the delivery of patient care, which makes it important for nurses to be

at their very best for the patients they serve (Gallup, 2019).

Although the mediation findings in this study were inconsistent, the relationships

between the practice environment, work engagement, and patient ratings suggest that

practice environment matters. The evidence is clear that practice environment plays a

vital role in patient outcomes and nursing practice (Aiken & Sermeus, 2012; Pearson,

Needleman, Beckman & Han, 2016; Press Ganey, 2015; Stimpfel, Sloane, Mchuch, &

Aiken, 2016; You et al., 2013). Nurses must partner, defend, and collaborate with others

on the importance of a good and positive practice environment.

Last, it is important for nurse leaders and hospital administrators to be aware of possible differences between work engagement and employee engagement and what difference, if any, it makes towards efforts to positively impact patient outcomes. This information is vital to a nursing's mission and goals within organizations. So many positive outcomes have been associated with Magnet facilities and this research supports the influence of Magnet designation and positive top-box patient ratings of the overall hospital.

IMPLICATIONS FOR FUTURE RESEARCH

Although the results of this study did not specifically find a positive relationship between work engagement and selected patient ratings, there is still work to be done in this area of research. If it is known that patient outcomes associated with work engaged nurses include 1) low mortality, 2) low patient complications, and 3) nurse-perceived quality of patient care, which includes less unfinished patient care and an absence of patient safety-related problems, more answers and research findings are needed to know what about engagement impacts these items (Blizzard, 2005; Wong, Laschinger & Cummings, 2010). Additionally, if past findings support improved quality outcomes associated with work engaged nurses and other occupations such as: 1) high reported organizational success and profitability; 2) high worker effectiveness; 3) high customer loyalty (hotel and restaurant workers); and, 4) positive patient perceived staff-customer interactions, more research is needed in this area also (Harter, Schmidt, Killam, & Agrawal, 2009; Laschinger, Wilk, & Greco, 2009; Salanova, 2005). Additionally, research needs to be conducted to determine what specific nurse-drivers relate to positive

patient hospital ratings. It is clear from past research that nurses have a critical impact on health outcomes and patient experience (Chau et al., 2015; Freney & Fellenz, 2013; Hakanen & Schaufeli, 2012; Halbesleben, Shanine, & Wheeler, 2013; Innstrand, Langballe, & Falkum, 2012; Salanova, Lorente, Chambel, & Martinez, 2011; Van Bogaert, Clark, Willems, & Mondelaers, 2013; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009).

Specific to hospital ratings of the overall hospital stay, future studies should focus not only on work engagement, but on other aspects as well. These might include, but are not limited to employee engagement, quality of physician communication, the manner in which staff assist patients with pain management, the extent to which hospital workers communicated regarding new medications, teamwork, responsiveness of non-nursing hospital employees and, at provision of key information during discharge teaching. Although infrequent in the literature, these concepts have been positively associated with the patient perception of the overall rating of the hospital (Kalisch, Curley, & Stefanov, 2007; Press Ganey, 2016; Westbrook, Babkus, & Grant, 2014). Perhaps even comparisons between some of the aforementioned aspects and cleanliness may yield more specific findings about drivers of high ratings of the overall hospital. Past research has already supported the positive association between cleanliness of the environment and the patients' perception that a pleasant environment was provided with a favorable patient overall rating of the hospital (Larrabee, & Bolden, 2001; Westbrook, Babkus, Grant, & 2014).

In conclusion, this research is a beginning step in exploring nurse work engagement. Although the major findings were unexpected, it still has value for this

organization and points out the importance of investigating patient experience and its

relationship to nursing.

References

Abdelhadi, N., & Drach-Zahavy, A. (2011). Promoting patient care: work engagement as a mediator between ward service climate and patient-centered care. *Journal of Advanced Nursing* , *68* (6), 1276-1287. doi.org/10.1111/j.1365-2648.2011

Aboshaiqah, A., Hamadi, H., Salem, O., & Zakari, N. (2016). The work engagement of nurses in multiple hospital sectors in Saudi Arabia: a comparative study. *Journal of Nursing Management*. doi:10.111/jonm.12356

AbuAlRub, R., Omari, F., & Rub, A. (2009). The moderating effect of social support on the stress-satisfaction relationship among Jordanian hospital nurses. *Journal of Nursing Management, 17*(7), 870-879.

Adriaenssens, J., DeGucht, V., Van Der Doef, M., & Maes, S. (2011). Exploring the burden of emergency care: predictors of stress-health outcomes in emergency nurses. *Journal of Advanced Nursing*, *67*(6), 1317-1328. doi: 10.1111/j.1365-2648.2010.05599.x

Agency for Healthcare Research and Quality. (2017). What is patient experience? Retrieved from: https://www.ahrq.gov

Aiken, L., Sermeus, W., Heede, K., Sloane, D., Busse, R., McKee, M., Bruyneel, L., Rafferty, Griffiths, P., Morena-Casbas, M., Tishelman,C., Scott, A., Brzostek,T., Kinnunen, J., Schwendimann, R., Heinen, M., Zikos, D., Sjetne, I., Smith, H., & Kutney-Lee, A. (2012). Patient safety, satisfaction and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *British Medical Journal,* 1-14. doi: 10.1136/bmj.e1717

185

Aiken, L., & Sermeus, W. (2012). Patient safety, satisfaction, and quality of hospital

    care: Cross sectional surveys of nurses and patients in 12 countries in Europe and

    the United States. *BMJ: British Medical Journal, 344*(7851), 20-20.

Aiken, L., Sloane, D. & Griffiths, P, Rafferty, A., Bruyneel, L., McHugh, M., Maier, C.,

    Moreno-Casbas, T., Ball, J., Ausserhofer, D. & Sermeus, W. (2017). Nursing

    skill mix in European hospitals: association with mortality, patient ratings, and

    quality of care. *BMJ Quality and Safety, 26* (7), 559-568. doi:10.1136/bmjqs-

    2016-005567.

Aiken, L., Sloane, D., Lake, E., Sochalski, J. & Weber, A. (1999). Organization and

    outcomes on inpatient AIDS care. *Medical Care, 37* (8), 760-772.

Aiken, L., Smith, H. & Lake, E. (1994). Lower Medicare mortality among a set of

    hospitals known for good nursing care. *Medical Care, 32* (8), 771-787.

Aiken, L., Sochalski, J., & Anderson, G. (1996). Downsizing the hospital workforce.

    Health Affairs, 15(4), 88-92.

American Hospital Association. (2017). Fast Facts on U.S. Hospitals. Retrieved from

    http://www.aha.org/research/rc/stat-studies/fast-facts.shtml

Arah, O., Asbroek, A., Delnoij, D., Koning, J., Stam, P., Poll, A., & Klazinga, N. (2006).

    Psychometric properties of the Dutch version of the hospital-level consumer

    assessment of health plans survey instrument. *Health Services Research, 41* (1),

    284-301.

Bacon, C., & Mark, B. (2009). Organizational effects on patient satisfaction in hospital

    medical-surgical units. *Journal of Nursing Administration, 39*(5), 220-227. doi:

    10.1097/NNA.0b013e3181a23d3f

Bahadon, M., Teymourzadeh, E., Ravangard, R., Nasiri, A., Raadabadi, R. &

    Alimohammadzadeh, K. (2016). Factors contributing towards patient's choice of

    a hospital clinic from the patients' and managers' perspective. *Electronic*

    Physician, 8 (5), 2378-2387. doi: 10.19082/2378

Bailey, C., Madden, A., Alfes, K., Fletcher, L., Robinson, D., Holmes, J., Buzzeo, J. &

    Currie, G. (2015). Evaluating the evidence on employee engagement and its

    potential benefits to NHS staff: a narrative synthesis of the literature. South

    Hampton/UK: Health Services and Delivery Research.

Bakker, A. & Demerouti, E. (2007). The job demands-resources model: State of the art.

    Journal of Managerial Psychology, *22* (1), 309-328. doi:

    10.1108/02683940710733115

Bargagliotti, L. (2012). Work engagement in nursing: A concept analysis. *Journal of*

    Advanced Nursing, *68*(6), 1414-1428. doi:10.1111/j.1365-2648.2011.05859.x

Bakker, A. & Demerouti, E. (2016). Job demands-resources theory: Taking stock and

    looking forward. *Journal of Occupational Health Psychology, 22* (3), 273-285.

    doi 10.1037/ocp0000056

Bakker, A., Demerouti, E. & Schaufeli, W. (2005). Crossover of burnout and

    engagement among working couples. *Human Relations, 58* (5), 661-689. doi:

    10.1177/00187267005055967

Bakker, A., Demerouti, E., Taris, T., Schaufeli, W. & Schreurs, P. (2003). A multigroup analysis of the job demands-resource model in four home care organizations. *International Journal of Stress Management, 10* (1) 16-38. doi:10.1037/1072-524510.116

Bakker, A., Shimazu, A., Demerouti, E., Shimada, K., & Kawakami, N. (2014). Work engagement versus workaholism: a test of spillover-crossover model. *Journal of Managerial Psychology, 29* (1), 63-80. Doi: 10.1108/JMP-05-2013-0148

Bamford, M., Wong, C., & Laschinger, H. (2013). The influence of authentic leadership and areas of worklife on work engagement of registered nurses. *Journal of Nursing Management*, *21* (3), 529-540. doi.org/10.1111/j.1365-2834.2012.01399

Beattie, M., Murphy, D., Atherton, I., & Lauder, W. (2015). Instruments to measure patient experience of healthcare quality in hospitals: a systematic review. *Systematic Reviews, 4* (97), 1-21. doi: 10.1186/s13643-015-0089-0

Biggs, A., Brough, P. & Barbour, J. (2014). Enhancing work related attitudes and work engagement: A quasi-experimental study of the impact of an organizational intervention. *International Journal of Stress Management, 21*(1), 43-68. doi*:*10.1037/a0034508

Bishop, M. (2013). Work engagement of older registered nurses: the impact of a caring-based intervention. *Journal of Nursing Management*, *21*, 941-949. http://dx.doi.org/10.1111/jonm.12182

Bjarnadottir, A. (2011). Work engagement among nurses in relationally demanding jobs

 in the hospital sector. *Nordic Journal of Nursing Research & Clinical Studies*,

 31(3), 30-34.

Briner, R. & Walshe, N. (2015). An evidence-based approach to improving the quality of

 rsource-oriented well being interventions at work. *Journal of Occupational and*

 organizational Psychology, 88 (1), 563-586. doi: 10.1111/joop.12133

Brooks, C., Hatfield, L., Plover, C., Dierkes, A., Davis, L., Hedgeland, T., Sanders,

 A.,Visco, F., Holland, S., Ballinghoff, J., Del Guidice, M. & Aiken, L. (2019).

 Association of nurse engagement and nurse staffing on patient safety. *Journal of*

 Nursing Care Quality, 34 (1), 40-46. doi:10.1097/NCQ.000000000000334

Brunetto, Y., Xerri, M., Shriberg, A., Farr-Wharton, R., Newman, S., & Dienger, J.

 (2013). The impact of workplace relationships on engagement, well-being

 commitment and turnover for nurses in Australia and the USA. *Journal of*

 Advanced Nursing , *69*(12), 2786-2799. doi.org/10.1111/jan.12165

Bureau of Labor Statistics. (2015). Occupational outlook handbook: Registered nurses.

 Retrieved from: https://www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-3

Calitz, T. (2010). An empowerment programme to regain positive work engagement for

 social workers in the North West Province. (PhD), Potchefstroom Campus of the

 North-West University, South Africa.

Carlson, M., & Morrison, R. (2009). Study design, precision, and validity in

 observational studies. *Journal of Palliative Medicine, 12*(1), 77-82.

 doi:10.1089/jpm.2008.9690

Carathon, J., Hatfield, L., Plover, C., Dierkes, A., Davis, L., Hedgeland, T., Sanders, A., Visco, F., Holland, S., Ballinghoff, J., Guidice, M. & Aiken, L. (2018). Association of nurse engagement and nurse staffing on patient safety. *Journal of Nursing Care Quality, 0*(0), 1-7. doi: 10.1097/ncq.0000000000000334

Centers for Medicare and Medicaid Services. (2019). *HCAHPS "Top-box" and "Bottom-box" Percentiles.* Retrieved from

https://hcahpsonline.org/globalassets/hcahps/summary-

analyses/percentiles/july_2019_summary-analyses_pctls.pdf

Centers for Medicare and Medicaid Services. (2018). *Frequently asked questions: Hospital value-based purchasing program.* Retrieved from

https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-

Instruments/hospital-value-based-purchasing/downloads/HVBPFAQ022812.pdf

Centers for Medicare and Medicaid Services. (2012). *Frequently asked questions: Hospital value-based purchasing program.* Retrieved from

https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-

Instruments/hospital-value-based-purchasing/downloads/HVBPFAQ022812.pdf

Centers for Medicare and Medicaid Services. (2015). Consumer Assessment of Healthcare Providers and Systems (CAHPS). Retrieved from

https://www.medicare.gov/hospitalcompare/search.html

Chau, J., Lo, S., Choi, K., Chan, E., McHugh, M., Tong, D., & Lee, D. (2015). A longitudinal examination of the association between nurse staffing levels, the practice environment and nurse-sensitive patient outcomes in hospitals. *BioMed Central, 15*(1), 538-548. doi:10.1186/s12913-015-1198-0

Chen, S., Westman, M., & Eden, D. (2009). Impact of enhanced resources on anticipatory stress and adjustment to new information technology: A field-experimental test of conservation of resources theory. *Journal of Occupational health Psychology, 14* (3), 219-203. doi: 10.1111/j.1744-6570.2010.01203.x

Chien, W. & Yick, S. (2016). An investigation of nurses' job satisfaction in a private hospital and its correlates. *The Open Nursing Journal, 10* (1), 99-112.

Cifre, E., Salanova, M., & Rodriguez-Sanchez, A. (2011). Dancing between theory and practice: Enhancing work engagement through work stress intervention. *Human Factors and Ergonomics in Manufacturing & Service Industries, 21*(3), 269-286. doi: 10.1037/a0015282

Collini, S., Guidroz, A., Perez, L., & Lisa, M. (2015). Turnover in health care: the mediating effects of employee engagement. *Journal of Nursing Management*, *23*(2), 169-178.

Dalal, R., Brummel, B., Wee, S., & Thomas, L. (2014). Defining employee engagement for productive research and practice. *Industrial and Organizational Psychology, 1* (1), 52-55. doi:10:1111/j.1754-9434.2007.00008.x

Demerouti, E., Bakker, A., Nachreiner, F., & Schaufeli, W. (2001). The job demainds-resources model of burnout. *Journal of Applied Psychology, 86* (3), 499-512. doi 10.1037//0021-9010.86.3.499

Dempsey, C. (2018). The antidote to suffering: How compassionate connected care can improve safety, quality, and experience. New York: McGraw-Hill.

Dempsey, C., & Reily, B. (2016). Nurse engagement: What are the contributing factors

  for success? *The Online Journal of Issues in Nursing, 21*(1).

  doi10.3912/OJIN.Vol21No01Man02

DiNapoli, J., O'Flaherty, D., Musil, C., Clavelle, J., & Fitzpatrick, J. (2016). The

  relationship of clinical nurses' perceptions of structural and psychological

  empowerment and engagement on their unit. *Journal of Nursing Administration*,

  46(2), 95-100. doi:10.1097/NNA.00000000000000302

Doherty, C. & Doherty, W. (2005). Patients' preferences for involvement in clinical

  decision-making within secondary care and the factors that influence their

  preferences. *Journal of Nursing Management, 13* (1), 119-127. doi:

  10.1111/j.1365-2934.2004.00498

Drews, K., Harrell, J., Thompson, D., Mazzuto, S., Ford, E., Carter, M., Ford, D., Yin, Z.,

  Jessup, A. & Roullet, J. (2009). Recruitment and retention strategies and methods

  in the HEALTHY study. *International Journal of Obesity, 33* (1), 21-28.

  doi:10.1038/ijo.2009.113

Eldor, L. & Harpaz, I. (2016). A process model of employee engagement: The learning

  climate and its relationship with extra-role performance behaviors. *Journal of*

  Organizational Behavior, 37(1), 213-235. doi: 10.1002/job.2037.

Enwereuzor, I., Ugwu, L. & Eze, O. (2016). How transformational leadership influences

  work engagement among nurses: Does person-job fit matter? *Western Journal of*

  Nursing Research, 40 (3), 346-366. doi: 10.1177/0193945916682449

Estabrooks, C., Midodzi, W., Cummings, G., Ricker, K. & Giovanetti, P. (2005). The

impact of hospital nursing characteristics on 30-day mortality. *Nursing Research,*

54(2), 72-84.

Fasoli, D. (2010). The culture of nursing engagement: a historical perspective. *Nursing*

Administration Quarterly 34, (1) 18-29. doi:10.1097/NAQ.0b013e318c95e7a

Fiabane, E., Giorgi, I., Sguazzin, C., & Argentero, P. (2012). Work engagement and

occupational stress in nurses and other healthcare workers: the role of

organisational and personal factors. *Journal of Clinical Nursing* , (22), 2614-

2624. doi.org/10.1111/jocn.12084

Ferguson, L., Myrick, F., & Olive, Y. (2006). Ethically involving students in faculty

research. *Nurse Education in Practice, 6*(6), 397-403.

doi:10.1016/j.nepr.2006.07.016

Ferri, P., Muzzalupo, J., & DiLorenzo, R. (2015). Patient's perception of dignity in an

Italian general hospital: a cross-sectional analysis. *BMC Health Services*

Research, 15(41), 1-8. doi: 10.1186/s12913-015-0704-8

Field, A. & Field, Z. (2012). *Discovering statistics using R*. London, UK: Sage.

Freney, Y., & Fellenz, M. (2013). Work engagement as a key driver of quality care: A

study with midwives. *Journal of Health Organization and Management*, *27*(3),

77-84. doi:10.1108/JHOM-10-2012-0192

Freeney, Y., & Tiernan, J. (2009). Exploration of the facilitators of and barriers to work

engagement in nursing. *International Journal of Nursing Studies*, *46*, 1557-1565.

doi.org/10.1016/j.ijnurstu.2009.05.003

Ferguson, L., Myrick, F., & Olive, Y. (2006). Ethically involving students in faculty

    research. *Nurse Education in Practice, 6*(6), 397-403.

    doi:10.1016/j.nepr.2006.07.016

Fuqua, S., Wyatt, B., Andrew, M., Sarpong, D., Cunningham, M. & Taylor, H. (2005).

    Recruiting African-American research participation in the Jackson Heart Study:

    methods, response rates, and sample description. *Ethnicity & Disease, 15* (1), 18-

    29.

Gallup. (2019). Nurses Again Outpace Other Professions for Honesty and Ehtics.

    Retrieved from https://news.gallup.com/poll/245597/nurses-again-outpace-

    professions-honesty-ethics.aspx

Gallup News. (2016). Employee Engagement in the U.S. Stagnant in 2015. Retrieved

    from http://news.gallup.com/poll/188144/employee engagement-stagnant-

    2015.aspx

Gallup. (2010). The Gallup Q12 Employee Engagement Questionnaire. Retrieved from

    https: //www.shrm.org

Garcia-Sierra, R., Fernandez-Castro, J., & Martinez-Zaragoza, F. (2015). Work

    engagement in nursing: an integrative review of literature. *Journal of Nursing

    Management*, *1*(6), 1-11. doi: 10.1111/jonm.12312

Giallonardo, L., Wong, C., & Iwasiw, C. (2010). Authentic leadership of preceptors:

    predictor of new graduate nurses' work engagement and job satisfaction. *Journal

    of Nursing Management, 18* (1), 993-1003. doi:10.1111/j.1365-

    2834.2010.01126x

Gillet, N., Fouquereau, E., Bonnaud-Antignac, A., Mokounkolo, R., & Colombat, P. (2013). The mediating role of organizational justice in the relationship between transformational leadership and nurses' quality of work life: a cross sectional questionnaire survey. *International Journal of Nursing Studies*, *50*, 1359-1367. doi.org/10.1016/j.ijnurstu.2012.12.012

Gokenbach, V. & Drenkard, K. (2011). The outcomes of Magnet environments and nursing staff engagement: A case study. *Nursing Clinics of North America, 46* (1), 89-105.

Gormley, D., Costanzo, A., Goetz, J., Isreal, J., Hill-Clark, J., Pritchard, T. & Staubach, K. (2019). Impact of nurse-led interprofessional rounding on patient experience. *Nurse Clinics of North America, 54* (1), 115-126. doi: 10.1016/j.cnur.2018.10.007.

Graffingna, G. (2017). Is a transdisciplinary theory of engagement in organized settings possible? A concept analysis of the literature on employee engagement, consumer engagement and patient engagement. *Frontiers in Psychology, 8* (1), 1-17. doi: 10.3389/fpsyg.2017.00872

Griffiths, P. (2006). Being a research participant: The nurse's ethical and legal rights. *British Journal of Nursing, 15*(7), 386-390.

Grissinger, M. (2017). Disrespectful behavior in health care: It's impact, why it persists, and how to address it-part 2. *Pharmacy and Therapeutics, 42* (2), 74-77.

Hagedorn Wonder, A. (2012). Engagement in RNs working in Magnet-designated hospitals: exploring the significance of work experience. *Journal of Nursing Administration*, *42*(12), 575-579. doi.org/10.1097/NNA.0b013e318274b5a8

Hakanen, J., & Schaufeli, W. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven year prospective study. *Journal of Affective Disorders*, *141*(1), 415-424. doi:10.1016/j.jad.2012.02.043

Halbesleben, J., Shanine, K., & Wheeler, A. (2013). Moderating role of attention-deficit/ hyperactivity disorder in the work engagement-performance process. *Journal of Occupational Health Psychology*, *18*(2), 132-143. doi:10.1037/a0031978

Havens, D., Warshawsky, N., & Vasey, J. (2013). RN work engagement in generational cohorts: the view from rural US hospitals. *Journal of Nursing Management*, *21*, 927-940. doi.org/10.1111/jonm.12171

HealthLeaders. (2015). Hospital Ratings Linked to Patient Choice, but how? Retrieved from https://www.healthleadersmedia.com/clinical-care/hospital-ratings-linked-patient-choice-how?page=0%2C1

Health Resources and Services Administration. (2015). The U.S. Nursing Workforce: Trends in Supply and Education Health Resources and Services Administration Bureau of Health Professions National Center for Health Workforce Analysis Web site. http://bhpr.hrsa.gov/healthworkforce/reports/nursingworkforce/nursingworkforcefullreport.pdf Published 2013. Accessed July 25, 2015.

Hengel, K., Blatter, B., Joling, C., van der Beek, A. & Bongers, P. (2012). Effectiveness of an intervention at construction worksites on work engagement, social support, physical workload and need for recovery: results from a cluster randomized controlled trial. *BMC Public Health, 12* (1). doi:10.1186/1471-2458-12-1008.

Herman, B. (2013). CMS: 1,451 hospitals penalized in 2014 value-based purchasing

program. *Becker's Healthcare.* Retrieved from

http://www.beckershospitalreview.com/finance/cms-1-451-hospitals-penalized-in-

2014-value-based-purchasing-program.html

Imamura, K., Kawakami, N., Furukawa, T., Matsuyama, Y., Shimazu, A., Umanodan, R.,

et al. (2015). Effects of an internet-based cognitive behavioral therapy

intervention on improving work engagement and other work-related outcomes:

An analysis of secondary outcomes of an randomized controlled trial. *Journal of*

Occupational and Environmental Medicine, 57(5), 578-584.

Innstrand, S., Langballe, E., & Falkum, E. (2012). A longitudinal study of the

relationship between work engagement and symptoms of anxiety and depression.

Stress and Health, *28*(1), 1-10. doi:10.1002/smi.1395

Institute for Patient-and Family Centered Care. (2010). Frequently asked questions.

Retrieved from www.ipfcc.org

Institute of Medicine. (2001). Crossing the quality chasm: A new health system for the

21st century. Retrieved from http://nap.edu/10027

Jennings, B., Heiner, S., Loan, L., Hemman, E. & Swanson, K. (2003). What really

matters to healthcare consumers. *Journal of Nursing Administration, 35* (4), 173-

180.

Jeve, Y., Oppenheimer, C., & Konje, J. (2015). Employee engagement within the NHS:

a cross-sectional study. *International Journal of Health Policy and Management,*

4(2), 85-90. doi:10.15171/ijhpm.2015.12

Jha, A., Orav, J., Zheng, J., Epstein, A. 2008. Patient's perception of hospital care in the United States. *The New England Journal of Medicine, 359* (18). 1921-1931.

Joint Commission on Accreditation of Healthcare Organizations. (2002). *Healthcare at the crossroads: Strategies for addressing the evolving nursing crisis.* Oakbrook Terrace, IL.

Kahn, W. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*(1), 692-724. doi: 10.2307/256287

Kalisch, B., Curley, M., & Stefanov, S. (2007). An intervention to enhance nursing staff teamwork and engagement. *Journal of Nursing Administration, 37* (2), 77-84.

Kanter, R. (1993). *Men and women of the corporation*. New York, NY: Basic Books.

Kelly, L.m, McHugh, M. & Aiken, L. (2011). Nurse outcomes in Magnet ® and non-Magnet hospitals. *Journal of Nursing Administration, 41* (10), 428-433.

Kennedy, B., Craig, J., Wetsel, M., Reimels, E. & Wright, J. (2013). Three nursing interventions' Impact on HCAHPS scores. *Journal of Nursing Care Quality, 28* (4), 327-334. doi: 10.1097/NCQ.0b013e31828b494c

Keyko, K., Cummings, G., Yonge, O., & Wong, C. (2016). Work engagement in professional nursing practice: A systematic review. *International Journal of Nursing Studies, 61* (1), 142-164. doi:10.1016./J.Jnurstu.2016.06.003

Knight, C., Patterson, M., & Dawnson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior, 38* (1), 792-812. doi: 10.1002/job.2167

Kralik, D., Warren, J., Price, K., Koch, T., & Pignone, G. (2005). The ethics of research using electronic mail discussion groups. *Journal of Advance Nursing, 52*(2), 537-545.

Kuhnel, J., Sonnentag, S., & Westman, M. (2009). Does work engagement increase after a short respite? The role of job involvment as a double-edged sword. *Journal of Occupational and Organizational Psychology*, *82*(3), 575-594.

Kular, S. (2007). *Employee engagement: A literature review (Unpublished master dissertation).* Kingston University, Kingston Business School, England.

Kutney-Lee, A., McHugh, M., Sloane, D., Cimiotti, L., Flynn, L., Neff, D. & Aiken, L. (2009). Nursing: A key to patient satisfaction. *Health Affairs, 28* (4) 669-677. Doi:10.1377/hlthaff28.4.w669

Kutney-Lee, A., Sloane, D. & Aiken, L. (2003). An increase in the number of nurses with baccalaureate degrees is linded to lower rates of postsurgery mortality. *Health Affairs, 32* (3) 579-586.

Lake, E. T. (2002). Development of the practice environment scale of the Nursing Work Index. *Research in Nursing and Health, 25*(3), 176-188. doi:10.1002/nur.10032

Lake, E. & Friese, C. (2006). Variations in nursing practice environments. *Nursing Research, 55*(1), 1-9.

Larrabee, J., Bolden, L. (2001). Defining patient-perceived quality of nursing care. *Journal of Nursing Care Quality 16* (1), 34-60.

Larrabee, J., Ostrow, L., Withtow, M., Janney, M.Hobbs, G., Burant, C. (2004).

>Predictors of patient satisfaction with inpatient hospital nursing care. *Research in*

>*Nursing and Health 27*(4), 254-268.

Laschinger, H. (2012). Job and career satisfaction and turnover intentions of newly

>graduated nurses. *Journal of Nursing Management*, *20*(4), 472-484.

Laschinger, H., Grau, A., Finegan, J., & Wilk, P. (2012).   Predictors of new graduate

>nurses' workplace well-being: testing the job demands resources model. *Health*

>*Care Management Review, 37*(2), 175-186.

Laschinger, H., & Finegan, J. (2005). Empowering nurses for work engagement and

>health in hospital settings. *Journal of Nursing Administration*, *35*(10), 439-449.

Laschinger, H., Wilk, P., & Greco, P. (2009). Empowerment, engagement and perceived

>effectiveness in nursing work environments: Does experience matter? *Journal of*

>*Nursing Management, 17* (5), 636-646. doi:10.1111/j.1365-2834.2008.00907.x

Lean (2015). What Is Lean Web Site? http://www.lean.org/WhatsLean/. Accessed July,

>1 2015.

Levine, C., Faden, R., Grady, C., Hammerschmidt, D., Eckenwiler, L., & Sugarman, J.

>(2004). *American Journal of Bioethics, 4*(3), 44-47.

Li, B., Li, Z. & Wan, Q. (2019). Effects of work practice environment, work

>engagement, and work pressure on turnover intention among community health

>nurses: Mediated moderation model. *Journal of Advanced Nursing, 6* (1). doi:

>10.1111/jan.14130

Little, P., Everitt, H., Williamson, I., Warner, G., Moore, M., Gould, C., Ferrier, K. &

>Payne, S. (2001). Preferences of patients for patient centered approach to

consultation in primary care: Observational study. *British Medical Journal, 322*(1), 468-472.

Loftin, C., Campanella, H., & Gilbert, S. (2011). Ethical issues in nursing education: The dual-role researcher. *Teaching and Learning in Nursing, 6*(3), 139-143. doi:10.1016/j.teln.2011.01.005

Lorente, L., Salanova, M., Martinez, I., & Vera, M. (2014). How personal resources predict work engagement and self-rated performance among construction workers: A social cognitive perspective. *International Journal of Psychology, 49* (3), 200-207. doi:10.1002/ijop.12049

Lowe, G. (2012). How employee engagement matters for hospital performance. *Healthcare Quarterly, 15* (2), 29-38.

Maas, C. & Hox, J. (2005). Sufficent sample sizes for multilevel modeling. *Methodology, 1*(3), 86-92. doi: 10.1027/1614-1881.1.3.86

Macy, W. & Schneider, B. (2008). The meaning of employee engagement. *Industrial and Organizational Psychology, 1* (1), 3-30.

Mahiro, S., Takshi, N., & Satoko, N. (2014). Work engagement and attitudes toward caring for dying patients and families among home-visiting nurses in Japan. *International Journal of Palliative Care Nursing* , *20*(7), 343-348. doi:10.12968/ijpn.2014.20.7.343

Manookian, A., Cheraghi, M., & Nasrabadi, A. (2014). Factors influencing patients' dignity: A qualitative study. *Nursing Ethics, 21*(3), 323-334. doi: 10.117/0969733013498526

May, D., Gilson, R., & Harter, L. (2004). The psychological conditions of

      meaningfulness, safety and availability and the engagement of the human spirit at

      work. *Journal of Occupational and Organizational Psychology, 77* (1), 11-37.

Mazurenko, O. (2016). Use of foreign-educated nurses and patient satisfaction in U.S.

      hospitals. *Health care management review.* 1-12 doi:

      10.1097/HMR.00000000000000077

McClelland, L. E., & Vogus, T. J. (2014). Compassion Practices and HCAHPS: Does

      Rewarding and Supporting Workplace Compassion Influence Patient

      Perceptions? *Health Services Research*, *49*(5), 1670–1683. doi:10.1111/1475-

      6773.12186

McHugh, M., Kelly, L., Smith, H., Wu, E., Vanak, J. & Aiken, L. (2013). Lower

      mortality in Magnet hospitals. *Medical Care, 51* (5), 382-388.

Medicare Payment Advisory Commission. (2018). *Report to Congress: Medicare*

      payment policy. Retrieved from http://www.medpac.gov/docs/default-

      source/reports/mar18_medpac_entirereport_sec.pdf

Metlife Mature Market Institute. (2009). Case Study: Fanning the Flame to Retain

      Boomer Nurses.   Retrieved from

      https://www.metlife.com/assets/cao/mmi/publications/studies/mmi-multigen-case-

      study-pitt-county-hospital.pdf. Accessed July 24, 2015.

Naruse, T., Taguchi, A., Kuwahara, Y., Nagata, S., Sakai, M., Watai, I., & Murashima, S.

      (2015). The effect of skill mix in non-nursing assistants on work engagement

      among home visiting nurses in Japan. *Journal of Nursing Management*, *23*, 532-

      541. doi: 10.1111/jonm.12167

Nielsen, K., Taris, T. & Cox, T. (2010). The future of organizational interventions:

    Addressing the challenges of today's organizations. *Work & Stress, 24* (3), 219-

    233. doi: 10.1080/02678373.2010.519176

Nordgren, S. (2001). Patients' perception of self-determination as expressed in the

    context of care. *Journal of Advanced Nursing, 35* (1), 117- 125.

NSI Nursing Solutions, Inc. (2015). 2015 National healthcare retention & RN staffing

    report. Retrieved from

    www.nsinursingsolutions.com/Files/assets/library/retention-

    institute/NationalHealthcareRNRetentionReport2015.pdf

Nurse Week. (2015). What Nurses Say, in Search for Solutions: NurseWeek/AONE

    survey provides some tools for turnaround Web site. Retrieved from

    http://people.uwec.edu/jamelsem/280/handouts/unit2/what_nurses_say_nursewee

    k_280.pdf. Accessed on July 24, 2015.

Oflaz, F. (2010). The evaluation of nurses and nursing activities through the perceptions

    of inpatients. *International Nursing Review, 57* (2), 232-239. doi

    10.1111/j.1466-7657.2009.00772.x

Orgambidez-Ramos, A., de Almeida, H. (2017). Work engagement, social support and

    job satisfaction in Portuguese nursing staff: A winning combination. *Applied*

    Nursing Research, 36(1), 37-41. doi 10.1016/j.apnr.2017.05.012

Otani, K, Waterman, B., Faulkner, K., Boslaugh, S. Clairborne, D. (2010). How patient

    reactions to hospital care attributes affect evaluation of overall quality of care,

willingness to recommend and willingness to return/practitioner application. Journal of Healthcare Management 10 (55), 25-37.

Othman, N., & Nasurdin, A. (2013). Social support and work engagement: a study of Malaysian nurses. *Journal of Nursing Management*, *21*(8), 1083-1090. doi.org/10.1111/j.1365-2834.2012.01448.x

Ouweneel, E., Le Blanc, P., & Schaufeli, W. (2013). Do it yourself: An online positive psychology intervention to promote positive emotions, self-efficacy and engagement at work. *Career Development International, 18*(2), 173-195. doi 10.1108/CDI-10-2012-0102.

Palmer, B., Quinn-Griffin, M., Reed, P., & Fitzpatrick, J. (2010). Self-transcendence and work engagement in acute care staff registered nurses. *Critical Care Nurse Quarterly*, *33*(2), 138-147. doi.org/10.1097/CNQ.0b013e318d912d8

Pearson, M., Needleman, J., Beckman, R., & Han, B. (2016). Facilitating nurses' engagement in hospital quality improvement: the New Jersey Hospital Association's implementation of transforming care at the bedside. *Journal of Healthcare Quality, 38* (6), 64-75.

Penn Arts & Sciences. (2017). Positive Psychology Center Retrieved from http://ppc.sas.upenn.edu/

Polit, D. & Beck, C. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed). Philadelphia: Lippincott.

Polit, D., & Yang, F. (2016). *Measurement and the measurement of change*. Philadelphia, PA: Wolters Kluwer.

Press Ganey, Nursing Special Report. (2015). *The influence of nurse work environment on patient, payment and nurse outcomes in acute care settings.* Retrieved from www.pressganey.com

Press Ganey, White Paper. (2016). *Building a high-performance workforce.* Retrieved from www.pressganey.com.

Psychology Today. (2017). Emotional Intelligence. Retrieved from www.psychologytoday.com

R Core Team. (2014). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. Retrieved from http://www.R-project.org/

Rigotti, T., Otto, K., Mohr, & Perko, K. (2014). Rewarding & sustainable health-promoting leadership. *Re-Su-Lead consortium Report. University of Liepzig, Germany.*

Rivera, R., Fitzptrick, J., & Boyle, S. (2011). Closing the RN engagement gap: which drivers of engagement matter? *Journal of Nursing Administration*, *41*(6), 265-272. doi.org/10.1097/NNA.0b013e31821c476c

Robinson, J., Callister, L., Berry, J. & Dearing, K. (2008). Patient centered care and adherence: Definitions and applications to improve outcomes. *Journal of the American academy of Nurse Practitioners 20* (12), 600-607.

Rogers, B. (2005). Research with protected populations-vulnerable participants. *American Association of Occupational Health Nurses, 53*(4), 156-157.

Rosenstein, A. & O'Daniel, M. (2005). Disruptive behavior and clinical outcomes: Perceptions of nurses and physicians. *American Journal of Nursing, 105* (1), 54-64. Retrieved from http://www.jstor.org/stable/29746264.

Rothman, A., Park, H., Hays, R., Edwards, C. & Dudley, R. (2008). Can additional patient experience items improve the reliability of and add new domains to the CAHPS Hospital Survey? *Health Services Research, 43* (6), 2201-2222.

Salanova, M., Agut, S., & Peiró, J. (2005). Linking organizational facilitators and work engagement to extra-role performance and customer loyalty: The mediating role of service climate. *Journal of Applied Psychology, 90* (6), 1217-1227.

Salanova, M., Llorens, S., Cifre, E., Martinez , I. & Schaufeli, W. (2003). Perceived collective efficacy, subjective well-being and task performance among electronic work groups: An experimental study. *Small Groups Research, 34* (1), 43-73.

Salanova, M., Lorente, L., Chambel, M., & Martinez, I. (2011). Linking transformational leadership to nurses' extra-role performance: The mediating role of self-efficacy and work engagement. *Journal of Advanced Nursing*, *67*(10), 2256-2266. doi:10.1111/j.1365-2648.2011.05652.x

Santos, A., Chambel, M. Castanheira, F. (2015). Relational job characteristics and nurses' affective organizational commitment: the mediating role of work engagement. *Journal of Advanced Nursing 72* (2), 294-305. Doi: 10.1111/jan.12834

Schaufeli, W. (2014). *A model for work engagement* [Lecture notes]. Retrieved from http://www.slideshare.net/tyoterveyslaitos/wilmar-schaufeli-employeeengagement

Schaufeli, W., & Bakker, A. (2004). *The Utrecht work engagement scale manual.*

    Retrieved from Personal Website of Wilmar Schaufeli:

    http://www.wilmarschaufeli.nl/downloads/test-manuals-2/

Schaufeli,W., Martinez, I., Salanova, M. & Bakker, A. (2002). Burnout and engagement

    in university students: a cross-national study. *Journal of Cross-Cultural*

    Psychology 33(5), 464-481. doi:10.117/0022022102033005003

Schaufeli,W., Salanova, M., Gonzalez-Roma, V. & Bakker, A. (2002). The measurement

    of engagement and burnout: A two sample confirmatory analytic approach. *The*

    Journal of Happiness Studies, 3 (1), 71-92. doi: 10.1023/A:1015630930326

Schaufenbuel, K. (2013). Powering your bottom line through employee engagement.

    UNC Kenan-Flagler Business School. Retrieved from http//execdev.kenan-

    flagler.unc.edu/powering-your –bottom-line-through-employee-engagement.

Seedhouse, D. (2002). Undignifying institutions. *Journal of Medical Ethics, 28* (6), 368-

    372. Doi:10.1136/jme.28.6.368

Seligman, M. (2018). Positive psychology: a personal history. *Annual Review of*

    Clinical Psychology, 15 (1), 1-23. doi: 10.1146/annurev-clinpsy-050718-095653.

Seligman M. & Csikszentmihalyi, M. (2000). Special issue on happiness, excellence and

    optimal human functioning. *American Psychologist, 55* (1), 5-14.

Setti, I., & Argentero, P. (2011). Organizational features of workplace and job

    engagement among Swiss healthcare workers. *Nursing and Health Sciences*,

    13(1), 425-432. doi.org/10.1111/j.1442-2018.2011.00636.x

Shahpouri, S., Namdari, K., & Adebi, A. (2016). Mediating role of work engagement in

the relationship between job resources and personal resources with turnover

intention among female nurses. *Applied Nursing Research, 30*(1), 216-221.

doi.org/10.1016/japnr.2015.10.008

Shamoo, A. , & Resnik, D. (2009). *Responsible conduct of research*. New York:

Oxford University Press.

Shang, J., Friese, C., Wu, E. & Aiken, L. (2013). Nursing practice environment and

outcomes for oncology nursing. *Cancer Nursing, 36*(3), 206-212.

doi:10.1097/NCC.0b013e31825e4293

Siller, J., Dolansky, M., Clavelle, J. & Fitzpatrick, J. (2016). Shared governance and

work engagement in emergency nurses. *Journal of Emergency Nursing, 42* (4),

325-330. doi: 10.1016/j.jen.2016.01.002

Simpson, M. (2009). Engagement at work: A literature review. *International Journal of

Nursing Studies*, *46*(7), 1012-1024. doi:10.1016/j.ijnurstu.2008.05.003

Social Intelligence Theory. (2004). *Theory of Social Intelligence*. Retrieved from

www.karlabrecht.com

Sodani,M., Yadigari, E., Shfia-Abadi, A. & Mohammadi, K. (2011). Effectiveness of

group-based creativity acquisition on job self-efficacy in a welfare organization in

IranIn F Tao (Ed.). *Social Science and Humanity, 5* (1), 34-35.

Sohrabizadeh, S., & Sayfouri, N. (2014). Antecedents and consequences of work

engagement among nurses. *Iranian Red Crescent Medical Journal, 16* (11),

e16351.   doi: 10.5812/ircmj.16351

208

Sonnentag, S. (2003). Recovery, work engagement, and proactive behavior: a new look at the interace between nonwork and work. *Journal of Applied Psychology*, *88*(3), 518-528. doi.org/10.1037/0021-9010.88.3.518

Spreitzer, G. (1995). Psychological empowerment in the workplace: dimensions, measurement and validation. *Academy of Management Journal, 38* (5), 1442-1462.

Stimpfel, A., Sloane, D., McHuch, M., Aiken, L. (2016). Hospitals known for nursing excellence associated with better hospital experience for patients. *Health Services Research, 51*(3), 1120-1134. doi:10.1111/1475-6773.12357

Strijk , J., Proper, K., van Mechelen, W., van der Beek, A. (2013). Effectiveness of worksite lifestyle intervention on vitality, work engagement, productivity, and sick leave: results of a randomized controlled trial. *Scandinavian Journal of Work Environment Health, 39* (1), 66-75. doi: 10.5271/sjweh.3311

Strumwasser, S., & Virkstis, K., (2015). Meaningfully incorporating staff inuput to enhance frontline engagement. *Journal of Nursing Administration, 45* (4), 179-182. Doi:10.1097/NNA.0000000000000179

Survey Monkey. (2017). Security Statement. Retrieved from https://www.surveymonkey.com/mp/policy/security/

Swiger, P., Raju, D., Breckenridge-Sproat, S. & Patrician, P. (2017). Adaptation of the practice environment scale for military nurses: a psychometric analsys. *Journal of Advanced Nursing 73*(9), 2219-2236. doi:10.1111/jan.13276

Taris, T., Kompier, M., DeLange, A., Schaufeli, W., & Schreurs, P. (2003). Leaning new behavior patterns: A longitudinal test of Karasek's active learning hypothesis

among Dutch teachers. *Work Stress, 17* (1), 1-20.

doi:10.1080/0267837031000108149.

The Commonwealth Fund. (2019). *U.S. spends more on health care than other high-income nations but has lower expectancy, worse health.* Retrieved from

https://www.commonwealthfund.org

The Joint Commission. (2008). *Sentinel events: Behaviors that undermine the culture of patient safety.* Retrieved from

httpsz:/www.joingcommission.org/assets/1/18/SEA_.40.PDF

Tofthagen, R., & Fagerstrom, L. (2010). Rodgers' evolutionary concept analysis-a valid method for developing knowledge in nursing science. *Scandinavian Journal of Caring Sciences*, *24* (1), 21-31. doi: 10.1111/j.-1471-6712.2010.00854.x

Unruh, L. (2002). Nursing staff reductions in Pennsylvania hospitals: Exploring the discrepancy between perceptions and data. *Medical Care Research and Review, 59*(2), 197-214.

U.S. Department of Health and Human Services, Medicare.gov. (2017). *About hospital compare data.* Retrieved from

https://www.medicare.gov/hospitalcompare/Data/About.html

Uzun, O. (2001). Patient Satisfaction with Nursing care at a university hospital in Turkey. *Journal of Nursing Care Quality 16*(1), 24-33.

Valimaki, M. (1998). Preconditions for and consequences of seld-determination: the psychiatric patient's point of view. *Journal of Advnaced Nursing, 27* (1), 204-212.

Van Beek, I., Hu, Q., Schaufeli, W., Taris, T., Schreurs, B., & Bert, H. (2012). For fun,

    love or money: What drives workaholic, engaged and burned out employees at

    work? *Applied Psychology: An International Review*, *61*(1), 30-55.

Van Berkel, J., Boot, C., Proper, K., Bongers, P. & Van der Beek, A. (2014).

    Effectiveness of worksite mindfulness-based multi-component intervention on

    lifestyle behaviors. *International Journal of Behavioral Nutrition and Physical*

    Activity, 11 (1). doi: 10.1186/1479-5868-11-9

Van Bogaert, P., Clark, S., Willems, R., & Mondelaers, M. (2013). Staff engagement as a

    target for managing work environments in psychiatric hospitals: Implications for

    workforce stability and quality of care. *Journal of Clinical Nursing*, *22*(11), 1717-

    1728. doi:10.1111/j.1365-2702.2012.04341.x

Van Bogaert, P., Heusden, D., Timmermans, O., & Franck, E. (2014). Nurse work

    engagement impacts job outcome and nurse-assessed quality of care: model

    testing with nurse practice environment and nurse work characteristics as

    predictors. *Frontier in Psychology, 5* (1), e1261. doi:

    10.3389/fpsyg.2014.01261

Van Bogaert, P., Peremans,, L., Van Heusden, D., Verspuy, M., Kureckova, V., Van de

    Cruys, Z., & Franck, E. (2017). Predictors of burnout, work engagement and

    nurse reported job outcomes and quality of care: a mixed methods study. *BMC*

    Nursing, 16 (5), 1-14. doi: 10.1186/s12912-016-0200-4.

Van Bogaert, P., Wouters, K., Willems, R., Mondelaers, M., & Clarke, S. (2013). Work

    engagement supports nurse workforce stability and quality of care: nursing team-

level analysis in psychiatric hospitals. *Journal of Psychiatric and Mental Health Nursing*, 20(8), 679-86. doi:10.1111/jpm.12004

Vinje, H., & Mittlemark, M. (2008). Community nurses who thrive: the critical role of job engagement in the face of adversity . *Journal of Nurses in Staff Development*, *24*(5), 195-202.

Vuori, J., Toppinen-Tanner, S. & Mutanen, P. (2012). Effects of resource-building group intervention on career management and mental health in work organizations: Randomized controlled field trial. *Journal of Applied Psychology, 97*(2), 273-286. doi: 10:1037/a0025584

Walker, A. & Campbell, K. (2013). Work readiness of graduate nurses and the impact on job satisfaction, work engagement and intention to remain. *Nurse Education Today, 33* (12), 1490-1495. Doi:10.1016/jnedt.2013.05.008

Wan, Q., Li, Z., Zhou, W. & Shang, S. (2018). Effects of work environment and job characteristics on the turnover intention of experienced nurses: The medicating role of work engagement. *Journal of Advanced Nursing, 74* (6), 1332-1341. doi: 10.1111/jan.13528

Wang, S., & Liu, Y. (2015). Impact of professional nursing practice environment an psychological empowerment of nurses' work engagement: test of structural equation modeling. *Journal of Nursing Management*, *23*(3), 287-296. doi.org/10.1111/jonm.12124.Epub2013

Wennberg, J., Bronner, K., Skinner, J., Fisher, E. & Goodman, D. (2009). Inpatient care intensity and patients' ratings of their hospital experiences: What could explain the fact that Americans with chronic illness who receive less hospital care report

better hospital experiences? *Health Affairs, 28* (1), 103-112.

doi:10.1377/hlhaff.28.1.103

Wensing, M., Jung, H., Mainz, J., Olesen, F. & Grol, R. (1998). A systematic review of

the literature on patient priorities for general practice care: Part 1 description of

the research domain. *Social Science & Medicine, 47* (10), 1573-1588. doi:

10.1016/S0277-9536(98)00222-6

Westbrook, K., Babakus, E., Grant, C. (2014). Measuring patient-perceived hospital

service quality: validity and managerial usefulness of HCAHPS scales. *Health*

Marketing Quarterly, 31(1), 97-114. doi:10.1080/07359683.2014.907114

White, M., Butterworth, T. & Wells, J. (2017). Healthcare quality improvement and

'work engagement'; concluding results from a national, longitudinal, cross-

sectional-study of the 'Productive Ward-Releasing Time to Care' Programme.

BMC Health Services Research 17(1), 510. doi.10.1186/s12913-017-2446-2

White, M., & Waldron, M. (2014). Effects and impact of Productive Ward from a nursing

perspective. *British Journal of Nursing* , *23*(8), 419-426.

White, M., Wells, J., & Butterworth, T. (2014). The impact of a large-scale quality

improvement programme on work engagement: Preliminary results from a

national cross-sectional-survey of the 'Productive Ward'. *International Journal of*

Nursing Studies, *51*(12), 1634-doi.org/10.1016/j.ijnurstu.2014.05.002

Whitehead, J. (2008). Patients' experiences of privacy and dignity. *British Journal of*

Nursing, 17 (6), 381-385. Doi:10.12968/bjon.2008.17.6.28904

Williams, A. & Irurita, V. (2004). Therapeutic and non-therapeutic interpersonal

    interactions: The patient's perspective. *Issues in Clinical Nursing, 13*(1), 806-

    815.

Wolosin, R. (2012). Nursing care, inpatient satisfaction, and value-based purchasing:

    Vital connections. *The Journal of Nursing Administration, 42*(6), 321-325.

    doi:10.1097/NNA.0b013e318257392b

Wonder, A. (2013). Work engagment in Magnet designated hospitals: exploring social

    and institutional demographics of RN's to optimize improvement efforts. *The*

    Journal of Nursing Administration, *43*(12), 667-672.

    doi.org/10.1097/nna.0000000000000009

Wong, C., Laschinger, H., & Cummings, G. (2010). Authentic leadership and nurses'

    voice behavior and perceptions of care quality. *Journal of Nursing Management,*

    18 (8), 889-900. doi: 10.1111/j.1365-2834.2010.01113.x

Xanthopoulou, D., Bakker, A., Demerouti, E., & Schaufeli, W. (2009). Work engagement

    and financial returns: A diary study on the role of job and personal resources.

    Journal of Occupational and Organizational Psychology, *82*(1), 183-200.

    doi:10.1348/096317908X285633

Yaraghi, N., Wang, W., Gao, G. & Agarwal, R. (2018). How online quality ratings

    influence patients' choice of medical providers: Controlled experimental survey

    study. *Journal of Medical Internet Research, 20* (3). Doi:10.2196/jmir.8986

You, L., Aiken, L., Sloane, D., Liu, K., He, G., Hu, Y., Sermeus, W. (2012). Hospital

    nursing, care quality, and patient satisfaction: cross-sectional surveys of nurses

and patients in hospitals in China and Europe. *International Journal of Nursing*

Studies, 50(2), 154-161. doi:10.1016/ijnurstu.2012.05,003

Zhu, Y., Liu, C., Guo, B., Zhao, L., & Lou, F. (2015). The impact of emotional

intelligence on work engagement of registered nurses: the mediating role of

organzational justice. *Journal of Clinical Nursing*, 24(15-16), 2115-2124.

doi.org/10.1111/jocn.12807

Appendix A

Cover Page

Emory University
Online Consent and HIPAA Authorization Script and Information Sheet
For Research Study Screening

Study Title: Work Engagement of Hospital Nurses and Patients' Ratings of Nurse Communication, Overall Hospital Stay and Likelihood to Recommend the Hospital to Others
Principal Investigator: Apryl Lewis, MSN, RN, CCTN, Nursing (also a UAB PhD student)
Funding Source: Self funded

Introduction
Thank you for your interest in the Work Engagement of Hospital Nurses and Patients' Ratings of Nurse Communication, Overall Hospital Stay and Likelihood to Recommend the Hospital to Others study. This study is anonymous. Although you will be asked to provide some information about yourself you will not be asked to give your identity. Some of the information will help determine if you are a candidate for the study. There is no screening interview. The below information will give you information on what I will do with your information.

1. The on-line survey will take about 10 minutes to complete.
2. You can stop the survey at any time. This is completely voluntary.
3. The survey information sheet is available in your unit location break room. Because of the anonymous nature of the study, I will not know the information you provided for the study is connected to you and therefore, would not be able to remove any information you provide during the study.
4. I will ask you about your demographic information including your hospital unit location, age, gender, hospital location, employment status (more or less than 30 hours per week), education level, marital status, time of the day you work, and length of the shift you work. I will also ask you to describe your work well-being such as how you feel about the work you do. I will also ask

you to describe information about your practice (work) environment. The information will be stored in an electronic database and contain information from others who have also shown interest in the study.

5. This information will only be used for the research study you are interested in.
6. The only risk to you in this on-line survey is the possibility that some questions may make you uncomfortable.
7. There is no "protected health information" or "PHI" used for this study.
8. The following persons or groups may use and/or disclose the your information from this study:
   - The Principal Investigator
   - Emory offices who are part of the Human Research Participant Protection Program and those who are involved in the research-related administration and billing
   - Any government agencies who regulate the research including the Office of Human Subjects Research Protections and the FDA
9. The researcher will not know the information you provide in the study is connected to you and therefore, I could not remove any information you provide.
10. This study uses no identifiers and no PHI and the information you provide is not subject to Privacy Rules. This means the information may be used or disclosed with other people or organizations, and/or for other purposes in the anonymous manner it was collected. You are being asked to be in a research study.
11. This form is available on your hospital unit location break room.

Contact Information
If at any time you have questions about the information provided in this form, your rights as a research participant, or if you have questions, concerns or complaints about the research you may contact the principal investigator, Apryl Lewis at 412.519.2203 or the Emory Institutional Review Board.

Apryl Lewis, RN, MSN, CCTN at 412-519-2203

Emory Institutional Review Board at 404-712-0720 or toll free at 877-503-9797 or by email at irb@emory.edu

You can also stop the survey at any time or not take the survey. This is completely voluntary.

On-line Consent & Authorization
By completing the survey, you consent to participate in the study.

Link to enter the study:
ADD LINK

Appendix B

Timeline

	Feb. 2018	March 2018	Apr. 2018	Summer 2018	Sept. 2018	Oct. 2018	Nov. 2018	Dec. 2018	Jan. 2019	Feb. 2019	March 2018	Apr. 2018	Summer 2019
Meetings with key members of organization					x	x	x	x					
IRB Application (two applications)	x					x							
IRB Approval			x				x						
Proposal Defense				x									
Recruitment									x				
Data Collection									x				
Data Cleaning										x			
Data Analysis											x	x	
Study Defense Summer													x

Appendix C

Nurse Demographic Questionnaire

1. What is your unit location by number?

2. What is your age in years?

3. Gender: _____ Female   _____ Male

4. The following question is needed to determine your hospital magnet status, please choose which hospital you work for:

   _____ Emory University Hospital (Clifton Road)

   _____ Emory University Hospital Midtown

   _____ Emory University Hospital Orthopedic and Spine

   _____ Emory University Hospital Wesley Woods

   _____ Emory University Hospital John's Creek

   _____ Emory University Hospital Saint Joseph's

5. What is your employment status?

   _____ less than 30 hours per week
   _____ 30 hours or more per week

6. What is your education level?

   _____ RN Diploma
   _____ Associate's degree in nursing (ADN)
   _____ Bachelor's degree in nursing (BSN)
   _____ Bachelor's degree **outside** of nursing
   _____ Master's degree (MSN) or higher in nursing
   _____ Master's degree or higher **outside** of nursing

7. What is your marital status?

_____ Single

_____ Married

8. What part of the day do you work?

_____day

_____evening

_____nightshift

9. What shift hours do you work?

_____ 8 hour shift
_____ 10 hour shift
_____ 12 hour shift
_____ 8 hour and 12 hour rotating shift
_____ Other [Please specify: _____

Appendix D

Utrecht Work Engagement Survey-9

Work & Well-being Survey (UWES) ©

The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, cross the "0" (zero) in the space after the statement. If you have had this feeling, indicate how often you feel it by crossing the number (from 1 to 6) that best describes how frequently you feel that way.

	Almost never	Rarely	Sometimes	Often	Very often	Always
0	1	2	3	4	5	6
Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

1. _____ At my work, I feel bursting with energy
2. _____ At my job, I feel strong and vigorous
3. _____ I am enthusiastic about my job
4. _____ My job inspires me
5. _____ When I get up in the morning, I feel like going to work
6. _____ I feel happy when I am working intensely
7. _____ I am proud of the work that I do
8. _____ I am immersed in my work
9. _____ I get carried away when I'm working

Appendix E

Practice Environment Survey of the Nursing Work Index (PES-NWI)

PES-NWI (items are listed by subscale)

Ratings: Strongly Disagree, Somewhat Disagree, Somewhat Agree Strongly Agree

Nurse Participation in Hospital Affairs

1. Staff nurses are involved in the internal governance of the hospital(e.g. practice and policy committees)

2. Opportunity for staff nurses to participate in policy decisions

3. Opportunities for advancement

4. Administration that listens and responds to employee concerns

5. A chief nurse officer who is highly visible and accessible to staff

6. Career development/clinical ladder opportunity

7. Nursing administrators consult with staff on daily problems and procedures

8. Staff nurses have the opportunity to serve on hospital and nursing committees

9. A chief nursing officer is equal in power and authority to other top level hospital executives

Nursing Foundations for Quality Care

10. Use of nursing diagnoses

11. An active performance improvement program

12. A perception program for newly hired RNs

13. Nursing care is based on a nursing, rather than a medical model

14. Patient care assignments that foster continuity of care i.e. the same nurse cares for the patient from one day to the next

15. A clear philosophy of nursing that pervades the patient care environment

16. Written, p-to-date nursing care plans for all patients

17. High standards of nursing care are expected by the administration

18. Active staff development or continuing education programs for nurses

19. Working with nurses who are clinically competent

Nurse Manager Ability, Leadership, and Support of Nurses

20. A nurse manager who is a good manager and leader

21. A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician

22. Supervisors use mistakes as learning opportunities, not criticism

23. A supervisory staff that is supportive of the nurses

24. Praise and recognition for a job well done

Staffing and Resource Adequacy

25. Enough staff to get the work done

26. Enough registered nurses to provide quality patient care

27. Adequate support services allow me to spend time with my patients

28. Enough time and opportunity to discuss patient care problems with other nurses

Collegial Nurse-Physician Relations

29. A lot of teamwork between nurses and physicians

30. Physicians and nurse have good relationships

31. Collaboration (joint practice) between nursing personnel and physicians

Appendix F

HCAHPS Nurse Communication Questions and Hospital Global Rating Questions

Nurse Communication HCAHPS Questions:

1. During this hospital stay, how often did nurses treat you with <u>courtesy and respect</u>?

___ Never

___ Sometimes

___ Usually

___ Always

2. During this hospital stay, how often did nurses <u>listen carefully to you?</u>

___ Never

___ Sometimes

___ Usually

___ Always

3. During this hospital stay, how often did nurses <u>explain things</u> in a way you could understand?

___ Never

___ Sometimes

___ Usually

___ Always

Global Hospital Ratings HCAHPS Questions

Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital stay?

___ 0 Worst hospital possible

___1

___2

___3

___4

___5

___6

___7

___8

___9

___10 Best hospital possible

Would you recommend this hospital to your friends and family?

___Definitely no

___Probably no

___Probably yes

___Definitely yes

Table 35

Research Question, Measurement Instrument, Empirical Indicator, Validity and Reliability

Research Question	Variable	Instrument	Empirical Indicator	Validity	Reliability Cronbach's alpha
RQ 1-4	Nurse work engagement	Utrecht Work Engagement Survey (UWES-9)	Unit/Hospital average of composite (overall and subscales) UWES-9 score	(CFI) = .917 (IFI) =.918 (RMSEA) =.060	(subscales) vigor.86 dedication .87 absorption .80
RQ 2-4	Nurse Communication; Overall Rating of Hospital; Likelihood to Recommend the Hospital to others	Hospital Consumer Assessment of Healthcare Providers Systems (HCAHPS)	Unit/Hospital top box ratings percentage for each HCAHPS domain (nurse communication, overall rating of hospital, likelihood to recommend)	(CFI) = .99 (GFI) = .95 (NFI) = .98 (NNFI) = .98 (RMSEA) =.062	.767
RQ 4	Practice Environment	Practice Environment Scale (PES-NWI)	Unit/Hospital composite score (favorable, unfavorable or mixed)	(CFI) = .87 (RMSEA) =.07	(subscales) Nurse participation in hospital affairs .83; Nursing foundations for quality of care .80; Nurse manager ability, leadership and support of nurses .84; Staffing and resource adequacy .80; Collegial nurse-physician relations .71; Composite .82
RQ 3	Hospital variables	Case Mix-Index Unit Type	Unit/Hospital score Unit type (patient specialty)	n/a	n/a

Confirmatory factor analysis results; comparative fit (CFI), incremental fit index (IFI), goodness of fit (GFI), normed fit index (NFI), nonnormed fit index (NNFI), root mean square error of approximation (RMSEA) and the reliability results of Cronbach's alpha referenced from (Van Bogaert, Clarke, Willems, & Mondelaers, 2013; Westbrook, Babakus, & Grant, 2014).