2017

The Nursing Practice Environment And Job Outcomes In Saudi Hospitals

Zainab Ahmad Ambani
University of Pennsylvania, ambaniz@nursing.upenn.edu

The Nursing Practice Environment And Job Outcomes In Saudi Hospitals

Abstract

The nursing shortage is a challenging problem globally. In Saudi Arabia, the nurse shortage continues to be a critical problem in all healthcare sectors. International nursing research has shown strong relationships between poor practice environments and unfavorable nurse job outcomes, including job dissatisfaction, burnout, and intention to leave, which often precedes turnover, a leading cause of shortage. However, there is scarcity in this area of research in Saudi Arabia. This study aims to describe and compare the nursing practice environments and nurse job-related outcomes of nurses in two types of hospitals in Saudi Arabia. Additionally, the study aims to test a model that links the nursing practice environment to nurse job outcomes using path analysis. A comparative cross-sectional design was employed to examine a sample of nurses (n=404) from inpatient units in a public and a teaching hospital. A survey instrument was designed that included the Practice Environment Scale of the Nursing Work Index, the Emotional Exhaustion subscale of the Maslach Burnout Inventory, and questions related to job dissatisfaction and intention to leave. Results showed that the nursing practice environment and nurse job outcomes in the teaching hospital were more favorable than those in the public hospital. In the entire sample, approximately half (52.7 %) of the participants had a high level of burnout, 38.7% were dissatisfied, and 25.8% intended to leave within a year. In the public hospital, the percentages were 80.8% burned out, 64.7% dissatisfied, and 33.2 intended to leave as compared to 26%, 15.8%, and 19.2% respectively in the teaching hospital. The results of path analysis showed that both nursing practice environments and hospital type (public vs. teaching) have significant effects on burnout and job dissatisfaction, which in turn increase the intention to leave. Hospital type has also a direct effect on intention to leave. This study presents a good- fitted model that provides a better understanding of the relationship between nursing practice environment and nurse job outcomes in Saudi hospitals. This knowledge will help nurse leaders and policy makers develop retention strategies to improve nursing practice environments and job-related outcomes and to reduce turnover.

Degree Type

Dissertation

Degree Name

Doctor of Philosophy (PhD)

Graduate Group

Nursing

First Advisor

Eileen T. Lake

Keywords

Burnout, Job dissatisfaction, Nursing Practice environment, Path analysis, Saudi Arabia, turnover

Subject Categories

Nursing

THE NURSING PRACTICE ENVIRONMENT AND JOB OUTCOMES IN SAUDI HOSPITALS

Zainab Ambani

A DISSERTATION
In

Nursing

Presented to the Faculties of the University of Pennsylvania

in

Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2017

Supervisor of Dissertation

_____

Eileen T. Lake, PhD, RN, FAAN
Associate Professor of Nursing

Graduate Group Chairperson

_____

Eileen T. Lake, PhD, RN, FAAN
Associate Professor of Nursing

Dissertation Committee:
Ann Kutney-Lee, PhD, RN, FAAN
Adjunct Associate Professor of Nursing

Alexandra L. Hanlon, PhD
Research Professor of Biostatistics

THE NURSING PRACTICE ENVIRONMENT AND JOB OUTCOMES IN SAUDI HOSPITALS

DEDICATION

To my father who left this world before celebrating the completion of my graduate studies

To my mother from whom I learned dedication, patience, and caring for others

To all my family and friends

and

To all researchers who may find this work useful

ACKNOWLEDGEMENT

With great appreciation, I would like express my sincere thanks to my dissertation chair Dr. Eileen Lake for the excellent guidance, support and caring for my academic development without which this project wouldn't have been possible. Since the beginning of defining my research topic, throughout my planning to the completion of this study, Dr.Lake's profound assistance, patience and commitment were always valuable and essential to the improvement of my work and for my learning experience.

I would like to extend my thanks to my dissertation committee members: Dr. Ann Kutney-Lee for her pivotal and timely feedback and thoughtful comments. Detecting subtle errors and providing important advice has contributed tremendously to the designing, and the execution of my study. My special thanks to Dr. Alexandra Hanlon for the instrumental statistical support during the developing of my study and mostly during the data analysis stage. I am grateful also to all staff in the Biostatistics Consulting Unit, Jesse Chittams, Joseph Rhodes, and Alicia Lozano, who spent time and efforts with me during data cleaning and management. Their support and careful attention to details taught me how to deal with data and helped me gain new technical skills necessary for any research.

I am thankful to the comments and advice from my dissertation readers: Dr. Patricia D' Antonio who helped me from the beginning and followed me throughout my journey and encouraged me to pursue my doctoral study. Dr. D'Antonio's caring and listening to all my ideas is very appreciable. My heartfelt thanks also to Dr. Connie

Ulrich, dissertation reader, who provided important recommendations to improve the study design and the reporting of my results. Dr. Ulrich's kindness and reassuring helped release my stress during critical times.

My sincere gratitude and thanks to my family and friends who encouraged me to start and complete my doctoral study. I share my success with all of you and wish to be at the level of your expectations. My dream and success wouldn't be meaningful and real without you.

ABSTRACT

THE PRACTICE ENVIRONMENT AND NURSE JOB OUTCOMES IN SAUDI HOSPITALS

Zainab Ambani

Eileen T. Lake

The nursing shortage is a challenging problem globally. In Saudi Arabia, the nurse shortage continues to be a critical problem in all healthcare sectors. International nursing research has shown strong relationships between poor practice environments and unfavorable nurse job outcomes, including job dissatisfaction, burnout, and intention to leave, which often precedes turnover, a leading cause of shortage. However, there is scarcity in this area of research in Saudi Arabia. This study aims to describe and compare the nursing practice environments and nurse job-related outcomes of nurses in two types of hospitals in Saudi Arabia. Additionally, the study aims to test a model that links the nursing practice environment to nurse job outcomes using path analysis. A comparative cross-sectional design was employed to examine a sample of nurses (n=404) from inpatient units in a public and a teaching hospital. A survey instrument was designed that included the Practice Environment Scale of the Nursing Work Index, the Emotional Exhaustion subscale of the Maslach Burnout Inventory, and questions related to job dissatisfaction and intention to leave. Results showed that the nursing practice environment and nurse job outcomes in the teaching hospital were more favorable than those in the public hospital. In the entire sample, approximately half (52.7 %) of the participants had a high level of burnout, 38.7% were dissatisfied, and 25.8% intended to leave within a year. In the public hospital, the percentages were 80.8% burned out, 64.7%

dissatisfied, and 33.2 intended to leave as compared to 26%, 15.8%, and 19.2% respectively in the teaching hospital. The results of path analysis showed that both nursing practice environment and hospital type (public vs. teaching) have significant effects on burnout and job dissatisfaction, which in turn increase the intention to leave. Hospital type has also a direct effect on intention to leave. This study presents a good-fitted model that provides a better understanding of the relationship between nursing practice environment and nurse job outcomes in Saudi hospitals. This knowledge will help nurse leaders and policy makers develop retention strategies to improve nursing practice environments and job-related outcomes and to reduce turnover.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

THE PRACTICE ENVIRONMENT AND NURSE JOB OUTCOMES IN SAUDI HOSPITALS

CHAPTER 1: INTRODUCTION

Healthcare services in the Kingdom of Saudi Arabia (KSA) have improved rapidly over the past three decades to fulfill the increasing demands of the growing population (Aboul-Enein, 2002; Al-Dossary, Vail, & MacFarlane, 2012). This development has coupled with a severe and chronic shortage of nurses, the major component of healthcare workers (Almutairi et al., 2015). However, the explosion of information technology has facilitated communication across the globe and allowed the Saudi government to invite more foreign (expatriate) nurses to work in the KSA. Today, the KSA is considered one of the biggest markets in the world for the expatriate nurses (Alonazi & Omar, 2013) where they comprise approximately 62 % of nursing workforce (Ministry of Health [MOH], 2015). Despite the huge influx of expatriates, the nurse shortage problem in the KSA still exists. According to some international statistics, there are approximately 5.47 nurses per 1000 population in KSA, as compared to 9.8 nurses per 1000 population in the United States (Heath Resources and Services Administration [HRSA], 2013).

Research has indicated that a major contributing factor to the nurse shortage in the KSA is nurse turnover. Bin Saeed (1995) found that in a Saudi public hospital, 56% of nurses intended to leave their jobs (Bin Saeed, 1995). A recent analysis from a large governmental hospital in Saudi Arabia has shown that approximately 75% of nurses

have left their jobs after only two years of employment (Alonazi & Omar, 2013). In fact, the temporary stay of the expatriate nurses has aggravated the overall rate of turnover (Alasmari & Douglas, 2012; Lamadah & Sayed, 2014). Therefore, such a high turnover rate requires scrutiny by researchers to identify the causes of nurse turnover. Consequently, this will help administrators develop strategies to retain nurses longer, reduce turnover, and ultimately reduce nurse shortages in Saudi hospitals.

One of the possible strategies to increase nurses' retention is to improve the quality of the practice environment within which nurses are functioning. Studies in western countries have shown that favorable practice environments are positively associated with higher level of job satisfaction, lower burnout, and higher retention (Aiken et al., 2008; Coomber & Barriball, 2007; Li et al., 2013; Manojlovich, 2005). In Far Eastern countries, studies from China have demonstrated similar relationships (Liu et al., 2012; You et al., 2013). Due to such empirical evidence from international studies, modifying the practice environment seems to be a useful strategy to improve nurse outcomes and reduce turnover. However, assessing the quality of the current practice environments in Saudi hospitals is warranted.

The Problem: Nurse Turnover in Saudi Arabia

The nursing shortage is a global problem (Almalki, FitzGerald, & Clark, 2011). However, it is more complicated in the KSA due to the influence of two factors: first, the unique Saudi cultural context. The restrictive traditions against the employment of women was predominant until late 1950s (Miller-Rosser, Chapman, & Francis, 2006). This led to the second factor which is the heavy dependence on expatriate healthcare

workforce including nurses. The structure of this multinational workforce that combines nurses from more than 44 countries (International Hospital Recruitment [IHR], 2015) is a crucial challenge to the government that needs to create policies to regulate the recruitment procedures and work conditions of expatriates.

The turnover problem in the KSA became even worse with the eruption of terrorist activities in the late 1980s and the beginning of the Gulf War in 1990s; Saudi Arabia became a place of uncertainty. High tax-free salaries were not enough to attract expatriate nurses to work in an unsafe country. Together with the global nursing shortage, these circumstances created an urgent need for a stable nursing workforce that the country can rely on even at a time of crisis. As a result, the Saudi government established the "Saudization" plan, which aims to educate and train Saudi nationals to replace the expatriate workforce gradually (Miller-Rosser et al., 2006). The Saudization appeared to be the best solution to create a sustainable Saudi nursing workforce (Aboul-Enein, 2002). However, it was reported that this strategy may take up to 25 years before the Saudi nurses reach 40% of the needed nursing workforce (Abu-Zinadah, 2006).

Evidence from numerous nursing studies in the United States, Europe and Far Eastern countries have shown the significant impact of the nursing practice environment on nurses' job outcomes, particularly job dissatisfaction, burnout, and the intent to leave (Aiken et al., 2012; Ganz & Toren, 2014; Hinno et al., 2012; Lee et al., 2014; Leone et al., 2015; Li et al. 2013; Shang et al., 2013). In these studies, poor nursing practice environments were associated with poor job outcomes such as job dissatisfaction, high burnout, and intention to leave jobs. Nurse's intention to leave

often precedes the actual turnover (i.e., resignation) (Lake, 1998). However, unfavorable working conditions, found within poor environments, are modifiable. When comparing panel data from 1999 and 2006, it was evident that improvement in practice environments was strongly associated with improved nurse job outcomes (Kutney-Lee et al., 2013). Likewise, modifying practice environments in Saudi hospitals may improve nurse job outcomes as well and reduce the turnover problem.

In general, nursing practice environments may vary based on the type of hospital; particularly, its ownership. For example, a study by Lee et al (2014) conducted in 60 hospitals in South Korea demonstrated that the percentage of nurses who reported intention to leave in private hospitals was significantly higher than that reported by nurses in public hospitals. In the KSA, hospitals are classified into three types based on its ownership: hospitals owned by the Ministry of Health (called public, governmental or MOH hospitals); hospitals owned by other governmental facilities (teaching and military hospitals); and hospitals owned by private institutions (private hospitals) (Almalki, 2011). For simplicity, the word "public" will be used throughout the dissertation to refer to the MOH hospital, whereas the word "teaching" will be used to refer to the hospital that is owned by another governmental facility.

Despite the differences in the types of hospitals in the KSA, no studies have described nursing practice environments, nor investigated whether nurse job outcomes differ in different types of hospitals. Therefore, the purpose of this study is to examine nursing practice environments from the perspective of nurses working in two different types of Saudi hospitals: a public and a teaching hospital, and to assess the relationship

between the practice environment and nurses' job dissatisfaction, burnout, and the intent to leave in both settings.

Specific Aims

1. To describe and compare the nursing practice environment, and nurse job-related outcomes (job dissatisfaction, burnout, and intention to leave) in a public and a teaching hospital in Saudi Arabia for the entire sample, and by hospital type (public vs. teaching).
2. To examine the complex relationship between nursing practice environment and nurse job related outcomes, in the presence of potential confounding factors at the individual level using path analysis.

Hypotheses

H1.1 The quality of the practice environment in the teaching hospital is better than that in the public hospital.

H1.2. The nurse job outcomes (job dissatisfaction, burnout, and intention to leave) in the teaching hospital are more favorable than those in the public hospital.

H2.1. The quality of the practice environment is associated with nurse job outcomes (job dissatisfaction, burnout, and intention to leave).

H2.2. Job dissatisfaction and burnout mediate the relationship between nurse practice environment and intention to leave.

The Health Care System in Saudi Arabia: An Overview

In the KSA, the total population is approximately 31.5 million, with an estimated annual population growth rate of 2.02%. The majority of the population (67.95%) is comprised of individuals aged 15-64 years, followed by children with ages of less than 15 years (29.12%), and finally, individuals who are 65 years and above (2.93%). The population in the targeted region in this study (Qatif and Al-ahsa) reaches approximately 4 million (MOH statistics, 2015).

According to the latest available statistics (MOH, 2015), the total number of hospitals in the KSA is 462 hospitals, with a capacity of 69,394 beds. This is equivalent to 22 beds per 10,000 population (one bed for each 454 of the population). The total number of nurses reached 172,483, from which 38.3% were Saudis. The healthcare system is composed of three sectors:

(1) The government hospitals: the hospitals of the Ministry of Health (MOH) with a total of 274 hospitals (41,297 beds) wherein approximately 73,688 nurses are working (52% are Saudis).

(2) The other governmental facilities with a total of 11,449 beds distributed in 11 hospitals and hospital systems in the major cities in the KSA. These hospitals include military hospitals, teaching hospitals, and specialized hospitals that are operated by some governmental facilities such as the Ministry of Interior, the Ministry of Defense and Aviation, the National Guard Health Affairs, and the Hospital Universities (Hasan & Gupta, 2013). In these hospitals, there are approximately 35,119 nurses, 18.2 % of them are Saudis.

(3) The private sector has 145 hospitals with a total capacity of 16,648 beds, as well as 2,670 general and specialized polyclinics. The total number of nurses in the private sector is 41,985 among which 5.2 % are Saudis.

The high percentages of non-Saudi nurses (expatriate) are obvious in all sectors. Recently, there has been a current increase in the number of Saudi nurses, as shown in Figure 1. However, the percentages of expatriates remain very high in the other governmental facilities (non-MOH) and private hospitals (MOH, 2015) wherein the percentages of Saudi nurses don't exceed 18.2 %.

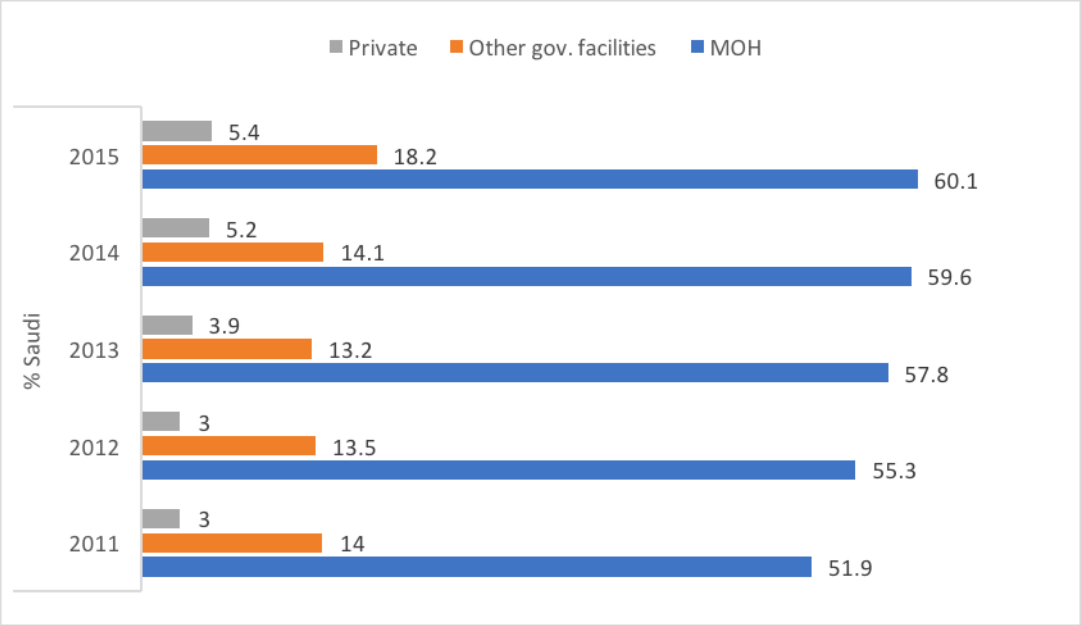


Figure 1. The percentages of Saudi nurses by hospital type over five years (2011 to 2015).

Patients' Visits and Admissions

One of the differences among the three sectors, in addition to their sources of funding and workforce structures, is the number and the type of cases they receive. For

example, in the year of 2015, patients' visits exceeded 60 million visits to the MOH hospitals, and 49.6 million visits to the health centers and outpatient departments in these hospitals which receive Saudi citizens only. In the other governmental facilities, there were more than 22 million visits to their clinics and outpatient departments which receive cases of citizens and residents working in the country. On the other hand, the hospitals and polyclinics in the private sector received approximately 50.5 million visits from Saudi and non-Saudi patients. In general, over the past five years, from all outpatient visits, the average proportion of outpatient visits to the MOH hospitals was 49%, while it was 17% to the other governmental facilities, and 35% to the private sector. The admission rate followed the same pattern of the visits. Over the past five years, in average, the MOH hospitals have admitted 51.8% of the total admitted cases in the country, while the other governmental facilities have admitted 15.7%, and the private hospitals have admitted 32.5% of the cases (MOH statistics, 2015).

Regulating Committees

There are four regulating entities that have evolved over time to regulate the provision of care and the legislations of the healthcare workforce in the KSA. The Public Health Department was established in 1925 to meet the health needs of the population. It built hospitals, healthcare centers and regulated the standards of heath practice. However, with the increasing demands of the population, there was a crucial need for a more specialized entity to supervise the growing health sectors and to ensure providing appropriate services. As a result, the Public Health Council was formed to supervise all hospitals and centers nationwide. Eventually, in 1950, the Council developed even further

to form the current Ministry of Health (MOH). The Ministry is responsible for the provision of healthcare services for treatment and health promotion, the development of laws and legislations to regulate the processes of health provision, and to monitor professional performance in all healthcare facilities. By 2020, the MOH aims to (1) provide the highest possible level of healthcare that is effective, equal, and universal; (2) create an exclusive entity responsible for health policies and insurance services; (3) adopt public health strategies to reduce the burden of the current health problems and improve health nationally; and (4) to find diverse sources of revenues to finance the healthcare system and estimate risks and benefits effectively (MOH Portal, 2014).

The Saudi Health Council (SHC), established in 2002, is the supervising council that coordinates responsibilities in the different healthcare sectors in the KSA. Its mission is to organize and improve healthcare services by cooperating with all health parties to reduce illnesses, disabilities and deaths in the country. In addition, it aims to overcome the problem of duplication and wasted resources in the provision of care. The main functions of the SHC are: preparing the strategy of healthcare; setting the appropriate operational organization for all hospitals by maintaining cost effectiveness, performance standards, and high quality; and creating the integration policies that regulate cooperation among all healthcare sectors (SHC, 2013).

All healthcare workers in the KSA, including nurses, must report to the Saudi Committee for Health Specialists (SCFHS), established in 1992. The SCFHS aims to "improve professional performance, develop and encourage skills, and enrich scientific theory and practice in the different health-related fields" (SCFHS portal, 2013). The

Commission's vision is to improve healthcare in Saudi Arabia to meet international standards (SCFHS, Nov. 2015). To achieve its aims, it develops and approves health-related programs in all health disciplines in the KSA, evaluates health institutions for training and specializing, issues professional certificates, and coordinates with professional boards internationally.

Although the SCFHS regulates the nursing profession, nurse leaders and professionals in the SCFHS have recognized the importance of forming a specific board responsible for the profession of nursing. Thereafter (10 years later), the Scientific Nursing Board (SNB) was formed in 2002. The SNB focuses on professional development, accreditation and regeneration, and creating standards of nursing education (Almalki et al., 2011). Currently, the SNB oversees all nurses in Saudi Arabia by registering them and following their attendance of a series of continuing education hours to renew their licenses (Abu- Zinadah 2005). Despite the great role of the SNB in regulating and improving the nursing profession in the KSA, it is not completely independent due to the authority of the SCFHS, under which the SNB is functioning (Almalki et al., 2011).

Study Significance

Literature in the field has repeatedly shown a direct positive relationship between nurses' job dissatisfaction and their intention to leave their jobs (Aiken et al., 2001; McCarthy et al., 2007). However, few studies in Saudi Arabia have examined these nurse outcomes (Al-Dossary et al., 2012; Alasmari & Douglas, 2012; Alsaqri, 2014). For

example, two studies were conducted in two different teaching hospitals. The first found that nurses' job dissatisfaction was largely attributed to work-related factors (Al-Dossary et al., 2012). The other study reported that some demographics as well as work-related factors were the major causes for nurses' intention to leave (Alasmari & Douglas, 2012). A more recent study focused on nurses in a public hospital, where there is a larger proportion of Saudi nurses. It found that nurses were largely dissatisfied, and approximately half of them reported their intention to leave. Further, it reported a significant relationship between job satisfaction, burnout, job stress and intention to leave, (Alsaqri, 2014).

International nursing studies from the United States, Europe and other countries have shown that better work environments are associated with lower levels of dissatisfaction among nurses, lower burnout and intention to leave. These associations were consistent in many countries such as the United States, United Kingdom, Canada, China, Japan, South Korea, Germany, Thailand, and New Zealand (Aiken et al., 2011). Furthermore, there is an association between staff shortages, caused by turnover, and significant decreases in the quality of patient care (Dana, 2005). Therefore, developing strategies to overcome nurse turnover is necessary not only to benefit organizations, but also to improve the quality of patient care. Although some studies from the KSA have evaluated several nurse job outcomes, none of them has linked these outcomes to the practice environments in Saudi hospitals. Moreover, the practice environments in the different types of Saudi hospitals have not been evaluated on a comparable scale to the one used in the international studies. Due to these differences, it is likely that the

practice environment in each type of these hospitals has different characteristics as well.

This study is the first to examine and compare the quality of the practice environment, and its associations to nurses' job dissatisfaction, burnout, and intention to leave in two types of hospitals in the KSA. The results of this study will generate useful knowledge that will help researchers understand the relationships among study variables and their associations with nurses' intention to leave. These findings will be imperative to inform the decisions of executives and administrators in the KSA when developing strategies to improve the quality of the practice environment, and reduce turnover.

CHAPTER 2: REVIEW OF RELATED LITERATURE

Introduction

This chapter describes the theoretical framework that guided this study. This is followed by a description of the concept of the nursing practice environment and its measurement in nursing studies, and definitions of the other variables involved in this study. An integrative review of the literature follows to illustrate the relationships among the practice environment, nurses' job dissatisfaction, burnout, and the intent to leave. The reviewed studies have been conducted in numerous countries including the United States, Europe, South Africa, and some Eastern and Far Eastern countries. Based on this review, this chapter identifies the gap in the literature that this study has addressed.

Theoretical Framework

The theoretical framework that guided this study is a modified version of Lake's (1998) Model of Nurse Turnover, see Figure 2. Lake's model is a multi-stage model that focuses on nurse turnover (resignation) as the main outcome. The initial stage includes individual factors, organizational factors, and job opportunity, whereas the middle stage includes the affective responses to the job (satisfaction, job related stress, and burnout), and clinical autonomy. At the late stage, intention to leave results in the actual turnover.

The model was modified slightly for this study by adding some variables (italicized) and pathways that have been found in the literature to be influential in determining nurse job outcomes. The new model incorporates nursing practice environment and hospital type as organizational factors. The individual factors are composed of some personal characteristics (gender, age, work experience, nationality

and unit type) in addition to the original variables (education and family responsibility). Corresponding to the original model, the pathways from the individual and the organizational factors toward intention to leave were maintained. Further, I hypothesized that there are two additional pathways (dotted lines) in the model that I will test in this study. see Figure 3.

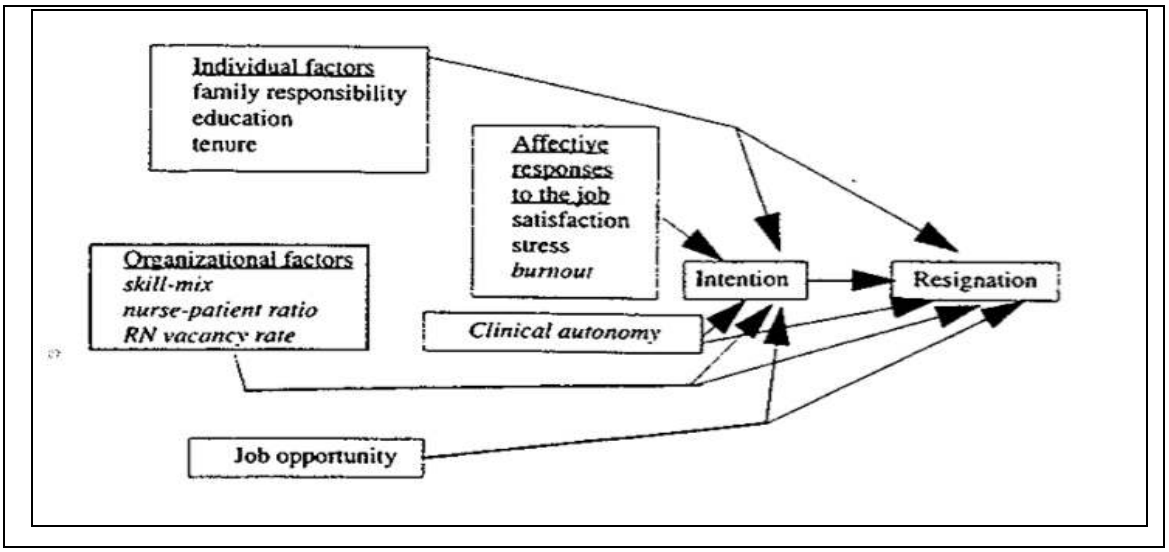


Figure 2. Model of Nurse Turnover (Lake, 1998)

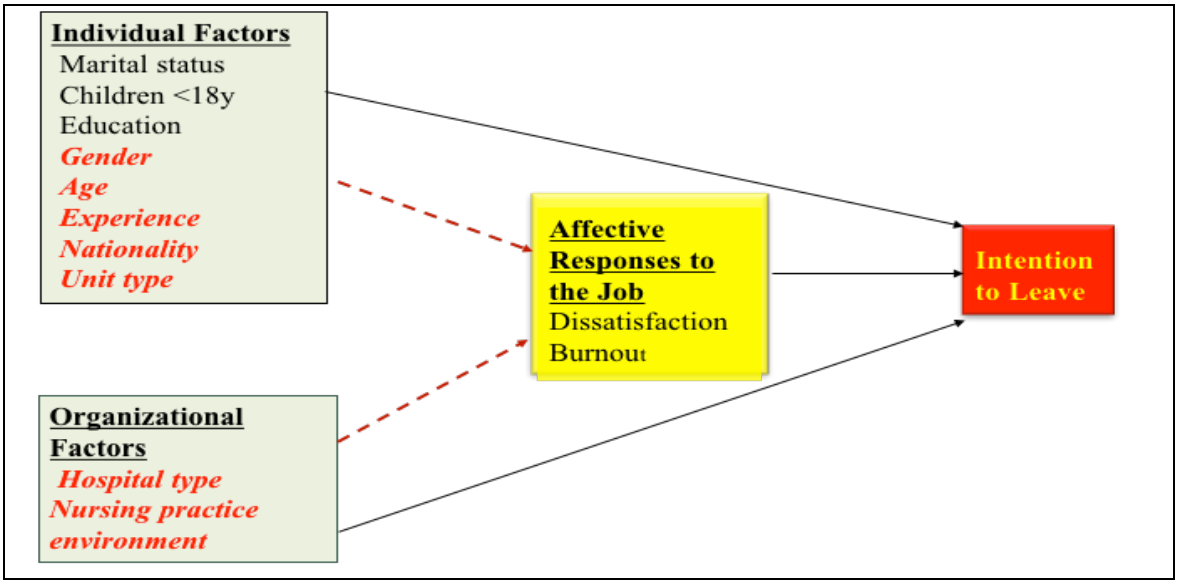


Figure 3. The modified model for nurse turnover

In this study, the individual factors refer to nurse characteristics: gender, age, family responsibility (marital status and number of children below 18 years old), level of education, years of experience, nationality (Saudi or expatriate) and unit type. Organizational factors include: hospital type (public or teaching), and the nursing practice environment. Both the individual and the organizational factors lead to the affective responses to the job which consist of job dissatisfaction and burnout. As a result, the model hypothesizes that these negative feelings lead to intention to leave job, which predicts the actual turnover, see Figure 3.

Practice Environment: Concept and Measures

The terms *workplace, work environment*, and *nursing practice environment* have been used interchangeably in nursing literature. In fact, while *workplace* refers to the physical place where nurses are working*, work environment* and *nursing practice environment* further include management practices, interactions, resources, processes, and some organizational features (AACN, 2005; Kotzer & Arellana, 2008; Lake, 2002). The subtle distinction is that *work environment* is applicable to all environments in any profession (including nursing), whereas *nursing practice environment* is more specific to the nurses and the practical nature of the nursing profession. Particularly, it is "the organizational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002).

Different terms have been used in nursing literature to indicate favorable working conditions. The American Organization of Nurse Executives (AONE), the American Association of Critical Care Nurses (AACN), and the American Association

of Colleges of Nursing (AACN) identified some features of *healthy* nursing work environments (American Association of Colleges of Nursing [2002]; American Association of Critical Care Nurses [AACN], 2005; American Organization of Nurse Executives [AONE], 2003). The key elements were a philosophy of quality and safety; interdisciplinary collaboration; continuity of care; nursing leadership at the executive level; appropriate staffing; effective decision making; clinical advancement programs; and recognition and rewards for nurses. Other identified elements include visible and authentic leadership; good relationships between nurses and physicians; acquisition and maintenance of knowledge and skills by nurses; and appropriate shift duration (Estabrooks et al., 2002; Institute of Medicine [IOM], 2004). Another term used to describe such an environment is *optimal practice environment,* which provides nurses with the opportunity to balance provision of care and time for professional development (Beal, Riley, & Lancaster, 2008). All of these terms (good, positive, healthy, and optimal) were used to denote the conditions that support professional nursing practice.

These work conditions are considerably empowering for the nursing staff by enhancing autonomy, control over practice (Zelauskas, & Howes, 1992), and control over the environment in which they are practicing. Furthermore, empowering nurses will most likely encourage positive work relationships with physicians, which is helpful for sustaining the positive environment (Aiken & Patrician, 2000). Conceptually, the professional nursing practice environment is defined as the environment that combines all supportive and empowering organizational characteristics that foster nurse autonomy and facilitate professional nursing practice.

Two major instruments were extensively used in the nursing literature to assess the quality of practice environments: the Revised Nursing Work Index (NWI-R) developed by Aiken and Patrician (2000), and the Practice Environment Scale of the Nursing Work Index (PES-NWI) developed by Lake (2002). The NWI-R is composed of 57 items categorized under three conceptually derived subscales: *autonomy, control over practice setting*, and *nurse-physician relationship.* Additionally, 10 items were selected from these three subscales to build a fourth subscale, *organizational support for caregivers* (Aiken & Patrician, 2000). The NWI-R was intended to assess the presence or absence of the targeted organizational factors in a unit or a hospital.

Although the theoretical foundation of the Nursing Work Index (NWI) was strong, its domains had not been derived or confirmed empirically. Additionally, a 65-item instrument is a long task to complete. Therefore, Lake (2002) modified the instrument further to create a 31-item scale known as the Practice Environment Scale of the Nursing Work Index (PES-NWI). From the original 65 items, 48 items were selected based on experts' content validation. An exploratory factor analysis resulted in retaining 31 items loaded into five subscales: *nurse participation in hospital affairs* (9 items); *nursing foundations for quality of care* (10 items); *nurse managers' ability, leadership, and support of nurses* (5 items); *staffing and resource adequacy* (4 items); and *collegial nurse-physician relationships* (3 items). Reliability testing reveled high reliability for both individual hospital level (for individual level, $\alpha \geq .8$, except for one subscale $\alpha = .71$; for hospital level, the inter-item correlation = .64 to .91).

The psychometric properties were based on NWI data obtained from hospital

nurses in Pennsylvania (Lake, 2002). The PES-NWI scale has been useful as a measure for outcomes research that aims to examine the relationships between practice environment and nurse and patient outcomes (Lake, 2007). The individual subscales and the composite scores are useful in providing data on areas needing improvement, and in making comparisons across different units and hospitals. Currently, the PES-NWI is the most widely utilized measure in the assessment of the nursing practice environments and the only measure recommended by several U.S. organizations that promote quality healthcare, including the National Quality Forum and the Joint Commission (Warshawsky & Havens, 2011). Moreover, the PES-NWI has been translated into different languages and is used globally (Aiken et al., 2011; Liu et al., 2012; Warshawsky & Havens, 2011). The psychometric properties of the scale as a whole and its individual subscales have created more opportunities for researchers to examine different practice environments and their associations with patient, nurse, and organizational outcomes.

Nurse Job Outcomes

Job Dissatisfaction: Locke (1976) described **job satisfaction** as a positive emotional state driven by a job experience. In other words, it is the degree to which an employee likes his/her job and has developed a liking or disliking attitude towards it (Zhang et al., 2014). Nursing literature has linked job dissatisfaction to poor nursing practice environments (Patrician, Shang, & Lake, 2010; Aiken et al, 2012) and with high turnover rates (Ganz & Toren, 2014). Job dissatisfaction is attributed to intrinsic and extrinsic factors. Intrinsic factors are those related to the individual sense of

accomplishment, and personal achievement. Extrinsic factors are those related to the work environment (organizational factors) such as payment, working conditions and available resources (Zaghloul et al., 2008). In Saudi Arabia, it was found that some organizational factors such as high workload, and stressful work environment are some of the leading causes for job dissatisfaction among Saudi nurses (Alotaibi et al., 2015). In addition, lack of promotion opportunities, hospital facilities, and demographics are strongly associated with nurse turnover in Saudi Arabia (Zaghloul et al., 2008).

Burnout is an occupational syndrome that results from emotional exhaustion, depersonalization, and personal accomplishment (Maslach, Jackson & Leiter, 1996). It is "the dislocation between what people are and what they have to do, representing an erosion in values, dignity, spirit, will, and the erosion of the human soul" (Maslach et al.,1996, p. 17). In the nursing literature, findings show that the poor quality of the practice environment leads to negative physical and emotional consequences (Leiter & Laschinger, 2006). Work overload and job stress for workers are associated with emotional exhaustion, which results in difficulty in handling their jobs and feeling emotionally drained (Lang et al., 2012, Alsagri, 2014).

Intention to leave is a predictor for actual turnover (Lake, 1998). For this study, intention to leave means the plan to leave the employer within one year (Lambert, et al., 2001). Nursing studies have found an association between nurses' intention to leave and poor work environments. Ganz & Toren (2014) demonstrated how the intention to leave among nurses in Israel was correlated with their work environments. Intention to leave

can be attributed to several reasons such as personal or familial reasons, recruitment problems, or conflict with managers (Wagner et al., 2013). The early assessment of nurses' intention to leave helps nurse leaders understand the contributing factors and develop interventions to rectify nurse resignation.

Review of the Literature

Review Strategy

A literature search was conducted using two databases: PubMed and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). The search terms used were "work environment," "practice environment," and "workplace." A number of job outcomes terms were added to capture relevant publications. These terms were "job satisfaction," "dissatisfaction," "burnout," "intent to leave," "intent to stay," and "turnover." The inclusion criteria required papers to be written in English and published as journal articles or in peer-reviewed journals during 2010 to 2015. The search yielded 176 articles from PubMed and 160 from CINAHL. The exclusion criteria were papers examining populations other than nurses and papers with focuses on settings other than inpatient units. When duplicates and papers that proved irrelevant to the study were eliminated, there remained 26 articles. A hand search for other previously published studies yielded seven additional articles that raised the total number of articles to 33. See Appendix A for a list of all included studies.

Results

Research on organizational attributes and their impact on nurse job outcomes has

been conducted over the past three decades. An extensive body of research has indicated the association between poor work environments and unfavorable nurse job outcomes; particularly, job dissatisfaction, burnout, and intention to leave, which ultimately decreases nurse retention and increases turnover (Aiken et al., 2001; Gardner, 2007; Liu et al., 2012). Furthermore, researchers have examined practice environments in different nurse populations, including inpatient and outpatient settings (Ganz & Toren, 2014). Although this area of research has been consistently studied for decades in the United States and Europe, this review shows that similar studies remain scarce in Middle Eastern countries.

Studies linking the practice environment to job outcomes were conducted on nurses from several countries. The reviewed studies were categorized based on their geographic areas and cultural contexts into 3 groups: (1) studies from the United States (n=11); (2) studies from some European countries (n=11); and (3) studies from the Far Eastern, Middle Eastern countries, and South Africa (n=11). See Figure 4 and the Table of Evidence in Appendix A.

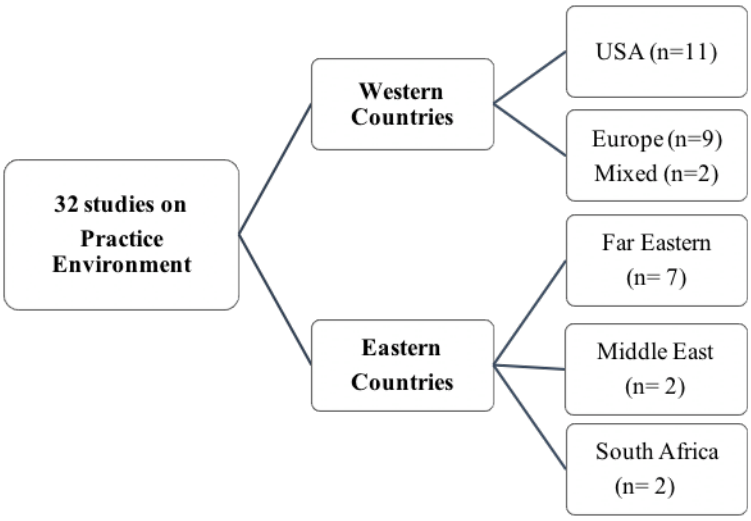


Figure 4. Categorization of studies based on geographical locations.

Studies in the United States and Canada

Aiken et al (2011) determined that over the recent past, nurses in the United States reported intention to leave, which was a consequence of their burnout. When nurses experience high burnout levels, they are more likely to leave jobs and look for alternatives elsewhere. In nurse practice environment studies, the emotional exhaustion subscale of the Maslach Burnout Inventory (MBI) has been used as a measure for burnout (Aiken et al., 2011; Heinen et al., 2013; Liu et al., 2012; You et al., 2013). Scoring 27 or higher on the emotional exhaustion subscale is considered as having high burnout. The score of 27 is the norm score for health-care workers (Maslach, Jackson & Leiter, 1996). In a large study, Aiken and colleagues (2008) studied 10, 184 nurses in 168 hospitals in Pennsylvania. The result showed that nurses in hospitals with poor work environments had higher dissatisfaction, burnout, and intention to leave than those in better environments.

Nurse researchers have studied the impact of the practice environments in several settings. Thomas-Hawkins et al, (2003) examined the practice environment for hemodialysis nurses and found the majority (80%) of nurses reported good work relations. However, they also reported low control over practice, and inadequate staff and resource, which was a source of frustration and led to intention to leave (19%) (Thomas-Hawkins et al., 2003). Another study by Gardner et al (2007) assessed the relationship between hemodialysis practice environment and nurse outcomes. The study revealed a significant relationship between the perceived quality of the practice environment and intention to leave. Consistent with the previous study, the turnover rate of 9% was significantly correlated with *staffing and resource adequacy* subscale (Gardner et al., 2007). Friese (2005) compared the outcomes of oncology nurses working in Magnet and non-Magnet hospitals, and by using the PES-NWI, he found that those working in Magnet hospitals had lower emotional exhaustion, and were twice as likely to report high quality care.

In psychiatric units, where nurses deal with unique mental health needs of their patients, the impact of the practice environment on burnout among nurses was evident from a study of 67 hospitals in Pennsylvania (Hanrahan et al., 2010). In this study, better work environments were significantly associated with less emotional exhaustion and depersonalization (dimensions of burnout). This result was consistent with the findings from a study of oncology nurses. Nurses working in more favorable work environments (favorable units) were less likely to report burnout than nurse working in medical and

surgical floors (Shang et al., 2013). Therefore, practice environments may vary based on the unit type.

In rural areas, hospitals are expected to have fewer employment options due to their geographic areas and frequent shortages in staff, which may contribute to poorer work environments (Cortelyou-Ward et al., 2010). These working conditions may contribute to a higher turnover. Cortelyou-Ward et al (2010) explored the impact of the work environment in a rural hospital in Central Florida on nurses' intention to leave. The analysis showed a negative relationship between the total score of the NWI-R as well as the subscale scores (autonomy, control over the practice setting, nurse-physician relationships, and organizational support) on the intention to leave. Based on the open-ended question at the end of the survey, approximately 49 % of respondents identified inadequate staffing and low salaries as their major reasons for dissatisfaction, while good working relationships and teamwork were sources of satisfaction.

The relationship between the practice environment and nurses' intention to leave among U.S Army nurses was consistent with findings from previous studies. According to a system-wide study on the practice environments and nurse job outcomes in 23 U.S. based Army Medical Departments (AMEDD), nurses who perceived unfavorable practice environments were 14 times more likely to have job dissatisfaction, 13 times more likely to experience emotional exhaustion, 3 times more likely to have intention to leave their jobs within one year, and 11 times more likely to report poor quality of care (Patrician et al., 2010). Another study conducted by Lang et al (2012) to investigate intent to leave among Army nurses recognized that group cohesion, communication,

intentions for a career change and satisfaction derived from compensation had a direct effect if nurses would stay or leave their current jobs. Emotional exhaustion was common among Army nurses across different hospitals whether they were deployed in Iraq or in the USA (Lang et al., 2012).

Unfavorable working conditions are modifiable. When comparing panel data from a sample of Pennsylvania hospitals in 1999 and 2006, it was evident that practice environments, as reported by nurses, slightly improved. Over time, the improvement in the work environment was strongly associated with lower job dissatisfaction, burnout, and intent to leave among nurses (Kutney-Lee et al., 2013).

In nursing literature, there are different levels of analysis such as individual level, unit level, and hospital level. It is possible that some aspects of the environment may predict nurse outcomes at one level but not at all levels (Gabriel et al., 2013). In order to identify what organizational factors should be modified to improve nurse outcomes, Gabriel et al (2013) investigated whether the effects of the practice environment subscales are similar across the individual level and the unit level. This study showed that the *staffing and resource adequacy* and *nurse manager's ability, leadership, and support of nurses'* subscales were negatively associated with job dissatisfaction, burnout, and intention to leave across the individual level and the unit level, while other subscales varied across the two levels. Such findings highlight the importance of tailoring interventions to address the individual or the unit level or both.

Studies in Europe

Practice environment studies have been conducted in many European countries over the past decade. Numerous studies have assessed the quality of the practice environment and its impact on nurse job outcomes (Van Bogaert et al., 2010; Aiken et al., 2012; Hinno et al., 2012). This group of studies determined that there was some variance among European countries in the percentage of nurses who reported poor quality of the practice environment. In addition, nurse job outcomes varied considerably across these countries (Aiken et al., 2011). These studies showed a common trend of the relationship between practice environment and nurse job outcomes. In general, when the nursing practice environment is good, and the ratio of patients to nurses is reduced, effects on quality of care are positive. Overall, in Europe, few nurses reported poor quality of care when they were operating in a better environment (Aiken et al., 2011).

In Belgium, several studies have examined the impact of the hospital and unit-level practice environment on nurse job outcomes (dissatisfaction, burnout, and turnover intention), and nurse reported quality of care (Van Bogeart et al.,2010; Bogeart et al., 2013b; You et al., 2013). The translated version of the NWI-R in Van Bogeart study had 3 dimensions: *nurse–physician relationship*, *nurse management at the unit level*, and *hospital management and organizational support*. The rating of the overall quality of practice environment was slightly above the average 2.5 (mean=2.71) (Van Bogaert et al., 2013a). These studies found that the dimensions of practice environments were negatively associated with job dissatisfaction, burnout, and intent to leave in acute care hospitals (Van Bogaert et al.,2010; Van Bogaert et al., 2012), and in psychiatric

hospitals (Van Bogaert et al., 2013b). In addition, these studies indicated that in Belgian hospitals, workload, decision latitude, and social capital play mediating roles between dimensions of practice environment and burnout, which in turn predicts job dissatisfaction (Van Bogaert et al., 2013a).

Across the United States and European countries, the relationships between the quality of the practice environment and nurse job outcomes were consistent. A large comparative study aimed to assess the association between practice environment and nurse and patient outcomes in the United States and 12 European countries: Belgium, England, Finland, Germany, Greece, Ireland, Netherlands, Norway, Poland, Spain, Sweden, and Switzerland (Aiken et al., 2012). Results of this study supported the significant negative relationship between practice environment and nurse outcomes (burnout, dissatisfaction, and intention to leave). Furthermore, data from these 13 countries became a useful source for comparative analysis of practice environments and job outcomes across countries. Interestingly, despite the consistency of the pattern of the relationship between practice environments and nurse outcomes, there were disparities in the level of satisfaction and burnout across countries. Nurses from Greece appeared to be in an unfavorable position compared to their counterparts from other European countries: 78% of nurses reported burnout, 56% were dissatisfied, 49% had intention to leave their jobs, and 47% of them reported poor or fair quality of the practice environment. On the other hand, Ireland had the lowest percentage of nurses who reported poor or fair quality of the practice environment (11%) (Aiken et al., 2012). In addition, findings from a larger study conducted in 11 European countries showed that

the *nurse- physician relationship* subscale had a strong negative association with all burnout dimensions at the unit level (Li et al., 2013). For Portuguese nurses, *opportunities for career advancement* was the strongest predictor of intention to leave (Leone et al., 2015).

Studies that aimed to compare work environments across countries determined variances among countries in the percentage of nurses reporting poor quality of the work environment, high level of burnout, and dissatisfaction. For example, Aiken et al (2011) conducted a large study in 9 countries including the United States, Canada, three European countries (Germany, New Zealand, and the United Kingdom,), and four Far Eastern countries (Japan, China, South Korea, and Thailand). In general, the majority of nurses in all involved countries rated their work environments as good or mixed. However, among those who reported poor work environment, the percentage of Chinese nurses was the highest, while the percentage of the Japanese was the lowest.

In the Aiken (2011) study, there was consistency in ranking the *staffing and resource adequacy* subscale as the lowest across countries. For instance, in Eastern Caribbean countries, nurses rated their environments less favorably (mean < 2.3; midpoint score for each scale is 2.5; higher scores indicate better work environments). In these four Caribbean countries, staffing was rated as the poorest (mean=1.9) (Lansiquot et al., 2012). On the other hand, the *collegial nurse-physician relations* subscale was most frequently ranked as the highest, followed by either the *foundations of quality of care* or the *nurse manager ability and leadership* subscales. Nurses from South Korea and Japan comprised the highest percentage of nurses who experienced high burnout

(60% in South Korea, and 58% in Japan). Likewise, dissatisfaction was very high among the Japanese nurses (60%), followed by Chinese (46%) (Aiken et al., 2011). However, in Heinen et al's (2013) study in ten European countries (Belgium, Finland, Germany, Ireland, Netherland, Norway, Poland, Spain, Switzerland, and UK), the countries' total mean scores of the *nurse foundations for quality of care* subscale was the highest (mean=2.78) followed by *leadership* (mean=2.72), then *nurse-physician relationships* (mean=2.70). The *staffing and resource adequacy* subscale was the second lowest (mean=2.19), after *participation in hospital affairs* (mean=1.33). Furthermore, this study highlighted the high level of burnout among nurses in the UK (42%), Ireland (41%), and Poland (40%) (Heinen et al., 2013). Compared to nurses in Finland, nurses in the Netherlands reported more favorable work environments. However, there was a similarity in the impact of the adequacy of resource and the supportiveness of the management on nurses' outcomes (Hinno et al., 2012).

Research findings further showed that rewards related to the job had a profound influence on nurses' intent to stay in their jobs. With the greater benefit being salary, Heinen et al's study indicated that rewards positively encouraged nurses to stay in their jobs. These rewards include pensions, parental leaves, paid vacations and access to fitness facilities and other forms of benefits that could be found in the work setting (Heinen et al., 2013). The support that the organization gives to further their professional practice was also identified as an important factor that played a role in whether nurses stayed or left the organization. This included how accessible education funding opportunities are both internally and externally. Organizations that provide meaningful

opportunities to further nurses' personal accomplishment have a high probability of retaining their workforce compared to those that do not (Van Bogaert, 2013a).

Studies from Eastern Countries

In Far Eastern countries, few studies from China have examined the impact of the practice environment on nurse outcomes (Liu et al., 2012; You et al., 2013). Nurse outcomes among Chinese nurses were poorer than their colleagues in Europe and the United States. Thirty-seven percent of nurses in Liu et al's (2012) study, and 38% in You et al's (2013) study experienced high burnout. Nurses also reported high dissatisfaction (54% in the Liu study, and 45% in the You study). Chinese nurses who worked in good practice environments were 1.5 times and 2 times less likely to report burnout and dissatisfaction respectively than their counterparts who worked in poor practice environments (Liu et al., 2012).

Nurses in China reported that approximately 44% of hospitals have poor work environments (Aiken et al., 2011). Inadequate staffing that did not consider the ratio of patients to nurses and availability of adequate resource were the biggest issues that surrounded the work environment. Research that has been done in the U.S and Europe has pointed to the significance of the adequacy of staffing and a supportive work environment (Aiken et al., 2011). In general, research findings for China were worse compared to that of its European counterparts (You et al., 2013). Approximately half of the nurses reported lack of confidence in the management of the hospitals in which they work and they think that management will not help to improve services to their employees (You et al., 2013).

NURSING PRACTICE ENVIRONMENT AND JOB OUTCOMES

The nursing practice environment contributes to the outcome of job satisfaction or turnover in various ways. Zhang et al. (2014) conducted a study in China to explore the relationship between job satisfaction, burnout and the nurse' intention to quit their jobs. The study reported some reasons for turnover. It cited that nurses who had high emotional exhaustion and depersonalization reported startling low levels of personal achievement. The study reported that 45% of nurses in China had indicated their dissatisfaction with their current jobs. Out of this percentage, 5% had shown their intention to leave their jobs. The main reason for intention to leave was their salary level. However, the study determined that the level of burnout was not prevalent in nurses who worked in good and supportive environments (Zhang et al., 2014). In Korea, the major contributing factors to job satisfaction were having a standardized nursing process, an adequate number of staff nurses, and good working relationships with physicians, which are all aspects of a good practice environment (Lee et al., 2014).

A study from Hong Kong indicates that job-related burnout among nurses stands at 38% while 45% of nurses were dissatisfied (Choi, 2013). This represents a significant proportion of the nursing workforce. Among nurses in this sample, 76% perceived low salary as the major source of dissatisfaction, while up to 60% of the sampled nurses reported that the quality of their work environment was very poor (Choi, 2013). Among the aspects of the work environment, the dimension of staffing was rarely adequate, hence making it hard to provide safe care. A parallel study conducted in Thailand in 2011 reported that 21% of nurses in Thailand showed that they were not satisfied with their jobs, and 41 % reported high emotional exhaustion. Nurses working in hospitals

with high nurse to patient ratios (can reach up to 1:13) were 12% more likely to experience emotional exhaustion (Nantsupawat et al., 2011).

In Middle Eastern countries, only two studies have assessed the impact of the practice environment on nurse outcomes. El-Jardali et al (2011) conducted a cross-sectional study to examine the impact of the practice environment on nurses' intention to leave. A multinomial logistic regression was used to predict job outcomes among Lebanese nurses as explained by practice environment. It showed that for each one-point decrease in the level of *participation* (a new subscale derived through factor analysis), there was a 53% increase in the likelihood of reporting intention to leave the hospital (El-Jardali et al., 2011). In another study, Ganz & Toren (2014) surveyed a sample of 610 nurses working in different regions in Israel. They reported moderate quality of the practice environment. There was a significant negative association between practice environment and job satisfaction. In this study, *staffing and resource adequacy* subscale was found to be correlated with hospital type and demographics. The intention to leave was relatively low (9%). One of the potential reasons for this low percentage was the lack of salary variation among different hospitals (Ganz & Toren, 2014).

Work environment studies in South Africa were also few. However, results from two studies indicated that poor working conditions are associated with unfavorable nurse outcomes (Cotezee et al., 2013; Klopper et al, 2012). In private hospitals, more than half of nurses (52%) rated their practice environment as fair or poor, 46% experienced a high level of burnout, and 54% had intention to leave their jobs within the next year (Cotezee et al., 2013). When examining the public hospitals, the results are comparatively worse

wherein 71% of nurses reported fair to poor work environment, and 59% had intention to leave within a year. Job dissatisfaction and burnout were major causes of frustration and intent to leave. Like studies in other countries, the staffing and resource adequacy subscale was the lowest (mean=2.28, given the midpoint of 2.5). Klopper et al's study in 2012 on critical care nurses in South Africa showed consistent results. Nurses had a high level of burnout due to dissatisfaction with several factors such as wages, opportunities for advancement, inadequate staffing, and lack of participation in hospital affairs (Klopper et al, 2012).

Discussion

The shortage of nurses in acute care hospitals has been linked to lowered quality of healthcare, increased workload on existing staff, high potential of injuries and more turnover (Cheng, 2011; Van Bogaert, 2013a). Nurses who exhibit burnout tend to distance themselves from their clients which may lead to a reduction in feelings of personal achievement. Due to the high incidence of burnout among nurses, burnout has received much attention in nursing literature. The intention to leave has been found to be an empirical predictor of actual leaving which has been widely regarded as the most common reason for the shortage of nurses (Alonazi et al., 2013).

Research on the impact of the nursing practice environment is receiving international interest. This trend is derived from employers' need to find ways to attract and retain nurses. The development of instruments to measure practice environments has paved the way for cross-cultural research where researchers can score and compare

practice environments in diverse settings and countries. In the reviewed studies, two key measures were extensively used to assess the practice environment: the NWI-R, which had been used more frequently before 2002, and PES-NWI that was developed in 2002. The latter is a nationally and internationally valid instrument with strong psychometric properties (Warshawsky & Havens, 2011). Furthermore, it is a National Quality Forum nursing performance standard (National Quality Forum, 2015). Despite the differences in these scales, both have dimensions that capture key characteristics of the work environment. The subscales in each instrument are useful to evaluate different aspects of the work environment and to determine which factor has a stronger effect on nurse outcomes. Findings of this type of studies help administrators and nurse leaders better understand the dynamics of hospital work environments, and inform managerial decisions for developing effective interventions.

This area of research has shown that the nursing practice environment is strongly associated with several nurse job outcomes, such as job dissatisfaction, burnout, and intention to leave. Research indicated that when a hospital has a good work environment, lower percentages of nurses are likely to report job-related burnout compared to nurses working in poor work environments. A good environment provides nurses with an opportunity to enhance their professional practice, access advancement opportunities, and gain higher autonomy at their respective places of work. Such environments reduce nurses' intentions to leave their jobs as compared to the case of poor environments. Thus, it is empirically evident that creating a good work

environment is necessary to reduce the level of dissatisfaction and burnout among nurses.

Aiken et al (2011) argued that a good work environment is the one that has characteristics that reduce burnout, improve job satisfaction and minimize intention to leave the job. This hypothesis was tested and supported by research findings from the United States, more than 12 European countries, and by some Far Eastern and Middle Eastern countries as well. Despite the disparity of the organizational structures, modes of financing and how each hospital facility is resourced, research consistently indicates that there exists a common pattern of the relationship between the practice environment and nurse outcomes. There was only a minimum difference in the ranking of the work environment's subscales. Particularly, there was almost complete agreement across countries on rating the *staffing and resource adequacy* subscale as the lowest in all work environments. There was less agreement on the remaining subscales where the majority of nurse populations rated the *collegial nurse-physician relations* as the highest, while in some countries *Nurse participation in hospital affairs* or the *nursing foundations for quality of care* have been rated the highest.

Gap in The Literature

Despite the general agreement on the pattern of the relationship between practice environments and nurse job outcomes, researchers can not completely generalize results from one population to another population for two reasons. First, the difference in the cultural orientation may influence nurses' perception of the quality of the practice

environment. Cheng et al (2011) found that in the U.S. hospitals, Filipino and Chinese nurses from collectivist cultures are more likely to rate their work environments as better, and are less likely to leave their jobs. Although this correlation between cultural orientation and the perception of practice environment was modest (r=-.24), it was significant (p<.05). Although the findings from different countries did not differ significantly, there is still a need to evaluate these relationships in the context of Saudi Arabia due to the potential influence of cultural, and population diversities. Second, in Saudi Arabia, the chronic problem of the nurse shortage has led employers to recruit more international nurses. This creates a multicultural workforce that is evident in many hospitals. For example, one hospital in Saudi Arabia has nurses from more than 44 different nationalities (International Hospital Recruitment Inc. [IHR], 2014). Given this unique environment, it is necessary to pay attention to the multicultural work setting that was not considered (if existed) in any of the reviewed international studies. It is unknown whether the cultural diversity in Saudi hospitals exhibits different dynamics and interactions between practice environment and job outcomes. For these reasons, there is a critical need to conduct practice environment studies in hospitals in Saudi Arabia.

In general, it is imperative for hospitals to invest more in improving work conditions such as provide adequate resources and staff to carry out the job, encourage building good relationships with colleagues, and allow nurses to participate in hospital affairs and institutional decision-making, as well as provide opportunities for career development for all nurses. However, due to the differences between Western countries

and Saudi Arabia in terms of cultural context, and the structure of the nursing workforce, prioritizing and tailoring such interventions must rely on studies within the country to ensure their relevance.

Limitations. This review excluded publications written in languages other than English**.** Even though the studies were largely consistent, they primarily relied on cross-sectional survey data and as such makes it very hard to establish causality. Further, though the data collection used the same instruments to gather information from nurses, the language difference as a result of extended geographical coverage could compromise the interpretation of results.

Summary

The International Council of Nurses (ICN) encourages positive work environments to attract nurses and improve nurse job satisfaction, enhance retention, and improve patient outcomes (ICN, 2007). Research on the work environment started in the United States and has expanded internationally. Using the NWI-R and the PES-NWI to assess the nurse practice environment was an essential step toward understanding the quality of nurse practice environments.

This review synthesized the literature on the relationships between the nursing practice environment and its impact on nurse job outcomes. The extensive body of research from the United States and more than 15 other countries shows the significant effect of the practice environment on nurse outcomes. Although studies from fields other than nursing, such as those in organizational behavior, indicate that different cultures

may induce different responses (Gelfand, Erez, & Aycan, 2007), studies in this review did not report significant differences in nurse outcomes across cultures except for one study (Cheng et al., 2011). Rather, they have shown a consistent relationship between positive practice environments and positive nurse job outcomes even when there was a variation in the scoring order of the highest and lowest subscales.

With the supportive empirical evidence on the practice environment, nurse leaders now have greater opportunity to improve the work environment in order to improve nurse job outcomes. Some strategies include: improving staffing adequacy, providing more resources, providing managerial support and opportunities for advancement, and encouraging nurses participation in hospital affairs. The availability of these structures in the workplace will more likely enhance nurses' perceptions of the quality of their work environments, which is a contributing factor to positive nurse outcomes. Nurse practice environments and their impact on nurse job outcomes in Eastern countries, such as the Middle East and South and North Africa is an under-researched area. Similar studies are necessary in these settings to evaluate the quality of practice environments and to provide recommendations for future interventions.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

This chapter explains the design of the study and the methodology of data collection and analysis. The study aims to describe nursing practice environments from the perspective of nurses working in two types of hospitals in Saudi Arabia: a public hospital and a teaching hospital. In addition, the study aims to test a model that links the practice environment to nurse job outcomes (job dissatisfaction, burnout, and intention to leave). This chapter explains the study design, sample, data collection, study variables, the relevant instruments of measurement, and the data analysis.

Research Strategy

Study Design

This study is an observational study that employed a comparative cross-sectional design to survey nurses from two types of hospitals in the KSA: a public and a teaching hospital, and to compare the findings from both settings. In this study design, the investigator measures all predictors and outcome variables at a single point in time (Hulley et al., 2013). Cross-sectional studies have been used to test or confirm associations between dependent and independent variables. The steps included: (1) recruit a sample from each hospital; (2) measure variables at one point in time; and (3) compare the results. To accomplish these steps, an electronic survey was sent to nurses via email addresses. Nurses participated in this study by completing the survey. Nurses' responses were examined and analyzed to test the study hypotheses.

The major strength of this study design is its feasibility and consistency with existing literature. Data were collected at one point, which avoids participant loss due to follow up problems, and minimizes expenses (Hulley et al., 2013). Additionally, the resulting differences or similarities between the two groups were comparable because they were obtained at the same period of time from both settings. This rules out the potential effect of time, and its possible consequences on the examined outcomes. Data from this cross-sectional study could be used as baseline data for another future cohort study to test the effect of specific intervention on the practice environment with no additional costs (Portney & Watkins, 2015).

Setting

Participants were recruited from two accessible settings:

(1) Hospital A is a tertiary public hospital owned by the Ministry of Health (MOH) with a capacity of 360 beds. This hospital has several outpatient clinics that receive referred cases from 26 primary health care centers in the city of Qatif, located in the eastern region of Saudi Arabia.

(2) Hospital B is a tertiary teaching hospital owned by a governmental facility with a capacity of 300 beds. This hospital has several outpatient clinics that receive cases from 5 primary and secondary health care centers.

Each hospital (A & B) has the following departments: internal medicine, surgical, pediatrics, maternity, critical care unit, emergency department, physiotherapy, operation

rooms, and dental clinics. Both hospitals have Saudi and expatriate nurses working in their inpatient and outpatient units.

Study Population

Site 1: The Public Hospital

This hospital has 650 nurses among which 80% are Saudis. In addition, there are 50 nurse aides (equivalent to Patient Care Technicians) working at different in-patient units. In each unit, beside staff nurses who provide direct patient care, Jobs are classified as the following: a Head Nurse (equivalent to Nurse Manager in other hospitals) manages the unit and performs the administrative tasks; Acting Head Nurse (AHN) works as an assistant to Head Nurse, helps in completing the administrative work and takes over during the absence of the Head Nurse, as well as providing nursing care to patients if unit is busy; and Charge Nurse (CN) is the team leader in the unit who observes patients' conditions in general, maintains safety, assign patients to nurses, ensures the adequacy of equipment and supplies in the unit and collaborates with other departments such as laboratory, medical imaging, and medical supply. The major healthcare providers are Staff Nurses and Nurse Aides. Staff nurses hold either Diploma or Bachelor's degrees in nursing and provide nursing care to all patients in the unit, while Nurse Aides (technicians) hold a Diploma (a technical degree in health or nursing aid) and work under the supervision of staff nurses to perform some primary tasks such as cleaning, feeding, and ambulating patients.

Site 2: The Teaching Hospital

There are 551 staff nurses working in this hospital, 8.17% of them are Saudis (45 nurses). In addition, there are 115 non-Saudi patient care technicians (PCTs). Job classification in this hospital is similar to jobs in the public hospital except for differences in some job titles; for instance, Nurse Manager and PCTs are equivalent to Head Nurse and Nurse Aide in public hospitals respectively. In addition, staff nurses are classified into two levels: staff nurse I (nurses with BSN degrees), and staff nurse II (mainly nurses with Diploma degrees or from Asian countries). Staff nurse I receive higher salaries, and are expected to take more responsibilities and job opportunities as well.

Sample

The population in this study includes all Saudi and expatriate nurses working in public or teaching hospitals in the KSA. The accessible population includes only nurses working in the above- mentioned two hospitals. The perception of the practice environment among foreign educated nurses working in the U.S. was investigated and showed no significant difference as compared to national nurses (Flynn & Aiken, 2002). However, it is unknown whether foreign educated nurses (expatriates) working in Saudi Arabia exhibit similar perception to that of Saudi nurses. Therefore, both Saudi and expatriate nurses were included in this study.

Convenience sampling, a form of nonprobability sampling, was used in this study. This type of sampling depends on recruiting easily accessible subjects. The

advantages of this type of sampling are its low cost and easy logistics. The sample included all nurses who met the inclusion criteria and were accessible via email. The major limitation of this sampling method is the potential selection bias (Portney & Watkins, 2015). Participants may have characteristics that are not representative of the characteristics of the population. A less biased sampling method is quota sampling that incorporates some stratification. For example, based on one characteristic, (such as the percentage of Saudi nurses in each hospital) the researcher can guide the sampling process to enhance the representation of each stratum in the population. However, this might reduce the sample size that an investigator would have from convenience sampling. Therefore, convenience sampling was used.

Spoken language in the targeted sample. There is observed variation in the languages of the participants. Saudi nurses speak Arabic as their first language. However, in general, those holding a BSN or higher degrees understand English better than those holding a diploma. On the other hand, there is greater variation in the languages of expatriate nurses. The majority are from the Philippines and India, while considerable portions come from Malaysia, South Africa and other nations. For expatriate nurses, English is the standard language of communication in both hospitals. Therefore, to ensure an acceptable level of understanding for Saudi and expatriate nurses, the survey was provided in Arabic and English.

Sample Size and Power Calculation

A power calculation was performed for aim 1. Group sample sizes of 209 participants from the teaching hospital and 195 participants from the public hospital

achieved over 99% power to detect differences in group population means equal to 0.7 for the nursing practice environment composite score (3.0 for teaching hospital and 2.3 for public hospital), assuming standard deviation of 0.4 and 0.5 for public and teaching hospital respectively. It is further assumed that the significance level (alpha) is 0.05 using a two-sided two-sample unequal-variance t-test.

For aim 2, path analysis is a large sample statistical approach. The general rule-of-thumb is 5 to 10 observations for each parameter to be estimated. However, this truly depends on many factors, such as the size of the model, distribution of the variables, amount of missing data, reliability of the variables, and the strength of the relations among the variables (Muthén & Muthén, 2002). Kline (2011) recommended at least 10 observations for each parameter to be estimated, and having 20 observations is more ideal. In this study sample, there are 32 parameters (arrows from exogenous to endogenous variables in the model). Therefore, a sample size of 320 is acceptable.

Inclusion criteria

1. Nurses working as bedside nurses with direct interaction with patients. Acting Head Nurses are also included in this category because they occasionally perform direct patient care especially if units are busy.
2. Nurses who have spent at least 6 months in their current units.
3. Nurses who are willing to participate in this study.
4. Ability to read and understand Arabic or English.

Exclusion criteria

1. Nurses who are not working at the bedside, such as nurse managers, and nurse educators.
2. Nurses who have spent less than 6 months in their current units.
3. Nurses who are not willing to participate in this study.
4. Inability to read and understand Arabic or English.

The purposes of specifying the 6-month working period are: (1) to ensure that participants have sufficient knowledge about different aspects of their practice environments; (2) for newly hired nurses, to exclude the beginning of the full-time job which may be stressful for some nurses and may influence their perceptions about the practice environment; (3) for expatriate nurses, to exclude the period of transition from one culture to another (i.e. cultural shock period).

Recruitment Procedure

The IRB approval was obtained from the public hospital in September 2016, and from the teaching hospital in November 2016. Both directors of nursing were supportive of the study. Another IRB approval were obtained from the University of Pennsylvania prior to commencing the study. It was planned to obtain nurses' emails to send the survey. However, both hospitals preferred direct communication between the director and the nursing staff. Therefore, in November 15th, 2016 the invitations for the survey were emailed to both directors of nursing who forwarded the invitations to nurses in both hospitals. The duration of the study was 4 weeks. Flyers were used to promote and to introduce the study to nurses working in inpatient units, see Appendix F.

Data Collection

Qualtrics was used to build the electronic survey in two languages: English and Arabic. Participants who completed the survey submitted it electronically. Qualtrics is a secure web-based application for managing databases. The survey was preceded by an electronic consent form that explained the conditions of the study, the privacy of participants, and the confidentiality of all information given by participants. The survey took approximately 10 to 12 minutes to complete.

To maximize response rate, the Tailored Design Method (TDM) (Dillman, Smyth, & Christian, 2014) was followed. Studies that have used the TDM method obtained high response rates that reached up to 60 or 80% for educated participants (Dillman, 1991). The TDM focuses on how to design and administer mail and internet surveys successfully to improve response rates. This method aims to reduce non-response errors by tailoring (customizing) the survey to fit the study population. Additionally, it requires that the investigator assess the response rate in a modifiable time interval such as weekly, or biweekly, then sends reminders to those who have not completed the survey. For this study, the survey was customized by providing it in two languages and by customizing nursing job titles to fit the classification in each hospital; for example, in the teaching hospital, staff nurses were called staff nurse I and staff nurse II, and nurse aids were called Patient Care Technicians. In addition, a first and second reminder were sent to nurses after one week and after 2 weeks respectively to encourage those who did not participate and those who started but did not complete the survey. Another strategy of TDM is using words or symbols to inform participants about

how far they are progressing toward the completion of the survey. For that, a welcome message was used in the beginning and a completion percentage was displayed on each page. This is a feature in Qualtrics to show much was completed to end the survey. Providing such information encourages participants to complete the survey and minimize early termination. Dillman et al. (2014) emphasizes using a consistent and clear layout of questions in the survey to facilitate understanding of all questions and to ensure obtaining accurate responses. The Qualtrics platform offers several options to set up the layout of the questions, such as the font colors and sizes, and the vertical and horizontal layout. These features were utilized to enhance the appearance and the clarity of the survey.

In the teaching hospital, the number of responses was high in the first week, then started to decrease. More responses were collected after sending reminders with the survey links to nurses. On the other hand, it was noticed from following the number of responses in the public hospital that responses in the first 2 days were high and started to decrease by the end of first week. After the first reminder, a few more responses were collected. By the third week, there were no responses at all even after sending a second reminder. At that point, the director of nursing suggested using paper and pencil surveys to improve the response rate. Two hundred paper surveys were distributed in the fourth week to nurses in inpatient units with a message at the beginning of the survey alerting them to not answer the survey if they already had done so in an electronic format. After one week, a nurse supervisor collected the paper surveys (n=107) from nurse managers in the participating units and then she handed them to the investigator.

Survey Instrument

Qualtrics automatically provides each participant with a unique identifier. The survey was sent separately to each hospital and responses were collected in two folders in Qualtrics to avoid any overlap between the two sites. The survey was composed of six sections (see the survey in Appendix B).

1. Demographic Data:

Collected demographics included the following ordinal variables:

a) Age: divided into 5 intervals (to simplify the categorization of nurses based on age groups): 20- 25, 26-30, 31-35, 36- 40, and 41 years or older.

b) Gender: male or female.

c) Nationality: Saudi, from other Arab countries, other Asian countries, or from western countries.

d) Marital status: single, married, divorced or widow.

e) Number of children (< 18 years old): 0, 1, 2, 3 or more.

f) Level of education: Diploma, Bachelor of Science in Nursing (BSN), or Master's or higher.

g) Years of experience: less than 2 years, 2 to 5 years, 6 to 10 years, or more than 10 years.

h) Unit: medical or surgical unit or medical/surgical, Intensive care unit, or others (including CCU- PICU-NICU- step down, ER, OB/GYN, maternity, pediatrics, hemodialysis and others).

i) i) Job classification: staff nurse, nurse aid (Patient Care Technician), or other. Nurse aids option was added to distinguish their responses from the staff nurses, since it was difficult to identify their emails from the email lists. This option facilitated excluding their responses prior to data analysis stage.

These are potential confounding variables that were identified from Saudi literature examining some of the main variables of interest: practice environment, job dissatisfaction, and intention to leave (Alasmari & Douglas, 2012; Almalki et al., 2012; Alsagri, 2014; Zaghloul et al., 2008).

2. Practice Environment Scale of the Nursing Work Index (PES-NWI) (Lake, 2002):

This scale is composed of 5 subscales: *nurse participation in hospital affairs* (9 items); *nursing foundations for quality of care* (10 items); *nurse manager ability, leadership, and support of nurses* (5 items); *staffing and resource adequacy* (4 items); and *collegial nurse-physician relations* (3 items). The PES-NWI was derived from the Nursing Work Index (Kramer & Hafner, 1989), and developed by Lake (2002). Each item has four responses ranging from strongly agree (score of 1), to strongly disagree (score of 4). The subscale scores are equal to the mean of item scores in that subscale. The composite score is equal to the mean of the five subscale scores. At the hospital level, subscale scores from each participant are aggregated to create a hospital-level subscale score. The reliability of this scale was reported as Chronbach α of .82. The scale has been used in numerous countries and translated in several languages so far (Warshawsky & Havens, 2011). The validity and reliability of the PES-NWI were

evident from some studies (Lake, 2002; Warshawsky & Havens, 2011) (see Table 1 for psychometrics properties of the PES-NWI, and Appendix B for the instrument). The PES-NWI was translated into Arabic in unpublished work by Jordanian researchers. The Arabic version of the PES-NWI were reviewed, modified and tested before using it in the survey. The validation process is explained in a coming section.

To evaluate the quality of the practice environments, some studies have used the sample median as cut point. The more subscale scored above the median, the better the environment. A practice environment is classified as poor if it has 0 or 1 subscale scores above the sample median, and it is mixed environment if it has 2 or 3, while it is better environment if it has 4 or 5 subscale scores. Although this method is more accurate when the average score of practice environment is unknown in specific population, it is more applicable with a sample of multiple hospitals. In this study, however, where the sample is composed of only two hospitals, the median is a biased cut point due to the large variation between the two hospitals. Another method used to evaluate the quality of practice environments is by using the theoretical cut point (a midpoint of 2.5) instead of the median. A hospital is classified as having unfavorable practice environment when it has 0 or 1 subscale above 2.5, mixed if it has 2 or 3, and favorable if it has 4 or 5 subscale scores exceeding 2.5.This approach is consistent with previous literature in the field (Friese, Lake, Aiken, Silber, & Sochalski, 2008; Lake & Friese, 2006; Patrician, Shang, & Lake, 2010).

3. Maslach Burnout Inventory- Human Service Scale (MBI-HSS) (Maslach& Jackson, 1981):

The MBI-HSS is the most widely used instrument in measuring burnout across countries (Poghosyan, Aiken, & Sloane, 2009). The validity of the instrument was tested across eight countries (the U.S., Canada, the U.K., Germany, New Zealand, Russia, Armenia, and Japan) and it has shown to perform similarly across countries. In addition, the factorial structures across the eight samples were almost similar (Poghosyan et al., 2009). The MBI-HSS is a 22-item scale divided into three subscales: 9 items measure emotional exhaustion (EE), 5 items measure depersonalization, and 8 items measure personal accomplishment. Consistent with numerous studies (Aiken et al., 2011; Heinen et al., 2013; Liu et al., 2012; You et al., 2013), this study used the emotional exhaustion subscale as a measure of burnout. Each item asks participants to rate the frequency of some of job-related feelings such as "I feel emotionally drained from my work"; "I feel frustrated by my job"; and "I feel I'm working too hard in my job". Rating of the items is on a 7-point frequency scale: 1= never, 2= a few times a year, 3= once a month or less, 4= a few times a month, 5= once a week, 6= a few times a week, or 7= every day. The total score is the sum of all 9 items which ranges from 9 to 63. For healthcare workers, it was noted that the average burnout score is 27 (Maslach et al., 1996). The MBI-HSS has been used frequently in studies that examined the practice environment and nurse outcomes such as the RN4CAST study, a large international study that linked practice environments and hospital characteristics to nurse and patient outcomes. The reliability (Cronbach's alpha) of the MBI-HSS instrument ranged between 0.71 to 0.90 (Maslach et al., 1996). The MBI-HSS was used in different countries such as the U.S and Europe (Aiken et al., 2011), China (Zhang et al., 2014); and Thailand (Nantsupawat

et al., 2015). The reported Chronbach's alpha for the EE subscale reached 0.91 (Nantsupawat et al., 2015) and it was .85 in Chinese nurses' population (Zahng et al., 2014).

4. Job Dissatisfaction

A single item was used to measure nurses' job dissatisfaction. This item was derived from a 9-item scale that has been used in the RN4CAST study in the United States and more than 12 European and Eastern countries (Aiken, Sloane, Bruyneel, Van den Heede, & Sermeus, 2013). However, because the purpose of this study was to assess the relationship between practice environment and nurse outcomes (including job dissatisfaction), only one question from the scale asking about job dissatisfaction in general was used. Answers were scored on a 4 point Likert scale: (1) very satisfied; (2) satisfied; (3) little dissatisfied and (4) very dissatisfied. Answers were then dichotomized as satisfied if the score was 1 or 2, and dissatisfied if the score was 3 or 4. Using single item to measure some psychological constructs such as job dissatisfaction is generally acceptable practice (Wanous, Reichers, & Hudy, 1997). The major concern is the low reliability of single–item measures. However, this approach has been followed by researchers in numerous studies (Aiken et al., 2011; Liu et al., 2012; Nantsupawat et al., 2015; Patrician et al., 2010) and the reported internal consistency (Cronbach alpha) was 0.87 (Zhang et al., 2014).

5. Intention to Leave:

The intention-to-leave item has been utilized in several studies to measure

nurses' intention to leave their jobs (Liu et al., 2012; Lindqvist et al., 2015; Patrician et al., 2010; Zhang et al., 2014). It consists of a single dichotomous question which is "Do you plan to be with your current employer one year from now?" with answers of "yes" or "no". To gain more insight about the possible reasons for intention to leave among nurses working in Saudi Arabia, one categorical question was added to specify the reason (s). The question asked the participant to select all that apply, and the given options were: I feel exhausted physically, I feel exhausted emotionally, I have to leave for family related reasons, I receive a low salary, I found a better job, I don't feel respected, I have problems with my manager, I have problems with co-workers, my contract was not renewed, I have problems with my work visa, I am not comfortable with my place of work, I am not comfortable living in this country, I cannot work in a mixed environment (has male and female workers), other (please specify).

5.Staffing

Staffing has been associated with increased burnout (Nantsupawat et al., 2015) and intention to leave (Leone et al., 2015). In this study, staffing was assessed by one question asking each participant to indicate the number of assigned patients during the most recent shift. Answers to this question will be aggregated to provide information about the average nurse-patient ratio in each hospital. Data obtained from this question will be used for future analysis.

Instrument Validation

To ensure the content validity of the survey's instruments, all questions were translated previously by a Jordanian researcher in a preliminary plan to produce an Arabic version of the RN4CAST survey and can be used in any Arabic-speaking country. The researcher shared his work with Dr. Allison Squires, an Associate Professor of Nursing at the New York University (NYU), and the investigator to collaborate in validating a final Arabic translation of the survey. Dr. Squires has previous expertise in

the international collaboration with nurse researchers to validate the RN4CAST survey, and she is the primary author of major papers in the validation process of the translated versions of the RN4CAST survey (Squires et al., 2013; Squires et al., 2014). The first Arabic version was administered to a group of experts to evaluate the cross-cultural relevance of the questions and the accuracy of the Arabic translation. The validation process produced a content validity indexing (CVI) score for the instrument. The reliability was calculated by Kappa score (a statistic that measures inter-rater agreement) which was 0.78 for the PES-NWI, and .72 for the MBI-HSS. The translation was reviewed again by the investigator, under the supervision of Dr. Squires during the month of June of 2015. The review of the first Arabic translated version of the survey revealed numerous translation errors that were addressed in the revised translation.

To be consistent with an established process of systematic survey instrument translation for multi-country comparative health workforce studies (Squires et al., 2013), the investigator followed the same process. Specifically, the forward translation was

performed by the investigator, and the backward translation was performed by three independent translators from Saudi Arabia. Then, the investigator compared the forward and the backward translations and made corrections in some problematic areas in the Arabic version. Next, the survey was administered to staff nurses and experts in Saudi Arabia during the month of July 2015. Given the valuable comments from 16 reviewers ranging from staff nurses, head nurses, and nursing doctoral students from different settings, the translated version was re-modified.

The translated version was also administered to Jordanian nurses again and results from first and second translations were compared and showed an improvement in the reliability of the new Arabic version. The reliability of the PES-NWI in the Jordanian sample improved to 0.83, and for MBI-HSS, it improved to .95. In addition, results from Saudi Arabia showed a reliability of .84 for the PES-NWI and .75 for the MBI-HSS. It was noticed that the MBI-HSS has some problematic vocabularies that are more relevant to the U.S culture and a low Kappa score was reported (Squires et al., 2014). The comments received from reviewers from Saudi Arabia were taken into consideration and helped refining the questions.

Table 1. Dependent and Independent Variables in the Study

Variable	Description	Variable type	Psychometrics
Nursing Practice Environment (NPE)	31 items in 5 subscales of PES-NWI, scored on a 4 point Likert scale ranges from strongly agree to strongly disagree. The subscales are: (1) *nurse participation in hospital*	NPE will be treated as a continuous variable based on the composite score (the mean of the 5	Cronbach's Alpha of 5 Subscales (Lake, 2002): (1) 0.83; (2) 0.80; (3) 0.84; (4) 0.80; and (5)0.71, while it was 0.82 for

	affairs (9 items); (2) *nursing foundations for quality of care* (10 items); (3) *nurse manager ability, leadership, and support of nurses* (5 items); (4) *staffing and resource adequacy* (4 items); and (5) *collegial nurse-physician relations* (3 items).	subscales).	entire instrument (Lake, 2002). In another study (Patrician et al., 2010), this value was 0.94 for entire instrument, and between .82 to .87 for subscales.
Burnout (BO)	Measured by the emotional exhaustion (EE) subscale of Maslach Burnout Inventory. It has 9 questions, on 7 points Likert scale ranges from "never" to "every day".	In aim 1: BO was treated as a continuous variable. In addition, it was categorized into 3 levels: low (score = 0 to 16), moderate (score= 17- 26), and high (score above 26). (Maslach 1986).	Cronbach's alpha for the EE subscale ranges between .85 to .91 (Nantsupawat et al., 2015; Zahng et al., 2014).
Job Dissatisfaction (JDS)	One item on a 4-points Likert scale where 1= very satisfied; 2= satisfied; 3= little dissatisfied; and 4= very dissatisfied.	Dichotomous. Satisfied if the score is 1 or 2, and dissatisfied if the score is 3 or 4.	Cronbach's alpha= 0.87 (Zhang et al., 2014).
Intent to Leave (ITL)	One item scored as 1=yes, or 0= no.	Dichotomous	No available data.
Hospital Type (HT)	0= Public hospital 1= Teaching hospital	Dichotomous	N/A
Individual Factors			

Age	20- 25 y 26-30 y 31-35 y 36- 40 y 41 years or older.	Ordinal	N/A
Gender	Male= 1 Female= 0	Dichotomous	N/A
Nationality	Saudi From other Arab countries Other Asian countries Western countries	Dichotomized as 1= Saudi, others (all expatriates) = 0.	N/A
Marital Status	Single Married Divorced or widow	Nominal	N/A
Number of Children <18 y	None One Two Three or more	Ordinal	N/A
Education	Diploma BSN Master's or higher	Ordinal	N/A
Years of Experience	Less than 2 years 2 to 5 years 6 to 10 years More than 10 years	Ordinal	N/A
Unit Type	Medical or surgical or Mid/Surg Intensive care unit Others	Nominal	N/A
Job Classification	Staff nurse Nurse aide (or PCT) Other	Nominal	N/A

Data Considerations

Responses from PES-NWI were reverse coded prior to the analysis, and 5 subscale scores and nurse-level composite scores were created. Burnout score was obtained by summing the 9 items of the *Emotional Exhaustion* subscale of the Maslach

Burnout Inventory. To classify responses, a new categorical variable was created to categorize nurses into three groups based on their levels of burnout. Low burnout is indicated by scores of 0 to 16; moderate burnout is corresponding to scores between 17 to 26; and high burnout is represented by scores that exceed 26 (Maslach, Jackson, Leiter, Schaufeli, and Schwab, 1986). Finally, to simplify the interpretation, the four levels of job dissatisfaction responses were collapsed into two categories where "very satisfied" and "satisfied" were coded as "satisfied", and "little dissatisfied" and "very dissatisfied" were treated as "dissatisfied". Data from nationality question were treated as dichotomous responses where Saudi Arabia is one category "Saudi" and all other nationalities were considered as "non-Saudis". The dataset was screened for any missing data. Missingness was not a serious problem in the dataset. After excluding not eligible participants, the resulted sample had slight missingness in each variable that did not exceed 3.3% of the values. See Appendix C.

Data Analysis

Electronic data from the collected surveys from both hospitals were exported Qualtrics into IBM-SAS software for statistical analysis. Data from paper surveys from the public hospital were entered into Excel sheet and then imported to IBM-SAS. Data from the 3 sources were combined in one dataset and cleaned. Both descriptive and inferential statistics were used to accomplish the aims of the study. Before the analysis, the normality of the distribution of continuous variables was tested (see Appendix D) and recoding was done (see Appendix E).

Aim 1. *To describe and compare the nursing practice environment, and nurse job-related outcomes (job dissatisfaction, burnout, and intention to leave) in a public and a teaching hospital in Saudi Arabia for the entire sample, and by hospital type (public vs. teaching).*

Hypotheses

H1.1: The quality of the practice environment in the teaching hospital is better than that in the public hospital.

H1.2: The nurse job outcomes (JDS, BO, ITL) in the teaching hospital are more favorable than those in the public hospital.

To accomplish this aim, descriptive statistics were used to analyze the continuous variables, and the relative frequency was used to analyze categorical variables. More specifically, data was displayed for the entire sample and by setting in a tabular and graphical format using descriptive statistics to illustrate the number and the percentages for each of the following: participants who had dissatisfaction, those who had high, moderate and low burnout, and participants who intend to leave their jobs. The number and the percentages of the nine demographics (age, marital status, sex, level of education, years of experience, number of children below 18-year-old, job classification, and the unit type) were displayed as well.

Statistics (mean, median, standard deviation, and interquartile range) were used to illustrate the distribution of continuous variables and to compare hospitals for the overall and the subscale scores of the nursing practice environment, and for burnout scores. In addition, Chi-square statistic was used to test whether the distribution of the categorical data in the two groups are different. The significance of the differences the continuous variables in the two groups was tested by using the tow sample t-test assuming unequal variance (Welch's t-test). This test is used due to the mismatched variances between the two samples (Kohr & Games, 1974).

Aim 2. *To examine the complex relationship between nursing practice environment and nurse job related outcomes (job dissatisfaction, burnout, and intention to leave) in the presence of potential confounding factors at the individual level using path analysis.*

Hypothesis

H2.1: The quality of the nursing practice environment is associated with nurse job outcomes (job dissatisfaction, burnout, and intention to leave).

H2.2: Job dissatisfaction and burnout mediate the relationship between nursing practice environment and intention to leave.

Path analysis was used to test the hypothesized associations among the endogenous (dependent) and the exogenous (independent) variables in the model. Path analysis is a structural model that represents a system of regression equations that aim to test theoretically-based causal relationships among a set of observed variables (Kline,

2011; Stage et al.,2004). An advantage of this statistical technique is that it allows the researcher to find the direct and indirect effects of multiple variables simultaneously (Stage et al., 2004). Researchers can use path analysis to test hypothetical relationships among variables using multiple models and then evaluate and compare these models based on their fit indices. Despite that, path analysis results alone cannot determine what model is correct. The results of goodness of fit are a matter of how well submitted data fit the proposed model and these results may support the tested causal relationships. The final decision, however, must not rely on path analysis results solely, it should consider theoretical knowledge and findings from previous research (Stage et al., 2004).

Assumptions for Path Analysis

1. **Linearity:** All functional relationships should be linear.
2. **Uncorrelated residual term:** Error terms should not be correlated to any variable.
3. **Disturbance terms:** Disturbance terms should not be correlated to endogenous variables.
4. **Endogenous variables** are never correlated, but their error terms can be.
5. **Low multicollinearity:** No perfect multicollinearity is assumed in path analysis. Including a multicolinear independent variables in a model will result in an inflated standard error of the path coefficient and possibly type II errors (Garson & David, 2014).
6. **Identification:** The path model can be identified or over-identified, but not under identified. A model is called under-identified when it has more unknown

than known (e.g., the model has too few variables while it aims to estimate many unknown values).

7. **Proper specification:** The model should include all significant causal variables in order to provide accurate and interpretable path coefficients. A misspecified model may result in different path coefficient than correctly specified model. Furthermore, leaving out a variable that is a predictor to a given variable may lead to Simpson's paradox in which the coefficient of the direct path from one variable to another appeared in a reversed sign (Garson & David, 2014).
8. **Using an interval scale of measurement:** When using ordinal data, creating dummy variables can overcome this assumption and it doesn't distort the stability of the regression or path coefficients (Boyle, 1970).
9. **Recursivity:** All arrows should flow in one direction with no feedback loop. Non-recursive models can be handled using different techniques.
10. **Adequate sample size:** The sample size should be at least equal to 10 cases for each parameter to be estimated in the model (Kline, 2011). Small sample size and/or large number of variables may reduce the accuracy of path analysis.

The study model (Figure 5) is a recursive model (unidirectional path with no backward arrows), that was built primarily based on previous literature in the field, particularly the Model of Nurse Turnover (Lake, 1998). To test these causal relationships, several models were used that linked the study variables differently. Dummy variables were created to represent the five ordinal variables (age, marital status, level of education, years of experience, and unit type). Mplus was used to explore

the path coefficients of the relationships and to check the overall model accuracy (based on model fit indices). Job dissatisfaction responses were collected as 4 ordinal responses (ranged from 1=very satisfied to 4= very dissatisfied), but were later collapsed to two categories as satisfied and dissatisfied. Mplus uses the robust weighted least square WLSMV as an estimator for parameters. This estimator does not assume normality and therefore it is a good option when using ordinal variables in the model (Brown, 2006). Kline (2011) recommended using at least 4 fit indices to report a model fit. The following statistics were used to test the goodness of fit of the four models:

- **Chi-square statistics:** A non-significant chi-square statistic indicates a good model fit. However, if the sample size is more than 200, the chi-square is almost always significant. Thus, other fit indices are necessary.
- **Absolute Fit Index:** The root mean square error of approximation (RMSEA): It is not sensitive to sample size. A good fitted model has a RMSEA value of ≤ 0.05, while a value of less than .08 is acceptable. A 90% confidence interval for RMSEA should be less than 0.08 for a good fitted model (null hypothesis: RMSEA ≤.05).
- **Increment Fit Index:** Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) range between 0 to 1 where 1 indicates best fit. In general, a good fit model should have a CFI and TLI of greater than 0.90.
- **Standardized Root Mean Square Residual (SRMR):** The SRMR is sensitive to sample size and is not recommended for models with binary outcomes. The threshold for acceptable fit is SRMR ≤ .08 (Hu & Bentler, 1999). Mplus

provided this index for model 2 when it used Theta parameterization.

- **Weighted Root-Mean-Square Residual (WRMR):** is a newer empirical index proposed by Muthén and Muthén (1998; 2002) and has not been tested extensively as other fit indices. One study found that good fitted model with binary outcomes at sample size ≥ 250 have WRMR ≤ 1.0 (Yu, 2002).

The following plan displays the data analysis procedure.

- Variables: (outcomes, mediators, covariates)
    - Outcomes of Interest – Intent to leave, Dissatisfaction, Burnout
    - Potential Mediators – Dissatisfaction, Burnout
    - **Endogenous Variable:** Eight individual factors **(**sex, age, marital status, number of children < 18y, level of education, years of experience, nationality, and unit type), hospital type, job dissatisfaction, and burnout.
    - **Exogenous Variables:** Nursing Practice Environment (measured by the nurse-level composite score).

1. **Proposed Pathways:** See Figure 5

a. Direct Effects

i. Individual Factors (8) → Intent to leave

ii. Hospital Type → Intent to leave

iii. Practice Environment → Intent to leave

iv. Burnout → Intent to leave

v. Dissatisfaction → Intent to leave

b. Indirect Effects (mediation)

i. Individual Factors (8)→ Dissatisfaction → Intent to leave

ii. Individual Factors (8)→ Burnout → Intent to leave

iii. Hospital Type → Dissatisfaction → Intent to leave

iv. Hospital Type → Burnout → Intent to leave

v. Practice Environment → Dissatisfaction → Intent to leave

vi. Practice Environment → Burnout → Intent to leave

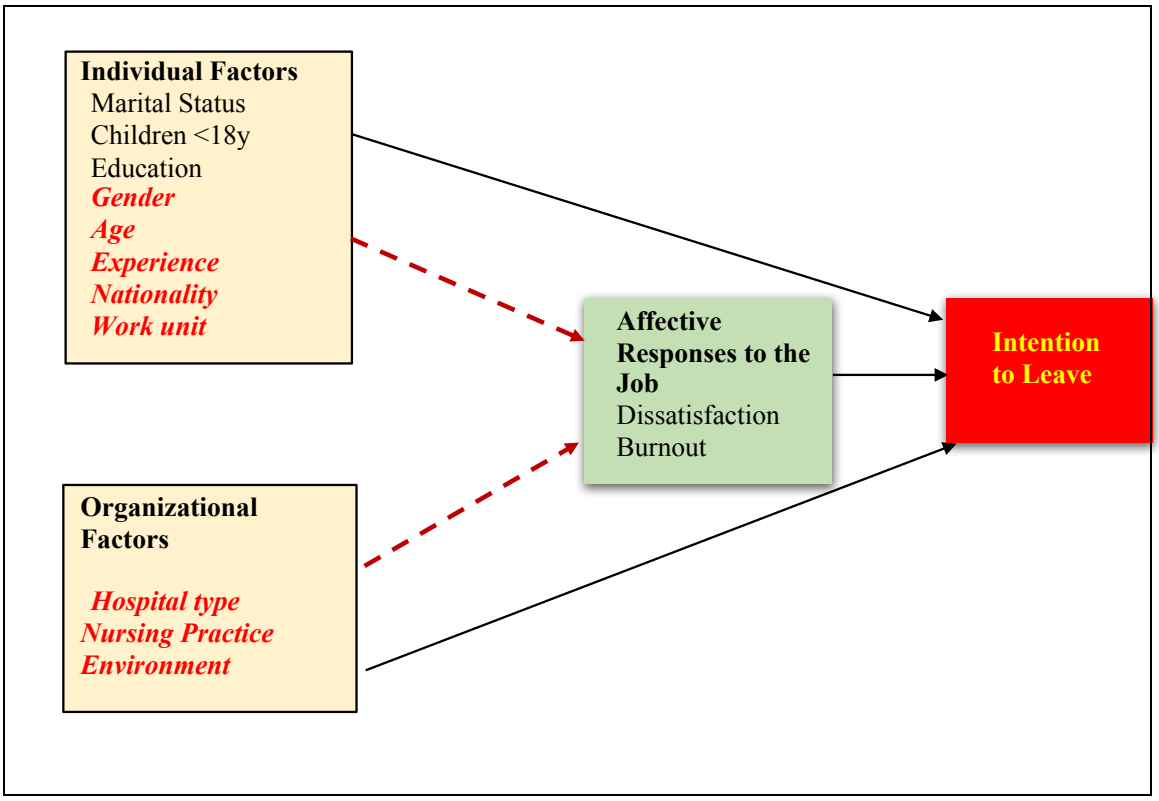


Figure 5. A path diagram illustrates the hypothesized model.

Statistical Procedure

Path analysis was used to assess the relationships among nursing

practice environment, hospital type, individual factors, and nurse job-related outcomes. The potential relationships among variables were tested and the overall model fit was determined from multiple fit indices, such as the chi-square test for model fit, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Squared Error of Approximation (RMSEA). The higher the chi-square value, the worse the data fit the model. The CFI and TLI should be greater than or equal to 0.95 for a good fit. An overall RMSEA less than or equal to 0.06 indicates a good model fit (Kline, 2011). The Weighted Root-Mean-Square Residual (WRMR) does not exceed 1 for good models (Yu, 2002). Standardized estimates of all direct and indirect effects were requested in Mplus. These effects included all the relationships in the path diagram in Figure 5.

Tested Models

Several models were tested to find the best model. The Major criteria for model selection were: (1) the model has a correct theoretical basis (accurate model specification); (2) the model has an adequate or good fit indices; and (3) the directionality of the path coefficients of the model are confirmed by bivariate logistic or linear regression analysis. The analysis was based on a sample size of 381 (23 cases were removed due to missing data). Initially, the job dissatisfaction variable was treated as ordinal variable, however, Mplus terminated the model and did not identify the robust chi-square nor the other fit indices and did not compute the standard errors for model parameter estimates. Therefore, the job dissatisfaction variable was dichotomized in all models, see Table 2 for a list of all included variables and their scales of measurement.

All tested models have 3 endogenous variables (job dissatisfaction, burnout and intention to leave) and 9 exogenous variables (sex, age, marital status, children <18y, nationality, education, experience, unit type and hospital type). See Table2.

Table 2. Study variables included in the path analysis

Variables in the Model		
Continuous	**Ordinal/ Nominal**	**Dichotomous**
Nurse-level PES-NWI composite score Burnout score Number of children <18 y	Age Marital status Level of education Years of experience Unit	Sex Nationality Hospital type Intention to leave (Main outcome) Job dissatisfaction

Based on the model in Figure 5, the initial path model (model 1) had the following three equations:

1. BO= β NPE + β HT+ β individual factors
2. JDS= β NPE + β HT+ β individual factors
3. ITL= β NPE + β HT+ β individual factors + β BO+ β JDS

Where BO= burnout, NPE= nursing practice environment, HT= hospital type, JDS= job dissatisfaction, ITL= intent to leave, and β individual factors = β sex + β age+ β marital status + β children+ β nationality+ β educ+ β exp+ β unit.

The second model was built upon the first model and added a regression of JDS on BO score, while in the third model BO was regressed on JDS. When trying to include both regressions in one model, the analysis process converged because the model turned into a non-recursive model (has forward and backward directions). Model 4 used the

correlation between JDS and BO (assuming no directionality in the relationship). This was based on suggestion given by the software in "modification indices" section which usually suggest adding or deleting arrows to enhance model fit. Modification indices were ignored when they had no theoretical sense. In all models, Mplus used Delta parameterization for estimation except for model 2, 5 and 6 where Theta parameterization was used. Theta is the alternative option that is recommended by Mplus for specific models when Delta parameterization is not feasible such as in path models where a categorical dependent variable is both influenced by and influences another variable (Muthén & Muthén, 2015).

To understand the underlying mediating effects of burnout and job dissatisfaction on ITL, the indirect effects of NPE, hospital type, and of individual factors (sex, age, nationality, marital status, children <18 y, level of education, years of experience, and unit type) were requested in each model. See Table 5 in the next chapter for a summary of all models and their results.

Ethical Conduct of Research & Human Subject Considerations

Human subjects' involvement is necessary to complete this study. Participation in this study requires providing demographic and other self-reported information related to work environment, managerial support, structure of the environment and work-related factors such as workload, collegial relationships, satisfaction, and intention to leave the job. This information, if not protected, may impose a risk of job loss for nurses who intended to stay in their work, yet are not completely satisfied with their work-related

factors. Further, lack of confidentiality and privacy is likely to discourage participation, or diminish the credibility of the given responses.

To ensure the ethical integrity of the study, a series of approvals were obtained beginning with a permission to use the copy- right-protected scale of Maslach Burnout Inventory, see Appendix E. The investigator obtained an approval from College Council at the investigator's affiliated university (King Saud bin Abdulaziz University for Health Sciences- College of Nursing) to conduct the study, followed by approval from the Ethical Committee at the targeted public hospital, and another IRB approval from the teaching hospital. A final approval from the IRB at the University of Pennsylvania was obtained before commencing the study.

To protect participants and encourage providing honest responses, several precautions were taken:

- Participants had to read and understand the electronic consent form before they decide to participate in the survey.
- The consent form was provided in two languages Arabic, and English to ensure a complete understanding of the conditions of the study by all participants including Saudi and expatriate nurses.
- The consent explained the aims of the study, the rights of participants, the confidentiality precautions, and the potential risks.
- Participants were provided with the investigator's contact information for any questions about the overall study, or questions in the survey.

- The survey (neither electronic nor paper version) were not linked to participants' emails. This will prevent exposing the identity of any participant. Each participant was assigned a unique identifier.
- To maintain privacy, the survey was anonymous, and the demographic data did not include any identifiable information such as names, addresses, or phone numbers.
- To maintain confidentiality, all related data were saved on a password- protected drive at the University of Pennsylvania, School of Nursing.
- If a participant agreed on the consent form, then decided to withdraw, he/she had the right to do so, as long as the survey is not yet submitted.

The benefits of this study will be shared with directors in both hospitals. The major benefit of collecting honest responses from participants is to gain a deep understanding of the perception of nurses about their practice environments, levels of satisfaction, burnout, their intention to leave, and the reasons behind having such intention. The data analysis process provided insight to guide the interpretations of the findings and helped to recommend strategies to enhance the quality of practice environment wherein nurses can function more effectively. Additionally, a comprehensive understanding of the reasons behind intention to leave would direct the efforts of the administrators and policy makers toward adopting strategies that increase nurses' retention. These strategies wouldn't be relevant to Saudi hospitals if data haven't been collected from local facilities. The transparency of weighing the

risks and benefits of participation in this study was believed to enhance nurses' participation and motivate them to provide honest responses.

Server infrastructure and security. The Office of Technology and Information System (OTIS) provides access for researchers to store data on a secure Windows 2008 64-bit server, which is backed up nightly. The server is behind a firewall and is registered as a "Critical Host" by the University. This means OTIS follows all University policies regarding critical hosts: firewalls, access controls, timely patch management and antivirus scans and software updates, and an enterprise system monitoring solution (allowing us to detect and address intrusion attempts). The research server and all local desktops are patched and have up-to-date antivirus signatures using Symantec Endpoint Protection. Microsoft's Malicious Software removal tool is installed and updated monthly on both the server housing and local workstations. Anti-virus and anti-spyware scans are performed at reboot and on a scheduled daily basis. In addition, anti-virus real-time protection is enabled on all workstations and servers. As a general practice, all unnecessary service has been disabled. Layer 2 hardware firewalls are in front of the server and prevent out of building access to the servers. Users are required to maintain strong password as defined by Microsoft. A password must be a minimum of 8 characters and must contain a mixture of three of the following: uppercase letters, lowercase letters, digits and/or symbols. Passwords are unique to the user and not shared, observable, recordable or stored in a readable format. The terminal server sessions all have mandatory password protected screensavers set via group policy.

Summary

This chapter focused on the research methodology and procedures. The proposed study used a cross-sectional design to collect data from a convenience sample of Saudi and expatriate nurses working in two different types of hospitals in the Eastern province of the KSA. There was an ethical approval from both hospitals and from the University of Pennsylvania prior to commencing the study. The survey was built via Qualtrics and started with an electronic consent form outlining study conditions, inclusion and exclusion criteria, possible risks and benefits, and privacy and confidentiality precautions.

The survey is composed of six sections: (1) demographic data; (2) the Practice Environment Scale of the Nursing Work Index (PES-NWI); (3) questions on job dissatisfaction; (4) questions on burnout; (5) questions on intent to leave; (6) one question about staffing. Upon completing data collection, data were analyzed using SAS and Mplus software packages. In the analysis of data, descriptive and inferential statistics were used to accomplish the specific aims of this study and path analysis was used to test the hypothesized model. The results will be displayed in the next chapter and conclusions will be drawn based on the analysis.

CHAPTER 4: RESULTS

Introduction

The purposes of this study were to examine nursing practice environments from the perspective of nurses working in two different Saudi hospitals: a public and a teaching hospital, and to assess the relationships among the nursing practice environment and nurses' job dissatisfaction, burnout, and nurses' intention to leave in both settings. The underpinning hypothesis were (1) the quality of the practice environment in the teaching hospital is more favorable than that in the public hospital; (2) nurse job outcomes (job dissatisfaction, burnout, and intent to leave) are more favorable in the teaching hospital than in the public hospital; (3) the quality of the practice environment is associated with nurse job outcomes (job dissatisfaction, burnout, and intention to leave); and (4) Job dissatisfaction and burnout mediate the relationship between nurse practice environment and intent to leave. To test these hypotheses, a comparative cross-sectional study was conducted in two sites: a public and a teaching hospital in Saudi Arabia using an anonymous survey. The population of this study is composed of staff nurses working in the two hospitals who have been working for at least 6 months in their current jobs. The population and sample from each site are described and the analysis results are provided respectively.

Sample Description

Figure 6 provides a diagram of the steps of refining the study sample. Initially, the number of received responses from the public hospital was 213 electronic surveys and 107 paper surveys for a total of 320 responses yielding a response rate of approximately 55.8 %, as all 550 nurses were invited by email. From the teaching hospital, the response rate was 70.86% (n= 304) based on the number of nurses who received the survey (n=429). From the total sample, 195 surveys from the public hospital and 209 surveys from the teaching hospital have met the inclusion criteria of this study making up a total sample size of 404 nurses.

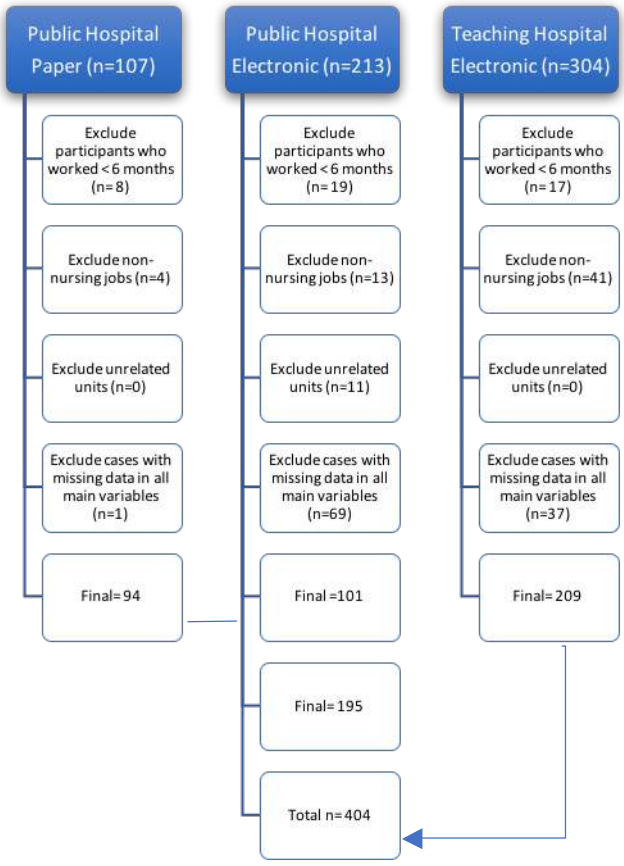


Figure 6. Final sample from the teaching and the public hospitals

Table 3 displays the sample characteristics of the study sample by hospital type. Overall, participants were predominantly female nurses (91%) with the majority (58%) aged between 26 to 35 years. It was noticeable, however, that a considerable percentage of nurses in the public hospital were younger, less experienced and with lower educational degrees than their counterparts in the teaching hospital (only 2% were older than 41years vs. 44% in the teaching hospital; 22.5% had more than 10 years of experience vs. 53%; 37% were BSN graduates vs. 82%). The participating units from each hospital were partially different. Nevertheless, the ethnicity (nationality) was the most prominent difference between the two groups. While the majority (83.4%) of nurses in the public hospitals are Saudis, there were approximately only 4% Saudi nurses in the teaching hospital, and 81.3 % were from Asian countries. Generally, most of the expatriate nurses in Saudi Arabia are from the Philippines, India, Malaysia, and Indonesia. Statistically significant differences were observed for sex, age, marital status, education, experience, nationality, and unit type.

Table 3. Characteristics of study sample based on the entire sample and by hospital.

Characteristics	**Entire Sample N= 404 n (%)**	**Public Hospital N=209 n (%)**	**Teaching Hospital N=195 n (%)**	***P*-value**
Age (years)				<.0001
20-25 y	23 (5.75)	20 (10.47)	3 (1.44)	
26- 30 y	113 (28.25)	76 (39.79)	37 (17.70)	
31- 35 y	120 (30.00)	69 (36.13)	51 (24.40)	
36-40 y	48 (12.00)	22 (11.52)	26 (12.44)	

41 and older	96 (24.00)	4 (2.09)	92 (44.02)	
Number of				0.3432
Children<18 y	170 (42.50)	77 (40.31)	93 (44.50)	
None	92 (23)	40 (20.94)	52 (24.88)	
One	87 (21.75)	45 (23.56)	42 (20.10)	
Two	51 (12.75)	29 (15.18)	22 (10.53)	
Three or more				
Experience (years)				<.0001*
Less than 2 years	23 (5.75)	19 (9.95)	4 (1.91)	
2 to 5 years	89 (22.25)	56 (29.32)	33 (15.79)	
6 to 10 years	134 (33.50)	73 (38.22)	61 (29.19)	
More than 10 years	154 (38.50)	43 (22.51)	111 (53.11)	
Sex				0.0164
Female	363 (90.98)	166 (87.37)	197 (94.26)	
Male	36 (9.02)	24 (12.63)	12 (5.74)	
Marital Status				0.0236
Single	115 (28.89)	47 (24.87)	68 (32.54)	
Married	264 (66.33)	137 (72.49)	127 (60.77)	
Widow/ divorced	19 (4.77)	5 (2.65)	14 (6.70)	
Nationality				<.0001
Saudis	169 (42.04)	161 (83.42)	8 (3.83)	
Non-Saudis	233 (57.96)	32 (16.58)	201 (96.17)	
Education				<.0001*
Diploma	153 (38.06)	118 (61.14)	35 (16.75)	
BSN	243 (60.45)	71 (36.79)	172 (82.30)	

MSN or higher	6 (1.49)	4 (2.07)	2 (0.96)	
Job				0.7098*
Staff nurse	385 (98.21)	179 (97.81)	206 (98.56)	
Acting Head Nurse	7 (1.79)	4 (2.19)	3 (1.44)	
Unit Type				0.0430
Medical-Surgical	174 (43.72)	95 (50.26)	79 (37.80)	
Intensive Care Unit (ICU)	101 (25.38) 123 (30.90)	43 (22.75) 51 (26.98)	58 (27.75) 72 (34.45)	
Other		Other units are: CCU, Stepdown, NICU, Pediatric, Pediatric Stepdown, PICU, LTCU; OB/GYNE; ICU SD; oncology, ICN.	Other units are: CCU, nursery, pediatrics, ER; hematology, OB/GYNE, Post-delivery, L&D, Hemodialysis, Burn unit.	

Note: Statistics for comparing the two groups of nurses. *P*-value indicates the test of significance based on Chi-squares for categorical variables. CCU=Cardiac Care Unit; ER=Emergency Room; NICU: Neonatal Intensive Care Unit; L&D= Labor and Delivery; LTCU= Long Term Care Unit; and ICN= Intermediate Care Nursery. *indicates the *p*-value is based on Fisher's exact test due to low count in some cells.

Specific Aim 1

To describe and compare the nurse work environments and nurse job-related outcomes (job dissatisfaction, burnout, and intention to leave) of nurses in a public and a teaching hospital in Saudi Arabia.

Hypotheses

H1.1 The quality of the practice environment in the teaching hospital is better than that in the public hospital.

H1.2 The nurse job outcomes (job dissatisfaction, burnout, and intention to leave) in the teaching hospital are more favorable than those in the public hospital.

To achieve this aim, descriptive and inferential statistics were used to illustrate the frequencies and percentages of the categorical variables, and mean, standard deviation, median, and interquartile range for continuous variables in the entire sample and in each hospital. The significance of the difference between the two groups was tested by chi-square test for categorical variables and two-sample t-test for continuous variables.

Nursing Practice Environment

Table 4 shows the statistical differences between hospitals for all NPE scores indicating the superiority of the teaching hospital. The differences between the two groups were less than one point in each subscale as well as in the composite score. The

scores of the five subscales in the teaching hospitals ranged between 2.88 to 3.15, whereas they ranged from 1.99 to 2.54 in the public hospital. The difference between the overall composite scores was 0.72. The greatest difference between the two groups was observed in the staffing and resource adequacy subscale (difference = 0.94), while the smallest was in the collegial nurse-physician relations subscale (difference= 0.49).

Table 4. Statistics of the practice environment scores based on the entire sample and by hospital

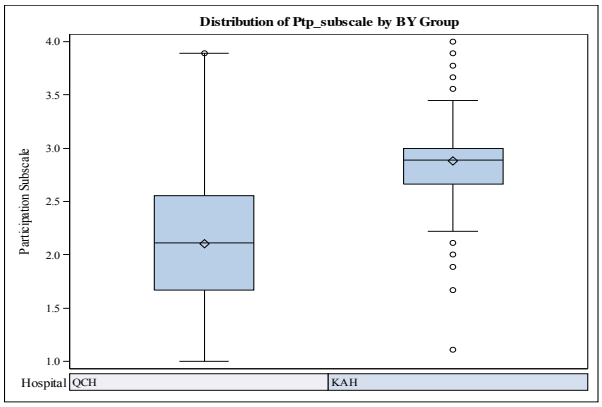
Variable	Entire Sample N= 404	Public Hospital N=195	Teaching Hospital N= 209	*P*-value
Nurse participation in hospital affairs Mean (SD) Median (IQR)	2.52 (0.65) 2.67 (0.89)	2.11 (0.62) 2.11 (0.89)	2.89 (0.43) 2.89 (0.33)	<.0001
Nursing foundations for quality of care Mean (SD) Median (IQR)	2.82 (0.54) 3 (0.60)	2.46 (0.50) 2.50 (0.70)	3.15 (0.34) 3.00 (0.30)	<.0001
Nurse manager ability, leadership, and support of nurses Mean (SD) Median (IQR)	2.70 (0.69) 2.80 (0.60)	2.34 (0.69) 2.40 (1.00)	3.02 (0.51) 3.00 (0.40)	<.0001
Staffing and resource adequacy Mean (SD) Median (IQR)	2.49 (0.73) 2.50 (1.00)	1.99 (0.63) 2.00 (1.00)	2.93 (0.50) 3.00 (0.50)	<.0001
Collegial nurse-physician relations Mean (SD) Median (IQR)	2.80 (0.55) 3.00 (0.67)	2.54 (0.58) 2.67 (1.00)	3.03 (0.39) 3.00 (0)	<.0001

Composite score at nurse level Mean (SD) Median (IQR)	2.66 (0.55) 2.75 (0.67)	2.28 (0.48) 2.33 (0.66)	3.00 (0.35) 2.98 (0.29)	<.0001

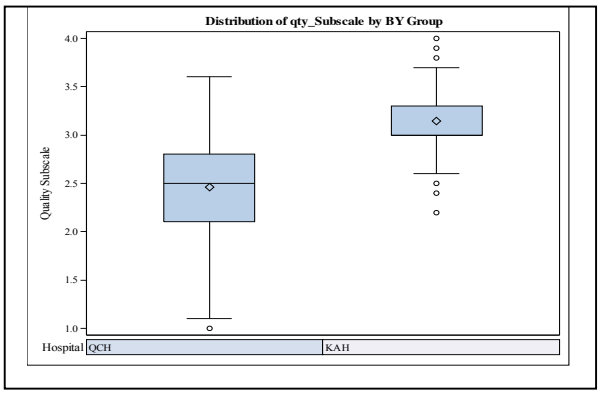
Note. P-value indicates the test of significance based on the comparison of two independent sample test with unequal variance (Welch's t-test).

The variation in the responses from public hospital was greater than that in the teaching hospital. As shown in Table 4 and Figure 7, the distance between the upper and the lower quartile are larger. Moreover, the boxes have larger areas. The interquartile ranges (IQR) in the teaching hospital ranged between 0.0 to 0.5, while that range was between 0.7 to 1 in the public hospital which highlights more variation in the responses and less consistency among participants. The smallest IQR was seen in the boxplot of the collegial nurse-physician relations in the teaching hospital given that this value was equal to zero. Due to that small variance, the graph showed few outliers above and below the IQR. As a default option, SAS software uses the value of 1.5 to multiply it by the IQR to distinguish the extreme values (the outliers) in each side based on the recommendations of Tukey (Tukey, 1977). Due to the relatively large variance of responses in the public hospitals, no outliers were detected. Figure 7 (A to F) also illustrates that the five IQRs of the responses from the teaching hospital were approximately above the level of the IQRs from the public hospital. These results support the first hypothesis (A1) from aim 1.

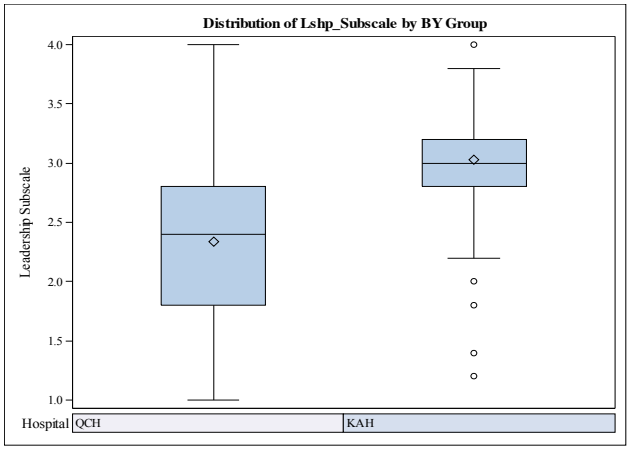
Figure 7. Distribution of practice environment subscale scores in both hospitals. Note: QCH=public hospital, and KAH=teaching hospital.



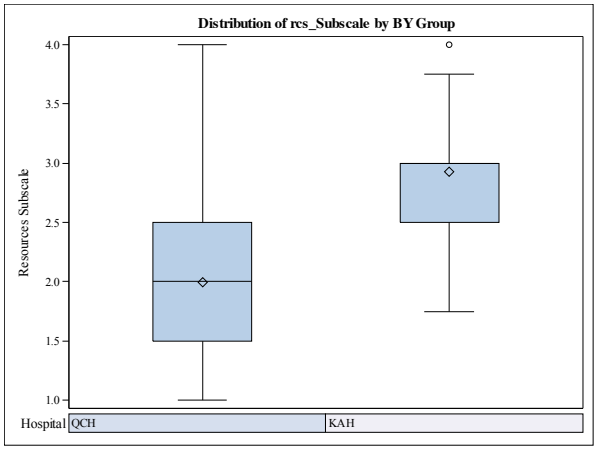
A. The distribution of Nurse Participation in Hospital Affairs scores in both hospitals



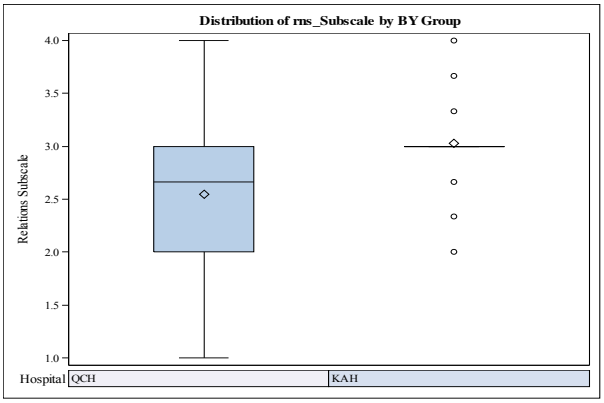
B. The distribution of Nursing Foundations for Quality of Care scores in both hospitals



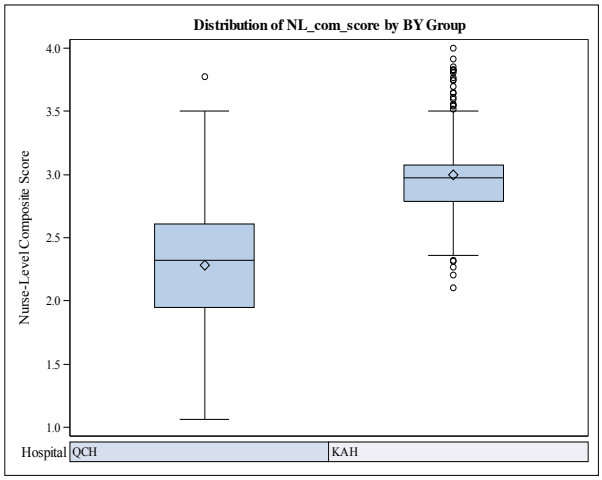
C. The distribution of Nurse Manager Ability, Leadership, and Support of Nurses scores in both



D. The distribution of Staffing and Resource Adequacy scores in both hospitals



E. The distribution of Collegial Nurse-Physician Relations scores in both hospitals



F. The distribution of the overall Composite Scores of the practice environment scores in both hospitals

Nurse Job Outcomes

Job dissatisfaction. Based on the entire sample (n=404), more than third of the participants (38.7%) reported dissatisfaction with their jobs. Among dissatisfied group, 25.95% were little dissatisfied, and 12.72% were very dissatisfied (see Table 4). Examining data from each hospital highlighted different patterns. In the teaching hospital group, the majority (84.2%) were satisfied, whereas in the public hospital the majority (64.7%) were dissatisfied. The lowest percentages were those who reported "very dissatisfied" in the teaching hospital (1.44%), and those who reported "very satisfied" in the public hospital (6.52).

Burnout. In the entire sample, the median for burnout was 27. Categorizing the responses to three levels illustrated that approximately half of the of participants experienced high level of burnout (scored 27 or above). The percentage of nurses who reported high levels of burnout was over three times higher in the public hospital compared to the teaching hospital (81% vs. 26%, p-value <.0001), see Figure 8. A considerable percentage of nurses in the teaching hospital reported low burnout (44%) compared to nurses in the public hospital (10%). A large difference was found between the median of the burnout score which was 18 in the teaching hospital but it reached up to 44 in the public hospital. A significant *p*-value for two sample t-test indicates that the difference in the means of the two groups is statistically significant (39.17 for public and 19.38 for teaching hospital, *p*-value <.0001), see table 5.

The histograms of burnout scores in each hospital, Figure 9, illustrates that the distribution of scores in the public hospital was negatively skewed (skewed to the left). Skewed data in this case was due to the high percentage (81%) of participants in this setting who selected high scores in burnout items (as indicated also by high median). On the other hand, the histogram of burnout scores from teaching hospital was slightly skewed to the right but close to normal. When combining two samples together, the histogram of the entire sample appeared approximately normal, see Figure 10. The difference in the IQR was evident from examining the boxplots of the two samples as shown in Figure 11.

Table 5. Statistics of job outcomes variables displayed based on the entire sample and by hospital

Variable	Entire Sample N= 404	Public Hospital N=195	Teaching Hospital N= 209	*P*-value
Job Dissatisfaction, n (%) (Based on 4 categories)				<.0001
Very Satisfied	27 (6.87)	12 (6.52)	15 (7.18)	
Satisfied	214 (54.45)	53 (28.80)	161 (77.03)	
Little dissatisfied	102 (25.95)	72 (39.13)	30 (14.35)	
Very dissatisfied	50 (12.72)	47 (25.54)	3 (1.44)	
Job Dissatisfaction, n (%)*				<.001
Satisfied	241 (61.32)	65 (35.33)	176 (84.21)	
Dissatisfied	152 (38.68)	119 (64.67)	33 (15.79)	
Burnout, n (%)				<.0001
Low (0-16)	110 (28.13)	18 (9.84)	92 (44.23)	
Moderate (17-26)	79 (20.20)	17 (9.29)	62 (29.81)	
High (27 or over)	202 (51.66)	148 (80.87)	54 (25.96)	

Burnout score*				<.0001
Mean (SD)	28.64 (16.36)	39.17 (14.19)	19.38 (11.96)	
Median (IQR)	27.00 (29.00)	44.00 (21.00)	18.00 (16.00)	
Intention to Leave, n (%)*				0.0017
Yes	101 (25.77)	61 (33.15)	40 (19.23)	
No	291 (74.23)	123 (66.85)	168 (80.77)	

Note. Descriptive statistics (n=404) based on entire sample and by hospital type, p-value indicates the test of significance based on Chi-square for categorical variables (job dissatisfaction, burnout level, and intention to leave). For burnout score (continuous variable), P-value is based on the comparison of two independent sample test with unequal variance (Welch's t-test). *Variables used to address specific aims.

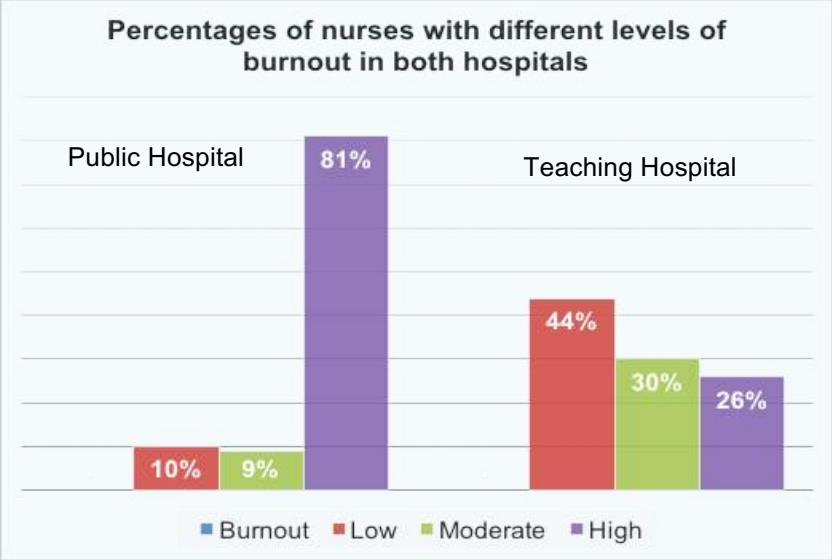
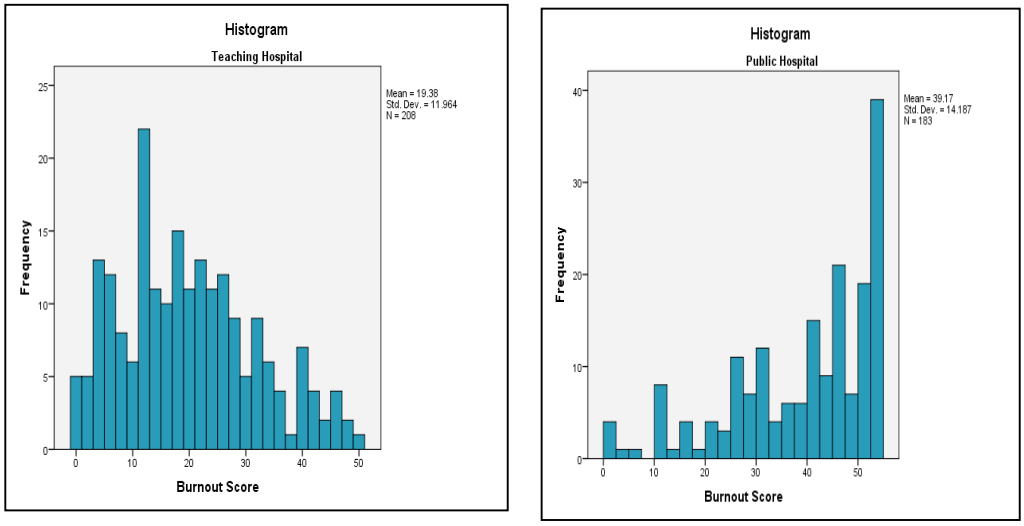


Figure 8. The three categories of burnout level by hospital.



A B

Figure 9. Histogram of the distribution of burnout scores in (A) teaching hospital, and public hospital.

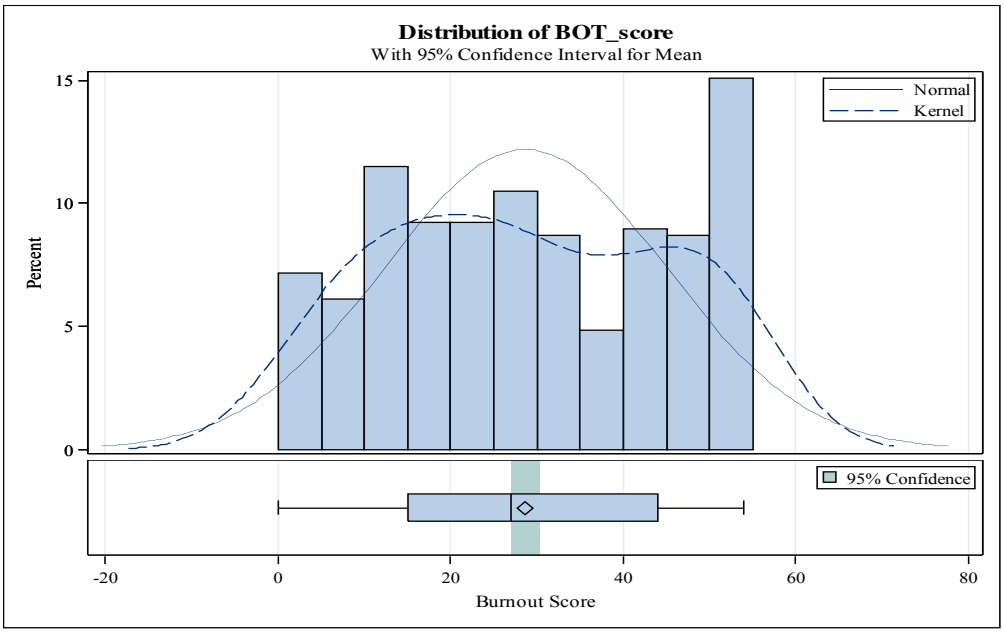


Figure 10. Burnout scores distribution, plot, and statistics based on the entire sample

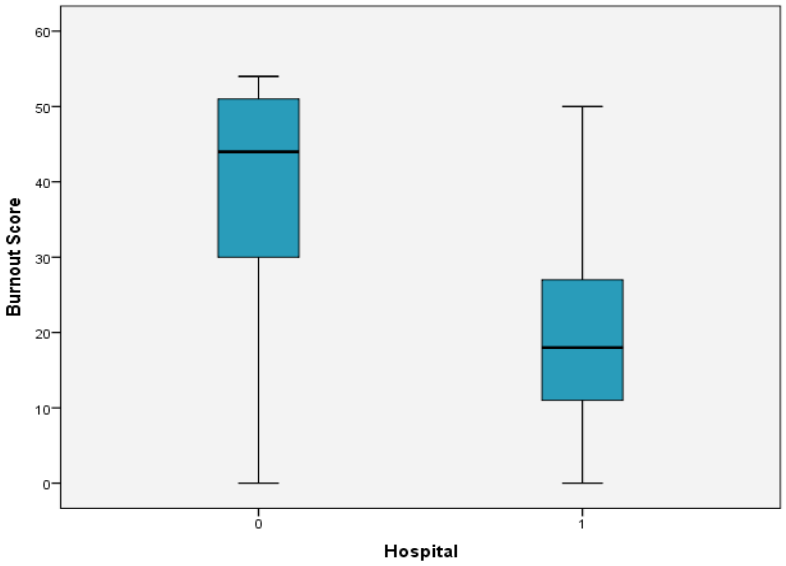
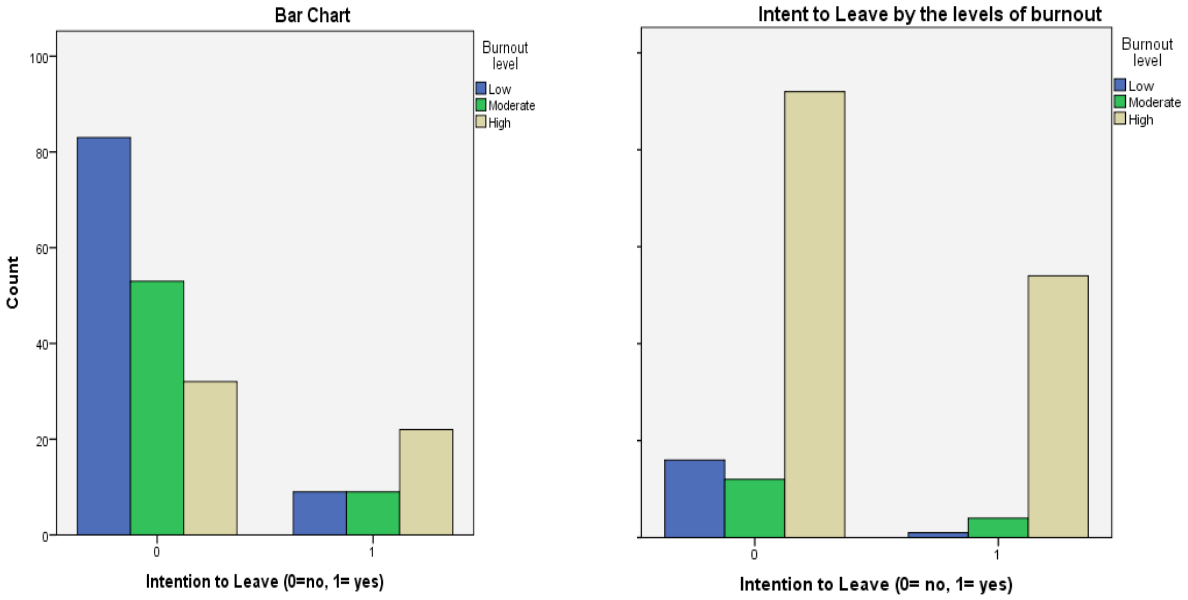


Figure 11. Difference in the overall burnout scores between public (0) and teaching hospital (1)

Intention to leave. A quarter of the participants (26%) had intention to leave their jobs within a year. As expected, the public hospital had a higher percentage of nurses who intend to leave (33%) vs. (19%) in the teaching hospital. The majority in both groups had no intention to leave their jobs a year from now. When examining intention to leave by burnout level in each hospital (see Figure 11 & 12), it was noticed that among those who intend to stay in the teaching hospital, the number of nurses who had high burnout was lower than nurses who had low or moderate burnout. In contrast, that count was different in the public hospital where there was large number of nurses with high burnout though wanted to stay in their jobs. Overall, all nurse job-related outcomes were more favorable in the teaching hospital than in the public hospital, and the differences were statistically significant, see Table 5. These results support the second hypothesis (A2) from aim 1.



A B

Figure 12. Intention to leave by burnout levels in both hospitals: A= teaching hospital, and B= public hospital.

Specific Aim 2

To examine the complex relationship between nursing practice environment, hospital type, and nurse job related outcomes, in the presence of potential confounding factors at the individual level using path analysis.

Hypotheses

H2.1: The quality of the nursing practice environment is associated with nurse job outcomes (job dissatisfaction, burnout, and intention to leave).

H2.2: Job dissatisfaction and burnout mediate the relationship between nursing practice environment and intention to leave.

Correlations among Study Variables

In the entire sample, job dissatisfaction, burnout and intention to leave were all correlated significantly to each other (burnout with dissatisfaction: r=.593, *p*= 0.01; burnout with ITL: r= .341, *p*= 0.01; dissatisfaction with ITL: r= .298, *p*= 0.01). In the public hospital sample, the correlation between burnout and dissatisfaction was moderate (r=.480), between burnout and ITL was low (r=.301), as well as between dissatisfaction and ITL (r= .215, *p*= 0.01 for all correlations). There is a low but significant correlation between Saudi nationals and burnout (r= .244, *p*= 0.01) while age did not have any significant correlation with any job outcome.

In the teaching hospital sample, the correlation between burnout and dissatisfaction and between burnout and ITL were lower than their counterparts in the public hospital (r=.340, and .328 respectively, *p*= 0.01); but it was stronger between dissatisfaction and ITL r= .322, *p*= 0.01. Age had low but significant correlation with ITL, r= -.214, *p*= 0.01. Being Saudi national was correlated significantly, but weakly, with dissatisfaction and burnout (r=.187, *p*= 0.01; and r= .149, *p*= 0.05). Unlike public hospital sample, in this sample, age had low but significant correlation with ITL, r= -.214, *p*= 0.01. Given that the majority of nurses (56.5 %) in this sample were older than 35- year old (vs. 36% in the public hospital sample) may explain this variation. The correlation between the nurse-level NPE and ITL in both hospitals were almost equal r= -.25; p= 0.01. See Appendix F.

Results of Models Testing

Table 5 shows the six models that have been tested prior to selecting the final model. Some models had a significant chi-square statistic denoting that the data does not fit the model adequately. However, the chi-square test is almost always sensitive to models that have sample size of 200 to 300 cases, and therefore, the significant result here doesn't necessarily reflect the actual model fit and other fit indices are required (Kline, 2011). Therefore, several fit indices were explored to make a sound decision. As stated earlier, a good fitted model is one with RMSEA of ≤ 0.05, CFI/TLI ≥ 0.95, SRMR ≤ .08, and WRMR ≤ 1.0. Table 6 shows that model 1 has poor fit (RMSEA= 0.298 with 90% confidence interval of 0.218 to 0.386, and very low TLI of-10.354). Models 2, 3, and 4 had approximately comparable fit indices with a perfect fit as evident by CFI, TLI, RMSEA and WRMR. However, when a model is just-identified (has degrees of freedom= 0), it is often that fit indices show perfect fit which might be inaccurate (Streiner, 2005).

Consulting the existing literature is necessary to determine the conceptual model that has some empirical support from previous research findings. Numerous studies that looked at the relationships among NPE, JDS, BO, and ITL indicate that burnout is a predictor of job dissatisfaction supporting the direction of the relationships in model 3 (Lake, 1998; Van Bogaert et al., 2009; Van Bogaert, Clarke, Roelant, Meulemans, & Van de Heyning, 2010). Therefore, model 3 was used as the basis to develop the final model. All results were compared with the logistic regression analysis (as recommended by Streiner,2005 and Garson, 2014) for building path models. The association between

ITL and hospital type was negative B= -.734, p-value= 0.002), meaning that being in the teaching hospital is associated with lower ITL.

Multicollinearity

The multicollinearity issue was suspected based on the correlation between HT and job dissatisfaction (JDS) and burnout (BO). However, JDS and BO maintained the right direction throughout the three regression equations in the model and their correlations did not exceed 0.7. Model 3 was tested without HT and it indicated that the impact of NPE on ITL was positive in the public hospital (contrary to bivariate regression and descriptive statistics), though this finding was non-significant (p-value= 0.919). The model was tested separately on each group and that problem disappeared.

To investigate further, the relationship between NPE, HT and ITL was analyzed using bivariate regression, see Figure 13.

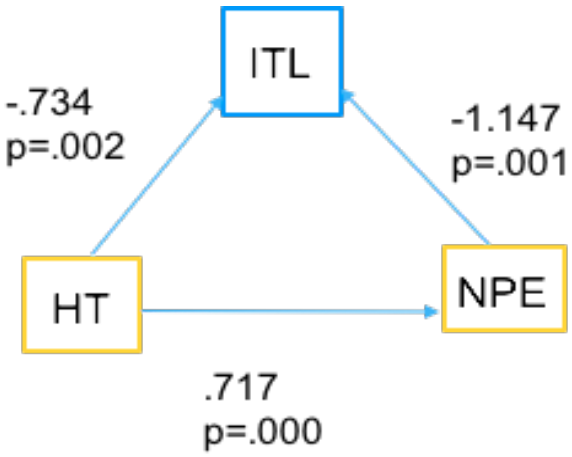


Figure 13. The relationships among intention to leave, nursing practice environment and hospital type.

The relationship illustrated above demonstrates Simpson's Paradox that is a "well-known statistical phenomenon. It is observed when the relationship between two categorical variables is reversed after a third variable is introduced to the analysis of their association" (Tu et al., 2008, p2). The two variables (NPE and HT) both have an impact on the ITL. The biserial correlation between them is 0.655. To confirm that, several regression analyses were performed to detect which variable reversed the direction of the relationship between NPE and ITL. The bivariate regression revealed that adding HT to the regression model reversed the sign. This is due to Simpson's Paradox which is a result of the effect of lurking variables.

To refine the model, HT was removed from the path that goes to ITL, and additional path from HT→ NPE was used (given that the linear regression showed a positive relationship between them, i.e., being in the teaching hospital is associated with higher NPE score, (B= .717, p-value <0.001). The model had a good fit (as shown in table 6 below) and it is consistent with the literature and with findings from the regression analysis.

Table 7 displays the standardized path coefficients of the direct effects of all study variables with their significance as in the final model. It was found that the main independent variables (NPE, JDS, BO, and HT) were significant at least in two of the equations in the model. Among the individual factors, the following variables had at

least one significant effect in the model: age, number of children < 18year old,

nationality, and unit type. See Figure 14 for the diagram of the final model.

Table 6. Summary of the tested models, their fit indices and rationales

Model	Model's Equations	Fit Indices				Findings
		Chi-square	RMSEA (90% C.I.)	CFI/ TLI	WRMR	
Model 1	• ITL= NPE+ BO+ JDS+ HT+ individual factors • BO= NPE+ HT+ individual factors • JDS= NPE+ HT+ individual factors	34.772 DF=1 P-value 0.0000	0.298 (0.218-0.386) P-value 0.000	CFI 0.801 TLI - 10.354	0.755	Poor fit indices. Signs of NPE and HT are not consistent with the bivariate regression.
Model 2* BO → JDS	• ITL= BO+ JDS+ HT+ individual factors • BO= NPE+ HT+ individual factors • JDS= NPE+ HT+ individual factors + BO	0.000 DF=0 p-value 0.0000	0.000 (0.000 - 0.000) P-value 0.000	CFI 1.000 TLI 1.000	SRMR = 0.009	This model is not preferable because it is just identified model (DF=0), fit indices may not be accurate. - The sign of HT is reversed.
Model 3 JDS→ BO	• ITL= BO+ JDS+ HT+ individual factors • BO= NPE+ HT+ individual factors + JDS • JDS= NPE+ HT+ individual factors	0.000 DF=0 p-value 0.0000	0.000 (0.000-0.000) P-value 0.000	CFI 1.000 TLI 1.000	0.005	Model did not improve, but it has empirical support from previous studies. - The sign of HT is reversed.
Model 4 Added correlation between BO and JDS	• ITL= BO+ JDS+ HT+ individual factors • BO= NPE+ HT+ individual factors • JDS= NPE+ HT+ individual factors • Correlate burnout with JDS.	0.000 DF=0 p-value 0.0000	0.000 (0.000 - 0.000) P-value 0.000	CFI 1.000 TLI 1.000	0.008	Adding the correlation between residuals (assuming no directionality) between JDS and BO did not improve the model.
Model 5* Added path from HT to NPE	• ITL= BO+ JDS+ individual factors • BO= NPE+ HT+ individual factors + JDS • JDS= NPE+ HT+ individual factors • HT→NPE	19.617 DF= 16 p-value= 0.2380	0.024 (0.000-0.056) P-value 0.902	CFI= 0.986 TLI= 0.937	WRMR= 0.510	A path was added from HT to NPE (based on logistic bivariate regression analysis). The model is over-identified now and it has a god fit, but the coefficient of HT (in the ITL path) is in a negative

						sign (contrary to logistic regression results).
Model 6* Model 5- HT is deleted from ITL path	• ITL= BO+ JDS+ individual factors • BO= NPE+ HT+ individual factors + JDS • JDS= NPE+ HT+ individual factors	22.101 DF- 16 p-value= 0.1809	0.028 (0.000 - 0.057) p-value= 0.880	CFI= 0.981 TLI= 0.916	WRMR= 0.542	HT was removed from ITL equation. The model is over-identified and has a god fit indices. All path coefficients are in the right direction, consistent with bivariate regression results.

Note. For simplicity, *Individual factors* in the table refer to a group of variables: age, sex, marital status, children <18 y, nationality, education, experience, and unit; BO= burnout, ITL= intention to leave; JDS= job dissatisfaction; HT= hospital type; NPE= nursing practice environment score at nurse level; DF= degrees of freedom; RMSEA= Root Mean Square Error of Approximation; CFI= Comparative Fit Index; TLI= Tucker-Lewis Index; WRMR= Weighted Root Mean Square Residual; SRMR= Standardized Root Mean Square Residual. *Model used Theta parameterization instead of Delta parameterization.

Table 7. Results of path analysis based on modified Model 6 showing the included regressions

ITL as DV	Beta	P-value	BO as DV	Beta	P-value	JDS as DV	Beta	P-value	NPE
NPE	-0.005	0.941	NPE	**-0.210**	0.000	**NPE**	**-0.439**	0.000	0.928
BO	**0.246**	0.006	HT (Teaching H.)	**-0.261**	0.044	**HT (Teaching H.)**	**-0.402**	0.034	p-value
JDS	**0.364**	0.001	JDS	**0.376**	0.000				=0.00
Individual Factors			Individual Factors			Individual Factors			
Sex	-0.180	0.447	Sex	0.116	0.308	Sex	-0.173	0.430	
Age			Age			Age			
20- 25 y	0.484	0.267	20- 25 y	-0.580	0.049	20- 25 y	-0.123	0.773	
26- 30 y	0.579	0.034	26- 30 y	-0.130	0.451	26- 30 y	-0.253	0.329	
31- 35 y	0.611	0.006	31- 35 y	-0.038	0.804	31- 35 y	-0.073	0.740	
36- 40 y	0.126	0.620	36- 40 y	0.207	0.118	36- 40 y	-0.217	0.328	
Marital Status			Marital Status			Marital Status			
Single	-0.263	0.340	Single	0.314	0.161	Single	-0.219	0.479	
Married	-0.100	0.689	Married	0.193	0.356	Married	-0.107	0. 702	
Children < 18 y	-0.156	0.024	Children < 18 y	-0.003	0.954	Children < 18 y	-0.156	0.025	
Nationality (Saudi)	-0.150	0.531	Nationality (Saudi)	0.392	0.005	Nationality (Saudi)	0.614	0.001	
Level of Education			Level of Education			Level of Education		0.518	
Diploma	0.739	0.320	Diploma	0.274	0.645	Diploma	-0.743	0.726	
BSN	0.586	0.430	BSN	0.146	0.805	BSN	-0.401	0.916	
Experience			Experience			Experience		0.724	
Less than 2 y	-0.290	0.497	Less than 2 y	0.517	0.123	Less than 2 y	0.044	0.813	
2- 5 y	-0.284	0.207	2- 5 y	0.046	0.763	2- 5 y	-0.076		
6-10 y	0.101	0.609	6-10 y	0.129	0.305	6-10 y	0.039	0.077	
Unit Type			Unit Type			Unit Type		0.407	
Medical/surgical	-0.080	0.615	Medical/surgical	0.073	0.433	Medical/surgical	0.254*		
ICU	0.152	0.361	ICU	0.107	0.329	ICU	0.141		

Note. Reference group for HT is the "public hospital". For individual factors, the reference groups are: "male" for sex, "41 y or older" for age, "divorced or widowed" for marital status, "non-Saudis" for nationality, "Master's or higher" for education, "more than 10 y" for experience, and "other" for unit type. Bolded numbers are the significant estimates at alpha level of 0.05. * denotes estimates with marginal significant effects.

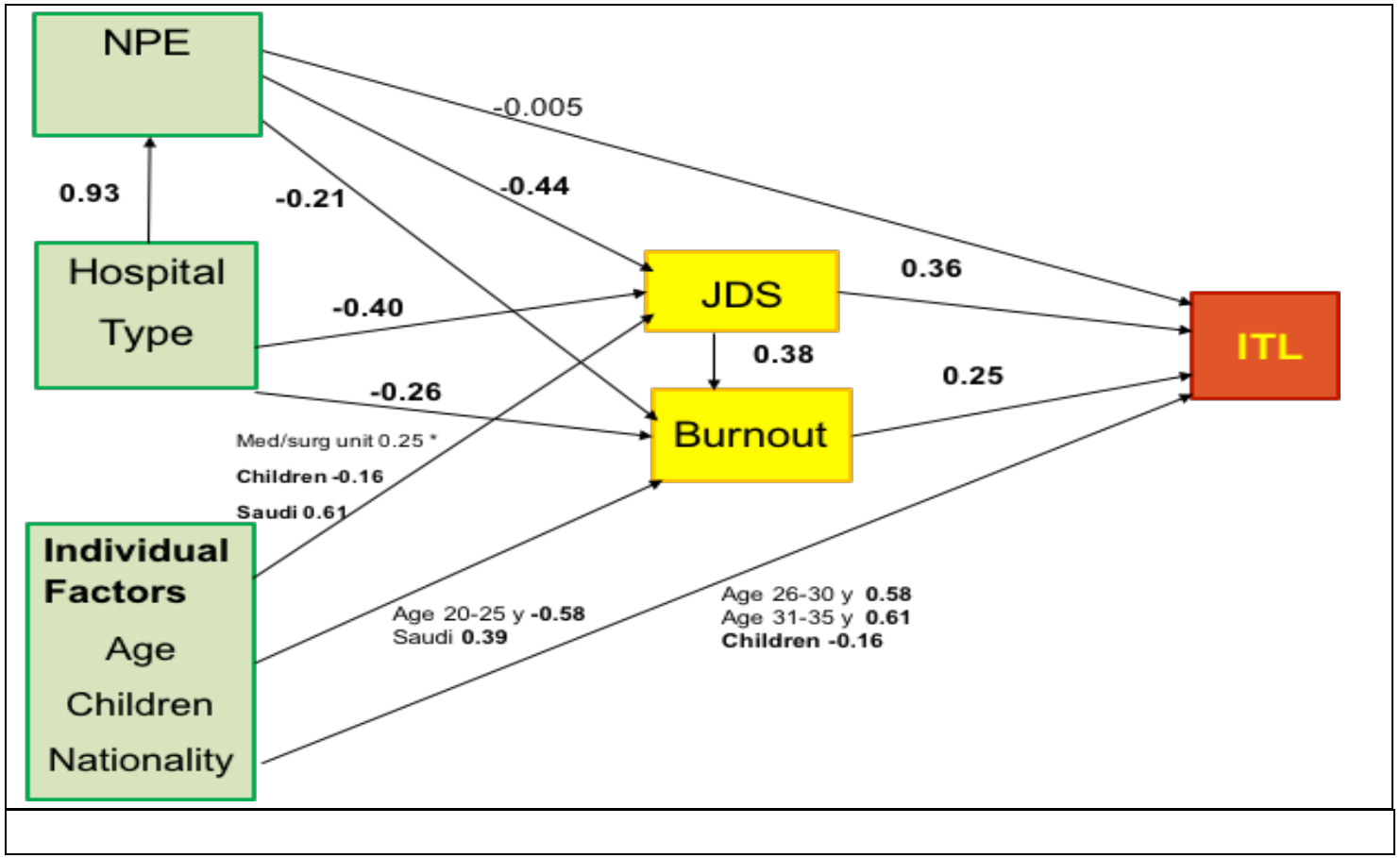


Figure 14. The final model shows the direct effects among endogenous and exogenous variables. Bolded numbers are significant standardized estimates. * denotes the corresponding p-value is marginally significant

The effects of main study variables

As shown in table 7, NPE had a significant negative effect on BO and JDS (Beta= -0.210, p-value <0.001; Beta= -0.439, p-value <0.001 respectively). Although the effect of NPE on ITL was non-significant, its major impact goes indirectly through HT (Beta= 0.928, P-value <0.000). Being in the teaching hospital was significantly associated with lower BO and JDS (-0.261, p-value= 0.044; and Beta= -0.402, p-value= 0.034 respectively).

The effects of individual factors

Among individual factors, ages between 26 and 30 and between 31 and 35 years have significant direct effect on ITL. Having more children aged less than 18years has no significant effect on BO but it seems to significantly reduce JDS (Beta= -0.156, p-value <0.025), and it reduces ITL (Beta= -0.156, p-value= 0.024). This Although this effect is small, this result can be justified by increasing the demands and responsibilities toward raising children and the need to stay in their job to cover expenses. Compared to nurses working in inpatient units (other than ICU), nurses who work in medical/surgical units were more dissatisfied (Beta=0.254, p-value= 0.077). Being Saudi was associated with higher BO and JDS (Beta= 0.392, p-value= 0.005; and Beta= 0.614, p-value= 0.001). In conclusion, the nursing practice environment did not predict intention to leave directly. Adding hospital type, burnout and job dissatisfaction to the path has explained how these variables mediate the relationship indirectly. This supports hypothesis H 2.2.

CHAPTER 5: DISCUSSION

Introduction

This study examined the nursing practice environment, nurse job dissatisfaction, burnout, and intention to leave among nurses working in two types of hospitals in Saudi Arabia: a public and a teaching hospital. The study revealed the superiority of the practice environment and nurse job outcomes in the teaching hospital over the public hospital. In addition, it found that burnout and job dissatisfaction have significant mediating effects in the relationship between practice environment and intention to leave. This chapter discusses the main findings and their implications. The limitations of the study are presented, followed by recommendations for future research.

Principal Findings

Nursing Practice Environment

This study revealed that the teaching hospital had a better environment (all subscale scores > 2.5), while the public hospital had a mixed environment (*Collegial Nurse-Physician Relations* =2.54, and *Nursing Foundations for Quality of Care* =2.46). The pattern of PES-NWI subscale scores was similar for the teaching and the public hospital. In both hospitals, *Collegial Nurse-Physician Relations* and the *Foundations for Quality of Care* yielded the top two subscale scores. Findings from the public hospital indicated that *Collegial Nurse-Physician Relations* subscale was the highest followed by *Foundations for Quality of Care*, whereas in the teaching hospital the order was reversed.

Similarly, in both hospitals, the two lowest scored subscales were *Nurse Participation in Hospital Affairs* and *Staffing and Resource Adequacy*. The latter subscale was the lowest in the public hospital while it was the second lowest in the teaching hospital. Overall, the differences between lowest subscales across hospitals was 0.89 and between the highest subscales was 0.61. Given the theoretical range of 4, these differences translate to one-fifth (i.e., 0.22) and .15 of the maximum variation possible, respectively.

Although the *Nursing Foundations for Quality of Care* in both hospitals rated as one of the top two subscales, the difference between two settings (0.69) might be attributed to some hospital characteristics such as the accreditation status (Joint Commission International (JCI) accreditation in 2009) and the availability of educational and training resource for staff development in the teaching hospital, that are not equally available in the public hospital, given that it passed the national accreditation but not the JCI accreditation.

The low rated *Staffing and Resource Adequacy* subscale in the public hospital might be driven by several factors. First, the relatively low financial resources may play a role as this hospital is funded by the Ministry of Health (MOH), which oversees 414 public hospitals throughout the country. The financial burden on the MOH was aggravated by the outbreak of Middle East Respiratory Syndrome Coronavirus (MERS-CoV), that was first reported in late 2012 in Saudi Arabia (CDC, 2016) and continues to drain considerable resources. Second, because public hospitals provide free healthcare services, they have high admission rates, in general, as compared to other teaching hospitals. According to the MOH data, public hospitals in Saudi Arabia receive the

majority of the admitted cases. Over five years (2010 to 2015), public hospitals, in general, received between 48% to 56% of admissions, while governmental facilities (including teaching hospitals) received between 14% to 17%, and private hospitals received approximately 27% to 38% (MOH, 2015). The high burden on public hospitals may consume more resources. Third, since one of the items in this subscale screens whether there are enough RNs in the workplace, it is expected that the low score in the public hospital might be driven by an inadequate number of RNs as manifested by (1) the low mean of this item, which was 1.95 in the public hospital and 2.84 in the teaching hospital as well as (2) the low percentage of BSNs in the public hospital. In Saudi Arabia, nurses with a BSN are hired as RNs whereas nurses with diploma are staff nurses. There were 37% of participants with BSN as compared to 82% in the teaching hospital. The role of nurses with BSN is somewhat different than that of Diploma graduates since the expectations are higher and usually more leadership tasks are assigned to BSN graduates. In general, low financial resources accompanied by high population demands and insufficient number of RNs are all possible factors that may lead to obtaining low scores in the *resource adequacy* subscale.

As shown in Appendix F, the correlation between NPE subscales and ITL seems contrary to the absence of a direct effect of NPE on ITL. However, the significant high correlation between NPE subscales and JDS and BO reveal an indirect effect. The *resource adequacy* subscale, particularly, is strongly correlated with JDS and BO (r= -0.52, p=0.01; r= -0.62, p=0.01 respectively). The three job outcomes were significantly correlated with all five subscales. Nevertheless, the highest correlations were between

burnout and *Nursing Foundations for Quality of Care,* followed by *Participation in Hospital Affairs,* and *Resource Adequacy (r= -0.64, -0.62, -.062, p*=0.01 respectively). For job dissatisfaction, the highest correlations were with *Participation in Hospital Affairs,* and *Resource Adequacy (r= -0.52, p*=0.01 for both), followed by *Nursing Foundations for Quality of Care (r= -0.49, p*=0.01). It is evident that these three aspects of the practice environment were influential in determining nurse job outcomes which are precursors of intention to leave. Therefore, they disserve high attention from nurse leaders in both hospitals.

Nurse Job Outcomes

Nurse job outcomes for participants in the public hospital were poorer than those in the teaching hospital. In the final model, hospital type was a significant predictor of JDS and BO. Burnout is alarming problem in the public hospital where there was a large number of nurses experiencing high level of burnout but they continue to work and interact with patients. Several factors may have triggered that burnout such as having family responsibilities and challenges in balancing work and family, low resources, and high demands from patients. Nurses' decision to stay could be attributed to low job opportunities especially that the majority of nurses in this hospital were diploma holders who often have less chance for new jobs than BSN gradates.

Despite the differences in ranking the practice environment subscales in the two settings, three major findings were noticed. First, job dissatisfaction, burnout, and intention to leave were correlated with all five aspects of the practice environment. Second, job dissatisfaction and burnout were predictors of intention to leave. This was

consistent with a previous study conducted in a large university hospital in Saudi Arabia but it examined only ICU nurses and found a significant effect of job satisfaction on ITL (Alasmari & Douglas, 2012). Job dissatisfaction and burnout mediated the relationship between NPE and ITL. In addition, the individual factors didn't have strong correlation with ITL. These findings support that the five aspects in the practice environment should become the target for modification if a hospital wants to reduce these negative job outcomes.

As compared to other studies from Saudi Arabia, moderate job satisfaction was reported among nurses working in a public hospital in Riyadh (Al-Ahmadi, 2002). This study's findings provide new evidence about nurse dissatisfaction in Saudi public hospitals. The impact of the individual factors on ITL was examined in Almalki et.al's study (2012) who found that age, marital status, nationality, and educational level were not significant in predicting ITL, although dependent children was significant in that study. In addition, all dimensions of worklife (using the Quality of Work Life instrument) were significantly correlated with ITL (M. J. Almalki, Fitzgerald, & Clark, 2012). The significant correlation between JDS and BO and between BO and ITL were also evident in Alsaqri's study (2014) on a sample of 5 public hospitals in Saudi Arabia. In that study, 56% of nurses had intention to leave their jobs. In the current study, 33% of public hospital nurses intended to leave their job.

Comparison with International Literature

International studies have used the PES-NWI and reported good psychometric properties. The reliability of the PES-NWI in this study sample was comparable to the

first reported reliability indices, obtained from non-Magnet hospitals. Based on the entire sample (n=392), the Cronbach alphas for the scale ranged between .75 to .91. Furthermore, due to the differences in the characteristics of both groups of nurses (i.e. difference in nationality, age, and education), an additional analysis was performed to check the reliability of the instrument by hospital type. In the sub-samples, the Cronbach's alpha for the *Collegial Nurse-Physician Relations* subscale in the public hospital was low (0.68). This subscale often yields a lower reliability index than other subscales due to its low number of items (n=3). All other subscales, as well as the composite score ranged between .73 to .91 indicating that the PES-NWI was a reliable measure in this study sample (see Table 8). The reliability of the Emotional Exhaustion subscale from the Maslach Burnout Inventory for Human Services Survey (MBI-HSS) that was used to measure burnout was calculated. The Cronbach's alpha for the emotional exhaustion subscale was .95 determining a high reliability in the study sample.

As compared to international findings, particularly, the PES-NWI scores from non-Magnet hospitals obtained in 1985-1986 and reported by Lake (2002), all scores from the public hospital were lower while all scores from the teaching hospital were higher than the reference scores. In comparison to more contemporary data from the U.S., Canada, England, Scotland, Germany, and the UAE, the percentage of participants from KSA who were dissatisfied with their current jobs was the highest, after the U.S. and the percentage with high burnout was the highest (51.66%). However, the percentage of nurses who intend to leave, and those who are 30 years or younger, were higher than the U.S. and Canada but lower than some European countries and the UAE (see Table 9).

Table 8. The reliability indices and average scores of the PES-NWI subscales in entire, and sub-samples.

The Practice Environment Scale of the Nursing Work Index								
Subscale	**N of items**	**Cronbach's Alpha**				**Mean (SD)**		
		Lake, 2002	All	Public	Teaching	Non-Magnet Hospitals, 1985-1986 (n=689)	Public Hospital	Teaching Hospital
Nurse Participation in Hospital Affairs	9	0.83	.91	.87	.91	2.44 (0.44)	2.11	2.88
Nursing Foundations for Quality of Care	10	0.80	.89	.81	.90	2.83 (0.36)	2.46	3.15
Nurse Manager Ability, Leadership, and Support of Nurses	5	0.84	.87	.83	.85	2.49 (0.60)	2.34	3.02
Staffing and Resource Adequacy	4	0.80	.86	.74	.79	2.49 (0.62)	1.99	2.93
Collegial Nurse-Physician Relations	3	0.71	.75	.68	.73	2.82 (0.55)	2.54	3.03
Composite	5	0.82	.91	.85	.86	2.65 (0.37)	2.28	3.00

Note. Non-Magnet results and reliability indices are based on data from 1985-1986 as reported by Lake as primary results of PES-NWI developed in 2002.

Table 9. Nurse job outcomes in Saudi Arabia as compared to other countries.

Nurse Job Outcome	KSA	USA	Canada	England	Scotland	Germany	UAE
Percentage dissatisfied with current job	38.67	41.0	32.9	36.1	37.7	17.4	37.5
Percentage with high burnout score	51.66	43.2	36.0	36.2	29.1	15.2	50.2
Percentage intend to leave [a]	25.77 (34.0)	22.7 (33.0)	16.6 (29.4)	38.9 (53.7)	30.3 (46.0)	16.7 (26.5)	53.2 (61.7)

Note. Comparison of nurse job outcomes among sample of nurses in Saudi Arabia and other 6 countries (L. H. Aiken et al., 2001), UAE data (El-Salibi, A; Chadwick, 2012).

a. Numbers in parentheses are the percentages of nurses younger than age 30 who were planning to leave in the next year.

Implications

Findings from this study have important implications for public and teaching hospitals in KSA, as well as nurses, administrators, and policy makers. The PES-NWI composite and subscale scores provide essential knowledge for nurse leaders to help them identify the overall quality of the practice environments and the specific aspects that need improvement. Planning for future interventions will be evidence-based and more efficient if it is informed by research results from the same population. Quantifying each aspect separately is important for better management of resources. The overall scores of NPE establish benchmarks for hospital comparisons and for

quality improvement.

The study findings shed a light on unfavorable nurse job outcomes among nurses in the public hospital. This is a situation that is harmful not only to nurses but also to the quality of care and patient outcomes. It is alarming that four out of five nurses (81%) working in inpatient units experience high burnout. Nurse leaders are urged to mitigate this risk by improving the practice environment and by listening to nurses to find out other underlying reasons. For example, in the analysis of the PES-NWI items in the public hospital, the lowest scored items were: *opportunity for staff nurses to participate in policy decisions, enough staff to get the work done*, and *praise and recognition for a job well done* (1.66. 1.76, and1.84 respectively). Low scores in these items indicates the absence of motivations and isolation of nurses from decision making. Nurse leaders in the public hospital may benefit from this information and improve these aspects by rewards, recognitions, and more involvement of nurses in the decision- making process (Kutney-Lee et al., 2016; Van Bogaert, Van Heusden, Timmermans, & Franck, 2014).

An influential result derived from this study and one necessary for policymakers to be aware of is that nationality had a non-significant effect on intention to leave. Unlike the pre-study expectations, being Saudi or expatriate does not predict whether the nurse plans to leave. Therefore, to overcome shortages in some hospitals, the study findings suggest that it is not harmful to recruit expatriate nurses if they are more available than Saudi nurses. Until the national nurses occupy all vacancies in nursing positions, having expatriate nurses might be a temporary

solution.

Strengths and Limitations

This study is the first to assess and compare nursing practice environments in a public and a teaching hospital in Saudi Arabia using an internationally established instrument (PES-NWI). Although there is a previous study that measured the work environment in Saudi Arabia, it assessed only one governmental hospital and used the AACN healthy work environment questionnaire (Aboshaiqah, 2015). There might be some projects that have used or currently are using the instrument but none has been published yet. In addition, no study has been found in the Middle Eastern countries to use path analysis to link work environment to the three nurse job outcomes simultaneously.

The path analysis technique has some advantages over logistic or multiple regression. It was suitable for this study due to the complex relationships among study variables and the mediating effects of some variables over the others. Path analysis can test complex models with multiple dependent variables and it counts for measurement errors whereas regression assumes perfect measurements. In addition, path models allow for correlations between variables while regression adjusts for variables in the model. Instead of running several models to test the indirect relationships among variables (mediations), path analysis can estimate all direct and indirect effects of parameters in one step. Most importantly, it is possible with path analysis to test a model and discover to what extent the data fit a hypothetical model and then modification indices are provided to improve a model fit (Kline, 2011).

This study considered the current situation of the multinational nursing workforce in Saudi Arabia wherein the majority of nurses are either Arabic-speakers or non-native English-speakers. For that, the study provided both languages (Arabic and English), in either electronic or paper format, to ensure the understanding of all items and to obtain accurate results. This might also involve a limitation if the Arabic translation is not clear and identical to the meaning of the English version. To overcome this problem, the survey was tested by administering it to a sample of nurses from both settings, and from other hospitals as well, to assess the face validity and the content validity of the survey.

One of the strengths of this study is that it assessed a heterogeneous population of nurses that may represent many Saudi hospitals since the multinational aspect of the workforce exists in almost all hospitals in Saudi Arabia. However, it is possible that the practice environments in the two targeted settings in this study might differ from other settings. Findings cannot be generalized to all Saudi hospitals due to its limited number of settings and of due to their limited geographical area (Eastern region of KSA).

Despite that, study findings provided baseline knowledge about the current situation of the quality of nursing practice environments and nurse job outcomes in two different types of hospitals. The huge variation between the two samples might be seen as a weakness, but in fact, the heterogeneity of the entire sample (n=404) has captured a wide range of possible outcomes that can be seen in other settings, and it provided relevant benchmarks for Saudi hospitals. This study did not include any hospital funded by the private sector, which compose about 31% of the total number

of hospitals in Saudi Arabia. In private Saudi hospitals, the practice environments and nurse outcomes might or might not exhibit similar outcomes nor similar pattern of relationships between study variables.

This study looked at one hospital characteristic, the type of hospital whether public or teaching, but did not look at the effect of other factors such as the capacity, the use of technology, and the accreditation status of these hospitals and whether these characteristics have any direct or indirect influence on how nurses perceive their work environments and how that affects their job outcomes. In fact, the teaching hospital is accredited by the JCI, while the public was accredited locally by the Saudi Board for Accreditation of Healthcare Institutions (CBAHI) in 2011. This board aims to promote health care quality and patient safety in all health care facilities in Saudi Arabia. Nevertheless, the standards of the JCI are higher and more challenging than that of the local accreditation board.

This study used a cross-sectional design which has an inherent limitation of not being able to establish causality between dependent and independent variables. Additionally, this study is an observational study. In this type of study, the discovered associations could be spurious associations resulted due to chance or bias (Hulley e al., 2013). However, testing the study model by using path analysis provided evidence that supports the hypothesized relationships.

Recommendations for Future Research

Researchers are encouraged to use a larger sample of hospitals and to include

public, teaching and private sectors with different accreditation status in different geographical regions in Saudi Arabia. Large samples provide more rigorous and generalizable results. Using stratified random samples would also yield a more representative sample that could reflect all variations in the nursing workforce in Saudi Arabia. Including Saudi and expatriate nurses in the survey is necessary because expatriates are an essential part of the workforce in Saudi Arabia and almost all Gulf Council countries. This study may be replicated to test the same variables but by including private hospitals to compare the effect of hospital type on NPE and on nurse job outcomes across hospitals. In addition, investigating the impact of other possible factors that lead to high burnout among nurses is necessary. Nurse-patient ratio could be one contributing factor that is modifiable. Despite the limited budget for public hospitals in general in Saudi Arabia, there is room for improvement when identifying main reasons for high burnout and for negative job outcomes. Moreover, it is imperative to examine the relationship between poor practice environments and patient outcomes in Saudi hospitals. Poor work conditions and poor job outcomes were linked to patient dissatisfaction and threaten patient outcomes (Aiken et al., 2008; Patrician et al., 2010).

In this study the practice environment was considered from the perspective of the entire hospital. However, there was a significant effect of unit type on JDS. Researchers may focus on units to explore the differences in practice environments and nurse job outcomes in different types of units such as medical, surgical, oncology, and critical care units. Researchers may also make comparisons of data among several regions in the country, between urban and rural regions or between two or more countries. The

international collaboration results in validating and generalizing some findings as well as refuting others. The Arabic version of the PES-NWI was tested in this study and showed high reliability. Researchers from Arabic-speaking countries can use the translated version so that Arabic-speaking nurses understand the meaning of items better.

Conclusion

This study demonstrated the differences in the quality of practice environment and nurse job outcomes (job dissatisfaction, burnout, and intention to leave) in two types of hospitals in Saudi Arabia. The teaching hospital had better practice environment while the public had a moderate environment. The poorer environment in the public hospital was accompanied by higher percentages of nurses who were dissatisfied, experienced a high level of burnout, and had intention to leave their current jobs within a year.

The path analysis illustrated how burnout and job dissatisfaction play an important but indirect role in mediating the relationship between practice environment and intention to leave. Burnout and job dissatisfaction were both significant predictors of intention to leave although burnout was a stronger predictor. Most demographic factors (sex, marital status, level of education, and nationality) were not significant in shaping this relationship. However, having more children at age 18 year or younger, and age were significant factors. The tested model showed a good fit with data. Study findings were comparable to findings from international studies. The PES-NWI and its subscales, and the EE subscale of the MBI-HSS were both reliable in this study sample. Study results provide important knowledge to nurses, administrators and policymakers to understand the current situations, plan for improvement, and to create efficient retention strategies.

Appendix A: Table of Evidence

Author, year	Purpose/ research question	Sample, setting	Design & Analysis	Country	Indep. var & measurements	Outcomes var. & measurements	Findings
Aiken et al., 2008	To examine the effect of PPE on nurse & patient outcomes (controlling for staffing and education).	10,184 nurses & 232,342 patients in 168 hospitals (80% adult acute care)	Secondary data analysis (1998-99)	Pennsylvania, USA	Work environment measured by PES-NWI	Dissatisfaction, burnout, intent to leave	Nurses in hospitals with poor WE had higher dissatisfaction, higher burnout, and intention to leave, and more likely to have negative perception of quality of care in their hospitals. The number of nurses who reported poor or fine WE was twice as nurse who reported

							good or excellent WE.
Cortelyou-Ward et al., 2010	To explore the relationship between NPE and nurses' intention to leave.	85 bed-side nurses worked in 13inpatient units in a rural hospital	Exploratory cross sectional study. The survey has an open-ended question about the potential reasons for leaving the job.	USA (rural Florida).	Total score of the NPE (measured by NEW-R) , and its 4 subscales	Intention to leave was measured by Blau's intent to leave scale	The total score and the 4 subscales' score were negatively associated with intent to leave.

Hanrahan et al., 2010	To examine the effect of on nurse burnout.	353 psychiatric nurses working at 67 hospitals	Cross-sectional design. A secondary analysis.	Pennsylvania, USA	was measured by the PES-NWI. Nurse and hospital characteristics	Burnout measured by Maslach Burnout Inventory.	Significant negative relationship between & emotional exhaustion & depersonalization. These relationships remained strong after controlling for nurse and hospital characteristics.
Patrician et al., 2010	To assess nurses' perception of , job dissatisfaction, emotional exhaustion, intent to leave, and the quality of care	955 nurses working n 23 U.S based Army Medical Dep. (AMEDD) hospitals	Cross sectional (mailed surveys)	USA	was measured by PES-NWI	Burnout was measured by Maslach Burnout Inventory (MBI). Job satisfaction, intent to leave, and quality of care were measured by one	Association between job satisfaction, emotional exhaustion, intent to leave, and the quality of care. Army nurses had higher emotional exhaustion than civilian nurses. 27% had job dissatisfaction, and 30% had

						single item for each.	high emotional exhaustion.34% intended to leave within 1 year. 16% rated quality as fair to poor. Nurses who perceived unfavorable had more negative outcomes.
Van Bogaert et al., 2010	To study the impacts of unit level NPE and burnout on nurse outcomes and nurse-assessed quality of care	Sample of 546 nurses from 42 units in 4 hospitals in Belgium	Multilevel modeling	Belgium	NPE (measured by NWI-R) and burnout at the unit level	Job satisfactio n, turnover intention, and nurse assessed quality of care.	The quality of the unit-level was significantly associated with the level of burnout, job satisfaction, turnover intention, and nurse-rated quality of care. Burnout is a predictor of job satisfaction.
Aiken et al; 2011	To assess the impact of the PE on nurses'	98,116 bedside nurses	Cross sectional design.	USA, Canada, UK,	was measured by PES-	Burnout, dissatisfact ion, nurse	Better NPE was associated with lower level of

	burnout, job dissatisfaction, patient reediness for hospital discharge, and quality of patient care.	working in 1406 hospitals in 9 countries between 1999 and 2009.	Analysis based on logistic regression.	Germany, New Zealand, Japan, China, South Korea, and Thailand.	NWI	reported quality of care.	burnout and dissatisfaction. In general, 26-44 % of hospitals were rated as having poor NPE. Nurses from Germany have lower burnout than other countries. In general, the rate of dissatisfaction ranged between 20-60% (the highest was found in Japan).
El-Jardali et al., 2011	To study the impact of NPE on nurses' intention to leave, and to assess the utility and validity of the NWI-R within the	Survey of 1793 RNs in 69 Lebanese hospitals	Cross-sectional survey design, regression analysis	Lebanon	NPE measured by NWI-R	Intention to leave	Low levels of participations, lower scores on career development. Participation, control, career development were crucial to attrition on nurses in

	context of the EMR.						Lebanon. Career development and level of participation were strongly associated with intention to leave the hospital.
Nantsupawat et al., (2011)	To examine the impact of nurse NPE and staffing on nurse outcomes	Sample of 5,247 of bedside nurses in Thailand	Secondary data analysis of the 2007 Thai Nurse Survey. Multivariate logistic regression analysis.	Thailand	NPE (PES-NWI); Staffing	Burnout, dissatisfaction, and the quality of nursing care.	High level of burnout (41%), and dissatisfaction (28%). The odds of reporting high emotional exhaustion increased by 2% for each additional patient to the workload.
Aiken et al., 2012	To examine the impact of staffing and on nurse and patient outcomes.	33,659 nurses & 11,318 patients in 488 acute care	Cross-sectional surveys	12 European countries, and the US (CA,	Nurse staffing, and.	Nurse outcomes (Burnout, dissatisfaction, intention	Quality of care was significantly associated with positive nurse outcomes, patient

		hospitals in 12 European countries. 27, 509 nurses & > 120,000 patients in 617 hospitals in USA.		PA, NJ, FL)		to leave, patient safety, quality of care). Patient outcomes (satisfactio n overall, and with nursing care, willingnes s to recommen d hospitals).	satisfaction, safety and quality of care. Over half of nurses reported lack of confidence in the ability of hospital management to solve patient care problems. The majority (78%) of nurses in Greece reported burnout, 56% dissatisfied with job, 49% had intention to leave, 47% rated poor to fair quality of care, & 17% rated poor safety. 49% of participating nurses in Finland hospitals had intention to

							leave. The lowest intention to leave was in USA (14%).
Klopper et al. (2012)	Practice environment, job satisfaction and burnout in critical-care nurses	Stratified sample of 935 nurses in private hospitals and national referral hospitals	Stratified sampling	South Africa	Inadequate staffing and resource	Burnout	Low wages, lack of advancement opportunities increase burnouts
Hinno et al., (2012)	To examine the relationship between NPE and nurse reported outcomes	869 nurses (535 from Finland, and 334 from Netherland).	Comparative cross sectional survey. Logistic regression analysis.	Finland and Netherland	NPE was measured by the NWI-R	Intent to leave, adverse indices affecting nursing and quality of care	significant relationship between practice environment characteristics and the occurrence of adverse incidents to RNs in both countries. Nurses in Netherland rated their NPE more positively.

Lang et al. (2012)	Comparison of nurse burnout across army hospital practice environment	105 nurses deployed to Iraq by the USA	Non-experimental cross-sectional design	USA	NPE and extended work schedule	Emotional exhaustion	Burnout was common across army hospital settings
Lansiquot et al., 2012	To explore the turnover intention among hospital based RNs.	A sample of 301 RNs in 4 Eastern Caribbean countries	Descriptive correlational design, self-reported questionnaires	4 Eastern Caribbean countries	NPE measured by PES-NWI	Intention to leave after 2 years and 5 years	Less positive environment (mean<2.5). Minimal participation in hospital affairs, the highest aspect was the MD/RN relations.
Liu et al., 2012	To study the relationship between & job satisfaction, burnout, & intention to leave	1104 staff nurses from 89 medical, surgical, & ICUs in 21 hospitals in Guangdong	Cross-sectional design. Stratified convenience sampling	China.	was measured by the PES-NWI	Nurse outcomes (Burnout, dissatisfaction, intention to leave, patient safety, quality of care).	Mean of PES-NWI was >3 for foundations of quality of care, leadership support, & RN/MD relations. 37 % of nurses had high burnout, 54% had job

						Patient outcomes (satisfaction overall, and with nursing care, willingness to recommend hospitals). Burnout, Job satisfaction and intention to leave were measured by single item for each.	dissatisfaction. Nurses in better had lower job dissatisfaction and burnout. Improving nurses' work environments from poor to better was associated with a 50% decrease in job dissatisfaction and a 33% decrease in job-related burnout among nurses.
Van Bogaert et al, (2012)	Impacts of unit level nurse practice environment, workload and burnout on	357 nurses from 34 acute nursing units in the Dutch	Cross-sectional design, survey	Belgium	unit level nurse practice environment, workload	Burnout	Negative perception of work environment, huge workload. Nurse outcomes

	nurse outcome	speaking regions of Belgium					are more predicted by relations in the work place and management than job and quality of environment
Van Bogaert et al., (2013) b	Nurse practice environment, workload, burnout, job outcomes and care quality in psychiatrist hospitals	Sample of 357 RNs in Belgium	Cross-sectional survey, structural equation model	Belgium	NPE, workload	Burnout, satisfaction, and care quality	Improved relations in workplace and good NPE In psychiatrist hospitals lead to improved outcome among nurses

Cheng et al., (2013)	To measure the predictability of cultural orientation on organizational commitment, perception of practice environment and intention to leave	195 Asian nurses working at least six months in US hospitals completed the survey.	Cross-sectional postal survey design.	USA_Asian nurses	Cultural orientation	Commitment, intention to leave, perception of quality of NPE	Cultural orientation showed positive predictable effects on organizational commitment and perception of practice environment, but had negative predictability for intention to leave.
Choi et al., (2013)	Attributes of nursing work environment as predictors of RNs job satisfaction and intent to leave	1271 RNs in Hong Kong	Cross-sectional survey	Hong Kong	Professionalism, co-worker relationships, management staff, staffing and resource	Job satisfaction and intention to leave	Attributes of nursing work environment have a significant bearing on nurses' job satisfaction and intention to leave
Coetzee et al., (2013)	To examine the nurse	Survey of 1187 nurses	Cross sectional	South Africa	NPE, staffing	Job dissatisfact	54 % had intention to

	NPE, staffing, nurse reported quality of care and patient safety	in 55 private and 7 public hospitals	survey			ion and intention to leave.	leave, and 52% rated the NPE as poor. Huge workload, poor safety, high burnout was strongly related to inadequate staffing
Gabriel et al., (2013)	to assess the impact of the PES-NWI subscales on three nurse outcomes at multiple levels.	699 full time RNs in 79 units and 9 branches of a hospital system in Midwestern, USA	Multilevel factor structure of the PES-NWI	USA	NPE	Emotional exhaustion , dissatisfact ion, and intention to leave	Certain practice environments are more crucial than others. Staffing adequacy was associated with nurse outcomes at the individual and unit level.
Heinen et al., (2013)	To identify factors associated with nurses' intention to leave their profession	2025 surgical and medical units in 385 hospitals in Europe.	Cross-sectional analysis of survey data, burnout	10 Europea n countries	NPE, nurse characteristi cs, and staffing.	Intent leave the profession.	Between 5-17% of nurses had intention to leave. Main reasons: NPE, female gender, burnout, working full-time, and older

							age.
Kutney-Lee et al; 2013	To compare the change in the rate of burnout, dissatisfaction, and intention to leave to the change in work environments in a panel of hospitals	137 hospitals.	Longitudinal study (2 stages panel design). Hospital level data were based on surveys on 1999 and 2006.	USA	was measured by the PES-NWI	Nurse burnout, job dissatisfaction, and intention to leave.	The percentage of nurses reported burnout, dissatisfaction, and intention to leave in 2006 was lower that of 1999. Strong negative relationship between the quality of NPE and the measured nurse outcomes.
Li et al. (2013)	Turnover intention among hospital based registered nurses	A sample of 301 RNs in Eastern Caribbean countries	Descriptive correlational design, self-reported questionnaires	Eastern Caribbean countries	Less positive environment, minimal participation in hospital affairs, leadership	Turnover	Dimensions of work environment were identified as reasons for nurses' turnover.

Lynn et al. (2013)	Role of work environment in keeping newly licensed in nursing	40% of all nurses licensed in 2006 in the USA	Correlational survey	USA	Negative perceptions of the work environments	Job commitment, intention to leave	Job difficulty and demand were significantly related to lower commitment
Shang et al., (2013)	To investigate whether hospital characteristics are associated with specific self-reported nurse outcomes.	Sample of 4047 oncology nurses from 282 hospitals in 3 states (PA, CA, NJ).	Secondary data analysis, logistic regression model	USA	Hospital size, work environment	Burnout, job satisfaction, intention to leave and nurse reported care quality.	Oncology nurses reported better outcomes than medical-surgical nurses. Work environment was associated with nurse outcomes.
Van Bogaert et al., (2013) b	To study the mechanism by which NPE and work characteristics affect nurse outcomes.	1201 nurses in acute care hospitals in Belgium	Cross sectional survey, and SEM	Belgium	NPE dimensions.	Job outcomes and quality of care.	Dimensions of NPE affect workload, decision latitude, and social capital, which they then affect nurse job outcomes

							variables and nurse ratings of quality of care.
You et al., 2013	To evaluate the effect of on nurse outcomes, quality & safety of care, and patient experience of care	9688 nurses from 20 hospitals in China & 6494 patients	Cross-sectional, surveys. Multi-level model for analysis	China	was measured by the PES-NWI	Burnout measured by emotional exhaustion in MBI, quality measured by 2 items, patient experience measured by modified version of the CAHPS Hospital Survey.	38% of nurses had high burnout, & 45% were dissatisfied with their jobs (76% due to salaries, 50% due to choose of nursing as a career), 61% rated as poor or fair, 36% rated safety low, and 29% rated quality as fair or poor. 54% of patients rated hospitals high. Mean PES score=3.3.
Ganz & Toren, 2014	To measure the , nurses' retention, job satisfaction	610 nurses in acute care & intensive care units in	Cross-sectional, descriptive, correlational	Israel	Changes between 1999 and 2006. It was	Nurse retention was measured	Moderate quality, and moderate job satisfaction. The

		7 hospitals in Israel.	study. Multiple regression		measured by the PES-NWI	by employment experience & one item: (I intend to leave within 12 months). Job satisfaction was measured by Nurse Job Satisfaction Questionnaire of the Hadassah org.	lowest significant score was the *staffing & resource adequacy* subscale. From this sample, 9% had intention to leave. Statistically significant correlation between staffing and resource and job satisfaction ($r = .64$, $p < .01$); and between it and intention to leave ($r = .35$, $p < .01$). Appropriate staffing differed based on hospital size and location.

Lee et al., (2014)	To examine the influence of NPE (at hospital level) on job satisfaction and turnover intention	Sample of 3096 nurses working in 185 general inpatient ward at 60 hospitals in Korea	Multilevel logistic regression modelling.	Korea	NPE	Job satisfaction, and turnover intention	Adequate staffing, good doctor-nurse relationship, standardized nursing process. no hospital-level variable from the KGU-NWI was significantly related to nurses' turnover intention. Favorable practice environments are associated with job satisfaction among nurses

Leone et al., (2015)	Work environment issues and intention to leave	Stratified random sample of 2235 nurses in 144 nursing units in 31 hospitals.	Survey, multilevel multivariate regression analysis	Portugal	NPE, workload, age, education	Intent to leave	Intention to leave was higher among nurses with specialty degree, and those who worked in a poorer work environment.
Friese, 2005	To compare the WE and nurse outcomes in oncology units in magnet and non-magnet hospitals (7 magnet, 15 non-magnet)	1,956 RNs, 305 of them are oncology nurses.	Secondary analysis of data from 1998	USA	Work environmen t	Burnout, dissatisfact ion	Oncology nurses in Magnet hospitals had significantly lower emotional exhaustion than those working in non-magnet hospitals. The highest subscale was RN/MD collegial relations. Those reported high relations also were twice as likely to report high quality care.

Gardner et al., 2007	To examine the relationship between PPE & nurse intention to leave, turnover, patient satisfaction, and hospitalization rate.	199 RNs in 56 dialysis facilities.	Descriptive correlational design	USA	Nursing practice environment	Intention to leave was measured by one item "Do you plan to leave your job in the next year". Turnover rate data obtained from HR dep. Patient satisfaction	Overall PES= 3.09 10 % of participants had intention to leave. PES score was significantly related to intention to leave. Turnover rate= 9%. This was significantly correlated with staffing adequacy subscale score (r=.36). Significant negative relationship between PPE & patient hospitalization days.

Thomas-Hawkins et. al, (2003)	To examine the perception of hemodialysis nurses about their WE, and their intention to leave.	383 staff nurses working in freestanding hemodialysis facilities	Cross sectional Surveys	USA	WE assessed by NWI-R; PES-NWI was also used during the analysis	Intent to leave assessed by one item: Do you plan to leave your job in the next year?.	The majority of nurses (80%) reported good work relationships. However, they reported low opportunities to participate in policy decisions, and half of them had low control over practice (autonomy). 19 % had intention to leave their jobs. Majority of staff reported inadequate staff and resource.

Note. NWI-R= Revised Nursing Work Index; OC= organizational commitment; MBI= Maslach Burnout Inventory; PES-NWI= Practice Environment Scale of the Nursing Work Index; = practice environment; RN= registered nurse; SEM= structural equation model; NPE= nursing practice environment.

Appendix B: Study Survey

The impact of Nursing Work Environment on Nurse Job satisfaction, Burnout, and Intention to Leave

دراسة تأثير بيئة العمل على الرضا الوظيفي، الإستنزاف العاطفي، والرغبة في ترك العمل بالنسبة للممرضين والممرضات

If you answered this survey electronically in the last 2 weeks, please do not answer here again

إذا كنت قد جاوبت هذا الاستبيان بشكل الكتروني في خلال الاسبوعين الماضيين الرجاء عدم الإجابة مجدداً

You are requested to participate in research that will be supervised by … and Ms. Zainab Ambani in …. This study is about **the impact of nursing work environment on nurse job satisfaction, burnout, and their intention to leave job.** Findings from this study will help us understand the relationships among these factors and will assist in finding ways to improve nurses' current situation and their relationships with work environment. Your participation is voluntary and you have the right to not complete this survey without giving any reason and this will not affect your current or future employment or medical care. You can choose to agree or disagree. Your acceptance to complete the survey will be interpreted as your informed consent to participate.	أنت مدعو للانضمام طواعية لدارسة بحثية سوف تشرف عليها الأستاذ.... و زينب أمباني في مستشفى ..... هذه الدراسة تهدف إلى دراسة تأثير بيئة العمل على الرضا الوظيفي، الإستنزاف العاطفي، والرغبة في ترك العمل بالنسبة للممرضين والممرضات. نتائج هذه الدراسة ستساهم في فهم العلاقة بين هذه العوامل وستساعد في ايجاد طرق مناسبة لتحسين وضع الطاقم التمريضي و بيئة العمل. إن مشاركتك في هذه الدراسة طوعية ولك الحق التام في عدم قبول تعبئة الاستبيان أو الانسحاب في أي وقت تشاء بدون ابداء الاسباب ولن يؤثر ذلك على وضعك الوظيفي ولا على العناية الطبية المقدمة لك حالياً أو في المستقبل. عليك الاختيار موافق / غير موافق في الأسفل. قبولك تعبئة هذا الاستبيان يعتبر بمثابة إقرارك بالموافقة على المشاركة في هذا البحث. ستبقى الردود على الأسئلة سرية وضمن الحد الادنى من الخطورة بسبب عدم طلبنا لإبداء اسمك أو أي معلومات سرية تخصك.

Your responses will be kept anonymous . The risks of compromising privacy, confidentiality, and/or anonymity are considered to be 'less than minimal', because we do not ask for your name or any identifiable information. **If you have any question about the research:** Contact Ms. Zainab Ambani, Email: ainab.ambani5@gmail.com, or call or send a message on Whats App on 0537131651 Or contact Ms….. Address: King Saud bin Abdulaziz University for Health Sciences, College of Nursing, Saudi Arabia, Mobile: 0547000014	إذا كان لديك أي اسئلة حول هذا البحث، يرجى التواصل مع الأستاذة: زينب أمباني. ايميل: zainab.ambani5@gmail.com أو الاتصال او التواصل على الواتس اب على الرقم ٠٥٣٧١٣١٦٥١ أو بالتواصل مع الأستاذة ..... العنوان: جامعة الملك سعود بن عبد العزيز للعلوم الصحية – كلية التمريض- المملكة العربية السعودية جوال: ٠٥٤٧٠٠٠٠١٤
☐ Agree to participate ☐ Disagree to participate	☐ موافق على المشاركة ☐ غير موافق على المشاركة

PLEASE ANSWER ALL THE FOLLOWING QUESTIONS **الرجاء الاجابة عن جميع الأسئلة التالية**

have worked in my current unit for at least 6 months **☐Yes** **☐No**	عملت في قسمي الحالي لمدة لا تقل عن ٦ أشهر ☐ نعم ☐ لا
I work as a bedside nurse (Interact with patient directly) **☐Yes** **☐No**	أعمل كممرضة بحيث أتعامل مع المرضى بشكل مباشر **(Bedside nurse)** ☐ نعم ☐ لا

Gender ☐ Male ☐ Female	الجنس ☐ ذكر ☐ أنثى
Age ☐ 20- 25 ☐ 26-30 ☐ 31- 35 ☐ 36- 40 ☐ 41- 45 ☐ Older than 45 years	☐ ٢٦-٣٠ ☐ ٣١- ٣٥ العمر ☐٢٠- ٢٥ ☐أكبر من ٤٥ سنة ☐ ٣٦- ٤٠ ☐ ٤١- ٤٥
Marital status : ☐Single ☐Married ☐Divorced or widow	الحالة الاجتماعية ☐ آنسة/عازب ☐ متزوج/متزوجة ☐ منفصل أو أرمل (منفصلة أو أرملة)
Nationality: ☐Saudi ☐ From other Arab countries ☐ Other Asian countries ☐ From Western countries	الجنسية ☐ سعودي/ة ☐ من دولة عربية أخرى ☐ من دولة أسيوية ☐ من دولة غربية
Number of Children who are less than 18 year old: ☐None (0) ☐One ☐ Two ☐Three or more	هل لديك أطفال بعمر ١٨ سنة او اقل ☐ لا يوجد ☐ ١ ☐٢ ☐٣ أو أكثر
Level of Education: ☐Diploma ☐BSN (Bachelor of Science in Nursing) ☐ Master's or higher	التعليم ☐ دبلوم ☐ بكالوريوس ☐ ماجستير أو أعلى
Years of Experience: ☐ less than 2 years ☐ 2-5 years ☐ 6-10 years ☐ more than 10 years	عدد سنوات الخبرة ☐ أقل من سنتين ☐ ٢- ٥
In what unit you are working in:	

☐Medical/surgical (or Med-Surg Unit) ☐ Intensive Care Unit ☐Other, (please specify)_____ **Job classification** ☐ Staff nurse ☐ Nurse Aid ☐other (please specify)_____	سنوات ☐ ٦- ١٠ سنوات ☐ أكثر من ١٠ سنوات في اي قسم تعمل/ تعملين؟ ☐ باطنية / جراحة ☐ وحدة العناية المركزة ☐ قسم آخر (الرجاء التحديد) ..... الوظيفة ☐ Nurse Aid ☐ Staff nurse وظيفة أخرى (الرجاء التحديد) .....

بيئة العمل

Practice Environment

For each item, please indicate the extent to which you agree that the item is PRESENT IN YOUR CURRENT JOB.

Indicate your degree of agreement by selecting the appropriate answer.

الرجاء بيان رأيك فيما إذا كانت العناصر التالية متوفرة في بيئة عملك الحالية. الإجابات تتراوح بين موافق بشدة (ان هذا العنصر متوفر) إلى معارض بشدة (أي هذا العنصر غير متوفر مطلقاً في بيئة عملي).

Items / المواصفات	**Strongly agree** موافق بشدة	**Agree** موافق	**Disagree** غير موافق	**Strongly Disagree** معارض بشدة
1. Adequate support services allow me to spend time with my patients (support services such as nurses' aides, unit assistants, patient escort, transport of test samples to the lab,...etc.) يوجد خدمات دعم كافية تسمح لي -الممرضات المساعدات، موظفي بقضاء الوقت مع مرضاي (خدمات الدعم مثل استقبال، عمال لنقل المرضى و لنقل عينات المختبر،... الخ)				
2. Physicians and nurses have good working relationships العلاقات المهنية بين الأطباء والممرضين/ الممرضات جيدة				
~ 3. A supervisory staff that is supportive of the nurses (supervisory staff such as: shift nurse in charge, nurse manager, nurse administrators and supervisors). يوجد كادر إشرافي يدعم/ يساعد الممرضات - الكادر الإشرافي مثل: رئيسة الشفت، رئيسة الممرضات، إداريات و) (رؤساء التمريض				

~ 4. Active staff development or continuing education programs for nurses هناك برامج نشطة للتعليم المستمر و لتطوير الأداء للممرضات				
5. Career development/clinical ladder opportunity. ~ هناك فرص للتطور المهني و التدرج بالسلم الوظيفي				
6. Opportunity for staff nurses to participate in policy decisions (policies such as overtime policies, patient to nurse ratio, and safety protocols,..etc). - هناك فرصة للممرضات/ الممرضين للمشاركة في قرارات وضع السياسات (السياسات مثل: قوانين ساعات العمل الإضافي، قوانين عدد المرضى) بالنسبة للممرضات، قوانين الأمان				
7. Supervisors use mistakes as learning opportunities, not criticism. - المشرفين/ المشرفات يستخدمون الأخطاء كفرصة للتعلم و ليس لتوجيه الانتقاد				
~8. Enough time and opportunity to discuss patient care problems with other nurses. يوجد وقت كافي و فرصة لمناقشة مشاكل العناية بالمرضى مع باقي الممرضين والممرضات				
9. . Enough registered nurses (nurses with bachelor degree) to provide quality patient care. يوجد عدد كافي من الممرضات (حملة البكالوريوس) لتقديم رعاية عالية				

الجودة للمرضى				
10. A nurse manager who is a good manager and leader رئيس /رئيسة الممرضات هي قيادية وإدارية جيدة				
11. A chief nursing officer who is highly visible and accessible to staff. رئيسة قسم التمريض متواجدة بكثرة و سهل الوصول لها من قبل الكادر التمريضي				
12. . Enough staff to get the work done. يوجد كادر كافي لإنجاز العمل المطلوب				
13. Praise and recognition for a job well done. يوجد ثناء و تقدير للأداء المتميز				
14. High standards of nursing care are expected by the administration. تتوقع الإدارة تقديم مستوى عالٍ من الرعاية التمريضية				
15. A chief nursing officer equal in power and authority to other top level hospital executives. رئيسة قسم التمريض لها نفوذ (قوة) و سلطة مساوية لما لبقية الإدارات التنفيذية العليا الموجودة بإدارة المستشفى				
16. A lot of teamwork between nurses and physicians. هناك الكثير من العمل الجماعي بين طاقم التمريض و الأطباء ~				

17. There are opportunities for advancement. توجد فرص للتطور و الترقي				
18. A clear philosophy of nursing that pervades the patient care environment (Philosophy of nursing means: a mission, vision, and a guide of principles for the delivery of nursing services). هناك فلسفة واضحة للتمريض تعم بيئة رعاية المريض فلسفة تعني وجود رؤية و رسالة واضحة للعناية التمريضية و مجموعة (قوانين تنظم الخدمات التمريضية)				
19. Working with nurses who are clinically competent. توجد فرصة للعمل مع ممرضين/ ممرضات ذوي كفاءات عملية (اكلينيكية)				
20. A nurse manager who backs up the nursing staff in decision making, even if the conflict is with a physician. مديرة/ مديرة التمريض(nurse manager) يدعم/ يحمي قرارات موظفيه حتى لو كانت مخالفة لآراء الأطباء				
21. Administration that listens and responds to employee concerns. الإدارة تستمع وتستجيب لإهتمامات / مشاكل الموظفين				
22. An active quality assurance program يوجد برنامج نشط لضمان الجودة				

23. Staff nurses are involved in the internal governance of the hospital (e.g., practice and policy committees). كادر التمريض يشارك بالإداره الداخلية للمستشفى (مثل: لجان الممارسة المهنية ولجان وضع السياسات الإدارية و الإكلينيكية الخاصة بالرعاية الصحية الآمنة)				
24. Collaboration (joint practice) between nurses and physicians. هناك تعاون بين فريق التمريض والأطباء				
25. There is a preceptor program for newly hired registered nurses. يوجد (preceptor program) للإشراف على الممرضات حديثي التعيين برنامج تدريبي				
26. Nursing care is based on a nursing, rather than a medical, model. الرعاية التمريضية مبنية على نموذج تمريضي وليس طبي				
27. Staff nurses have the opportunity to serve on hospital and nursing committees الممرضين/ الممرضات لديهن الفرصة للمشاركة في لجان المستشفى و لجان التمريض				
28. Nursing administrators consult with staff on daily problems and procedures. التمريض يستشيرون الممرضات و الممرضين بشأن الإجراءات و مسؤولو المشاكل اليومية				

29. Written, up-to-date nursing care plans for all patients. خطة الرعاية التمريضية م				
30. Patient care assignments that foster continuity of care, i.e., the same nurse cares for the patient from one day to the next. مهام رعاية المرضى توزع على الممرضات بحيث تعزز استمرارية الرعاية (مثل: الممرض نفسه يقدم الرعاية لنفس المريض من يوم لآخر)				
~ 31. Use of nursing diagnoses نستخدم التشخيص التمريضي				

JOB Satisfaction الرضا الوظيفي

How satisfied are you with your current primary job? **ما مدى رضاك عن عملك الحالي**

Very Satisfied	Satisfied	Little Dissatisfied	Very dissatisfied
☐	☐	☐	☐
راضي جداً	راضي	غير راضي بعض الشيء	غير راضي مطلقاً

BURNOUT الإستنزاف العاطفي

The purpose of the following questions is to discover how staff members view their job, and their reactions to their work.
On the following section, there are 9 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, select Never. If you have had this feeling, indicate how often you feel it by selecting the option that best describes how frequently you feel that way.

الهدف من الأسئلة التالية هو معرفة مشاعر الممرضين و الممرضات تجاه عملهم
هذا القسم يتضمن ٩ اسئلة عن المشاعر المتعلقة بالعمل. الرجاء قراءة كل عبارة بانتباه وبيان مدى تكرر هذه المشاعر لديك. إذا لم تواجه المشاعر المذكورة مطلقاً، اختر (لا مطلقا). إذا واجهت هذه المشاعر مسبقاً، اختر الإجابة الأنسب التي تدل على مدى تكرر هذا الشعور لديك
ا لرجاء اختيار الإجابة الأقرب الى وصف حالتك و مدى تكرر كل المشاعر التالية لديك
Please mark the response that best describes how frequently you have each feeling.

Question	**Never** لا أبداً	**A few times a year or less** بضع مرات او اقل في السنة	**Once a month or less** مرة او اقل في الشهر	**A few times a month** بضع مرات في الشهر	**Once a week** مرة في الأسبوع	**A few times a week** بضع مرات في الأسبوع	**Every day** كل يوم
I feel emotionally drained from my work. أشعر أن عملي يستنزفني عاطفياً							

I feel used up at the end of the workday. أشعر باستنفاد طاقتي (إنهاك) في نهاية يوم العمل							
I feel frustrated by my job. أشعر بالإحباط بسبب عملي							

Intention to Leave / الرغبة بترك العمل

Question	Yes	No
Do you plan to be with your current employer one year from now? **هل تنوي/ تنوين البقاء في عملك الحالي لمدة سنة من الآن؟**		

If you answered the previous question by NO, please answer the following question

إذا كنت جاوب ب (لا) الرجاء الاجابة على السؤال التالي

ماهي الأسباب التي دفعتك للتفكير بترك العمل؟ اختر كل ما يتوافق معك و يدفعك لهذا لتفكير

What are the reason (s) for leaving your job? Select all that apply

I feel exhausted emotionally أشعر بالإرهاق نفسياً (عاطفياً) ☐	☐ I feel exhausted physically أشعر بالإرهاق جسدياً
I receive low salary أتقاضى راتب ☐منخفض	☐ I have to leave for family related reasons يجب علي ترك العمل لأسباب عائلية
I don't feel respected أشعر بعدم الاحترام من قبل ☐ الآخرين	☐ I found a better job وجدت فرصة عمل أفضل
I have problems with my work visa لدي مشاكل متعلقة ☐بتأشيرة العمل (الفيزا)	☐ I am not satisfied in general أنا لست راضي /ة بشكل عام
I am not comfortable in my work place أنا لست ☐مرتاح/ة في مكان عملي	☐ I have problems with my manager لدي مشاكل مع مديري/ مديرتي
I have problems in renewing my contra لدي مشاكل في ☐تجديد عقد عملي	☐ I have problems with co-workers أواجه مشاكل مع زملاء العمل

I cannot work in a mixed environment (has male and female workers) لا أستطيع العمل في بيئة مختلطة (بها موظفين ذكور و إناث)☐	☐I am not comfortable living in this country أنا لست مرتاح/ة للعيش (البقاء) في هذا البلد
Other reason/s (please specify) أسباب أخرى (الرجاء ذكرها)	

❖ **In your last shift, how many patients you were responsible for? في آخر يوم عمل لك، كم كان عدد المرضى المسؤول/ المسؤولة عن رعايتهم؟**

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐10 or more

Thank you very much for your participation **شكراً جزيلاً لمشاركتك في الاستبيان**

Appendix C: Note on Missing Data

Missing data was not a serious problem in the dataset. After excluding not eligible participants, the resulted sample had slight missingness in each variable that did not exceed 3.3% of values. The analysis of the patterns of missingness revealed no consistent pattern which suggests data are missing at random (MAR), see Figure 16.

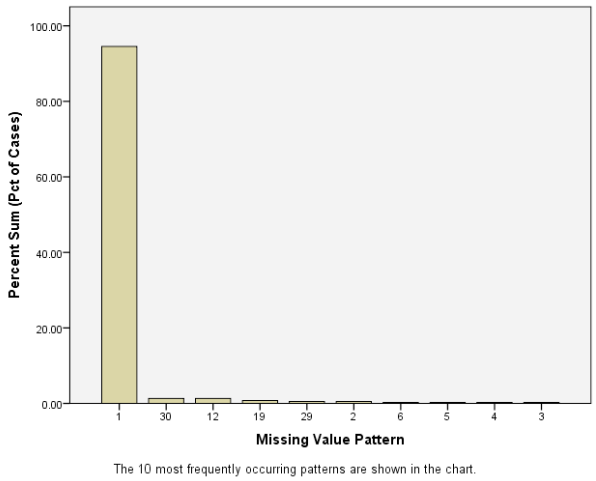
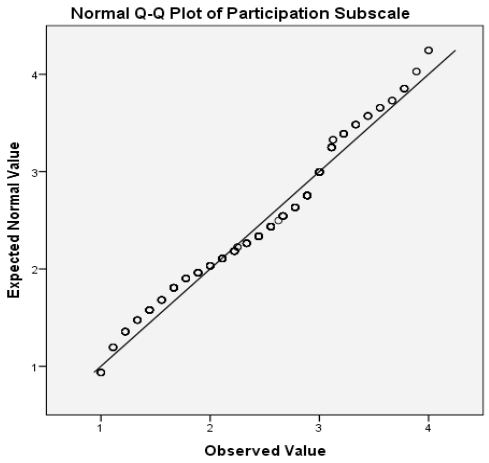


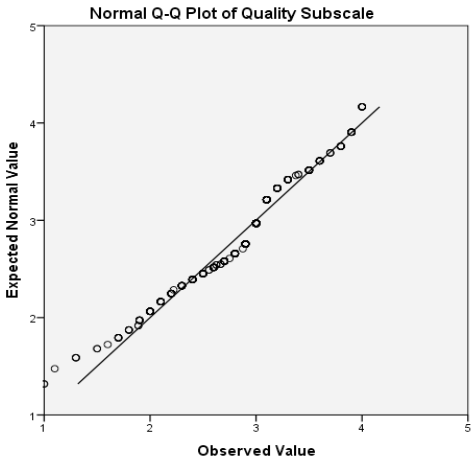
Figure 16. Patterns of missingness. The first pattern on the left illustrates the pattern of non-missing values, patterns 3 to 30 are different patterns of missingness.

Appendix D: Test of Normality

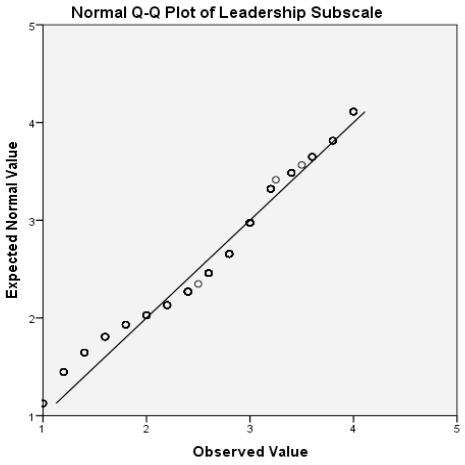
To test the distribution of the continuous variables, Q-Q plots of variables were explored. In addition, as recommended by Ghasemi & Zahediasl (2012), the Shapiro-Wilk test of normality was checked and found to be significant (p-value <0.0001) and ranged between 0.90 to 0.99. These results support the normality of all continuous variables in the study. See Figure 17.



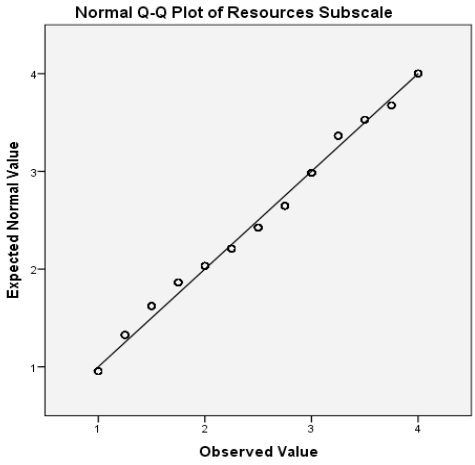
A



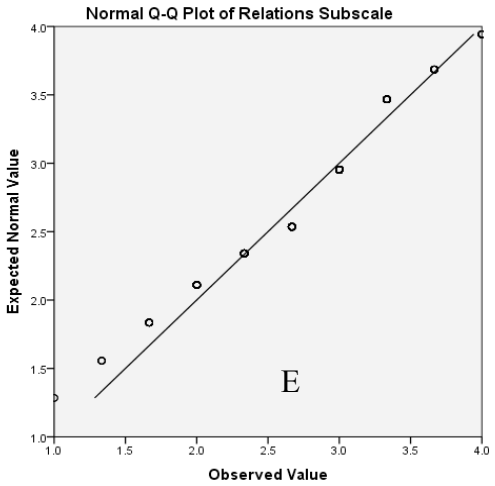
B

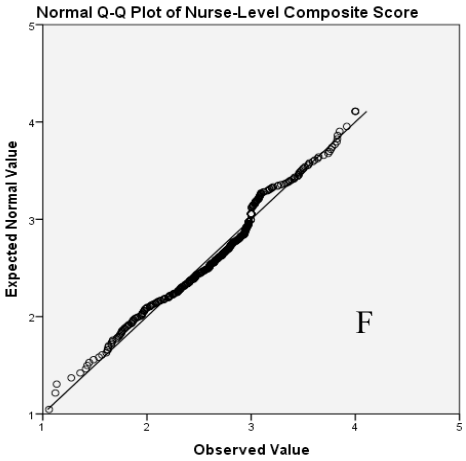


C



D





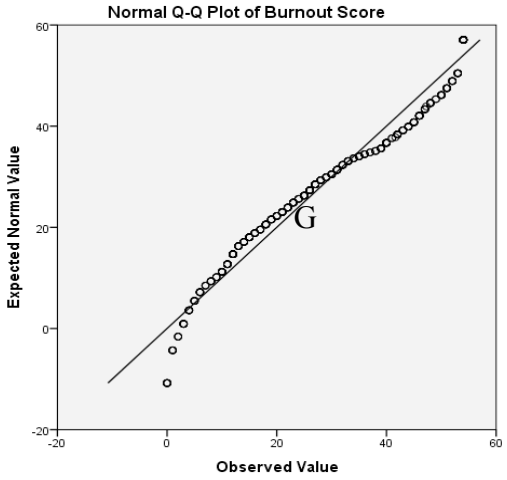


Figure17. Q-Q plots of the continuous variables including the practice environment subscales, composite score and burnout score. A: Participation in Hospital Affairs; B: Nursing Foundationss for Quality of Care; C: Nurse Manager Ability, Leadership, and Support of Nurses; D: Staffing and Resource Adequacy;

Appendix E: Study Variables

Variable	Definition
Demographics	
Hospital	Type of hospital: QCH=0, KAH=1
Age	1= 20-25y; 2= 26-30y; 3= 31-35y; 4= 36-40y; 5= 41 or older
Sex	0= female, 1= male.
M_ status	Marital status: 1=single; 2= Married; 3= divorced or widow
Nationality	1=Saudi; 2= from other Arab countries; 3= from other Asian countries; 4= from Western countries. Then, it was coded as: 1=Saudi, 0= non-Saudi (2,3,4)
Children	Number of children < 18 y old: 1= none; 2= one; 3= two; 4= 3 or more, then treated as continuous variable.
Educ	Level of education: 1= Diploma; 2= BSN; 3= Master's or higher
Exp	Experience: 1: < 2y; 2: 2-5y; 3: 6-10y; 4: >10y
Unit	1= Medical/ Surgical or Med-Surg unit; 2= ICU; 3= other units.
Job	1=staff nurse, 2 = other (Acting Head Nurses included while nurse aids excluded).
Nursing Practice Environment Scale 1=strongly agree; 2=Agree; 3=Disagree; 4= Strongly Disagree. Scores were reversed coded by subtracting score from 5.	
Support	Adequate support services allow me to spend time with my pt
RNMD_ relation	Physicians and nurses have good working relationships
Sup staff	A supervisory staff that is supportive of the nurses
staff dev	Active staff development or continuing education
Career	Career development/clinical ladder opportunity
Participation	Opportunity for staff nurses to participate in policy decisions
mistakes	Supervisors use mistakes as learning opportunities, not criticism
Time	Enough time and opportunity to discuss patient care problems
Enough_RN	Enough registered nurses to provide quality patient care
Good_NM	A nurse manager who is a good manager and leader
Visible_CNO	A chief nursing officer who is highly visible and accessible to staff
Enough_staff	Enough staff to get the work done
Praise	Praise and recognition for a job well done
standards	High standards of nursing care are expected by the administration
Power	A chief nursing officer equal in power and authority to …

teamwork	A lot of team work between nurses and physicians
advancement	There are opportunities for advancement
philosophy	A clear philosophy of nursing that pervades
competent	Working with nurses who are clinically competent
Backs_up	A nurse manager who backs up the nursing staff …
Admin_listen	Administration that listens and responds to employee concerns
assurance	An active quality assurance program
governance	Staff nurses are involved in the internal governance
collaboration	Collaboration (joint practice) between nurses and physicians
preceptor	There is a preceptor program for newly hired registered nurses
Nur_model	Nursing care is based on a nursing, rather than a medical, model
committees	Staff nurses have the opportunity to serve on … committees
consult	Nursing administrators consult with staff on daily problems
Care_plans	Written, up-to-date nursing care plans for all patients
continuity	Patient care assignments that foster continuity of care
Nur_diagnosis	Use of nursing diagnoses
Job Satisfaction	
JS	1=very satisfied; 2= satisfied; 3= little dissatisfied; 4=very dissatisfied. Then it was dichotomized as 1 or 2 as satisfied (category1) , and 3or 4 dissatisfied (category2)
Burnout 0=never; 1=A few times a year or less; 2= once a month or less; 3=A few times a month; 4= once a week; 5= A few times a week; 6= Every day. (High: 27 or more; moderate: 17-26; low: 0-16).	
Drained	I feel emotionally drained from my work
Used_up	I feel used up at the end of the workday
Fatigued	I feel fatigued when I get up …
	BOT_score: sum of the 9 items; BOT_level: 1=1-16 (low), 2=17-26 (moderate), 3= 27 and above (high). Note: the remaining 6 items were not displayed due to copyright restriction.
Intention to Leave	
ITL	0=no (reference), 1=yes.

Appendix F: Results of multiple and logistic regression

Results of multiple and logistic regression of model's equations based on entire sample and by hospital

Regression Equation	**Entire Sample**		**Public Hospital**		**Teaching Hospital**	
ITL as DV (logistic regression)	**Odds ratio**	**P-value**	**Odds ratio**	**P-value**	**Odds ratio**	**P-value**
NPE	0.705	0.350	0.831	0.696	0.244	0.104
BO	**1.045**	0.001	**1.043**	0.049	**1.065**	0.003
JDS	**2.270**	0.021	1.854	0.238	**5.945**	0.002
Individual Factors						
Sex (male)	0.581	0.314	0.479	0.292	0.295	0.270
Age						
20- 25 y	3.302	0.176	2.709	0.562	8.476	0.198
26- 30 y	**3.109**	**0.045**	2.053	0.624	**5.643**	0.036
31- 35 y	**3.607**	0.012	3.206	0.419	**4.789**	0.034
36- 40 y	1.168	0.793	1.006	0.997	1.871	0.438
Marital Status						
Single	0.455	0.278	0.270	0.253	0.690	0.728
Married	0.662	0.544	0.739	0.774	0.677	0.702
Children < 18 y	**0.644**	0.009	**0.551**	0.011	0.752	0.299
Nationality (Saudi)	0.442*	0.070	2.130	0.283	0.141*	0.097
Educ. (BSN or higher)	0.998	0.995	1.814	0.233	0.348*	0.082
Experience						
Less than 2 y	0.403	0.250	0.215	0.149	0.629	0.749
2- 5 y	0.565	0.232	0.437	0.202	0.756	0.736
6-10 y	1.253	0.568	1.328	0.627	1.418	0.578
Unit Type						
Medical/surgical	0.969	0.927	0.582	0.263	1.457	0.517
ICU	1.217	0.600	0.850	0.772	2.362	0.168
JDS as DV (logistic regression)	**Odds ratio**	**P-value**	**Odds ratio**	**P-value**	**Odds ratio**	**P-value**
NPE	**0.082**	0.000	**0.112**	0.000	**0.029**	0.000
HT (Teaching hospital)	**0.330**	0.016	-	-	-	-
Individual Factors						
Sex (male)	0.555	0.275	0.455	0.217	0.913	0.937
Age						
20- 25 y	0.661	0.630	1.705	0.719	0.000	0.999
26- 30 y	0.509	0.239	1.283	0.844	0.279	0.157
31- 35 y	0.727	0.525	1.654	0.684	0.464	0.276
36- 40 y	0.535	0.251	0.687	0.771	0.582	0.449
Marital Status						
Single	0.629	0.522	0.616	0.675	0.377	0.357
Married	0.822	0.773	1.373	0.770	0.345	0.298
Children < 18 y	**0.725**	0.045	0.679*	0.080	0.731	0.255
Nationality (Saudi)	1.765	0.222	0.758	0.646	5.793*	0.078
Education (BSN or higher)	**2.400**	0.019	0.962	0.936	365125070.6	0.997
Experience	1.530	0.610	2.625	0.353	0.000	0.999

Less than 2 y	1.213	0.683	0.996	0.995	1.626	0.581
2- 5 y	1.134	0.757	0.925	0.893	1.518	0.496
6-10 y						
Unit Type	**2.196**	0.020	**3.359**	0.009	1.260	0.664
Medical/surgical	1.196	0.654	2.342	0.132	0.535	0.343
ICU						
BO as DV (multiple regression)	**Beta**	**P-value**	**Beta**	**P-value**	**Beta**	**P-value**
NPE	**-0.362**	0.000	**-0.329**	0.000	**-0.337**	0.000
JDS	**0.258**	0.000	**0.360**	0.000	**0.213**	0.002
HT (Teaching hospital)	**-0.170**	0.010	-		-	
Individual Factors						
Sex (male)	0.026	0.465	-0.016	0.800	0.059	0.352
Age	0.095*	0.076	**0.216**	0.010	0.058	0.506
20- 25 y						
26- 30 y						
31- 35 y						
36- 40 y						
Marital Status	-0.053	0.174	-0.063	0.402	-0.056	0.421
Single						
Married						
Children < 18 y	-0.011	0.783	-0.071	0.372	0.012	0.869
Nationality (Saudi)	0.110*	0.097	**0.146**	0.054	0.042	0.524
Level of Education	-0.009	0.834	-0.004	0.958	0.015	0.819
Experience						
Less than 2 y	-0.064	0.179	-0.081	0.333	-0.083	0.319
2- 5 y						
6-10 y						
Unit Type	-0.063*	0.081	-0.041	0.535	-0.098	0.127
Medical/surgical						
ICU						
HT→ NPE (simple linear regression)	**Beta**	**P-value**	**Beta**	**P-value**	**Beta**	**P-value**
HT (Teaching)	**0.655**	0.000	-	-	-	-

Note. Reference group for HT is the "public hospital". For individual factors, the reference groups are: "female" for sex, "41 y or older" for age, "divorced or widowed" for marital status, "non-Saudi" for nationality, "Diploma" for education, "more than 10 y" for experience, "other" for unit type. Bolded numbers are the significant estimates at alpha level of 0.05. * denotes estimates with marginal significant effects. Regression equations were identical to equations in the path analysis. They are:

4. ITL= β NPE + β BO+ β JDS+ β sex + β age+ β marital status + β children+ β Nationality+ β educ+ β Exp+ β unit
5. BO= β NPE + β JDS+ β HT+ β sex + β age+ β marital status + β children+ β Nationality+ β educ+ β Exp+ β unit
6. JDS= β NPE + β HT+ β sex + β age+ β marital status + β children+ β Nationality+ β educ+ β Exp+ β unit
7. HT= β NPE

Appendix G: Correlation among Study Variables

Correlation among Study Variables									
		Resource Subscale	**Relations Subscale**	**Leadership Subscale**	**Participation Subscale**	**JDS**	**Burnout Score**	**ITL**	**Nurse-Level Composite Score**
Resource Subscale	Pearson Correlation	1	.591**	.644**	.761**	-.517**	-.621**	-.259**	.876**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	394	392	394	393	387	384	383	393
Relations Subscale	Pearson Correlation	.591**	1	.474**	.609**	-.421**	-.582**	-.207**	.755**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000	0.000
	N	392	398	397	395	390	388	386	395
Leadership Subscale	Pearson Correlation	.644**	.474**	1	.770**	-.445**	-.479**	-.239**	.846**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	N	394	397	399	396	391	388	387	396
Participation Subscale	Pearson Correlation	.761**	.609**	.770**	1	-.517**	-.623**	-.263**	.923**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	N	393	395	396	396	389	387	385	396

JDS	Pearson Correlation	-.517**	-.421**	-.445**	-.517**	1	.593**	.298**	-.556**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000	0.000
	N	387	390	391	389	393	384	382	389
Burnout Score	Pearson Correlation	-.621**	-.582**	-.479**	-.623**	.593**	1	.341**	-.679**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000	0.000
	N	384	388	388	387	384	391	387	387
ITL	Pearson Correlation	-.259**	-.207**	-.239**	-.263**	.298**	.341**	1	-.289**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	N	383	386	387	385	382	387	392	385
Nurse-Level Composite Score	Pearson Correlation	.876**	.755**	.846**	.923**	-.556**	-.679**	-.289**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	N	393	395	396	396	389	387	385	396

Appendix H: Permission to Use MBI-HSS

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material;

Instrument: ***Maslach Burnout Inventory, Forms: General Survey, Human Services Survey & Educators Survey***

Authors

MBI-General Survey: Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach & Susan E. Jackson

MBI-Human Services Survey: Christina Maslach & Susan E. Jackson MBI-Educators Survey: Christina Maslach, Susan E. Jackson & Richard L. Schwab

Copyright: ***Copyright © 1986 by CPP, Inc. All rights reserved in all mediums.*** for his/her thesis research.

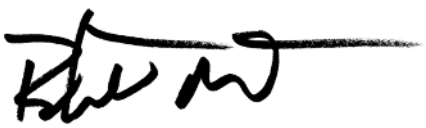
Three sample items from a single form of this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation.

The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,

Robert Most

Mind Garden, Inc.



Appendix I: Study Flyer

References

Aboshaiqah, A. E. (2015). Nursing work environment in Saudi Arabia. *Journal of Nursing Management*, *23*(4), 510–520. http://doi.org/10.1111/jonm.12164

Aboul-Enein, F. H. (2002). Personal contemporary observations of nursing care in saudi arabia. *International Journal of Nursing Practice*, *8*(4), 228–230. http://doi.org/10.1046/j.1440-172X.2002.00370.x

Abu-Zinadah, S. (2005) The inception of nursing regulation in Saudi Arabia. 3rd International Nursing Conference, Muscat, Sultanate of Oman.

Abu-Zinadah, S. (2006). Nursing situation in Saudi Arabia. Accessed 19 Jan 2016 from http://www.nurse.scfhs.org

Aiken, L. H., & Patrician, P. A. (2000). Measuring organizational traits of hospitals: The Revised Nursing Work Index. *Nursing research, 49,* (3), 146-153.

Aiken, L. H., Clarke, S. P., Sloane, D. M., & Sochalski, J. a. (2001). An International Perspective on Hospital Nurses' Work Environments: The Case for Reform. *Policy, Politics, & Nursing Practice*, *2*(4), 255–263. http://doi.org/10.1177/152715440100200402

Aiken, L. H., Clarke, S. P., Sloane, D. M., Lake, E. T., & Cheney, T. (2008). Effects of hospital care environment on patient mortality and nurse outcomes. *The Journal of nursing administration*, *38,* (5), 223.

Aiken, L. H., Sloane, D. M., Clarke, S., Poghosyan, L., Cho, E., You, L., ... & Aungsuroch, Y. (2011). Importance of work environments on hospital outcomes

in nine countries. *International Journal for Quality in Health Care*, *23*(4), 357-364.

Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M.,... 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. *Bmj,344*, e1717, 1-14.

Aiken, L. H., Sloane, D. M., Bruyneel, L., Van den Heede, K., & Sermeus, W. (2013). Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. *International Journal of Nursing Studies*, *50*(2), 143–153. http://doi.org/10.1016/j.ijnurstu.2012.11.009 http://intqhc.oxfordjournals.org/content/early/2011/05/10/intqhc.mzr022.abstract

Al-Dossary, R., Vail, J., & MacFarlane, F. (2012). Job satisfaction of nurses in a Saudi Arabian university teaching hospital: A cross-sectional study. *International Nursing Review*, *59*(3), 424–430. http://doi.org/10.1111/j.1466-7657.2012.00978.x

Alasmari, H., & Douglas, C. (2012). Job Satisfaction and Intention to Leave Among Critical Care Nurses in Saudi Arabia. *Middle East Journal Of Nursing*, *6*(4), 3–12.

Almalki, M., FitzGerald, G., & Clark, M. (2011). The nursing profession in Saudi Arabia: an overview. *International Nursing Review*, *58*(3), 304–11. http://doi.org/10.1111/j.1466-7657.2011.00890.x

Almalki, M. J., Fitzgerald, G., & Clark, M. (2012). Quality of work life among primary health care nurses in the Jazan region, Saudi Arabia: a cross-sectional study. *Human Resources for Health*, *10*. Retrieved from http://www.human-resources-

health.com/content/10/1/30

Almutairi, A. F., McCarthy, A., & Gardner, G. E. (2015). Understanding Cultural Competence in a Multicultural Nursing Workforce Registered Nurses' Experience in Saudi Arabia. *Journal of Transcultural Nursing, 26* (1), 16-23

Alonazi, N. A., & Omar, M. A. (2013). Factors affecting the retention of nurses. A survival analysis. *Saudi medical journal*, *34*(3), 288-294.

Alotaibi, J., Paliadelis, P. S., & Valenzuela, F. R. (2015). Factors that affect the job satisfaction of Saudi Arabian nurses. *Journal of nursing management*, 24 (3), 275-282

Alsaqri, S. (2014). A Survey of Intention to Leave, Job Stress, Burnout and Job Satisfaction among Nurses Employed in the Ha ' il Region ' s Hospitals in Saudi Arabia, (February 2014).

American Association of Colleges of Nursing (2002). Hallmarks of The Professional Nursing Practice Environment. Washington, DC: AACN; Retrieved on July 14th, 2015 from http://www.aacn.nche.edu/Publications/positions/hallmarks.htm

American Association of Critical Care Nurses. (2005). AACN standards for establishing and sustaining healthy work environments: a journey to excellence. *American Journal of Critical Care, 14* (3), 187-197.

American Organization of Nurse Executives. (2003). Healthy Work Environments, Volume 2: Striving For Excellence. Retrieved on July 14, 2015 from http:// www.hospitalconnect.com/aone/keyissues/hwe_excellence.

Beal, J. A., Riley, J. M., & Lancaster, D. R. (2008). Essential elements of an optimal clinical practice environment. *Journal of Nursing Administration, 38* (11), 488-493.

Bin Saeed, K. (1995). Factors which influence nurses' intention to leave the hospital, Riyadh city, Saudi Arabia. *Journal of King Saud University*.

Boyle, R. P. (1970). Path analysis and ordinal data. *American Journal of Sociology*, *75*(4, Part 1), 461-480.

Brown, T. (2006). *Confirmatory factor analysis for applied research.* New York: Guildford.

Center for Disease Control and Prevention. Middle East Respiratory Syndrome (MERS). Retrieved April 1st.2017 from https://www.cdc.gov/coronavirus/mers/

Cheng, C. Y., & Liou, S. R. (2011). Intention to leave of Asian nurses in US hospitals: does cultural orientation matter?. *Journal of clinical nursing*, *20*(13-14), 2033-2042.

Choi, S. P. P., Cheung, K. I. N., & PANG, S. M. C. (2013). Attributes of nursing work environment as predictors of registered nurses' job satisfaction and intention to leave. *Journal of nursing management*, *21*(3), 429-439.

Coetzee, S. K., Klopper, H. C., Ellis, S. M., & Aiken, L. H. (2013). A tale of two systems—Nurses practice environment, well being, perceived quality of care and patient safety in private and public hospitals in South Africa: A questionnaire survey. *International journal of nursing studies*, *50*(2), 162-173.

Cortelyou-Ward, K. H., Unruh, L., & Fottler, M. D. (2010). The effect of work environment on intent to leave the nursing profession: a case study of bedside registered nurses in rural Florida. *Health Services Management Research, 23*(4), 185-192.

Coomber, B., & Louise Barriball, K. (2007). Impact of job satisfaction components on intent to leave and turnover for hospital-based nurses: A review of the research literature. *International Journal of Nursing Studies*, *44*(2), 297–314. Retrieved on Jan 20th , 2016 from http://doi.org/10.1016/j.ijnurstu.2006.02.004

Dana, B. (2005). Taking the measure of quality in LTC. Provider (Washington, DC), 31(2), 41.

Dillman, D. A. (1991). The design and administration of mail surveys. Annual review of sociology, 225-249.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method*. John Wiley & Sons.

El-Jardali, F., Alameddine, M., Dumit, N., Dimassi, H., Jamal, D., & Maalouf, S. (2011). Nurses' work environment and intent to leave in Lebanese hospitals: implications for policy and practice. *International journal of nursing studies, 48*(2), 204-214

El-Salibi, A; Chadwick, C. (2012). Job Satisfaction among Registered Nurses Working in UAE Ministry of Health Hospitals : Demographic Correlates. *Doctoral Dissertation*. Retrieved from http://bspace.buid.ac.ae/handle/1234/193

Estabrooks C, Tourangeau A, Humphrey C, Hesketh K, Giovannetti P, Thomson D,

Wong J, Acorn S, Clarke H & Shamian J. (2002). Measuring the hospital practice environment: a Canadian context. *Research in Nursing & Health, 25*, 256–268.

Flynn, L., & Aiken, L. H. (2002). Does international nurse recruitment influence practice values in US hospitals?. Journal of Nursing Scholarship, 34(1), 67-73

Friese, C.R. (2005). Nurse practice environments and outcomes: Implications for oncology nursing. *Oncology Nursing Forum, 32*(4):765–772

Friese, C. R., Lake, E. T., Aiken, L. H., Silber, J. H., & Sochalski, J. (2008). Hospital nurse practice environments and outcomes for surgical oncology patients. *Health Services Research*, *43*(4), 1145–1163. http://doi.org/10.1111/j.1475-6773.2007.00825.x

Gabriel, A. S., Erickson, R. J., Moran, C. M., Diefendorff, J. M., & Bromley, G. E. (2013). A multilevel analysis of the effects of the practice environment scale of the nursing work index on nurse outcomes. *Research in nursing & health*, *36*(6), 567-581.

Ganz, F. D., & Toren, O. (2014). Israeli nurse practice environment characteristics, retention, and job satisfaction. *Israel journal of health policy research, 3,* (1), 7, 1-8.

Gardner, J.K., Thomas-Hawkins, C., Fogg, L., Latham, C.E., (2007). The relationships between nurses' perceptions of the hemodialysis unit work environment and nurse turnover, patient satisfaction, and hospitalizations. *Nephrology Nursing Journal, 34,* (3):271–281.

Garson, G. David (2014-01-20). Path Analysis (Statistical Associates Blue Book Series

22) (Kindle Location 963). Statistical Associates Publishers. Kindle Edition.

Gelfand, M. J., Erez, M., & Aycan, Z. (2007). Cross-cultural organizational behavior. Annual Review of Psychology,58, 479-514.

Hasan, T., & Gupta, P. (2013). Assessing the learning environment at Jazan medical school of Saudi Arabia. *Medical teacher, 35*(sup1), S90-S96.

Hanrahan, N. P., Aiken, L. H., McClaine, L., & Hanlon, A. L. (2010). Relationship between psychiatric nurse work environments and nurse burnout in acute care general hospitals. *Issues in mental health nursing*, *31*(3), 198-207.

Heinen, M. M., van Achterberg, T., Schwendimann, R., Zander, B., Matthews, A., Kózka, M., ... & Schoonhoven, L. (2013). Nurses' intention to leave their profession: a cross sectional observational study in 10 European countries. *International Journal of Nursing Studies*, *50*(2), 174-184.

Hinno, S., Partanen, P., & Vehviläinen-Julkunen, K. (2012). The professional nursing practice environment and nurse-reported job outcomes in two European countries: a survey of nurses in Finland and the Netherlands. *Scandinavian journal of caring sciences*, *26*(1), 133-143.

Health Resources and Services Administration (HRSA). Bureau of Health Professionals. Retrieved from National Center for Health Workforce Analysis. (April 2013). The U.S. Nursing Workforce: Trends in Supply and Education. http://bhpr.hrsa.gov/healthworkforce/reports/nursingworkforce/nursingworkforcefullreport.pdf on Feb 1st 2016.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure

analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55. http://doi.org/10.1080/10705519909540118

Hulley, S.B., Cummings, S.R., Browner, W.S., Grady, D.G., & Newman, T.B. (2013). Designing Clinical Research. (4th ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.

International Council of Nurses (ICN). (2007*). Positive Practice Environments: Quality Workplaces= Quality Care.* In: Bauman, A., editor. Information and action toolkit. Geneva, Switzerland.

Institute of Medicine. (2004). Keeping Patients Safe: Transforming the Work Environment of Nurses. Institute of Medicine of the National Academies. Retrieved on July 8th, 2015 from http://www.nap.edu/catalog/11151.html

International Hospital Recruitment Inc (IHR). King Abdulaziz Medical City- Al Hasa (2015). Accessed on August, 16th, 2015 from http://ihrcanada.com/hospitals/king-abdulaziz-medical-city--al-hasa.html

Kline, R. B. (2011). Principles and Practice of Structural Equation Modeling. New York, NY: Guilford Publications.

Klopper, H. C., Coetzee, S. K., Pretorius, R., & Bester, P. (2012). Practice environment, job satisfaction and burnout of critical care nurses in South Africa. *Journal of nursing management*, *20*(5), 685-695.

Kock, N. (2015). How Likely is Simpson's Paradox in Path Models?. International Journal of e-Collaboration (IJeC), 11(1), 1-7.

Kotzer, A. M., & Arellana, K. (2008). Defining an evidence-based work environment for nursing in the USA. *Journal of clinical nursing*, *17,* (12), 1652-1659.

Kramer, M., & Hafner, L. P. (1989). Shared values: impact on staff nurse job satisfaction and perceived productivity. *Nursing Research*. http://doi.org/10.1097/00006199-198905000-00019

Kutney-Lee, A., Wu, E. S., Sloane, D. M., & Aiken, L. H. (2013). Changes in hospital nurse work environments and nurse job outcomes: an analysis of panel data. International Journal of Nursing Studies, 50(2), 195-201.

Kutney-Lee, A., Germack, H., Hatfield, L., Kelly, S., Maguire, P., Dierkes, A., … Aiken, L. H. (2016). Nurse Engagement in Shared Governance and Patient and Nurse Outcomes. *The Journal of Nursing Administration*, *46*(11), 605–612. http://doi.org/10.1097/NNA.0000000000000412

Kutney-Lee, A., Wu, E. S., Sloane, D. M., & Aiken, L. H. (2013). Changes in hospital nurse work environments and nurse job outcomes: an analysis of panel data. *International Journal of Nursing Studies*, *50*(2), 195-201.

Lake, E. T. (1998). Advances in understanding and predicting nurse turnover. *Research in the Sociology of Health Care*, 147-172.

Lake, E. T. (2002). Development of the practice environment scale of the nursing work index. *Research in nursing & health*, *25,* (3), 176-188.

Lake, E. T. (2007). The nursing practice environment measurement and evidence. *Medical Care Research and Review*, *64* (2 suppl), 104S-122S.

Lake, E. T., & Friese, C. R. (2006). Relation to Staffing and Hospital Characteristics, *55*(1), 1–9.

Lamadah, S. M., & Sayed, H. Y. (2014). Challenges Facing Nursing Profession in Saudi Arabia. *Journal of Biology, Agriculture and Healthcare*, *4*(7), 20–25.

Lang, G. M., Patrician, P., & Steele, N. (2012). Comparison of nurse burnout across Army hospital practice environments. *Journal of Nursing Scholarship*, *44*(3), 274-283.

Lansiquot, B. A., Tullai-McGuinness, S., & Madigan, E. (2012). Turnover Intention Among Hospital-Based Registered Nurses in the Eastern Caribbean. *Journal of nursing scholarship, 44*(2), 187-193.

Lee, S. Y., Kim, C. W., Kang, J. H., Yoon, T. H., & Kim, C. S. (2014). Influence of the Nursing Practice Environment on Job Satisfaction and Turnover Intention. *Journal of Preventive Medicine and Public Health, 47*(5), 258.

Leiter, M. P., & Laschinger, H. K. S. (2006). Relationships of work and practice environment to professional burnout: testing a causal model. *Nursing Research*, *55*(2), 137-146

Leone, C., Bruyneel, L., Anderson, J. E., Murrells, T., Dussault, G., de Jesus, É. H., ... & Rafferty, A. M. (2015). Work environment issues and intention-to-leave in Portuguese nurses: A cross-sectional study. *Health Policy, 119*(12), 1584-1592.

Li, B., Bruyneel, L., Sermeus, W., Van den Heede, K., Matawie, K., Aiken, L., & Lesaffre, E. (2013). Group-level impact of work environment dimensions on

burnout experiences among nurses: a multivariate multilevel probit model. *International journal of nursing studies*, *50*(2), 281-291.

Lindqvist, R., Smeds Alenius, L., Griffiths, P., Runesdotter, S., & Tishelman, C. (2015). Structural characteristics of hospitals and nurse-reported care quality, work environment, burnout and leaving intentions. Journal of nursing management, 23(2), 263- 274.

Liu, K., You, L. M., Chen, S. X., Hao, Y. T., Zhu, X. W., Zhang, L. F., & Aiken, L. H. (2012). The relationship between hospital work environment and nurse outcomes in Guangdong, China: a nurse questionnaire survey. *Journal of clinical nursing*, *21,* (9-10), 1476-1485.

Locke, E. (1976). The nature and causes of job satisfaction. In M. Dunnette (Ed.), *Handbook of industrial and organizational psychology*. Chicago, IL: Rand McNally.

Manojlovich, M. (2005). Linking the practice environment to nurses' job satisfaction through nurse-physician communication. Journal of Nursing Scholarship, 37, 4, 367-373.

Maslach C. & Jackson S.E. (1981) The measurement of experienced burnout. *Journal of Occupational Behaviour 2,* (2), 99–113.

Maslach C, Jackson SE. (1986). *Maslach Burnout Inventory Manual*. 2nd ed. Palo Alto, Calif: Consulting Psychologists Press.Maslach, C., Jackson, S. & Leiter, M. (1996). MBI: The Maslach Burnout Inventory: Manual (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

McCarthy G, Tyrrell P, Lehane E. (2007). Intention to leave or stay in Nursing. *Journal of Nursing Management*, 15(3):248-255.

Meeusen, V. C. H., Van Dam, K., Brown-Mahoney, C., Van Zundert, A. a J., & Knape, H. T. a. (2011). Understanding nurse anesthetists' intention to leave their job: how burnout and job satisfaction mediate the impact of personality and workplace characteristics. *Health Care Management Review*, *36*(June), 155–163. http://doi.org/10.1097/HMR.0b013e3181fb0f41

Ministry of Health. Prtal (December, 2014). Retrived March 10th, 2016 from http://www.moh.gov.sa/en/Ministry/About/Pages/Vision.aspx

Muthén, L.K. and Muthén, B.O. (1998-2015). Mplus User's Guide. Seventh Edition. Los Angeles, CA: Muthén & Muthén

Muthén, L. K., & Muthén, B. O. (2002). How to use a Monte Carlo study to decide on sample size and determine power. *Structural Equation Modeling, 9*(4), 599-620.

Nantsupawat, A., Srisuphan, W., Kunaviktikul, W., Wichaikhum, O. A., Aungsuroch, Y., & Aiken, L. H. (2011). Impact of nurse work environment and staffing on hospital nurse and quality of care in Thailand. *Journal of Nursing Scholarship,*

43(4), 426-432.

Nantsupawat, A., Nantsupawat, R., Kulnaviktikul, W., & McHugh, M. D. (2015). Relationship between nurse staffing levels and nurse outcomes in community hospitals, Thailand. *Nursing & health sciences*, *17*(1), 112-118.

National Quality Forum. Practice Environment Scale - Nursing Work Index (PES-NWI). (Nov, 2015). Retrieved on March 17th, 2016 from http://www.qualityforum.org/QPS/0206.

Patrician, P. A., Shang, J., & Lake, E. T. (2010). Organizational determinants of work outcomes and quality care ratings among Army Medical Department registered nurses. *Research in Nursing & Health*, *33*(2), 99–110. http://doi.org/10.1002/nur.20370

Poghosyan, L., Aiken, L. H., & Sloane, D. M. (2009). Factor structure of the Maslach burnout inventory: an analysis of data from large scale cross-sectional surveys of nurses from eight countries. International journal of nursing studies, 46(7), 894-902.

Portney, L.G. & Watkins, M.P. (2015). Foundations of clinical research: Application to practice (3rd ed.). New Jersey: Prentice Hall.

Saudi Commission for Health Specialties . (25 September, 2013). Retrieved on March 10th, 2016 from http://www.scfhs.org.sa/en/about/Pages/default.aspx

Saudi Commission for Health Specialties . Vision and Mission. (12 November, 2015). Retrieved on Mrach 10th, 2016 from http://www.scfhs.org.sa/en/about/Pages/Vision.aspx

Saudi Health Council. (2013). Retrieved on March, 10th, 2016 from http://www.chs.gov.sa/En/Council/Pages/VisionAndMission.aspx

Shang, D. J., Friese, D. C. R., Wu, M. E., & Aiken, L. H. (2013). Nursing practice environment and outcomes for oncology nursing. *Cancer nursing*, *36*(3), 206.

Squires, A., Aiken, L. H., van den Heede, K., Sermeus, W., Bruyneel, L., Lindqvist, R., ... & Ensio, A. (2013). A systematic survey instrument translation process for multi-country, comparative health workforce studies. International journal of nursing studies, 50(2), 264-273.

Squires, A., Finlayson, C., Gerchow, L., Cimiotti, J. P., Matthews, A., Schwendimann, R., ... & Moreno-Casbas, M. T. (2014). Methodological considerations when translating "burnout". *Burnout research*, *1*(2), 59-68.

Stage, F. K., Carter, H. C., & Nora, A. (2004). Path analysis: An introduction and analysis of a decade of research. *Journal of Educational Research, 98*(1), 5-12.

Streiner, D. L. (2005). Finding our way: an introduction to path analysis. The Canadian Journal of Psychiatry, 50(2), 115-122.

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. Frontiers in Psychology, 5(NOV), 1–11. http://doi.org/10.3389/fpsyg.2014.01261

Thomas-Hawkins, C., Denno, M., Currier, H., & Wick, G. (2003). Staff nurses' perceptions of the work environment in freestanding hemodialysis facilities. *Nephrology Nursing Journal*, *30*(4), 377-386.

Tu, Y. K., Gunnell, D., & Gilthorpe, M. S. (2008). Simpson's Paradox, Lord's Paradox, and Suppression Effects are the same phenomenon–the reversal paradox. *Emerging Themes in Epidemiology*, *5*(1), 2.

Van Bogaert, P., Meulemans, H., Clarke, S., Vermeyen, K., & Van De Heyning, P. (2009). Hospital nurse practice environment, burnout, job outcomes and quality of care: Test of a structural equation model. *Journal of Advanced Nursing*, *65*(10), 2175–2185. http://doi.org/10.1111/j.1365-2648.2009.05082.x

Van Bogaert, P., Clarke, S., Roelant, E., Meulemans, H., & Van de Heyning, P. (2010). Impacts of unit-level nurse practice environment and burnout on nurse-reported outcomes: a multilevel modelling approach. *Journal of Clinical Nursing*, *19*(11-12), 1664-1674.

Van Bogaert, P., Clarke, S., Willems, R., & Mondelaers, M. (2012). Nurse practice environment, workload, burnout, job outcomes, and quality of care in psychiatric hospitals: a structural equation model approach. *Journal of advanced nursing*, *69*(7), 1515-1524.

Van Bogaert, P., Clarke, S., Wouters, K., Franck, E., Willems, R., & Mondelaers, M. (2013) a. Impacts of unit-level nurse practice environment, workload and burnout on nurse-reported outcomes in psychiatric hospitals: a multilevel modelling approach. *International journal of nursing studies*, *50*(3), 357-365.

Van Bogaert, P., Kowalski, C., Weeks, S. M., & Clarke, S. P. (2013) b. The relationship between nurse practice environment, nurse work characteristics, burnout and job outcome and quality of nursing care: a cross-sectional survey. *International journal of nursing studies*, *50*(12), 1667-1677.

Van Bogaert, P., Van 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. *Frontiers in Psychology*, *5*(NOV), 1–11. http://doi.org/10.3389/fpsyg.2014.01261

Wagner, J. I., Warren, S., Cummings, G., Smith, D. L., & Olson, J. K. (2013a). Resonant Leadership, Workplace Empowerment, and. CJNR (Canadian Journal of Nursing Research), 45(4), 108-128.

Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: how good are single-item measures?. *Journal of Applied Psychology, 82*(2), 247-252.

Warshawsky, N. E., & Havens, D. S. (2011). Global use of the practice environment scale of the nursing work index. *Nursing research, 60,* (1), 17-31.

World Health Organization, Health Workforce. (2012). Retrieved on March 22, 2015 from http://gamapserver.who.int/gho/interactive_charts/health_workforce/NursingMid

wiferyDensity/atlas.html

You, L. M., Aiken, L. H., Sloane, D. M., Liu, K., He, G. P., Hu, Y.,…Sermeus, W. (2013). 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.

Yu, C. Y. (2002). Evaluating cutoff criteria of model fit indices for latent variable models with binary and continuous outcomes (Doctoral dissertation, University of California Los Angeles).

Zaghloul, A. A., Al-Hussaini, M. F., & Al-Bassam, N. K. (2008). Intention to stay and nurses' satisfaction dimensions. *Journal of multidisciplinary healthcare, 1*(8), 51-58.

Zelauskas, B., & Howes, D. G. (1992). The effects of implementing a professional practice model. *Journal of Nursing Administration*, *22,* (7/8), 18-23

Zhang, L. F., You, L. M., Liu, K., Zheng, J., Fang, J. B., Lu, M. M., ... & Bu, X. Q. (2014). The association of Chinese hospital work environment with nurse burnout, job satisfaction, and intention to leave. *Nursing outlook*, *62*(2), 128-137