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Leadership and Attitudes on Adopting Evidence-Based Practice for Influenza Vaccination

Pamela A. Paparone
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Pamela Paparone

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Review Committee
Dr. Deborah Lewis, Committee Chairperson, Health Services Faculty
Dr. Andrea Jennings-Sanders, Committee Member, Health Services Faculty
Dr. Sue Bell, University Reviewer, Health Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2014

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MSN, Seton Hall University, 1977

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Doctoral Project Submitted in Partial Fulfillment

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Abstract

The United States has set a 90% benchmark for influenza vaccinations for healthcare personnel. Unfortunately, healthcare personnel fall far short of that mark with current rates as low as 62%. Low vaccination rates are responsible for influenza, nosocomial influenza, influenza-like illness, and mortality during influenza season. The purpose of this quantitative correlational study was to understand the relationship between leadership styles, attitudes towards evidence-based practice, and vaccination intention among New Jersey registered nurses (RNs). Diffusion of innovations theory was the theoretical foundation. The 3 instruments used were the Multifactor Leadership Questionnaire, Evidence Based Practice Attitude Scale, and Behavioral Intention Scales, which measured independent variables such as transformational leadership and attitudes toward evidence-based practice. Vaccination intent was the dependent variable. The results showed that transformational leadership was positively related to vaccination intent $r(353) = .16$, $p < .01$. There was no relationship between transactional leadership and vaccination intent $r(353) = .01$, $p > .05$ nor between attitudes toward evidence-based practice and vaccination intent $r(353) = .09$, $p > .05$. The implication of the study is that the effects of transformational leadership constitute a predictive tool to identify how an organization can increase vaccination rates among RNs. Implementing the recommendations of the study could promote social change by providing nursing leadership with tools to facilitate increased vaccination rates among health care personnel. Increasing vaccination rates for healthcare personnel will decrease vaccine-preventable illnesses and improve outcomes for hospitalized patients.

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Dedication

This project is dedicated to the Lord, through whom all things are possible.

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Section 1: Overview of the Evidence-Based Project

Introduction

Achieving the national benchmark for health care personnel and influenza vaccination was the focus of this study. The goal was to understand if nurses' leadership style and attitudes towards the adoption of evidence-based practice were associated with influenza vaccination intent. The purpose of this quantitative correlational study was to understand the relationship between leadership styles, attitudes towards evidence-based practice, and vaccination intention among New Jersey registered nurses (RNs).

The World Health Organization (WHO) identified a healthy work force as essential in the quest to meet comprehensive national and universal health goals (WHO, n.d.a). Nosocomial or hospital-acquired influenza poses a significant threat to patients (Sullivan, 2010). WHO recommends influenza vaccination for all health care personnel (HCP) globally (WHO, n.d.b). Likewise, the Centers for Disease Control and Prevention (CDC) have advised HCP to get the seasonal influenza vaccination for over 30 years. Additionally, the Centers for Medicare and Medicaid Services (CMS) and the Joint Commission have shown an increased interest in HCP influenza vaccination by collecting data on HCP influenza vaccination rates through the National Quality Forum, starting in January 2013 (CMS, n.d.; Sullivan, 2010). The CMS suggested a decrease in hospital reimbursement if hospitals do not realize the HCP national benchmark of 90% for influenza vaccination rate by the year 2020.

Statement of the Problem

HCP in the United States vaccinated themselves at 38% below the suggested rates by the CMS in 2011- 2012 (Peng-jun et al., 2013). Thus, the rate of influenza vaccination remained far below the national benchmark of 90% (CDC, 2011a). As the HCP vaccination rate increased, nosocomial influenza, influenza-like illness, and mortality during influenza season decreased (United States Department of Health and Human Services [USDHHS], 2013). Nurses represented the largest group of HCP and RNs were effective in promoting influenza vaccination among patients, yet they failed to receive the vaccine themselves (Lau et al., 2012). Research demonstrated that RNs doubted the safety and efficacy of the influenza vaccine. Half of all RNs believed that their strong immune systems rendered the influenza vaccine unnecessary and that hand washing alone was sufficient to prevent the onset of influenza (McLennan, Vollweiler & Celi, 2008; Norton, Scheifele, Bettinger, & West, 2008; Willis &Wortley, 2007). The gap in the literature was that leaders of health care organizations did not understand how barriers to vaccination affected the rates of influenza vaccination among RNs (Ajenjo et al., 2010). The gap presented a specific problem, addressed in this study: the effects of leadership style and attitudes towards adoption of evidence-based practice on RNs' intent to receive influenza vaccination in two hospital organizations in New Jersey.

Purpose Statement and Project Objectives

The purpose of this project was to understand the relationship between leadership styles and attitudes towards adoption of evidence-based practice on the intent to vaccinate

among RNs in the state of New Jersey. Conducting this study required a quantitative methodology with a correlational design. The dependent variable was vaccination intention as measured by the behavioral intention scale. The independent variables were leadership styles (such as transactional and transformational leadership, as measured by the Multifactor Leadership Questionnaire [MLQ]), and attitudes toward adoption of evidence-based practice (as measured by the Evidence-Based Practice Attitude Scale [EBPAS]).

I secured permissions to use the behavioral intention scale, the MLQ, and the EBPAS (see Appendix A). The aim of this project was to gather information to facilitate the achievement of the national benchmark for influenza vaccination for health care workers. The goal of this project was to identify barriers to, and facilitators of, influenza vaccination by RNs in New Jersey. Then the identified barriers would be removed and the identified facilitators introduced. As a result, increasing RNs' influenza vaccination rates would progress toward, and ultimately achieve, the national benchmark. The objectives of this study were as follows:

1. Determine the relationship between transformative leadership and vaccination intent.
2. Determine the relationship between attitudes toward adoption of evidence-based practice and vaccination intent.
3. Determine whether transformative leadership and attitudes toward evidence-based practice can predict vaccination intent.

4. Determine if there are differences in vaccination intent based on nursing demographics.
5. Determine the relationship among (a) demographic variables, leadership styles, and attitudes towards adoption of EBP and (b) vaccination intent.

Significance and Relevance to Practice

The most efficient way of preventing influenza is through annual prophylactic, pre-exposure vaccination (CDC, 2012). Health care workers (including physicians, nurses, emergency medical personnel, dental professionals, HCP students, and laboratory technicians) are at an increased risk of occupational exposure to the virus. Administrative staff—including clerical and billing, food service, housekeeping and laundry, security, maintenance, and volunteers—represented personnel who may not have had direct patient contact who but are capable of transmitting the illness to individuals who are involved in direct patient care (CDC, 2011a).

The consequences of nosocomial transmission from HCP to individuals in their care are significant and well documented. Munoz et al. (1999) discussed an influenza type A outbreak in a neonatal intensive care unit (NICU). Four neonates developed symptoms of influenza and influenza A/H3N2 was isolated from two of the four infants who were symptomatic (Munoz et al., 1999). The authors concluded that HCP immunization is of value when caring for vulnerable, high-risk NICU infants (Munoz et al., 1999). Weinstock et al. (2000) described the control of influenza type A on a bone marrow transplantation unit in a major United States cancer center. Stringent infection

control measures, including influenza vaccination during the following influenza season, were highly effective in preventing hospital-acquired influenza at the institution (Weinstock et al., 2000).

Malvaud et al. (2001) described a nosocomial influenza type A outbreak in a solid organ transplant unit and described four cases of confirmed influenza A infection in a 12-bed single-room transplant unit. Not one patient had received influenza vaccination (Malvaud et al., 2001). Three of the four patients stricken by influenza had no visitation by friends or relatives during their inpatient stay (Malvaud et al., 2001). Twenty-seven HCP had contact with the patients, and three nurses demonstrated clinical signs and symptoms of influenza, suggesting nosocomial transmission of the illness (Malvaud et al., 2001). Slinger and Dennis (2002) detailed nosocomial influenza in 19 inpatients in a Canadian pediatric hospital over a 5-year period. Only one child of the 19 patients who contracted influenza while hospitalized received vaccination against influenza (Slinger & Dennis, 2002). Subsequent inflection control measures—including HCP influenza vaccination, prospective investigation of nosocomial influenza, and prophylactic antiviral medications for unimmunized HCP and other unimmunized persons—proved to be effective (Slinger & Dennis, 2002).

Sartor et al. (2002) discussed the impact of a nosocomial influenza type A outbreak on an internal medicine unit through a prospective cohort study and microbiological investigation. They demonstrated an attack rate of 41% among patients and 23% among HCP; 3 of 14 cases were found positive by viral isolation. The organism

responsible for this influenza outbreak was influenza A/H3N2 (Sartor et al., 2002). The average absenteeism associated with HCP illness was 14 days; 8 hospital admissions were postponed, and all emergency admissions were suspended for 11 days (Sartor et al., 2002). The financial impact was significant. The outbreak cost the hospital over $34,000 and the average extra charge for patients infected with influenza was almost $4000 per patient (Sartor et al., 2002).

Bridges, Kuehnert, and Hall (2003) argued that influenza vaccination of HCP and patients was the single most important strategy for the prevention of nosocomial influenza and that vaccination of HCP was associated with lower rates of influenza-like illness (ILI) and death in extended care facilities. The use of antiviral medication and isolation of patients with influenza were useful in preventing the spread of influenza (Bridges et al., 2003). Influenza vaccination of HCP was beneficial for preventing the influenza illness (Bridges, Kuehnert, & Hall, 2003; Kostova et al., 2013; Munoz et al., 1999; Slinger & Dennis, 2002; USDHSS, 2013; Weinstock et al., 2000).

It was questionable whether influenza vaccination intention is an evidence-driven decision (McLennan, Vollweiler, & Celi, 2008; Norton, Scheifele, Bettinger, & West, 2008; Willis & Wortley, 2007). Evidence-based practitioners must identify and incorporate factors that influence decisions, such as leadership style and attitudes toward evidence-based practice regarding influenza vaccination (Ajenjo et al., 2010; Majid et al., 2011; Solomons & Spross, 2011). When the influenza vaccination rates of RNs

increased, carriage of the influenza virus decreased, influenza cases decreased, and the disease burden and health care costs decreased (Kostova et al., 2013).

Leadership styles affect decision-making (Ajenjo et al., 2010; Van Loveren, 2007). Leadership itself determines the philosophy and atmosphere of any nursing organization (Doody & Doody, 2012; Van Loveren, 2007). Employee involvement, inspirational leadership, collegial teamwork, and a sense of shared responsibility typify institutional excellence (Van Loveren, 2007). Transformational leadership goes beyond that of transactional leadership, and in turn motivates employees to excel (Doody & Doody, 2012; Van Lovern, 2007). Transformational leadership is necessary to align RNs with the goals and objectives of an organization. The results of this study will provide hospitals with useful information when planning projects to increase RNs influenza vaccination rates and thereby contribute to positive social change.

Project Question and Hypotheses

The nursing practice inquiry began with a clinical question based on the acronym *PICOT*, where *P* represents the specific population or problem; *I* represents the intervention or interest; *C* represents the comparison of intervention or interest; *O* represents the outcome measured; and *T* represents the time-period for the intervention to produce the outcome (Facchiano & Snyder, 2012; Fineout-Overhold, Melnyk, & Williamson, 2010). The refined question (see following subsection) guided the literature search.

Project Question

The project question for this proposal follows: What effect does leadership style and attitudes toward evidence-based practice have upon vaccination intent among New Jersey RNs? With respect to PICOT, for RNs (P), does transformational leadership (I), when compared with transactional leadership (C), correlate with attitudes toward evidence-based practice and the intent to receive influenza vaccination (O) in the next influenza vaccination season (T)?

Hypotheses

$H0_1$: There is no positive relationship between transformational leadership and vaccination intent.

Ha_1: There is a positive relationship between transformational leadership and vaccination intent.

$H0_2$: There is no positive relationship between transactional leadership and vaccination intent.

Ha_2: There is a positive relationship between transactional leadership and vaccination intent.

$H0_3$: There is no positive relationship between attitudes toward evidence-based practice and vaccination intent.

Ha_3: There is a positive relationship between evidence-based practice and vaccination intent.

$H0_4$: Transformational leadership and attitudes toward evidence-based practice cannot predict vaccination intent.

Ha_4: Transformational leadership and attitudes toward evidence-based practice can predict vaccination intent.

$H0_5$: There are no differences in vaccination intent based on RN demographics.

Ha_5: There are differences in vaccination intent based on RN demographics.

Evidence-Based Significance of the Project

The use of the best level of scientific evidence in patient care is referred to as evidence-based practice (EBP; Majid et al., 2011; Solomons & Spross, 2011). According to Majid et al. (2011) and Solomons & Spross (2011), despite respect for evidence-based practice, time constraints and lack of familiarity with statistics and research terminology were barriers that prevented nurses' use of current research findings. In addition to barriers on an individual level, barriers to the use of EBP also occurred on an institutional or leadership level (Ajenjo et al., 2010; Solomon & Spross, 2011).

Even though the RN rate of seasonal influenza vaccination is low, this project aimed to identify facilitators to influenza vaccination among RNs. Nurses educated at the doctoral level are pivotal to this process of scientific inquiry and the process by which research data translates to clinical interventions and improved patient outcomes (Riley, 2011). Information from this project was expected to influence social change by adding to the body of knowledge on the subject of influenza vaccination and RNs. In addition, nursing leaders could use the results of this study as evidence in planning future strategies

to increase the use of EBP approaches to increase the rate of influenza vaccination among RNs.

Implication for Social Change in Practice

Nurses are the providers of care who work closely with patients and trust is essential in the nurse-patient relationship (Ding & Gastmans, 2013). Ethical nursing practice forms the substructure of the profession, where social justice and caring for the ill, injured, and susceptible are, ideally, the normative philosophical orientations of nurses (ANA, 2001). Additionally, the interests of the patients come first (ANA, 2001; Caplan, 2011, Poland, 2010). The philosophical orientations of nurses form the foundation from which arise their professional activities toward preventing illness and promoting health (ANA, 2001).

These philosophical orientations represent the biomedical ethics principles of autonomy (self-determination or freedom), nonmaleficence (the prevention of harm), beneficence (acting for the benefit of others), and justice or fairness (Beauchamp & Childress, 2013). Given the fact that influenza results in 200,000 hospital admissions annually and approximately 35,000 deaths each year, it is nurses' moral obligation, as holders of the public trust, to receive influenza vaccination each year (Caplan, 2011; CDC, 2012b; Poland, 2010; Thompson et al., 2003; Thompson et al., 2004).

Further, it is the duty of health profession leaders and stewards of the health care system to champion influenza vaccination programs to improve nursing practice and patient outcomes (USDHHS, 2013).The results of this study could provide a way for

hospitals to increase influenza vaccination rates among HCP. Positive social change will be realized when 90% of HCP are immunized, herd immunity is achieved, and the spread of influenza from HCP to HCP—and HCP to patient—is decreased (CDC, 2011a). Thus, decreasing the societal threat posed by influenza. As the nosocomial spread of infection decreases the cost to the organization decreases, the health care process becomes streamlined, HCP absenteeism decreases, and HCP experience a better quality of life (Wilde et al., 1999).

Definition of terms

Bystander Effect or Genovese Syndrome: The bystander effect, or Genovese syndrome, are the terms used to describe a situation in which individuals fail to act in response to a crisis. The bystander effect is a syndrome that touches on decision-making and leadership. Pivotal to the bystander effect is the scattering of responsibility (Stavert & Lott, 2013). As the number of individuals involved in decision-making increases, the more likely it is that individuals assume that others in the group are more accountable for making decisions or that others have acted (Stavert & Lott, 2013). For purposes of this study, the bystander effect or Genovese syndrome refers to the widespread lack of organizational leadership with respect to raising influenza vaccination rates.

Evidence-based practice (EBP): According to Burns & Grove (2011) evidence-based practice is a decision making process used in the health care setting. Evidence-based practice includes integration of the best research evidence with clinical expertise

and patient needs and values in the delivery of care. Evidence-based practice is the foundation of best clinical practice.

Health Care Personnel (HCP): Health care personnel include (but are not limited to) patient care professionals and technical staff such as physicians, nurses, nursing assistants, therapists, technicians, emergency medical service personnel, and dental personnel. In addition, pharmacists, laboratory personnel, autopsy personnel, students, and trainees are HCP. Further, contractual staff not employed by the healthcare facility and persons not directly involved in patient care (e.g., clerical, dietary, housekeeping, laundry, security, maintenance, administrative, billing, and volunteers) but potentially exposed to infectious agents that can be transmitted to and from health care workers and patients are considered HCP (CDC, 2011b).

Influenza and ILI: The CDC (2011b) defines influenza-like illness (ILI) as fever of or greater than 100°F, cough, and/or sore throat in the absence of a known cause other than influenza. Influenza is an acute illness (CDC, 2011b). For the purposes of this study, influenza and ILI are the same.

Influenza Vaccination Season: The medical center, influenza vaccination season starts on October 1 of each year and ends on March 31 of each year. The influenza vaccination season coincides with the seasonal influenza season in the United States (CDC, 2013). This is consistent with CDC information (CDC, 2013).

Influenza vaccination mandate: An influenza vaccination mandate is an influenza policy that includes the receipt of a yearly influenza vaccine by the hospital employee as

a condition of employment at the hospital (Mandatory Influenza Vaccination, 2012). Influenza vaccination mandates evolved after voluntary influenza vaccination programs failed to achieve the national benchmark (Poland, 2010). Mandatory influenza programs are present in over 200 hospitals nationwide and have universally achieved or surpassed the national benchmark (Poland, 2010).

Registered nurse (RN): Registered nurse is the term used to describe an individual who completed a course of study leading to a diploma or degree in nursing and who satisfactorily passed the registered nurse exam administered by a state board of nursing. For the purposes of this study, RN will refer to registered nurses who are presently working in hospitals in the state of New Jersey.

Transactional leadership: According to Aarons (2006), transactional leadership is a leadership style characterized by an agreement between an organizational leader and personnel. Communication centers on discussions between a leader and followers. Rewards to those who met or exceeded stated goals were responsible for the support of transactional leaders.

Transformational leadership: Transformational leadership is a style of leadership characterized by idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration within a close relationship (Doody & Doody, 2012).Transformational leaders nurture growth in followers by empowering them and facilitating behaviors that are consistent with the mission, goals, and objectives of the organization (Aarons, 2006).

Assumptions, Limitations and, Delimitations

Assumptions

An assumption for this study was that RNs were capable of making evidence-based decisions regarding nursing interventions. Additionally, I assumed that survey respondents told the truth when completing the survey. Further, assumptions for the study included that survey respondents were RNs and that RNs who responded to the survey had an opinion about influenza vaccine. A large enough sample size and the statistical methods used to analyze the data mitigated these assumptions.

Limitations

Influenza vaccination, learning styles, and the process by which innovations diffused are complex subjects and this project did not cover every aspect of these topics. Participants in this survey were representative of the nursing field, although they did not represent all nurses. In addition, in this study I measured intent and not behavior. Further, the respondents may have experienced influenza in varying degrees. In addition, budget and time constraints were limitations of this project.

Delimitations

In this study, I examined RNs employed by hospitals in the state of New Jersey who had experience with influenza vaccination. The influenza vaccination prevented illness in RNs, or as an RN administrator of the vaccine, it prevented illness in patients. Although the focus of the study was the RNs' intent to receive influenza vaccine, I did not consider allergies, prior significant reactions, including Guillain-Barre Syndrome

(GBS), and religious beliefs in the study—which together accounted for less than 1% of evidence-based declinations for influenza vaccination (Rakita, Hagar, Crome, & Lammert, 2010). Additionally, I did not consider any co-morbidity of any respondent.

Summary and Transition

Section 1 contained a discussion of the problem of inadequate influenza vaccination rates among HCP and RNs. Low influenza vaccination rates influence influenza, nosocomial influenza, influenza-like illness, and mortality during influenza season (USDHHS, 2013). Influenza vaccination is the most effective way to prevent the spread of influenza (CDC, 2012). Nurses work closely with patients and receiving a yearly influenza vaccination is part of ethical nursing practice (Caplan, 2011). Leadership determines the philosophy of nursing organizations and nurses rely on evidence-based practice to make clinical decisions (Ajenjo et al.; Doody & Doody, 2012). In this project, I used the quantitative methodology with a correlational design to determine if there were relationships between vaccination intent and leadership styles, and attitudes towards adoption of EBP. Section 2 contains the review of the literature on (a) transformational leadership styles and transactional leadership, (b) influenza vaccination, (c) the frameworks of diffusion of innovations and evidence-based practice.

Section 2: Review of Scholarly Evidence

Introduction

The problem addressed by this project was that of inadequate influenza vaccination rates of RNs. The purpose of this project was to determine whether leadership style and attitudes toward EBP correlate with influenza vaccination intent. Four areas of literature pertained to this project: transformational and transactional leadership, EBP, diffusion of innovations, and influenza. Transformational leadership is an effective leadership style that motivates and inspires followers to achieve and surpass stated goals (Doody & Doody, 2012). In contrast, transactional leadership is a leadership style based on rewards and punishment (Clark, 2013). EBP is the process whereby a patient is evaluated and a plan of care is formulated (Titler, 2010). The gap in the literature, which this project addresses, involves the relationships of leadership styles, EBP, and influenza vaccination intent. Section 2 details the relevant literature on leadership, EBP, and influenza. Additionally, diffusion of innovations theory is presented as a theoretical framework for the project.

Literature Search

The literature search was a continuous process starting in August 2012. The following databases were used: Cumulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE, and the Cochrane Database of Systematic Reviews. The websites of the following organizations were also important: WHO, CDC, CMS, USDHHS, and the Joint Commission.

I selected Boolean searching for terms such as influenza vaccination, health care worker or health care personnel, correlation and quantitative data. I excluded some qualitative papers because of small sample size. The following keywords were used: *influenza, vaccination, barriers, facilitators, HCP, leadership, attitude, personnel, health, infection control, immunization, and compliance*. Because recommendations for influenza vaccination date back to the 1980s, the literature search included the original CDC recommendations and the literature that formed the basis of current recommendations.

I reviewed original articles by Munoz (1999), Malvaud et al. (2001), Sartor et al. (2002), and Slinger and Dennis (2002) to substantiate the significance of the problem. Two current publications influenced the research question of this project and were useful in assuring the currency and impact of this area of research: recommendations by the National Vaccine Advisory Committee (2013) and the guidelines for reaching the national benchmark (USDHHS, 2013). The CDC website has an extensive section devoted to influenza and influenza vaccine. Topics such as seasonal influenza, influenza basics, influenza prevention, and influenza treatment are in sections written for readers who are members of the public and for those readers who are health professionals (CDC, 2012a).

Leadership

According to Stavert and Lott (2013), Kitty Genovese was a manager at a New York City bar in 1964, and while she was walking home from work, she was mortally

wounded, prompting national controversy. Central to the debate was the fact that 38 witnesses either saw the murder or heard cries for help. The terms "Genovese syndrome" and "bystander effect" describes the probability that individuals are unlikely to lend a hand when additional persons are nearby in crises and the terms describe human behavior in medical predicaments. Pivotal to the bystander effect is the dispersal of accountability. As the number of individuals involved in decision-making increases, the more likely it is that individuals assume that others in the group are more responsible for making decisions or those others had acted (Stavert & Lott, 2013). Thus, the bystander effect is a consequence of inadequate leadership.

With respect to influenza vaccination and RNs, healthcare organizations as a group have suffered from the bystander effect. Multiple influential health care organizations have recommended that healthcare workers receive seasonal influenza vaccination for over 30 years. Hospitals have implemented numerous educational strategies, yet hospitals have failed to raise influenza vaccination rates among RNs. The bystander effect that is associated with inadequate influenza vaccination rates among RNs is a consequence of inactivity and group size influences the effect. The bystander effect occurs in situations where duties are not designated (Stavert & Lott, 2013). Collectively, health care facilities have been waiting for an individual, organization, or agency to act and it is transformational leadership that must overcome organizational inertia and focus the management efforts of health care facilities on increasing the influenza vaccination rates among RNs.

Transformational Leadership

James MacGregor Burns defined transformational leadership as a motivational form of political leadership in the year 1978 (Kuhnert & Lewis, 1987). A transformational leader caused the needs, beliefs, and values of followers to change thus creating a relationship of mutual stimulation and elevation (Kuhnert & Lewis, 1987). Transformational leadership prepared followers to evolve into leaders by addressing the needs of each individual follower, empowering them, and orienting their aims and purposes with that of the leader, the group and eventually, the organization (Marshall, 2011).

Bass extended Burns' theory to organizational management in 1985 and described transformational leaders in an organizational setting as those who raised the attentiveness of co-workers, contemporaries, staff, and contacts to important issues (Kuhnert & Lewis, 1987). Further research has shown that transformational leadership encouraged followers to surpass set goals and increased the contentment and loyalty of followers toward the group and the organization (Marshall, 2011).

Transformational leadership is the guidance that created an organization that is more than the sum of its parts. Doody and Doody (2012) described transformational leadership as a motivational leadership strategy employed to address organizational management, professional responsibilities, ideas, values, and actions for the good of the order. In satisfying the intellect and passion of the work force, transformational leadership effectively motivated staff to think, do, and create. Four distinct spheres of

transformational leadership overlapped to create the overall dimension of transformational leadership. Figure 1 illustrates this concept.

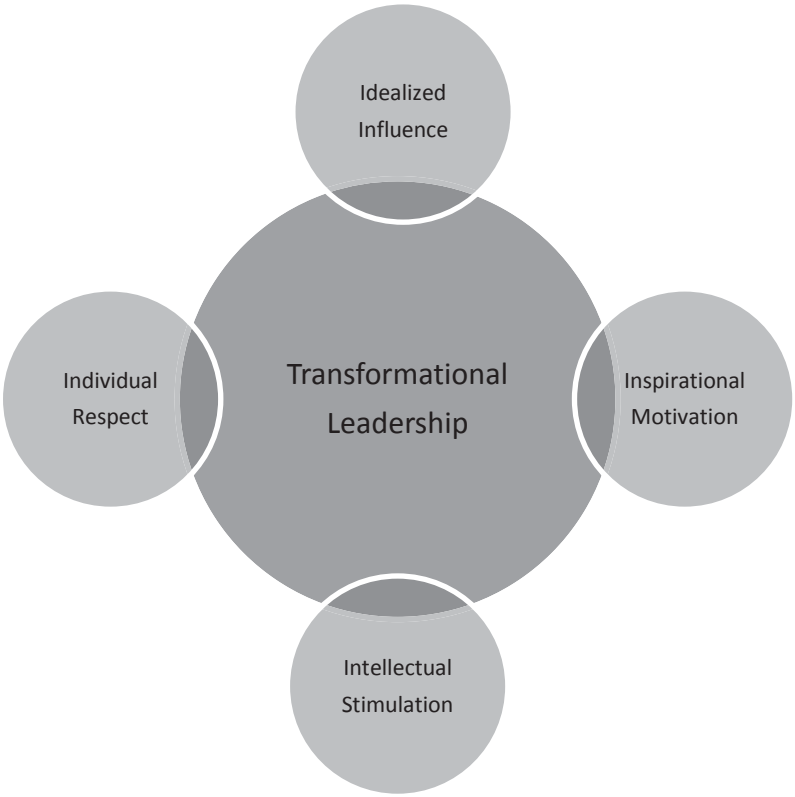

Figure 1. The individual spheres of idealized influence, inspirational motivation, intellectual stimulation, and individual respect, and their relationship to transformational leadership. Adapted from "Transformational Leadership in Nursing Practice", by O. Doody & C. M. Doody, 2012, *British Journal of Nursing, 21*, pp. 1212.

Transformational leaders employed one or more of the following four characteristics attributed to this leadership style (Doody & Doody, 2012; Kuhnert & Lewis, 1987). Transformational leadership characteristics could be present individually and were more likely to be present in combination (Doody & Doody, 2012). An overlap of transformational leadership characteristics was often present (Doody & Doody, 2012).

1. Idealized Influence (II): Transformational leaders' bearing commanded the respect, admiration, and trust of their followers. They served as role models and inspired followers to emulate them. There were two facets to idealized influence: the behavior exhibited by leaders and the qualities followers attributed to their leaders, such as having exceptional abilities, perseverance, and resolve. Hence, idealized influence evolved because of the interplay between the leader's behavior and the qualities ascribed to the leader by followers. In addition, leaders who exerted a great deal of idealized influence were risk takers, showed great consistency, and tended to have very high ethical standards.
2. Inspirational Motivation (IM): The actions of transformational leaders impelled and inspired their followers, provided clarity, and set greater goals for them. They encouraged followers to embrace the team spirit and demonstrate great hope and energy. Transformational leaders involved followers in envisioning goals for the future. They articulated a clear set of goals that the followers were eager to achieve and displayed a commitment towards realizing common goals and a shared vision.
3. Intellectual Stimulation (IS): Transformational leaders encouraged their followers to be innovative and creative by reassessing existing beliefs, redefining challenges, and finding novel solutions to existing problems. The leader assigned projects with the goal of expanding the potential of the

followers. Monitoring the progress made on such tasks provided the necessary support and guidance.

4. Individualized Respect (IR): Transformational leaders played the role of mentor to their followers and facilitated their professional development. Their managerial style adapted to accommodate the specific requirements of each individual follower. This style of leadership was highly interactive with an open channel of communication between the leader and followers. Followers of transformational leaders faced no penalty for holding a view independent from that of the leader and no public ridicule for errors.

Burns originally described transformational leadership as a form of political leadership. Bass extended Burns' theory to organizational leadership (Kuhnert & Lewis, 1987). Bass (1985), Curphy (1992), and Longshore (1988) described the importance of this style of leadership in the military setting. Over the years, extensive research has extended the influence of transformational leadership in a wide variety of fields and environments. Keller (2006) provided evidence that transformational leadership was a positive predictor of innovation in a research and development environment. Nederveen Pieterse, van Knippenberg, Schippers, and Stam (2010) showed that transformational leadership encouraged innovation when followers were psychologically empowered.

Williams, Parker, and Turner (2010) researched the proactive performance of teams in a chemical processing plant. They found that teams headed by transformational leaders were more proactive. They assessed that the basis for this performance was the

interpersonal relations established between team members and the leaders. Transformational leadership greatly improved workplace safety. Further, when training leaders were aware of the impact of transforming leadership on the safety practices, it further improved safety outcomes Mullen & Kelloway, 2009). Schaubroeck, Lam, and Cha (2007) explored the impact of transformational leadership and team performance in 218 financial services across Hong Kong and the United States. When the leaders had higher transformational leadership ratings, the team performance was improved.

Healthcare organizations have begun to place a great deal of importance on transformational leadership paradigms. One research study showed that in 370 hospitals, across 50 states, transformational leadership among healthcare managers improved knowledge management and quality improvement programs that ultimately resulted in better outcomes for the organization and patients (Marshall, 2010). Wang, Chantawon, and Nantsupawat (2012) described a correlation between transformational leadership of nurse managers and job satisfaction among hospital nurses in China while Nielsen, Yarker, Brenner, Randall, and Borg (2008) demonstrated an association between transformational style and the working conditions of followers such as involvement, influence, and meaningfulness. Transformational leadership correlated with employee well being (Nielsen et al., 2008).

Although instances of transformational leadership strategies were in the influenza vaccination literature, a leadership approach that included multiple spheres of transformational leadership was missing from evidence on the subject. Visible

vaccination of leadership figures, an action that is associated with transformational leadership, has been helpful in raising influenza vaccination rates, although not high enough to reach the national benchmark (Doody & Doody, 2012; Hood & Smith, 2009; USDHHS, 2013). The action of visible vaccination is part of the sphere of idealized influence and inspirational motivation by facility leaders.

Priority status by hospital leadership, another example of transformational leadership, was a strategy used in combination with other interventions, as part of an overall approach to increase RN influenza vaccination rates (USDHHS, 2013). Promoting influenza vaccinations was a hospital priority that appealed to the intellectual stimulation or thought processes of an individual and was a component of the sphere of respect (Doody & Doody, 2012). There were no specific references in the literature on transformational leadership as a strategy to improve influenza vaccination intent among RNs.

Transactional Leadership

In contrast, Bass described transactional leadership as a leadership style promoted by James MacGregor Burns. Transactional leadership was a form of political leadership that relied on a covenant between the leader and staff that specified the expectations of the staff member and the expected recompense. The source of the leaders' influence was the provision of rewards to subordinates who meet their expectations and penalties to those who failed to fulfill their obligations. Performance was rewarded by salary increase and promotion, and underperformance was punished. Effective transactional leaders were

adept at recognizing the achievements of followers and promptly rewarding them. They responded and fulfilled the changing needs of their followers, foresaw problems, and were proactive in devising strategies to solve them.

Transactional leadership was pragmatic because the emphasis was on meeting specific goals or requirements. It was very effective in situations that involved following established procedures and meeting established standards. However, subordinates of transactional leaders may not be encouraged to think outside the box. Preordained measures assessed subordinates. Transactional leadership operated at two levels: high and low quality. Under high-quality transactional leadership, employees and leaders had interpersonal relationships, engaged with, and supported each other at an emotional level. Low-level transactional leadership entailed an exchange of elements that individuals agreed upon contractually, such as wages for the number of hours worked (Bass, 1990).

Burns and Bass in 1978 and 1985, respectively, made the distinction between the various forms of transactional relationships (Bass, 1990). Burns described the commonplace interactions such as jobs in exchange for votes in the political realm (Bass, 1990). The less obvious forms of transactional leadership were rooted in trust, loyalty, and respect (Kuhnert & Lewis, 1987). Bass (1990) commented that transactional leaders bestow returns when they are satisfied that the subordinates are fulfilling the terms of their agreement (Kuhnert & Lewis, 1987). Leaders elucidated the extent of the followers' duties and the goals they needed to meet in order to achieve their personal objectives while also promoting growth of the organization.

Commitments founded on moral values such as trust and respect formed the basis of a higher order of transactional leadership. These moral values created an alliance between the leaders and their followers. In lower order transactional leadership, leaders exerted influence by virtue of the resources they had under their control and desired by their subordinates. However, if leaders did not have direct authority over resources, it dramatically undermined their influence. On the other hand, transactional leadership at the higher level relied on the exchange of intangible goods that were in the leaders' purview to ensure performance by subordinates. Rather than the organizational excellence that is associated with transformational leadership, transactional leadership yielded average or mediocre outcomes (Bass, 1990).

Kleinman (2004) demonstrated a negative association between transactional leadership and staff retention. Transformational and transactional leadership styles as antecedents of safety behavior were the subject of a meta-analytic review by Clarke (2013). Transformational leadership was positively associated with perceived safety climate and safety participation and perceived safety climate partially mediating leadership and safety participation (Clarke, 2013). A positive association between active transactional leadership linked perceived safety climate, safety participation, and safety compliance, suggesting that transformational leadership was important to employee participation in safety, and transactional leadership was essential to procedural compliance (Clarke, 2013; Doody & Doody, 2012). Safety benefited from the combination of leadership styles (Clarke, 2013; Doody & Doody, 2012).

Influenza Vaccination

History of Influenza Vaccination

Influenza easily spread from person to person via droplets when an infected person sneezed or coughed, or through fomites, inanimate objects that an infected person touched. General symptoms included cough, fever, runny or stuffy nose, headaches, and myalgia. The majority of people recovered within three to seven days. However, certain populations were at a greater risk for developing serious complications or even death: elderly people (over 65 years of age), young children (especially those under two years of age), pregnant women, people who are immunocompromised or critically ill, and people with chronic medical conditions such as asthma, diabetes, or heart disease (CDC, 2011).

Current research explored the relationship between influenza like infection and fatal and non-fatal cardiac events suggested that recent influenza like infection was a nontraditional cardiovascular risk factor (Udell et al., 2013). Additionally, Udell et al. (2013) demonstrated that influenza vaccination correlated with a 36% reduction in risk for cardiovascular events when compared to not receiving influenza vaccination. The benefits of influenza vaccination for those people who suffered a recent heart attack or unstable angina was determined to be even greater with a 55% lower risk of cardiovascular events for individuals who received influenza vaccine when compared to those who did not receive the vaccine (Udell et al., 2013).

It is known that adults can spread the influenza virus at least one day before any symptoms appear and for up to five days after they become sick (Fiore et al., 2010). Only

about 50% of people show symptoms of the illness, and both symptomatic and asymptomatic patients can shed the virus (Foy, Cooney, Allan, & Albrecht, 1987; McLennan et al., 2008). In fact, in one serosurvey of HCP, 23% had documented evidence of influenza infection and of these, 59% could not recall having the disease and 25% could not recall any respiratory illness (Pearson, Bridges, & Harper, 2006). The fact that many HCP tend to continue to work despite being ill compounds the risk of nosocomial spread of influenza (Wilde et al., 1999).

Influenza vaccination recommendations for health care workers originated from the CDC over 30 years ago (Sullivan, 2010). The United States Department of Health and Human Services (USDHHS) suggested a national benchmark of 90% through the health promotion project, Healthy People (USDHHS, 2013). The project, Healthy People 2020, is the third in a series of 10-year initiatives designed to lead all Americans in the quest for health improvement (CDC, 2013). These goals and objectives of Healthy People 2020 provided benchmarks for action, were measureable, and apprised us of the national progress on wellness in specific groups of people (CDC, 2013).

Increasing the percentage of HCP who vaccinate annually against seasonal influenza was an objective in the Healthy People 2020 topic area of Immunization and Infectious Diseases (Healthy People 2020, 2011). Healthy People 2020 reported that a baseline of 53% of health care workers received seasonal influenza vaccination in the influenza season of 2008-2009 with the target for this objective being 90% (CDC, 2013). Of interest is the fact that the HCP influenza vaccination rate was 62% in 2010, thereby

exceeding the Healthy People 2010 objective of 60% by the year 2010 (USDHHS, 2013). Despite recommendations for influenza vaccination of HCP and national goals for achievement of the benchmark, there remain questions about vaccine efficacy and clinical trials.

Ten systematic reviews have addressed the subject of influenza vaccination in the Cochrane Databases, and several reviews pointed to the lack of sufficient data and the poor quality of present knowledge. Jacobson, Vann, and Szilagyi (2005) reviewed reminder systems and immunization rates and determined that reminders increased immunization rates in the range of 1 to 20 percentage points (adult influenza vaccinations *OR* = 1.66, 95% *CI* 1.31, 2.09). The authors concluded that patient reminder and recall systems in a primary care setting were effective at improving influenza vaccination rates. Chang, Morris, and Chang (2007) reviewed influenza vaccine for children and adults with bronchiectasis. The authors concluded that the evidence for or against influenza vaccination for children and adults with bronchiectasis did not exist.

Keller, Weeda, van Dongen, and Levi (2008) examined influenza vaccination and the prevention of coronary heart disease. The authors concluded that in spite of the significant effect seen in individual studies, there was insufficient data to determine the effect of influenza vaccination on coronary heart disease. Vaccines for preventing influenza in the elderly were examined by Jefferson et al. (2010). Uncertainty on the safety, effectiveness, and efficacy of influenza vaccination in people aged 65 and older

was reported. The poor quality of evidence and a dearth of randomized clinical trials (RCTs) on the subject contributed to data interpretation.

Poole, Chacko, Wood-Baker, and Cates (2010) examined influenza vaccine for patients with chronic obstructive pulmonary disease (COPD). Although a small number of studies addressed this subject, the evidence demonstrated that inactivated influenza vaccination reduces exacerbations in patients with COPD. Influenza vaccination in children undergoing cancer chemotherapy was the focus of research by Goossen, Kremer, and van de Wetering (2009). Paedriatric oncology patients who were undergoing chemotherapy treatment produced an immune response to influenza vaccination but whether or not influenza vaccination was protective against influenza or complications subsequent to influenza was uncertain. Well designed RCTs on this subject are needed (Goossen, Kremer, & van de Wetering, 2009).

Vaccines for preventing influenza in people with cystic fibrosis were the subject of a review by Dhjarmaraj and Smyth (2009). The authors concluded that RCT evidence that influenza vaccination of individuals with cystic fibrosis is of benefit was lacking. Thomas, Russell, and Lorenzetti (2010) tackled the subject of strategies to increase influenza vaccination rates of people 60 years and older living in the community. Individualized postcards or phone calls were effective in increasing influenza vaccination rates of community-dwelling people aged 60 years and above (Thomas, Russell, & Lorenzetti, 2010). Home visits and facilitators were found to be effective, and reminders to physicians were shown to be ineffective, in increasing influenza vaccination rates in

people ages 60 and above who were living in the community (Thomas, Russell, & Lorenzetti, 2010).

Cates and Rowe (2013) reviewed vaccines for preventing influenza in people with asthma and reported uncertainty about whether or not influenza vaccination protects against asthma exacerbation related to influenza infection. A single systematic review dealt with influenza vaccination for health care personnel caring for the elderly was conducted by Thomas, Jefferson, and Lasserson (2010). The authors determined that studies reviewed showed no effect for laboratory confirmed influenza, pneumonia, and pneumonia related mortality. There was a lack of data on the incidence of laboratory-confirmed influenza infection among healthcare personnel, and the authors called for high-quality RCTs to evaluate multiple strategies for the prevention of influenza.

Beyer et al. (2013) recently challenged the Cochrane findings on influenza vaccination of people aged 65 and over, and rearranged the Cochrane data presented by Jefferson et al. (2010). Where data analyzed by Jefferson et al. (2010) lacked evidence of vaccine effectiveness, similar data that was rearranged by Beyer et al. (2013) demonstrated support for influenza vaccination of the elderly. The authors framed data in a biological framework to show vaccine effectiveness against fatal and non-fatal influenza complications of about 30%, influenza like illness about 40%, confirmed influenza infection of about 50%, and vaccine efficacy against infection of about 60%.

Given the somewhat inconsistent and contradictory evidence and the cited lack of RCTs, it is not surprising that HCP influenza vaccination rates have not reached the

national benchmark. Clearly needed were improved research methodology and large-scale RCT results. Kostova et al. (2013) presented CDC data that documented the advantages afforded by influenza vaccination. Surveillance data examined over a six-year period, influenza cases, outpatient visits, and hospitalizations averted by influenza vaccination proved beneficial. Increased vaccination coverage in non-elderly adults and influenza vaccine effectiveness in the elderly proved beneficial.

Voluntary Programs for Influenza Vaccination

During the last decade, multiple voluntary influenza vaccination programs described in the literature detailed numerous influenza vaccination strategies yet not one voluntary program reported achieving the national benchmark. Doratotaj, Macknin, and Worley (2008) reported no evidence to recommend that influenza vaccination campaigns that supplied mailed information or large raffle prizes were effective in increasing influenza vaccination rates for health care employees. Hood and Smith (2009) employed a multidisciplinary, leadership-modeled team to increase influenza vaccination rates but failed to reach the national benchmark of 90%. Talbot, Dellit, Hebden, Sama, and Cuny (2010) noted that incentivization of influenza immunization, train the trainer programs, visible vaccination of administrators, and leadership programs result in higher vaccination rates; however, these efforts did not achieve the national benchmark.

Declination statements did not influence vaccination rates (Talbot et al., 2010). Not one of these voluntary, evidence-based programs achieved the national benchmark of 90%. Rhudy, Tucker, Ofstead, and Poland (2010) portray nurses as considering influenza

vaccination as a matter of personal choice rather than an evidence-based nursing practice. Belief that influenza is a serious threat to personal health, belief that influenza vaccination protects those persons around HCP and a belief in vaccine safety was associated with higher rates of HCP influenza vaccination and a belief that influenza vaccine causes influenza in those vaccinated was associated with the lowest rates of influenza vaccination among HCP (Peng-jun et al., 2013).

Mandatory Programs for Influenza Vaccination

Given the unsuccessful voluntary HCP influenza vaccination programs described in the literature and dismal HCP influenza vaccination rates reported by health care organizations, it is not surprising that health care leaders considered influenza vaccination mandates as a strategy to increase HCP influenza vaccination rates. Poland (2010) enumerated the facts concerning influenza vaccination and published an appeal for mandatory health care worker influenza vaccination. Caplan (2011) detailed the evidence favoring influenza vaccination in health care workers, described the plethora of voluntary programs, and discussed the ethics of protecting patients. Caplan also noted the low vaccination rates despite educational efforts and issued the call for an influenza vaccination mandate.

Current publications have described the transition from voluntary to mandatory influenza vaccination as achieving and surpassing the national benchmark. The most recent literature identifies mandatory influenza vaccination programs that surpass the national benchmark of 90%. Rakita et al. (2010) reported the first successful mandatory

influenza vaccination program. The initiative took place at Virginia Mason Medical Center in Seattle, Washington. Over 4,000 health care workers participated in the program that achieved an influenza vaccination rate of 97.6% in 2005, the first year of implementation, and achieved sustained rates surpassing 98% in the following four years (Rakita et al., 2010). Medical and religious exemptions accounted for less than 1% of the health care workers, and influenza vaccination declined by less than 1% of personnel who subsequently left the medical center (Rakita et al., 2010).

Karanfil, Bahner, Hovatter, and Thomas (2011) described raising health care worker vaccination rates from 54% in the years prior to 2009 to 99.9% in the 2009 influenza vaccination season. The combination of an influenza vaccination mandate, application for medical accommodation, and religious exemption provided the means for the accomplishment of the achievement of the national benchmark. Health care workers who were deemed non-compliant were terminated (Karanfil et al., 2011); the actual percentage of employees terminated was less than 1% (Karanfil et al., 2011). This influenza mandate covered approximately 29,000 health care workers (Karanfil et al., 2011).

Huynh, Poduska, Mallozzi, and Culler (2012) reported increased influenza vaccination rates for health care workers from 68% in the 2009 to 95.5% in the 2010 influenza vaccination season, after the establishment of a mandatory influenza vaccination program. Kidd, Wones, Momper, Bechtle, and Lewis (2012) reported HCP influenza vaccination compliance of 100%.

Mandatory seasonal influenza vaccination policies yielded influenza vaccination coverage that meets or exceeded the national benchmark of 90%, and the success sustained. Little health care worker pushback has been described, and positive commentary on patient safety by the press, patients, and families has been noted. In addition, health care worker absenteeism has decreased in institutions with mandates (Poland, 2005; Poland, 2010).

Despite the success of mandatory influenza vaccination programs in increasing the influenza vaccination rates of HCP, there were not enough recent studies conducted on the relationship between influenza vaccination and a decrease in influenza. Munoz et al. (1999), Weinstock et al. (2000), and Slinger and Dennis (2002) argued that influenza vaccination was helpful in preventing nosocomial influenza outbreaks. Bridges et al. (2003) noted that lower rates of ILI and death in extended care facilities were associated with HCP influenza vaccination.

More recent population based studies have shown the positive effects of influenza vaccination. Kostova et al. (2013) demonstrated that influenza vaccination was associated with decreased influenza cases, outpatient visits, and averted hospitalizations. Additionally, Castilla et al. (2013) conducted a case control study to look at influenza vaccine efficacy in preventing outpatient, inpatient, and severe or fatal cases of laboratory verified influenza. The authors demonstrated that influenza vaccination was 75% effective in preventing influenza in the outpatients, 60% effective in preventing hospitalizations associated with influenza, and 89% effective in preventing severe

influenza illness. Influenza vaccination not only prevented influenza and hospitalization associated with influenza, but in patients who contracted influenza, vaccination was associated with a favorable prognosis (Castilla et al., 2013).

Udell et al. (2013) demonstrated the relationship between influenza vaccination and lower risk of major adverse cardiac events. In those high-risk patients with unstable cardiac disease, researchers noted an amplification of influenza vaccination effect. Influenza is therefore a nontraditional cardiovascular risk factor (Udell et al., 2013).

Vaccination Programs Legal Issues

However positive the achievement of the national benchmark for HCP influenza vaccination rates was with a mandatory approach, legal and ethical considerations emerged (USDHHS, 2013). The states of California, Georgia, Illinois, Maine, Maryland, Massachusetts, Nebraska, Oklahoma, Rhode Island, and Tennessee have offer laws, meaning that health care organizations must offer HCP influenza vaccine each year (CDC, 2013b; USDHHS, 2013). Ensure laws, where seasonal influenza vaccination is mandatory for all HCP, are present in Alabama, Colorado, and New Hampshire (CDC, 2013b; USDHHS, 2013).

The collective bargaining process was cited as a reason that litigation to challenge vaccination mandates was filed in California, Washington, and Iowa (NVAC, 2013). In California and Washington, arbitration upheld the position of the hospital and the influenza mandate, and in Iowa, arbitration sided with the union and the mandate was rescinded (NVAC, 2013).

Ethical concerns centered on HCP autonomy and the individual's right to make decisions (NVAC, 2013). However, professional duty to curtail the carriage of the influenza virus superseded individual autonomy (NVAC, 2013). The failure to reach the national benchmark by voluntary influenza programs and the ethical and legal issues that accompanied mandates point to the need for leadership.

Theoretical Frameworks

Diffusion of Innovations Theory

Theories provide nurses with the structure for using the nursing process to solve a clinical problem (Davidson, Dracup, Phillips, Padilla, & Daly, 2007; Fawcett, 1999; Fawcett & Garity, 2009; McEwen & Wills, 2011). EBP is the use of nursing theory, as applied to patient care in the clinical setting, and nursing theory directs our EBP (Fawcett & Garity, 2009; Hodges & Videto, 2011; McEwen & Wills, 2011). People in life experience innumerable and diverse innovations, and nursing practice often assists patients and families in facilitating innovations related to health and wellbeing (Davidson et al., 2007).

Diffusion of innovations, a theory rooted in the social sciences, describes the process by which novelties in areas such as thinking, clinical practice, and community customs transition or progress from an idea to an innovation through communication channels over time (Hodges & Videto, 2011; Rogers, 2003). This theory provided the theoretical concepts and structure for this project as well as the framework for the linkages between concepts and propositions. The central concepts to this theory are

innovation, communication channels, time, and the social system (Rogers, 2003). Relative advantage or improvement, compatibility or congruency with the present, complexity or intricacy of the idea, trialability or the capacity to pilot the program, and observability or visibility to others is helpful to the diffusion process (Dearing, 2009; Rogers, 2003).

While the evidence behind the recommendation for influenza vaccination and HCP is not new, the goal of a national benchmark is relatively new, and the collection of HCP influenza vaccination rates data and the suggestion of financial penalties for hospitals that fail to attain the benchmark are recent advancements. Influenza vaccination for HCP is intuitively appealing, and herd immunity is advantageous. Influenza vaccination programs are common and the number of health care organizations requiring annual influenza vaccination of HCP in the United States numbers over 200 (Immunize.org, n.d.). There are photographs of national leaders such as President Obama receiving a flu shot.

Five distinct domains exist in the diffusion of innovations, and behaviors are common to each domain (Hodges & Videto, 2011; Rogers, 2003). The domains are knowledge, persuasion, decision, implementation, and confirmation (Hodges & Videto, 2011; Rogers, 2003). Communication is inherent in this process, and as people advance in the innovation trajectory, they discover the innovation, comprehend it, and then digest, rework, hash over, analyze, and synthesize the idea in the process (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004; Rogers, 2003).

Antecedents to the diffusion of innovations process are prior experience, perceived need for the innovation, leadership, and community values (Rogers, 2003). Therefore, leadership is an integral part of the diffusion of innovation process. HCP enter the influenza vaccination as an innovation trajectory during their professional education. Despite the long-standing CDC recommendation for seasonal influenza vaccination and yearly vaccination campaigns by professional organizations such as the ANA, HCP do not perceive influenza as a personal threat and influenza vaccination has low value among HCP (Rhudy et al., 2010).

Knowledge is the first domain in the diffusion of an innovation, and it is at this time that the innovation is discovered, studied, and comprehended (Hodges & Videto, 2011; Rogers, 2003). It is also during this time that the perceived need for knowledge is created (Rogers, 2003). Problems often go unrecognized and needs and wants are commonly confused (Rogers, 2003). Awareness knowledge concerns the existence of the innovation (here, what influenza and the preventive vaccine are); how-to knowledge is the information on how to use the innovation (here, how to receive an influenza vaccine); and principles knowledge concerns how the innovation works (here, how influenza vaccination protects HCP and patients). Undergraduate RN education, organizational educational offerings, and clinical nursing experience in caring for patients with influenza expose HCP to knowledge of the illness and influenza vaccination. RNs thus gain an understanding of the illness and prevention.

Persuasion is the domain in which a person structures an approving or disapproving opinion on the innovation (Rogers, 2003). Persuasion is an antecedent to the decision domain, and it is in the persuasion phase that attitudes towards the innovation are formulated (Rogers, 2003). Aiding in the persuasion process for influenza vaccination of HCP are numerous recommendations for annual seasonal influenza vaccination by public health agencies such as the WHO and CDC. In addition, there are recommendations for voluntary influenza vaccination of HCP by highly regarded organizations such as the ANA, American Medical Association (AMA), and Advisory Council on Immunization Practices (ACIP), Association of Occupational Health Professionals (AOHP), and the Healthcare Infection Control Practices Advisory Committee (HICPAC).

Suggestions for mandatory influenza vaccination of HCP by professional organizations recently increased. Opinion leaders such as the American Academy of Pediatrics (AAP), American Academy of Family Physicians (AAFP), American College of Physicians (ACP), and American Hospital Association (AHA) recommend influenza vaccination mandates. In addition, the Infectious Disease Society of America (ISDA), American Pharmacists Association (APhA), American Public Health Association (APHA), and the American Medical Directors Association (AMDA) have expressed favor towards mandatory HCP influenza vaccination. Further, the Association for Professionals in Infection Control and Epidemiology (APIC), focused attention on the

issue of HCP influenza vaccination rates, the barriers faced by HCP, and the compelling evidence in favor of increasing these rates.

Decision is the domain of choice, judgment, and commitment (Rogers, 2003). Pilot programs are helpful to decision making, as are visible presentations of leadership adopting the innovation. The intent to vaccinate is a decision to receive the vaccine, and vaccination intent linked to prior vaccination history. Therefore, it is important to employ the domains of knowledge, persuasion, and decision early in the HCP career. Present mandatory influenza vaccination programs are pilot programs in a sense, demonstrating high influenza vaccination rates among HCP that not only met, but also exceed the national benchmark and elements of transformational and transactional leadership. Visible presentations of leaders receiving influenza vaccination are helpful in this domain.

Implementation is the domain in which the innovation was applied (Rogers, 2003). The idea moves from a thought process to one of action (Rogers, 2003). Questions regarding the scope of the innovation, or who, what, where, when, why, and how of the practice are answered in this domain (ANA, 2010a). Accordingly, HCPs ask questions about the vaccine, ingredients, preservatives, as well as location and availability. They also want to know what organizational leaders have received the inoculation, and how and where they could receive the vaccine themselves.

Reinvention is common at this time, and the innovation adapted for individual institutional usage. Mandatory influenza vaccination programs were a relatively recent

innovation with no programs in existence over ten years reported in the literature. Reinvention was evident as hospitals offered employees who refused to receive influenza vaccine the option to transfer out of a priority unit during influenza season and return to the unit after the influenza season concluded (McLennan et al., 2008).

Confirmation, the final domain in the diffusion of innovations process, involves the reinforcement of a decision and intervention (Rogers, 2003). In this domain, the individual rejects or reduces disagreement or conflict about the decision. The benefits of the innovation become evident, the innovation is integrated into customary behavior, and the innovation is endorsed and supported by the individual (Rogers, 2003). In organizations where influenza vaccination rates of HCP have reached or exceeded the national benchmark of 90%, the success is sustainable, commentary by the media, families, and the community at large has been favorable, and HCP absenteeism has been decreased (Poland, 2010).

Nurses have used diffusion of innovations theory to examine and explain research utilization. Milner, Estabrooks, and Humphrey (2005) used diffusion of innovations as the theoretical framework when describing the determinants of research usage among clinical nurse educators charged with enhancing professional development among staff. Gale and Schaffer (2009) described how diffusion of innovations provided the theoretical framework to identify barriers and facilitators to EBP. The authors underscored the diffusion of innovations strategy of highlighting the advantage of the innovation for patients when considering the adoption of an EBP. In addition, as a facilitator in adopting

EBP, the authors detailed the strategy of discussing how the innovation added to the worth of nursing practice.

Evidence-Based Practice Theory

EBP is the continuously evolving process whereby careful evaluation of current best practices, expert clinical judgment, and the regard for patient preferences synthesize to formulate a plan for patient care (Titler, 2010). Although the phrase EBP recently evolved, Dr Archie Cochrane facilitated the current process of utilizing research findings in medicine. Dr. Cochrane, an epidemiologist from Great Britain called for the timely review, summation, and communication of randomized controlled trials (White, 2012). Long before Cochrane called for clinical practice based on research, Florence Nightingale gathered information and quantified the data, and her suggestions of causal relationships resulted in clinical practice modifications so it was reasonable to suggest that EBP is the foundation of nursing practice (White, 2012).

Systematic reviews, randomized controlled trials, cohort studies, quantitative and qualitative research, case series, case reports, editorials, and expert opinion are examples of evidence that were used in clinical decision-making (Titler, 2010; Friis & Sellers, 2009). The Cochrane Database of Systematic Review, the Database of Abstracts of Review of Effect (DARE), and Joanna Briggs were examples of systematic reviews, the highest level of evidence (Friis & Sellers, 2009).

Clinical evidence, First/Nursing Consult, and BMJ Point of Care present critically appraised topics. ACP Journal Club, evidence updates, and evidence-based journal series

summarize critically appraised individual articles (Friis & Sellers, 2009). Systematic reviews, critically appraised topics, and critically appraised individual articles are filtered information (Friis & Sellers, 2009). Randomized controlled trials, cohort studies, case controlled studies, case series, and case reports are unfiltered information (Friis & Sellers, 2009). Background information and expert opinion such as UpToDate, and textbooks represent the lowest level of evidence (Friis & Sellers, 2009). Figure 2 illustrates the concept of levels of evidence.

Figure 2. A graphic representation of the levels of evidence in pyramid form. Adapted from *Epidemiology for Public Health Practice* by R. H. Friis and T. A. Sellers, 2009, p. 329.

Multiple factors have contributed to the EBP movement. Taken together, quality and safety measures, the exponential increase in information, the delay in translating research into practice guidelines, a decline in use of best evidence, and the interest shown by the general public in health care information and decision making have contributed to the expansion of EBP (White, 2012). Although guidelines for evidence-based practice are numerous, existing inconsistencies in clinical practice guidelines are problematic as is the lack of research on strategies for successful implementation of evidence-based practices (Titler, 2010).

Attitudes toward the adoption of EBP provided the theoretical concepts and structure by which this project was constructed and the framework for the linkages between concepts and propositions. There are four separate dimensions of attitudes toward EBP. The central dimensions of attitudes toward the adoption of EBPs are the intuitive appeal of EBP, likelihood of adopting EBP given requirements to do so, openness to new practices, and perceived divergence of usual practice with research-based or academically developed interventions (Aarons, 2004). The Evidence-Based Practice Scale (EBPAS) developed by Aarons (2004) measures attitudes toward the adoption of evidence-based practice.

The first dimension, intuitive appeal of innovation, involves persuasion and efficacy (Aarons, 2004).The appeal of EBP and the information source of the innovation have some bearing on the adoption of the EBP (Frambach & Schillewaert, 2002). Aarons

et al. (2010) demonstrated that females, higher educational levels, and people who are Caucasian were associated with greater intuitive appeal of EBP.

The second dimension, likelihood of adopting EBP given requirements to do so, refers to the organizational policies and procedures as well as state and federal mandates. For instance, on a national level, there was inconsistent uptake of the CDC recommendation that all HCP receive yearly influenza vaccination. Some states required annual influenza vaccination by HCP, some states required health care organizations to offer the vaccine, and some states had no legislation concerning influenza vaccination. In addition, there was wide variation in the HCP influenza vaccination policies that health care organizations have adopted. Some organizations have adopted mandatory policies while others had voluntary policies. Aarons et al. (2010) demonstrated that advancing age, female gender were associated with greater willingness to adopt EBP while higher educational attainment and more years of experience were associated with decreased willingness to adopt EBP.

The third dimension, openness to new practices, involves openness and a willingness to try an innovation (Aarons, 2004). As a personality characteristic, openness has been associated with intelligence and divergence (Schretlen, van der Hulst, Pearlson, & Gordon, 2011). Fewer years of professional experience and holding the highest degree in social work (relative to psychology) were associated with higher scores on the openness dimension of the EBPAS (Aarons et al., 2010).

The fourth dimension, perceived divergence of usual practice with research-based or academically developed interventions concerns the discrepancy that arises when there is a variation between accepted practice and the EBP innovation (Aarons, 2004). EBP mandates were be seen as unrelated to or unnecessary for health care traditions (Garland, Kruse & Aarons, 2003). Less perceived divergence between present clinical practice and EBP was associated with less number of year's worked, Caucasian ethnicity, and having the highest degree in psychology relative to another discipline (Aarons et al., 2010).

Aarons (2004) determined a relationship between attitudes toward adoption of EBP and education, level of experience, and organizational context. Attitude was an antecedent to an evidence-based decision (Aarons, 2004; Rogers, 2003). Clark, Cowan, and Wortley (2009) studied influenza vaccination attitudes and practices and described a relationship between knowledge about influenza vaccination of HCP and higher influenza vaccination rates.

Despite congruency with professional nursing goals such as prevention of illness and restoration of health, the goal of 90% HCP influenza vaccination rates have not been reported in the literature by a single hospital without a complete institutional mandate (Poland, 2010; Tilburt, Mueller, Ottenberg, Poland, & Koenig, 2008). There is some evidence that HCP viewed influenza vaccination as a matter of personal choice based on a personal belief system rather than an evidence-based nursing intervention (Rhudy et al., 2010). The conclusion that patient safety outcomes did not factor into the decision-making process and risk of illness or injury and personal health choice did enter the

decision making process was determined by Rhudy et al. (2010) in a qualitative descriptive design study. Semi structured interviews and content analysis evaluated decision-making about personally receiving influenza vaccination in 14 nurses (Rhudy et al., 2010).

The theoretical model, diffusion of innovations, has been used as a framework to study the diffusion of numerous and diverse technologies such as innovations in agriculture, teaching, medicine, and health, and attitude towards an innovation influenced whether an EBP is ultimately adopted (Aarons, 2004). It was crucial to understand the attitudes toward the adoption the EBP of influenza vaccination as applied to the diffusion of an innovation (Aarons, 2004).

Background and Context

All hospital systems in the nation must achieve the national benchmark of 90% for HCP influenza vaccination rates by 2020 (Healthy People, 2020, 2011; NVAC, 2013, USDHHS, 2013). Information learned about the relationships between leadership style and attitudes toward EBP on influenza vaccination intent will be useful in helping hospitals develop strategies to increase HCP influenza vaccination rates. Two hospital systems in New Jersey agreed to participate as research sites for this study.

Hospital A, located in southeastern New Jersey, is a nonprofit organization that employed over 5,000 clinical and administrative personnel. The mission of Hospital A is to deliver health and healing through trusting relationships. The vision of Hospital A is building healthy communities. Values of the organization include integrity, respect,

service, teamwork, and safety. Hospital A's clinical services including hospitals, long-term care and rehabilitation centers, ambulatory sites, and outpatient services are licensed by the New Jersey Department of Health and Senior Services**.** The Joint Commission accredited Hospital A. Hospital A has achieved and recertified Magnet status conferred by the American Nurses Credentialing Center (ANCC) since 2004.

Hospital B, located in southwestern New Jersey, is a non-profit organization that employs over 8,000 clinical and administrative personnel. The mission of Hospital B is to help you be well, get well, and stay well. The vision of Hospital B is that it is the premier choice in health and wellness. Values of the organization include integrity, respect, caring, commitment, teamwork, and excellence. Hospital B's clinical services including hospitals, long-term care and rehabilitation centers, ambulatory sites, and outpatient services are licensed by the New Jersey Department of Health and Senior Services. The Joint Commission accredited Hospital B.

The student is a certified adult nurse practitioner and certified medical-surgical clinical nurse specialist. The clinical practice of the student includes the care of individuals who need all vaccinations including influenza vaccination. The student is well versed in the topic. Individual participants in the project may have known the student and the student may have known individual participants in the project. The student may have had collegial relationships with individual project participants. A nursing administrator in Hospital A was the DNP mentor of the student, a potential project participant, and hospital system A was the practicum site of the student. A potential project participant

and project facilitator in Hospital B was a family member of the student. The student is a member of the medical staff of Hospital A.

Curiosity and the desire to learn more about the relationships of leadership style and attitudes toward EBP brought the student to this project. The student had a desire to learn more about how to increase HCP influenza vaccination rates in the nation and the world. The student disseminated findings of the study to Hospital A and Hospital B in written format, prepared a paper for publication in a scholarly journal, and submitted the presentation for oral presentation at the Nursing Research Day of Hospital A and Hospital B.

Summary and Transition

In Section 2, I reviewed scholarly evidence on the subjects of influenza, leadership, EBP, and diffusion of innovations theory. Nosocomial influenza is a threat to hospitalized patients and HCP influenza vaccination is an important part of influenza prevention programs. Influenza vaccination rates of HCP are below the national benchmark and numerous strategies have been tried without success in an attempt to attain the national benchmark of 90 %. Industry support for vaccination mandates is widespread yet the idea of a mandate is unpopular. Leadership is necessary to help raise HCP influenza vaccination rates. Transformational leadership may be particularly helpful in the in raising vaccination rates because it is a motivational style of leadership which aligns the vision of the employees with the vision of the organizational leadership.

In addition to the relationship between leadership and influenza vaccination, I discussed the relationship of EBP and influenza vaccination. EBP is a framework that includes current scientific evidence, best clinical practices, and patient preference in clinical care decision making. Quantitative research in the area of HCP influenza vaccination and EBP is needed. Diffusion of innovations theory is the theoretical framework and explains how an idea progresses from a concept to accepted practice. In section 3, I outline the design, methodology, population, sampling, data collection, and statistical analysis for the project.

Section 3: Approach

Introduction

The purpose of this project was to understand the association between leadership styles and attitudes toward adoption of EBP and the intent to receive influenza vaccination among nurses in the state of New Jersey. Influenza vaccination rates for HCP were 38% below the national benchmark suggested by the CMS, the Joint Commission, and Healthy People 2020 (CMS, n.d.; Healthy People 2020, 2011). As influenza vaccination rates increased during the time from 2005 to 2011, influenza cases were averted (Kostova et al., 2013). It is important for organizational leaders to recognize barriers to influenza vaccination and to identify facilitators to increase vaccination rates (Ajenjo, et al., 2010).

Earlier sections covered the complexities of the practice issue, a review of the evidence, and the need to understand relationships such as leadership style and attitudes toward evidence-based practice and influenza vaccination intent. The theoretical framework, diffusion of innovations describes how an idea progresses from a concept to accepted practice was selected to guide this project. Section 3 describes how the project was carried out. The project design, theoretical model, population and sampling, data collection, and statistical analysis are presented and discussed.

Project Design and Methods

This project used a quantitative methodology and a correlational design to understand relationships between leadership styles, attitudes toward EBP, and influenza

vaccination among RNs. A correlation describes the strength and direction of the association between the independent variables, demographics, transformational leadership, transactional leadership, and attitudes toward EBP and the dependent variable of influenza vaccination intent (Polit, 2009).There was no intent to use an interventional approach. The reasons for using a correlational design were as follows: time constraints, budget limitations, the ability to understand the behavior of a large population using a sample from the population, and the ability to generalize about the population (Pagano, 2010; Polit, 2009).

This project allowed the relationships between variables to be examined and allowed inferences about the population to be suggested (Burns & Grove, 2009; Polit, 2009). The independent variables in this project were leadership style, attitudes toward adoption of EBP, and demographic variables. The dependent variable was vaccination intent. The decision to use this methodology occurred after a careful search revealed a gap in the literature. Rhudy et al. (2010) suggested that HCP used a personal belief system rather than an evidence based decision when determining whether to receive influenza vaccination, and a quantitative study on the subject was deemed necessary. Figure 3 is a visual representation of the proposed relationships between attitudes toward EBP, leadership style, and influenza vaccination intent.

The theoretical model in Figure 3 indicates the relationship between vaccination intent and transformational and transactional leadership within an organization. For example, transformational leadership within an organization leads to high levels of EBP

(that is, vaccination reduces the spread of the influenza virus), and high levels of EBP leads to high levels of vaccination intentions among HCPs. The graph also shows that transactional leadership within organizations has the opposite effect and eventually reduces vaccination intention among HCPs. The center right side of the graph showed the factors that make up the attitudes towards adoption of an innovation. The innovation process included five factors; however, the persuasion factor links directly to attitude development about EBP adoption and vaccination intention.

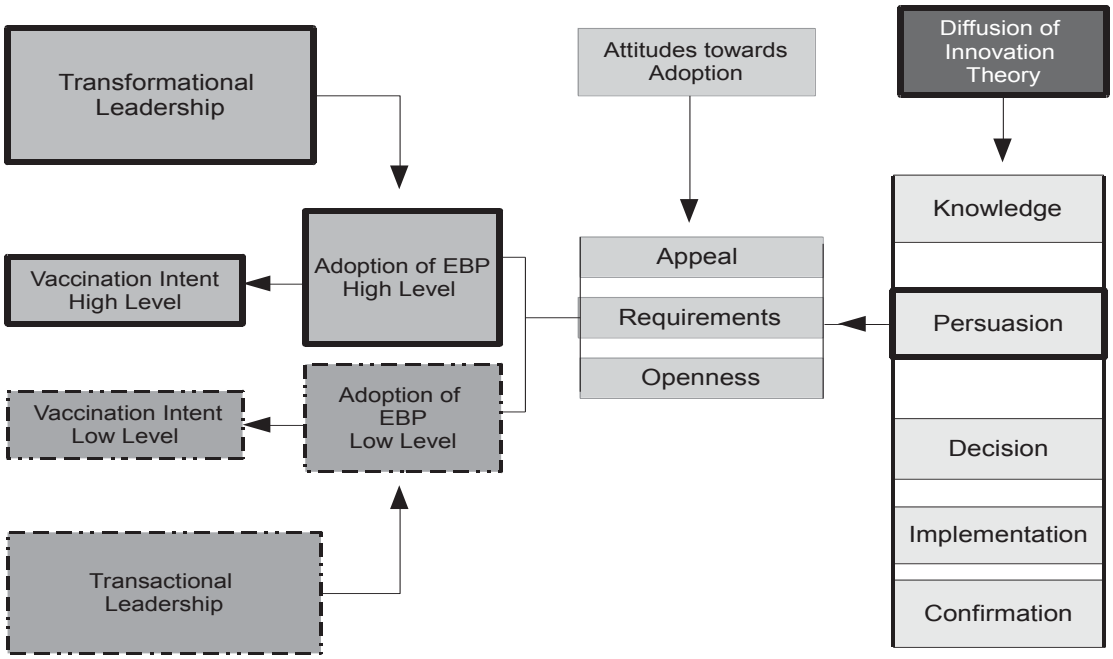

Figure 3. A theoretical model illustrating the relationships between transformational leadership and transactional leadership, the adoption of EBP, and diffusion of innovations. Adapted from "Mental Health Provider Attitudes Toward Adoption of Evidence-based Practice: The Evidence-based Practice Attitude Scale (EBPAS)" by G.A. Aarons, 2004, *Mental Health Service Resource, 22*, p. 61.

A correlation coefficient, Pearson's *r,* described the association among leadership style and multiple variables and was an appropriate statistical test for this project (Pagano, 2010). Scholars have used a correlational design to study the relationships among variables such as leadership and intent. For example, Malloy and Penprase (2010) used a correlational design to examine the relationship between leadership style and psychosocial work environment; Neilsen, Yarker, Brenner, Randall, and Borg (2008) explored the relationships among transformational leadership, perceived working conditions, well-being, and job satisfaction of followers; and Salanova, Lorente, Chambel, and Martinez (2011) correlated transformational leadership style with self efficacy and work engagement. Two correlational research studies examined the relationships between leadership style, and intent to continue or halt employment. Abualrub and Alghamdi (2012) explored the relationship between leadership style and nurses' intent to stay employed at a hospital in Saudi Arabia. In a similar study, Suliman (2009) used a correlational design to determine the relationships between leadership style and intent to stay or leave employment among Saudi Arabian nurses.

In addition, the correlational design was useful when describing the relationship between diffusion of innovations and EBP. Milner, Estabrooks, and Humphrey (2005) used this method. Aarons (2004) studied the association between leadership style and evidence-based practice using the Multifactor Leadership Questionnaire (MLQ) and created the Evidence-Based Practice Attitude Scale (EBPAS). Transformational and

transactional leadership styles were positively associated with positive attitudes towards adoption of EBP (Aarons, 2004).

Institutional Review Board Process

An institutional review board (IRB) is a committee of research experts charged with the protection of human subjects who are included in a research study or project (Burns & Grove, 2009). The composition of an IRB includes at least five members with one of the members coming from outside the organization (Terry, 2012). IRB duties include the protection of the rights and wellbeing of research participants, the determination of properly obtained informed consent, and the assurance that the likely benefits of the project outweigh the potential risks (Burns & Grove, 2009). The USDHHS and the Food and Drug Administration (FDA) described regulations governing the membership, purpose, and structure of IRBs. In discharging their duties, an IRB ensures that research proceeded in an ethical manner and that rights of research subjects protected at the institution (Burns & Grove, 2009).

The IRB purpose includes evaluating research that is exempt from review, expedited review, and complete review, and the committee decides the level of the review (Burns & Grove, 2009). Studies that pose no threat to research subjects are exempt from review (Burns & Grove, 2009). For example, studies that examine de-identified records or pathology samples are exempt from IRB review. Studies that contain minimal risk generally qualify for an expedited IRB review. Minimal risk is the equivalent of risks that an individual might encounter while participating in activities of

daily living or during standard physical evaluations or tests (Burns & Grove, 2009). For example, research concerning the perception, or cognitive behavior of individuals or groups that does manipulate behavior, is appropriate for expedited review (Burns & Grove, 2009). Studies with risk considered greater than minimal warrant complete IRB consideration (Burns & Grove, 2009).

IRBs considers the risk to subjects, the equal selection of participants, the proper recording of informed consent from all research subjects, the supervision of data to guarantee participant safety, and conditions that make certain that the privacy and confidentiality of research participants and data is secure (Terry, 2012). IRBs generally require that a project facilitator or someone other than the researcher approach and invite subjects to participate in a study (Terry, 2012). Most universities and health care organizations insist on IRB approval prior to study implementation (Terry, 2012).

I submitted a request for IRB approval to Walden University and received approval with the IRB approval number 09-20-13-0324560. Hospital A and Hospital B issued Letters of Cooperation. I wrote the data collection tools, the invitation to participate notice, and the reminder notice. I gathered the signed confidentiality agreements for project facilitators and the consent form prior to the submission of the IRB proposal and included these documents with the IRB application. I initiated the IRB approval process after the oral defense of the project proposal. It was understood that neither participant recruitment, nor data collection were to begin prior to receiving IRB

approval. I developed a plan for data security and integrity to protect the privacy of all participants that is discussed below.

Population and Sample

Population

A population refers to the total group of subjects under consideration that share a common trait (Pagano, 2010; Polit, 2009).The population for this project was all RNs employed at two hospitals (Hospital A and Hospital B) in the state of New Jersey. Burns and Grove (2009) argued that a sample is a proportion of a population targeted for examination to allow making inferences about the population.

Sample

I used a convenience or accidental sample in this project. Convenience samples are accessible and take less time to obtain than other sample types (Burns & Grove, 2009). I addressed bias by having a large enough sample size. All RNs employed by Hospital A and Hospital B received invitations to participate in this project. For example, nurses on all units, on all shifts, working full time and part time received an invitation to participate in this project by e-mail and by posting recruitment posters in report rooms and nurses' lounge areas. The sample was from a heterogeneous RN population that supported extrapolation of results to other settings. Survey Monkey, the global leader in electronic survey applications, hosted the survey.

In order to address recruitment concerns and preserve confidentiality (both Hospital A and Hospital B included names on e-mail addresses), a project facilitator (one

project facilitator from Hospital A and a second project facilitator from Hospital B) signed a confidentiality agreement, collected e-mail addresses, and uploaded the e-mail address directly to an e-mail collector in Survey Monkey. Hospital A had a unique password that changed directly after uploading the e-mail addresses. Hospital B had a different unique password that was changed directly after uploading the e-mail addresses.

Upon the start of data collection, I sent a notice of invitation to participate in a research study to each individual e-mail address on the e-mail lists. The only e-mail name on the notice of invitation to participate in a research study was the e-mail address of the recipient. Included on the notice of invitation to participate in the research study was a unique link to the consent and survey. If interested in participating in the research study, the potential participant clicked on the link. The potential participant re-directed to the consent page. If the potential participant read the consent and decided not to participate, the potential participant navigated away from the page. If the potential participant read the consent and decided to participate in the study, the participant clicked next and redirected to the survey.

Weekly, for three weeks, after the invitation to participate in the research study mailed, a reminder to participate in the research project distributed to those e-mail addresses that had not responded and returned completed surveys. The reminder notice to those RNs who had not yet responded was a feature of Survey Monkey and was accomplished when I clicked on the reminder notice button. Reminder notices distributed weekly. Collector settings configured to disassociate e-mail addresses from responses so

that confidentiality and anonymity were preserved. There were no IP addresses available in the e-mail collector. Participants read the consent, agreed to participate by clicking next, entered their answers, and exited the survey. The survey took approximately 15 minutes to complete.

The sample was large enough to perform the statistical tests and a confidence interval of 95% provided the boundaries of the results found in the sample. Additionally, the *p* value calculated using a 0.05 alpha level was useful for the operationalization of the null hypothesis (Burns & Grove, 2009). The alpha level is the probability required for significance and a calculated *p* value of ≤ 0.05 indicated that the results were significant. Alternatively, a *p* value of > 0.05 indicated that the other results were not significant. By setting the alpha level at 0.05, the null hypotheses rejected if chance was accountable for the findings. The probability of this occurring was equal to or less than 5 times in 100 (Pagano, 2010). A Type 1 error or the likelihood of rejecting the null hypothesis when it was true was limited because the alpha level was 0.05 (Pagano, 2010).The confidence interval supported the rejection of the null hypothesis when the results were significant. Sampling distribution established the likelihood of a normal curve (Burns & Grove, 2009; Polit, 2009).

Power analysis is a calculation that estimates the minimum sample size required to determine the true effect of the phenomenon examined in a study (Fawcett & Garity, 2009). Power is the estimation of the real effect of the independent variable on the dependent variable (Pagano, 2010). If the independent variable has a real effect on the

dependent variable, I reject the null hypothesis (Pagano, 2010). Power is a probability, and the measure of power ranges from 0.00 to 1.00 (Pagano, 2010). Higher power equates with greater sensitivity of the research to determine a real effect of the independent variable (Pagano, 2010).

Power of 0.80 and above is advantageous but uncommon in behavioral science (Pagano, 2010). Research with power of 0.40 to 0.60 is more frequent in behavioral science research (Pagano, 2010). Power found in the results increases with larger sample size (Polit, 2009). Using the G*Power 3.13 application, the minimum required sample size for this project was $n = 210$ respondents and was sufficient for the planned statistics such as *t* test, ANOVA test, and regression analyses, and provided a power level of 0.95. Each hospital employed over 500 RNs. RNs in each hospital (A and B) expected to return at least 105 surveys. A response rate of slightly less than 20% was necessary to achieve the desired power.

Data Collection and Survey

Data Collection

I collected data for this project by using a survey instrument. Project facilitators gathered e-mail addresses from each institution. The purpose of a project facilitator was to disconnect the researcher from the survey (Burns & Grove, 2009; Terry, 2012). Nurses working on all days of the week and all shifts participated in the project until the desired sample size obtained. Data collection started within seven days after IRB approval was

received from the IRB at Hospital A, Hospital B, and Walden University. Data collection started Tuesday October 15, 2013, and lasted until November 15, 2013.

E-mail addresses provided by Hospital A and Hospital B uploaded to a Survey Monkey email invitation collector. An invitation to participate in research e-mail distributed to all e-mail addresses on the list provided by Hospital A and Hospital B requesting RNs to participate in a study concerning leadership style, attitudes toward EBP, and influenza vaccination. A link to the survey was present on the invitation. Participants clicked on the link and redirected to the consent form. After reading the consent form, clicking next advanced the participant to the survey. Potential participants who did not click next did not advance and exited the survey.

Potential participants consented to participation by agreeing to the terms of the consent form located in Appendix B. After the initial invitation, a one-week, two-week, and three-week reminder e-mail distributed via e-mail to those RNs who had not completed the survey, reminding them to do so. I preserved confidentiality and anonymity because no names, addresses, e-mail addresses, file numbers, telephone numbers, or other identifying information was present that would link any survey response to the respondent. Survey data were private and not sold by Survey Monkey (Survey Monkey, n.d.). E-mail addresses uploaded to Survey Monkey and the cloud based site acted as a guardian of the information and stores survey data on servers in the United States (Survey Monkey, n.d.). To increase the level of privacy, I turned IP

addresses off, making it impossible to determine the origin of the response or location of the responder.

Surveys

The vaccination survey instrument was adapted from the Multifactor Leadership Questionnaire 5X (MLQ), the Evidence-Based Practice Attitude Scale (EBPAS), and the Behavior Intention Scale (BIS) (Aarons, 2004; Avolio & Bass, 2004; Rise, 2008). The first section of the survey contained the MLQ 5Xdimensions concerning transformational and transactional leadership. Kanste et al. (2006) reported on the validity of the MLQ 5X when the instrument was used to measure multidimensional nursing leadership in Finland. The Cronbach's alpha for leadership subscales ranged from 0.78 to 0.94 (Kanste et al., 2006). Further analysis demonstrated a Cronbach's alpha of 0.88 for idealized influence (attributed), 0.90 for idealized influence (behavioral), 0.92 for inspirational motivation, 0.91 for intellectual stimulation, and 0.94 for individualized consideration.

In addition, Kanste et al (2006) demonstrated a Cronbach's alpha of 0.91 for contingent reward, 0.80 for active management by exception, and 0.78 for passive management by exception. Muenjohn (2008) determined that the MLQ5X produced a Cronbach's Alpha of 0.87, demonstrating an acceptable reliability. Because the intent of the project was to measure transformational and transactional leadership styles, I dropped questions measuring laissez-faire leadership and measures of extra effort, effectiveness, and satisfaction from the survey because these constructs were not a part of the project questions.

The second section of the survey contained the EBPAS. The dimensions included in the survey included the following: requirements, appeal, and openness (Aarons, 2004). In his paper, Aarons et al. (2010) argued that a Cronbach's alpha coefficient value provides a measure of internal consistency, and examined the degree to which all items in the EBPAS consistently measured dimensions of the construct. Additionally, Aarons (2004) reported a Cronbach's alpha for openness of 0.78, appeal of 0.80, and requirements of 0.90.

In an updated study, Aarons et al. (2007) provided results using a sample of service providers in 17 states and conducted a confirmatory factor analysis (CFA). The CFA results provided a Cronbach's alpha of 0.74 for appeal, 0.81 for openness, and 0.90 for requirements. The fourth dimension of the EBPAS was divergence. Aarons (2004) reported a Cronbach's alpha for divergence of 0.59. Because the Cronbach's alpha for divergence was lower than the standard of internal consistency of 0.70, I deleted questions pertaining to the dimension of divergence from the survey because the dimension lacked internal validity (Kanste et al., 2006; Polit, 2009).

The third section of the survey contained the BIS utilized to measure intent to quit smoking used by Rise, Kovac, Kraft, and Moan (2008). The Cronbach's alpha for the BIS was 0.97. Rise et al. (1998) used the BIS to predict intentions and use of dental floss among adolescents, and Rise and Wilhelmsen (1998) used the BIS to predict intentions of adolescents not to drink alcohol. In addition, Myklestad and Rise (2007) used the BIS to predict willingness to engage in unsafe sex and intention to perform sexual protective

behaviors among adolescents. Further, Kovac et al. (2011) used the BIS to describe the relationship between past behavior, intention, and planning and quitting smoking. Larsen, et al. (2011) used the BIS to study intention and use of Snus.

The BIS contained three questions regarding intention. The student modified the BIS by deleting the words *quit smoking* and substituting the words *influenza vaccination*. The fourth section of the survey asks for demographic information. For example, I asked each respondent was to provide age, gender, education level, and number of hours worked each week.

The data analysis commenced following collection of the surveys. The data review process included coding, data input, analysis, and reporting results. I coded and labeled variables and the variable names entered into a codebook. For example, the age variable coded as Q1 and labeled as age in the codebook. The gender variable coded as Q2 and labeled as gender in the codebook, and so on. Survey Monkey entered data into an Excel spreadsheet that was ready to export to the Statistical Package for the Social Sciences (SPSS) for analysis.

SPSS is one example of computer systems that perform statistical analysis (Pagano, 2010). The Statistical Analysis System (SAS), SYSTAT, and MINITAB are also useful for computer-aided problem solution (Pagano, 2010). I selected SPSS because the application is a standard that is used when calculating complicated statistical data (Pagano, 2010). In addition, SPSS provides options for display of the data in graphic form and has the ability to handle large amounts of data (Pagano, 2010). In the following

section, there is a discussion of each data analysis technique used to address each hypothesis and answer research questions.

Data Analysis

In the data analysis section, there is a discussion of how I answered project questions and operationalized the project hypotheses. There were five project questions and each question is associated with a hypothesis. Several different statistical analyses were required to answer the project questions and address the hypotheses. I accomplished data analysis in collaboration with the Alleyne Consulting Firm. Dr. D. Chris Alleyne earned a Doctor of Business Administration degree with a specialization in information systems management. He has experience working with students at the doctoral level. Prior to selection of the Alleyne Consulting Firm, the student interviewed several statisticians and selected the Alleyne firm because of their experience with doctoral level, student research analysis. The statistical tests will include descriptive analyses and calculating *t* Test, ANOVA, and regression analyses as detailed below.

Descriptive Analysis

Descriptive analysis was useful for providing central tendencies found within the data. Descriptive statistics provided percentiles, frequencies, and central tendencies to understand the behaviors observed in each variable (Fawcett & Garity, 2009). For example, when analyzing the age variable, the mean age provided the average age of the participants. The median age indicated the value that split the age of participants so that 50% were above the median age and the rest were below the median age. Additionally,

the age with the highest frequency was the modal age (Burns & Grove, 2009).

Descriptive analysis included reporting measures such as the standard deviation values, the standard error of the mean, minimum, and maximum scores, and the range in continuous variables such as the age variable (Burns & Grove, 2009; Pagano, 2010). I repeated this process was for the demographic variables of experience (years) and hours worked per week. I reported percentages and mode (as appropriate) for nominal variables such as gender. The level of education variable was ordinal and I reported modal statistics along with frequencies and percentages for each level of education. The goal of this study was to understand the relationships between demographic variables, leadership styles, and attitudes toward adoption of EBP and vaccination intent. Therefore, I used correlations, *t* tests, ANOVAs, and regression analyses to answer the project questions.

Correlation

A Pearson's correlations test was used in this study to provide an understanding of linear relationships between transformational leadership and attitudes toward adoption of EBP with influenza vaccination intent (Polit, 2009). The theory was that by implementing a transformational leadership approach to influenza vaccination intent and creating high levels of positive attitudes toward adoption of EBP, high levels of vaccination intent resulted. Additionally, if a transactional approach to vaccination was present, low levels of positive attitudes toward adoption of EBP and low levels of influenza vaccination intent resulted.

t Test

I used a *t* test to understand if there was a difference in vaccination intentions based on the gender, high and low levels of positive attitudes toward EBP, and leadership styles. Any significant difference found indicated where there was an effect on people's intention to vaccinate. For example, if results indicated a significant difference between peoples intention to vaccinate based on attitudes toward EBP, the results would indicate that either a high or a low level of positive attitudes toward EBP affected whether or not people decided to receive influenza vaccine.

Analysis of Variance (ANOVA)

ANOVA analyses and post hoc comparisons was used to understand if there were significant differences between groups with more than one factor (Polit, 2009). For example, I conducted an ANOVA test to understand if there is a significant difference in people's intent to vaccinate based on whether they earned a bachelor's degree, master's degree, and other level of education. The analysis was useful in understanding if differences found were significant between each group based on the education levels of participants and for understanding the group that is most likely to vaccinate and the group that is most likely to decline vaccination.

Regression

The linear regression analysis was useful to predict scores on the intent to vaccinate scale. I used a correlation's matrix analysis was to determine all the independent variables that significantly correlated with intent to vaccinate. I used all

significant relationships in the regression model to predict the variance explained and created a regression equation to predict scores for intention to vaccinate. The regression equation used to predict scores on the intention to vaccinate variable was $Y = a + b1_{(x)} + b2_{(x)} + k_{(x)}$ (Polit, 2009). The *Y* represented the dependent variable, intent to vaccinate, and *a* represented the constant. The constant is the value of *Y* when all *X* variables are zero. The *b*1 variable represented the first beta value, and *X* represented the value of the related independent variables. For example, if the *X* variable were age, for each participant, the beta value multiplies by the participant's age. The *K* represented all remaining values in the regression model that significantly contribute to vaccination intent.

Summary and Transition

In Section 3, I detailed the rationale for choosing a quantitative method and a correlational design, and introduced studies that used similar methods. I presented a theoretical model that guided the design and implementation of the project. The theoretical model illustrates the relationships between transformational leadership, transactional leadership, attitudes toward the adoption of EBP, and vaccination intent. I discussed the IRB process and described the project consent form and survey. The population selected for the project was RNs and a convenience sampling method was chosen for data collection. Data collection was anticipated to be electronic via Survey Monkey and planned data analyses was described. Anticipated data analysis included descriptive statistics, *t* tests, ANOVAs, and linear regression analysis with the assistance

of a statistician. A sample size of $n = 210$ was calculated, and plans to obtain the participants from two hospitals (A and B) were discussed.

Section 4 contains the findings of the project. I addressed the findings in terms of each objective and hypothesis. I discussed findings within the context of relevant literature and made recommendations for policy or practice change. I discussed the applicability of findings to practice in terms of policy, practice, research, and social change. I reviewed the strengths and limitations of the project. Finally, an analysis of my scholar practitioner and project manager roles, and detail how this project relates to future goals is in Section 4.

Section 4: Discussion and Implications

Summary and Evaluation of Findings

Nationwide, HCP receive influenza vaccine at rates far below the standard suggested by the CDC (2011a). All hospitals must address the task of increasing influenza vaccination rates among employees; the goal of this project was to help health care organizations in their efforts to raise HCP influenza vaccination rates. Understanding whether leadership style and attitudes toward EBP were associated with influenza vaccination intent in RNs was the purpose of this project. In Section 3, I discussed the approach to the project's design, presented a theoretical model explaining the proposed relationships between the independent and dependent variables, and described the IRB process. I also outlined the project population and sample, plans for data collection and presented the survey. I specified procedures for data analysis and identified the planned statistical tests.

I describe the results of the project in Section 4. Project objectives and hypotheses guided the findings. I discuss the project's conclusions within the context of applicable literature and theoretical frameworks. Appropriate policy or practice changes are proposed. I discuss the project findings in terms of policy, practice, research, and social change. I evaluate the project's strengths and limitations. I examine my role as a scholar, practitioner, and project developer and manager, and professional. Finally, I provide details on how this project relates to future goals.

Descriptive Analysis

The study included 354 participants from two hospitals. Participants from Hospital A (n = 264) consisted of 75% of the sample, participants from Hospital B (n = 90) made up the rest of the sample. There were 2132 invitations sent out by e-mail, with three reminders, indicating a response rate of 17%. The study included RNs and comprised 7% males (n = *26*) and 93% females (n = *328*). The average age of the RNs was M = 45.75 (SD = 11.02) years old; the mode was age 56. The median age of 46 years indicated that approximately 50% of participants were from 47 to 69 while the youngest RNs were from 22 to 45 years old. The range was 47 years with approximately 68% of the RNs between 35 to 57 years old. The youngest 10% of the RNs were 22 to 28 years old, while the oldest 10% were 58 to 69 years old.

Vaccination Intent

To determine nurses' intent to vaccinate against the influenza virus, RNs were asked to describe their intent. Scores from one to seven were used, with 1 indicating no intent to vaccinate and 7 indicating full intent to vaccinate. Scores of 1 and 2 were considered low on the intent; scores of 3, 4, and 5 were considered medium; and scores of 6 and 7 were considered high. RNs reported a moderately high level of intent to be vaccinated (M = 5.62*,* SD = 2.26). Approximately 18% of all RNs reported a low (n = 64) intent to vaccinate, 7% (n = 25) reported a medium vaccination intent, and 75% (n = 265) of all RNs reported the highest vaccination intent. The modal score of 7 was also the median score and the highest score reported, while the lowest score reported was 1,

resulting in a range of 6. The histogram in Figure 1 shows the dispersion of vaccination intent among RNs in the sample. The graph demonstrates that a majority of RNs intended to vaccinate.

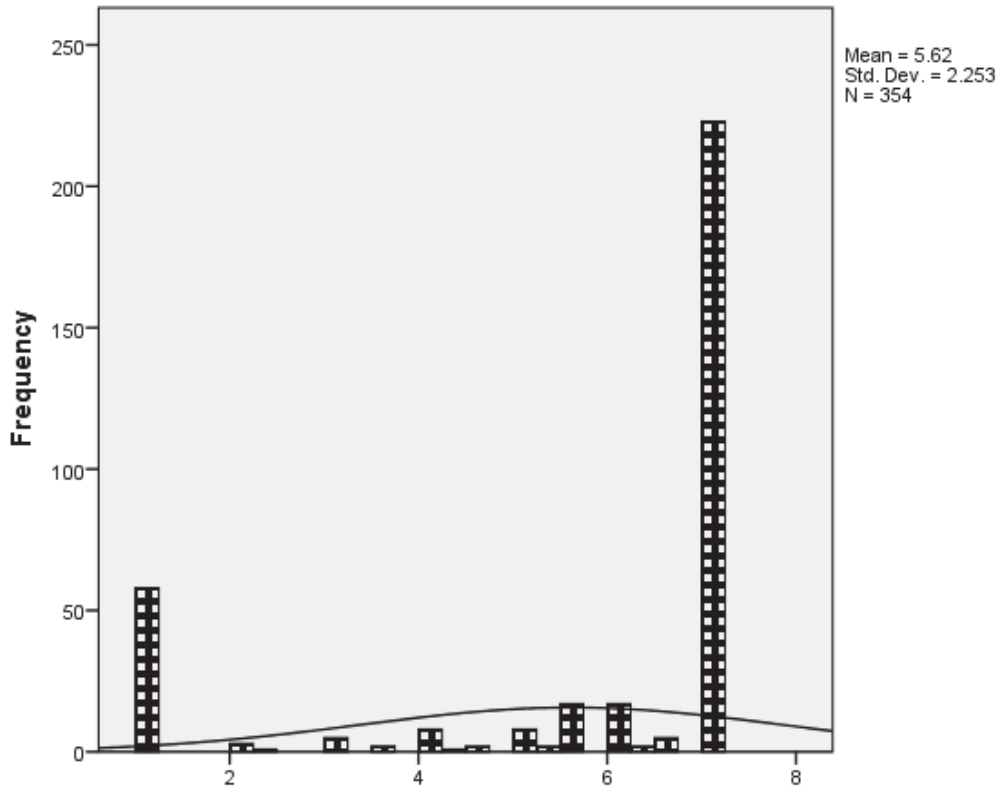

Figure 4. A histogram of vaccination intentions among RNs.

Age

I divided the sample into three groups. The youngest age group of RNs was from 22 years to 40 years old (n = 109) and was 31% of the sample. RNs in the middle age group (n = 127) were from 41 years to 51 years old and were 36% of the sample. RNs in the oldest group (n = 118) were from 52 to 69 years old and formed the second largest

group (33%). When I assessed age by group, the results showed that RNs of all ages intended to vaccinate at similar rates. The mean vaccination rate for those in the youngest group was 5.36, (*SD* = 2.3), the mean rate in the oldest group was 5.62, (*SD* = 2.25), and those in the middle age group who showed the highest intent to be vaccinated had a mean vaccination rate of 5.70, (*SD* = 2.14). The histogram found in Figure 2 shows a graphic analysis of the age distribution among RNs.

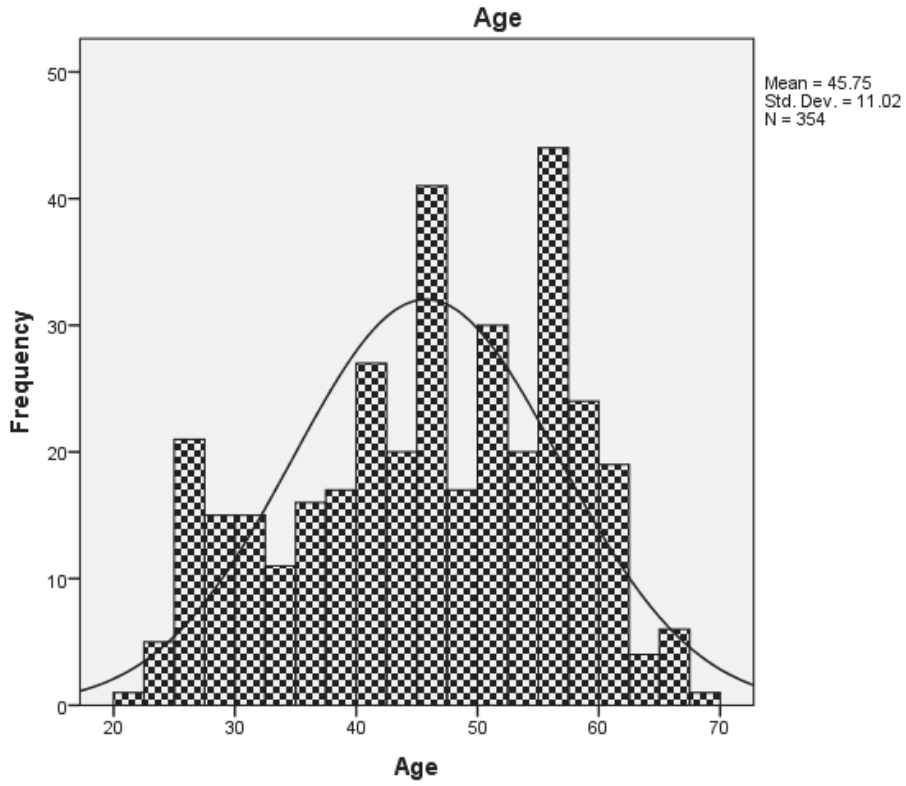

Figure 5. A histogram of the age distribution among RNs.

Education Level

Most RNs had earned a bachelor's degree (n = 195) in addition to their nursing license and were 55% of the sample. Those who earned less than a bachelor's degree were 33% of the sample and just 12% of all RNs had earned a graduate degree. The results are in Table 1.

Table 1

Frequency Analysis of RNs Education by Degree

	Frequency	Percent	Cumulative Percent
Hospital diploma	20	7	7
Associated degree	96	27	33
Bachelor's degree	195	55	88
Graduate degree	43	12	100

Experience Level

Overall, RNs had high levels of experience (M = 18.02, SD = 11.71 years). Approximately 68% of all RNs have from 6–30 years of experience. The modal value was 5 years of experience and the median value 18 was years. Since the median value is similar to the mean value, the results indicated that there are no outliers in the distribution of experience among RNs. Some RNs were new to the profession and indicated less than 1 year of experience. The highest years of experience are 46 years, resulting in a range of

45 years. RNs were grouped based on experience into three levels. RNs with a low level (1-15 years) of experience (n = 112) were 32% of the sample. RNs with a medium level (16-30 years) of experience (n = 126) were 36% of the sample, and RNs with high levels (31-45 years) of experience (n = 116) made up the rest of the sample (32%). RNs with 5 years of experience or less made up 21% of the sample. RNs with 25 years or more experience were 29% of the sample.

Participants with low levels of experience reported a mean vaccination intent rate of 5.73*(SD* = 2.12) which was the highest level of vaccination intent. Participants with medium levels of experience reported the lowest level of intent to vaccinate, but vaccination intent may not be significantly different from those with low levels of experience. The results are presented in Table 2.

Table 2

Frequency Analysis Results for Vaccination Intention based on Experience Level

Experience by level	*M*	*SD*	*N*	Experience
Low level experience	5.73	2.12	112	1 - 15 yrs
Medium level experience	5.38	2.32	126	16 - 30 yrs
High level experience	5.77	2.29	116	31 - 45 yrs

The histogram found in Figure 3 shows the dispersion of experience of RNs. The line in the middle of the bell curve indicates the location of the mean value. The graph indicates that most of the years of experience are under the bell curve and indicates a

normal distribution. The graph shows that the largest group includes those with less than 10 years of experience while the smallest group includes those with the most experience.

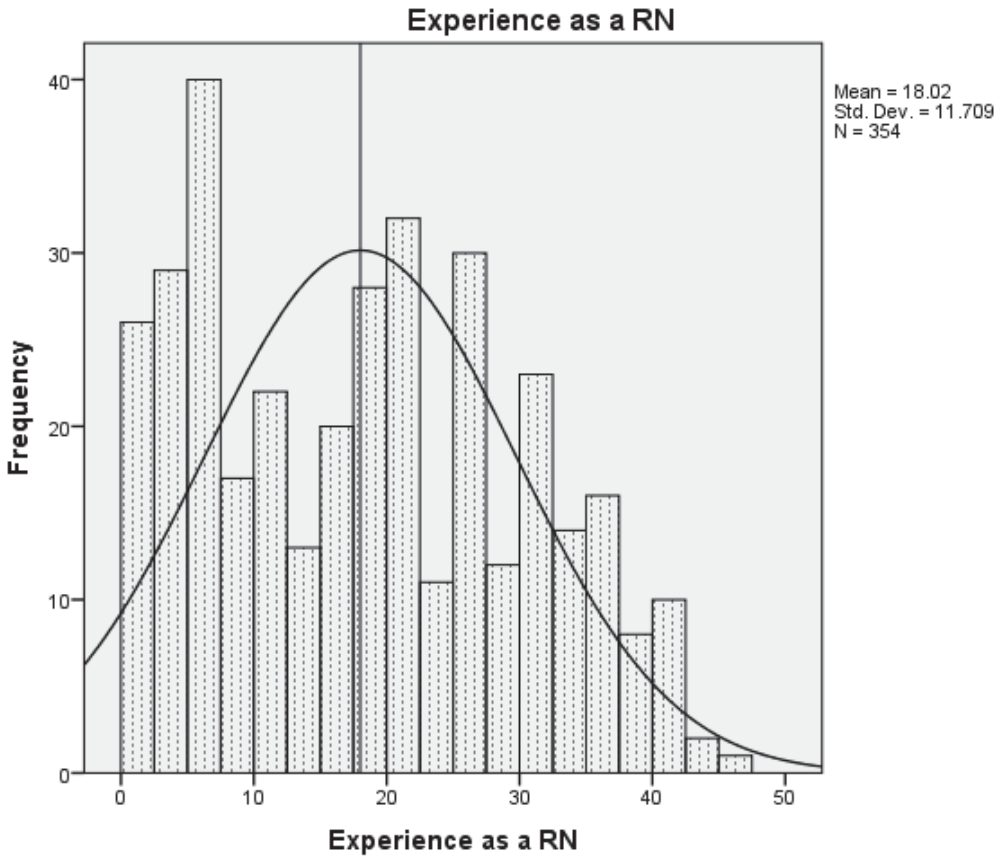

Figure 6. A histogram showing the dispersion of experience by years for RNs.

An analysis of vaccination intent based on experience levels shows similar results among the groups. The initial examination indicated that those with high levels of experience were the most likely to receive vaccinations while those with medium levels of experience were the least likely among the groups to report intent to vaccinate. The results are similar and differences may not be significant. ANOVA test results are in the

results section. The descriptive statistics for vaccination intention based on experience level are in Table 3.

Table 3

Descriptive Results for Vaccination Intentions Based on RN Experience Levels

Experience by level	*M*	*SD*
Lower level experienced	5.73	2.12
Medium level experienced	5.38	2.32
High level experience	5.77	2.29
Total	5.62	2.25

Hours Worked Per Week

RNs worked a normal workweek (M = 38.40, SD = 9.52) and the modal number of hours worked was 36. The results showed that some RNs worked a part-time schedule of 3 hours per week while others work as much as 84 hours per week. The range of hours was 81; however, 50% of all RNs work less than 37.75 hours and the rest work more than the 37.75, which is the median number of hours worked. Less than 1% of RNs worked less than 10 hours per week while 41% work a normal fulltime schedule from 36 to 45 hours per week (n = 145). RNs who worked beyond the normal workweek (from 46 to 84 hours) were approximately 12% of the sample and those who work less than a full time schedule (from 3 to 32 hours) per week were approximately 14% of the sample. The histogram in Figure 4 shows the dispersion of the hours worked per week by the RNs in

the sample. The graph showed that most RNs work from just below 40 hours per week to just above 40 hours per week. The descriptive analyses for these four variables are reported in Table 4.

Table 4

Descriptive Analysis Results for Four Variables in this Analysis (N = *354*)

	Age	Gender	Educational level	Experience
M	45.75	1.93	2.74	18.02
S.E.	.59	.01	.04	.62
Median	46.00	2.00	3.00	18.02
Mode	56	2	3	5
SD	11.02	.26	.74	11.71
Range	47	1	3	46
Min	22	1	1	0
Max	69	2	4	46

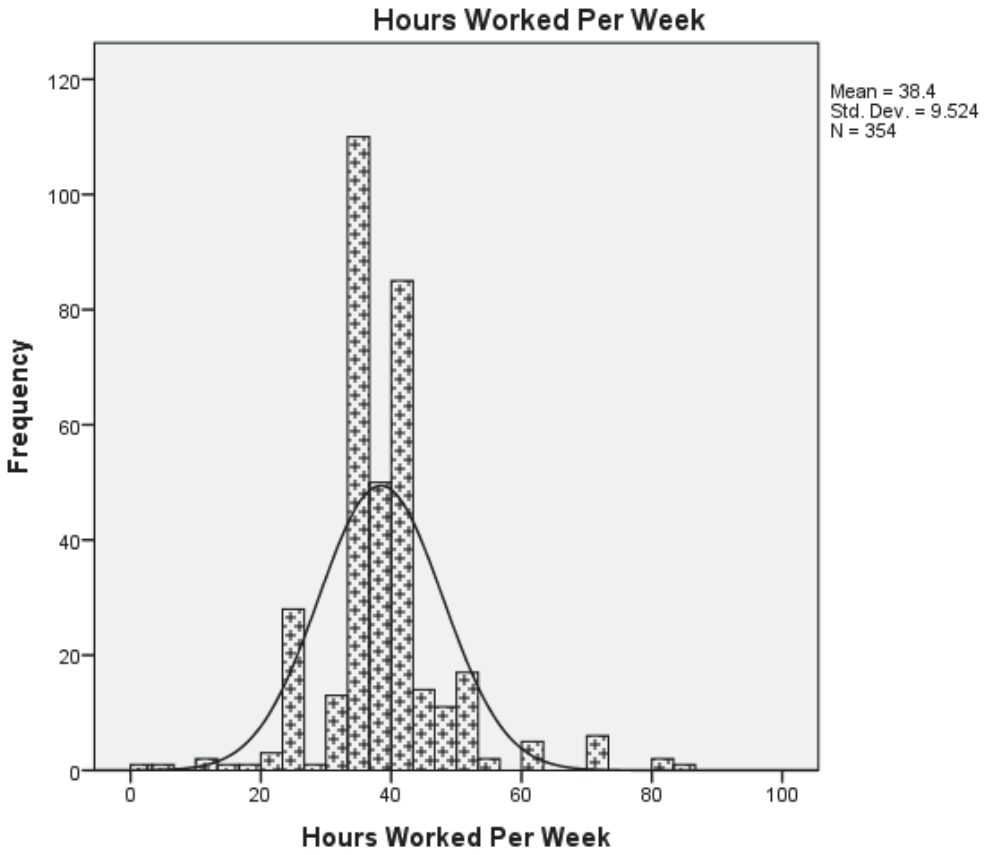

Figure 7. A histogram showing the dispersion of hours worked by RNs.

I placed RNs were into groups based on how many hours they worked to assess if the length of time spent working each week was related to vaccination intent. Those who worked part-time (n = 51) were the smallest group and those who worked a regular schedule (n = 244) were the largest group, 70% of the sample. The rest of the RNs (n = 59) were those who worked more than a full-time schedule. The results in Table 5 show the descriptive results of RNs and indicate that RNs who worked part time have slightly less intention of receiving vaccinations compared to those who work full-time and more than full-time.

Table 5

Descriptive Results for Vaccination Intentions and Hours Worked by Groups (N = *354*)

Hours worked by group	*M*	*SD*
Part-time	5.10	2.59
Regular full-time	5.64	2.20
More than full-time	5.99	2.09
Overall	5.62	2.25

Transformational Leadership

I asked RNs to assess the transformational leadership qualities of their managers and organization. The scale ranged from 0 to 4 so that a score of two or higher is above average. Participants reported a strong transformational leadership. The mean was 2.98, (*SD* = .92); however some RNs did not experience transformational leadership at a high level and reported a zero while others reported the highest score of 4, resulting in a range of four. A score of 4 was modal and approximately 50% of all RNs reported a mean of 3.20 indicating that they perceived that their managers and organizations used transformational leadership. Additionally, less than 10% of all participants reported a score of one or less and 76% of all nurses reported a score of three or higher. The histogram found in Figure 5 showed that most people had a score of greater than 2. The scatter plot found in Figure 6 showed a positive relationship between vaccination intent

and transformational leadership. The results indicated that as the transformational leadership experience of RNs increased, their intent to vaccinate also increased.

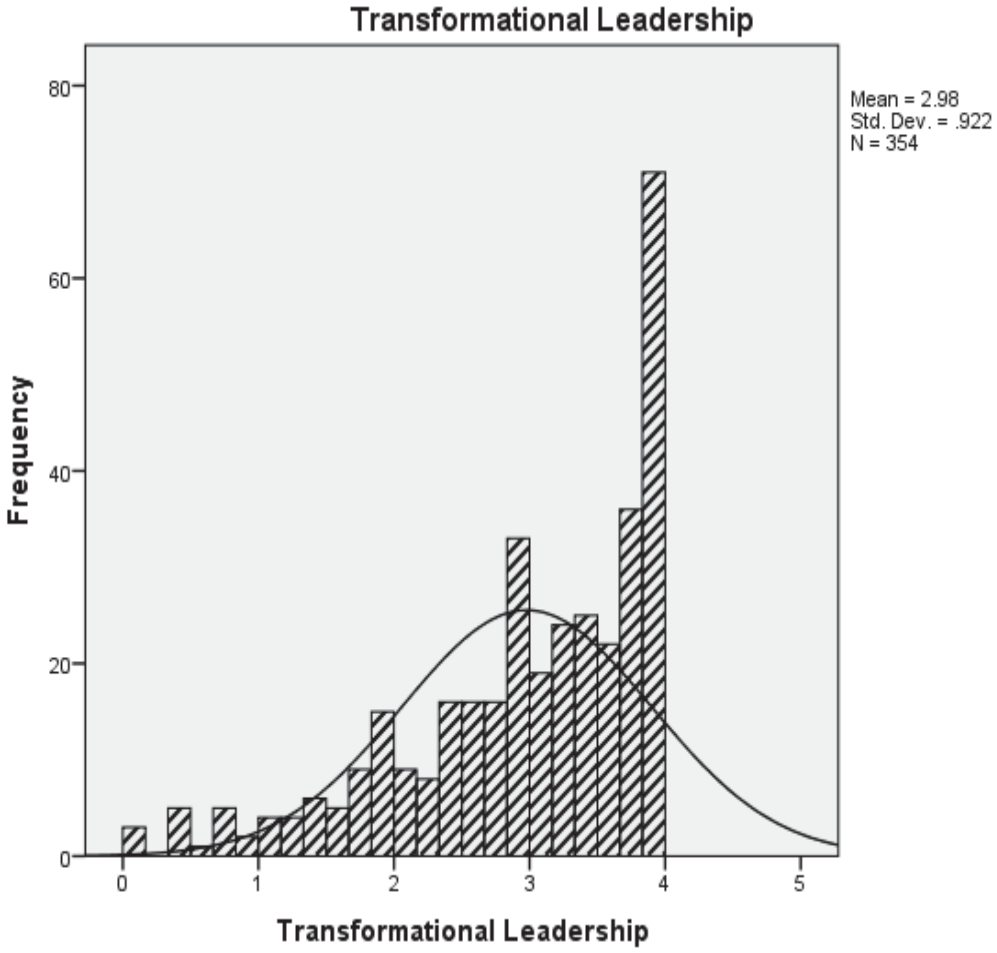

Figure 8. A histogram showing the dispersion of scores for transformational leadership experienced by RNs.

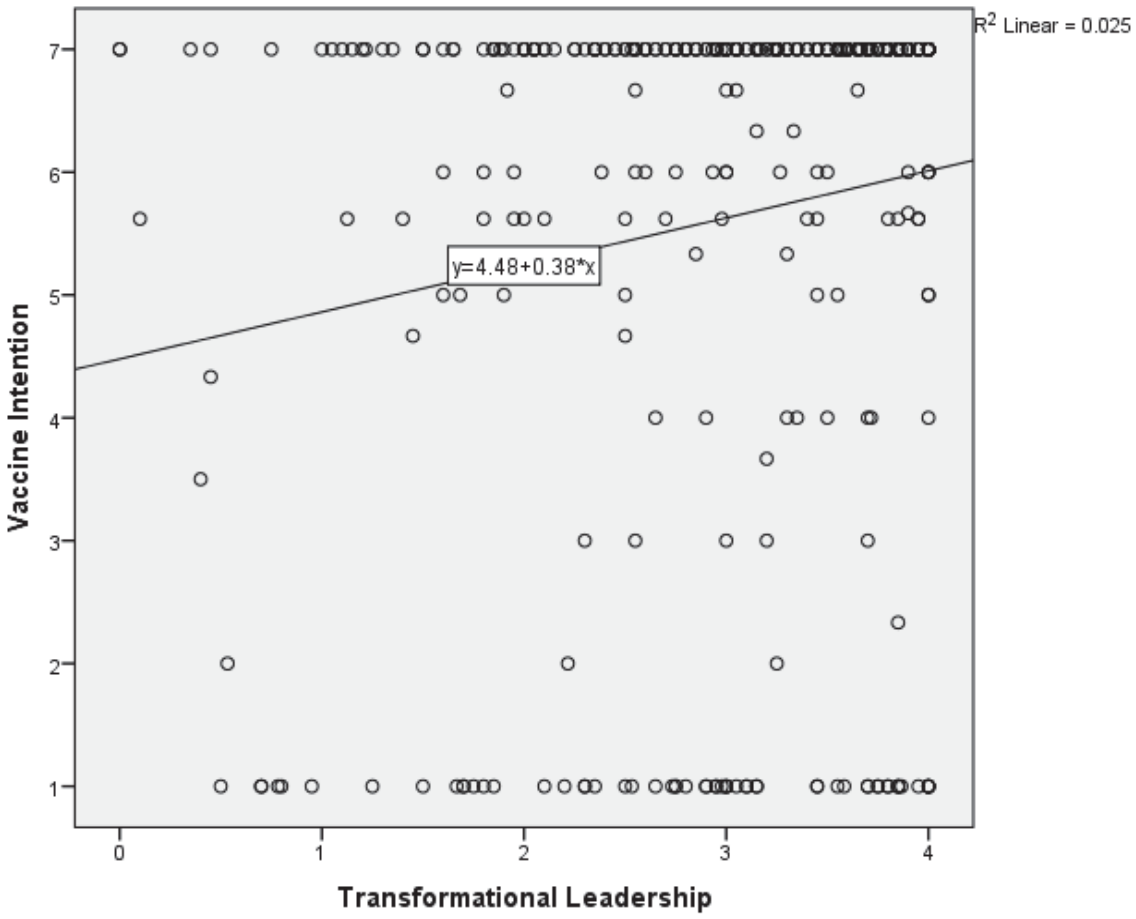

Figure 9. A scatter plot showing a positive relationship between vaccination intentions and transformational leadership among RNs.

Transactional Leadership

RNs assessed the transactional leadership qualities of their managers and organization. The scale was from zero to 4 making scores higher than 2 strong transactional experience and less than 2, low transactional experience. The overall experience (M = 2.15, SD = .52) was moderately high while most RNs reported a 2, the modal score. Approximately 50% of all RNs reported scores that were higher than 2.17,

the median score. While some RNs reported experiencing no transactional leadership and reported a zero on these questions, others reported experiencing a 4, which was the highest score possible.

The histogram found in Figure 7 showed the dispersion and indicated that the majority of RNs (88%) experienced transactional leadership and reported scores between 2 and 3. A scatter plot showing no relationship between transactional leadership and vaccination intention are in Figure 8. The figure demonstrated that although many RNs had high vaccination intent, transactional leadership was not a factor in their decision to vaccinate.

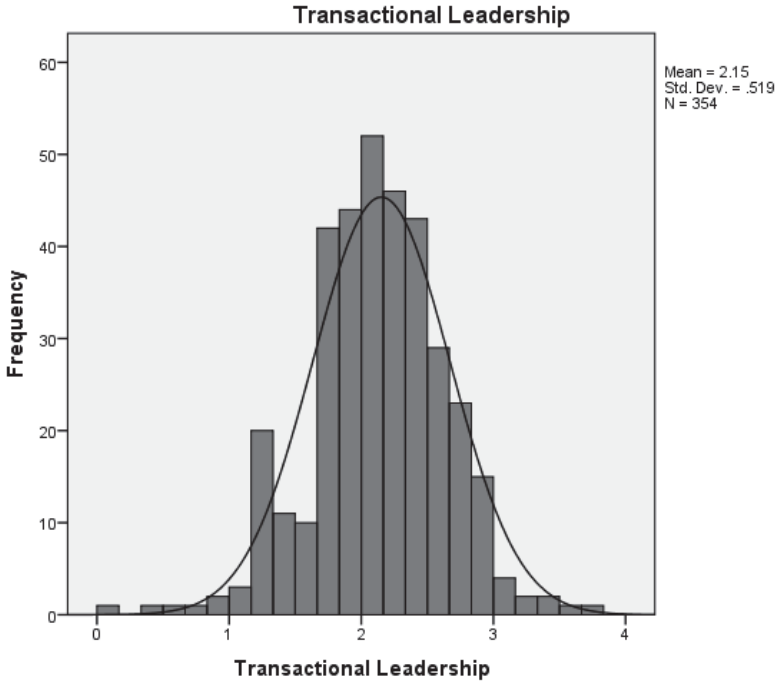

Figure 10. A histogram shows the dispersion of transactional leadership experience of RNs.

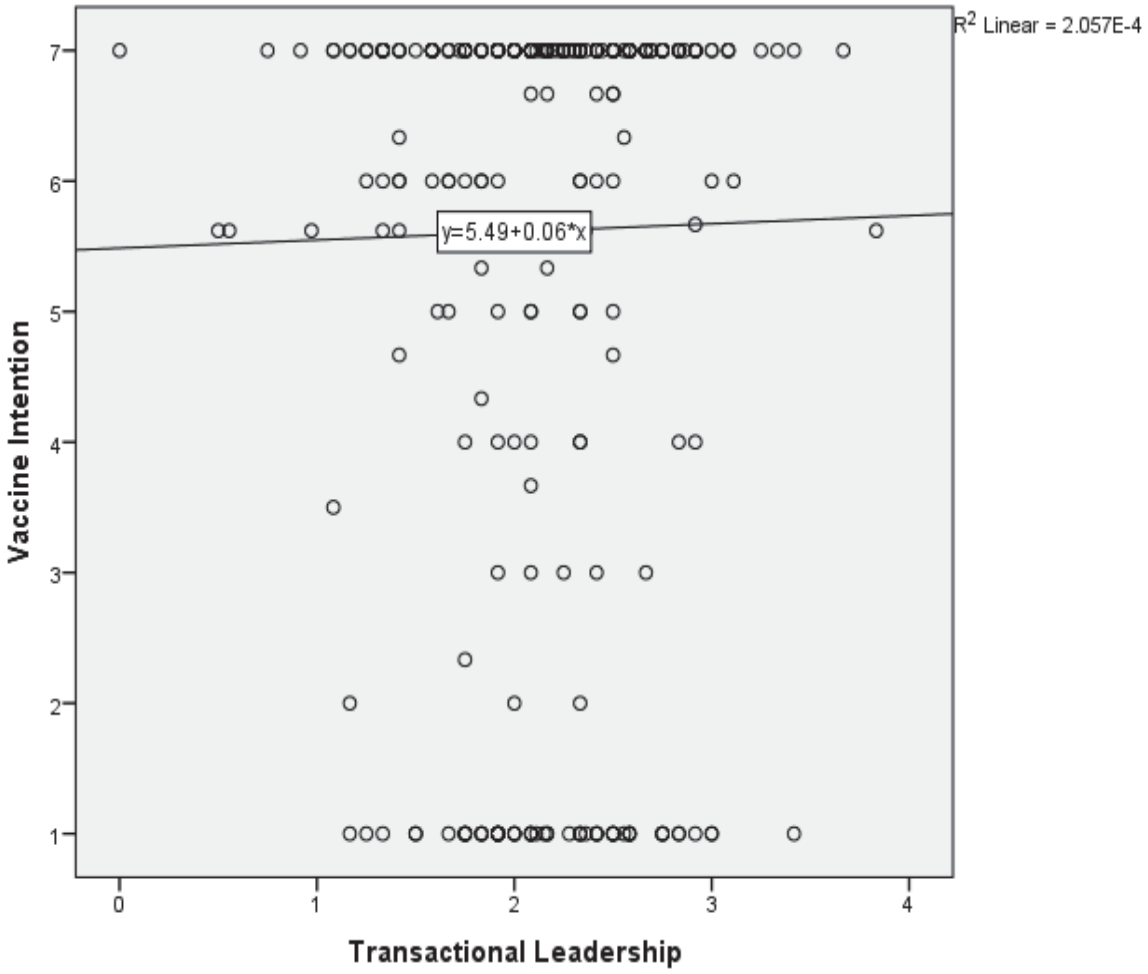

Figure 11. A scatter plot showing no relationship between vaccination intention and transactional leadership among RNs.

Attitudes Toward Evidence-Based Practice

To assess RNs attitudes toward practicing new therapies or interventions derived from evidence-based practices, I measured RNs on a scale from zero to four. A score of zero indicated no intent and a four indicated highest intent to practice the new therapy. Any score above 2 indicated moderate positive attitudes toward adopting a new evidence-

based intervention and less than 2 indicated negative attitudes toward evidence-based practice even if the intervention was required. RNs reported a mean of 3.32, (*SD* = .56), indicating a moderately strong intention to carry out new practices based on evidence when required. The results showed that the lowest score reported was a 1 while the highest was a 4 and indicated a range of 3.

A score of 4 was the mode and the median score of 3.40 indicated that at least 50% of all RNs had strong intent to practice using new evidence-based therapies. The results shows that approximately 90% of the participants intended to practice new therapies and approximately 10% had low to no intent to utilize evidence -based practice. At the highest level, 40% of all RNs reported strong intent to practice new therapies. The histogram found in Figure 9 showed the dispersion of the evidence based practice intent among the RNs. The histogram demonstrates that the majority of the RNs have positive attitudes toward evidence-based practice and only a small number of participants do not. An assessment of the relationship between vaccination intention and evidence-based practice utilizing a scatter plot shows a positive relationship between the two variables is presented in Figure 10. The relationship was positive and indicated that when evidence-based practice increased, vaccination intention also increased. The results of the descriptive analysis for five variables in this analysis are presented in Table 6.

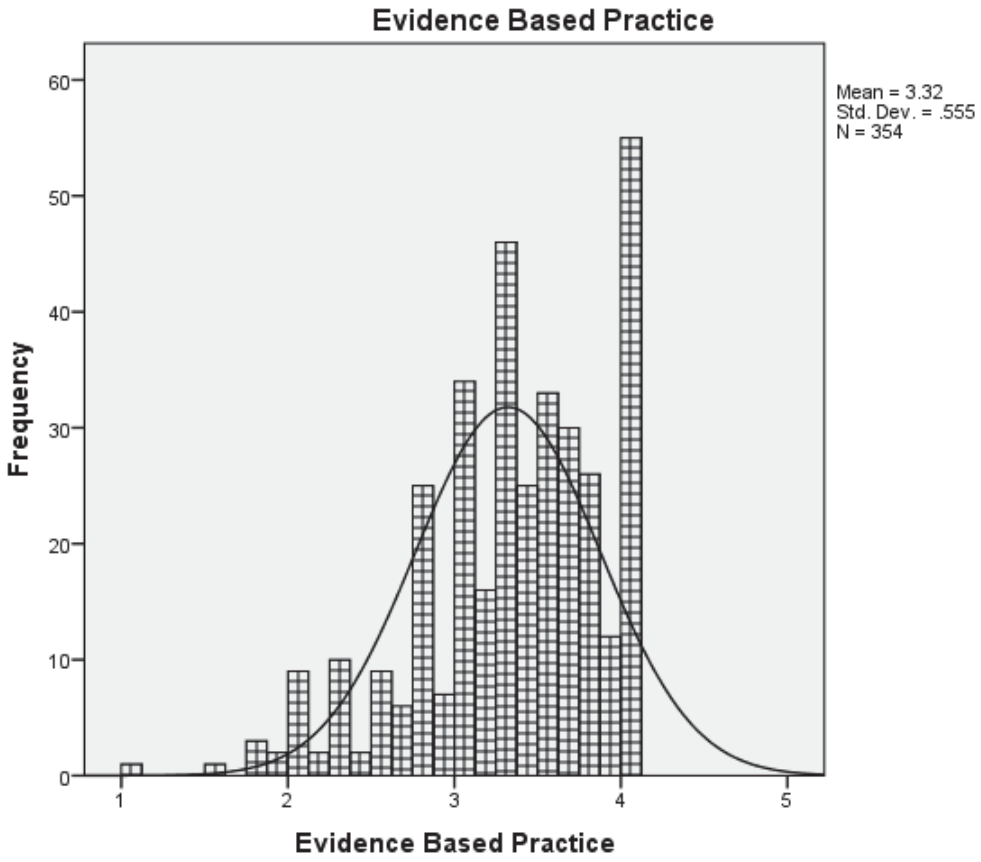

Figure 12. A histogram showing the dispersion of evidence based practice intentions among RNs.

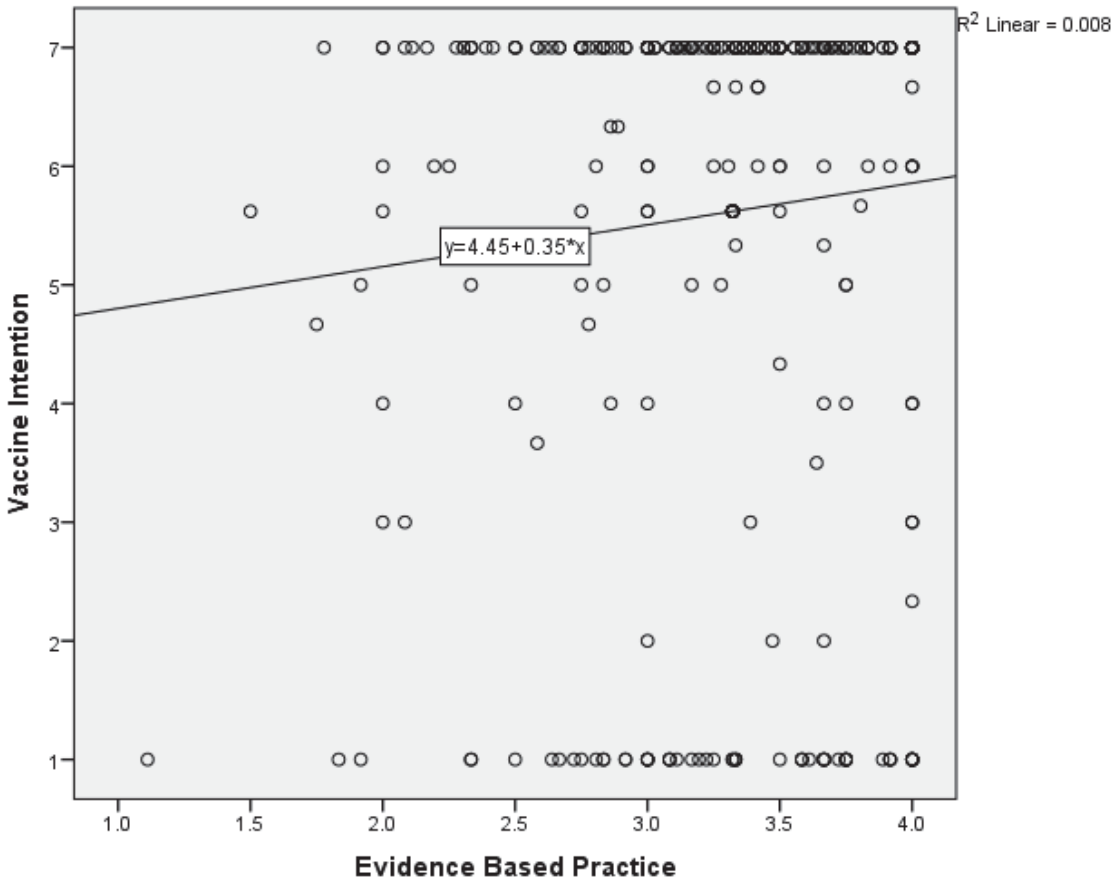

Figure 13. A scatter plot showing the relationship between vaccination intentions and evidence based practice intentions among RNs.

Table 6

Descriptive Analysis Results for Five Variables in this Analysis (N = *354*)

	Hours worked	Transformational	Transactional	Evidence practice	Vaccine intention
M	38.40	2.98	2.15	3.32	5.62
S.E.	.51	.05	.03	.03	.12
Median	37.75	3.20	2.17	3.40	7.00
Mode	36	4	2[a]	4	7
SD	9.52	.92	.52	.56	2.25
Range	81	4	4	3	6
Min	3	0	0	1	1
Max	84	4	4	4	7

Statistical Model Test Results

Hypothesis 1

H0_1: There is no positive relationship between transformational leadership and vaccination intent.

Ha$_1$: There is a positive relationship between transformational leadership and vaccination intent.

I conducted a Pearson's correlation test to determine if a relationship between vaccination intention and transformational leadership was positive. The results of the

relationship was significant (r (353) = .16, $p < .01$, $R^2 = .03$), indicating that the null hypothesis was false and should be rejected. The results mean that there was a positive relationship between transformational leadership and vaccination intent. When transformational leadership behavior increased in hospitals, vaccination intent increased. The *r*-squared value indicated that transformational leadership alone was responsible for 3% of the variance explained and the effect size is small and significant. The results indicated that organizations benefit slightly when perceived transformational leadership behavior increases when it comes to the vaccination intent of RNs. The scatter plot found in Figure 6 demonstrates the significant relationship. The results of the Pearson's correlation test are in Table 7.

Table 7

Results of Pearson's Correlation Test Showing a Significant Positive Relationship between Transformational Leadership and Vaccination Intentions or RNs (N = 354)

Variables	*M*	*SD*	*r*	*p*
Vaccination intention	5.62	2.25	.16	.002
Transformational leadership	2.95	.92		

Hypothesis 2

$H0_2$: There is no positive relationship between transactional leadership and vaccination intent.

Ha_2: There is a positive relationship between transactional leadership and vaccination intent.

I conducted a Pearson's correlation test to determine if there was a positive significant relationship between transactional leadership behaviors of organization and RNs intention to vaccinate against the influenza virus. The results of the test were not significant (r (353) = .01, $p > .05$), indicating that the null hypothesis was true and should be retained. The result means that when hospital RNs perceive a transactional leadership style in the organization, there is no influence on their intent to vaccinate. The scatter plot found in Figure 8 provides an optical analysis of the non-significant relationship between transactional leadership and vaccination intentions of RNs. The results of the Pearson's correlations test are in Table 8.

Table 8

Results of Pearson's Correlation Test Showing a Non-Significant Positive Relationship between Transactional Leadership and Vaccination Intentions or RNs (N = *354*)

Variables	*M*	*SD*	*r*	*p*
Vaccination intention	5.62	2.25	.01	.39
Transactional leadership	2.15	.52		

Hypothesis 3

$H0_3$: There is no positive relationship between attitudes toward evidence-based practice and vaccination intent.

Ha_3: There is a positive relationship between evidence-based practice and vaccination intent.

I conducted a Pearson's correlation test to determine if there was a significant positive relationship between evidence-based practice and vaccination intentions among the sample. The result was not significant (r (353) = .09, p > .05), indicating that for the sample, the null hypothesis was true and was retained.

Table 9

Pearson's Correlation Results for the Relationship between Evidence-based Practice and Vaccination Intentions among RNs

Hospitals	*n*	*r*	*p*	*M*	*SD*	*M*	*SD*
				Vaccination		Evidence based	
Overall	353	.09	.10	5.62	2.25	3.32	.56

Hypothesis 4

*H*04: Transformational leadership and attitudes toward evidence-based practice cannot predict vaccination intent.

*H*a4: Transformational leadership and attitudes toward evidence-based practice can predict vaccination intent.

A regression analysis was beneficial for predicting vaccination intent utilizing transformational leadership and attitudes towards evidence-based practice as predictor variables. A pre analysis for linearity (Pearson's correlation) was conducted among all independent variables with vaccination intentions to determine the variables with significant linear relationships. Transformational leadership (p < .01) was the only

variable in the correlational matrix that showed a significant relationship with vaccination intentions among all RNs.

The results of the regression analysis for the sample was significant (F (2, 351) = 4.76, $p < .01$, $r = .16$, $r^2 = .03$) indicating that the null hypothesis was rejected. The results showed that RNs perceived transformational leadership and RN attitudes toward evidence-based practice could predict vaccination intent. The equation used to predict the slope that best represents the prediction of $Y_{(\text{Vaccination intent})}$ is

$$Y = 3.97 + .35_{(\text{Transformational Leadership})} + .18_{(\text{Evidence-Based Practice})}.$$

The t Test showed that the beta values of transformational leadership was significantly different from zero (t (352) = 2.61, $p < .01$).

The t Test results showed that the beta values of evidence-based practice was not significantly different from zero (t (352) = 2.61, $p > .05$). The 95% confidence interval for transformational leadership for the unstandardized beta value of .09 to .62 indicates that a zero beta is not likely in the population and that the null hypothesis should be rejected. The 95% confidence interval for evidence-based practice for the unstandardized beta value of -26 to .62 showed that a zero beta was possible in the population and that the predictor should be dropped from the model.

The results of the regression analysis when the evidence-based practice predictor was removed from the model did not yield better results nor did the results deteriorate (F (1, 352) = 8.85, $p < .01$, $R = .16$, $R^2 = .03$), indicating the rejection of the null hypothesis. Overall, the effect size provided by $r = .16$ indicated a small effect among the variables.

The explained variance of 3% indicated that transformational leadership alone explained only a small portion of the variance for vaccination intent. The results indicated that 97% of the variance of vaccination intent among RNs remained unexplained. The results of the regression analysis are presented in Table 10. The results of the model summary are presented in Table 11 and the results of the model coefficients are presented in Table 12.

Table 10

ANOVA Results of the Regression Analysis Predicting Vaccination Intentions among RNs

Model		*SS*	*df*	*MS*	*F*	*p*
1	Regression	47.28	2	23.64	4.76	.01
	Residual	1744.79	351	4.97		
	Total	1792.06	353			

a Dependent variable: vaccine intention

b Predictors: (constant), evidence based practice, transformational leadership

Table 11

Results of the Regression Analysis Model Summary

					Change statistics				
Model	*R*	R^2	AdjR^2	*S.E.*	R^2 Chg	*F*Chg	*df*1	*df*2	*p*
1	.16	.03	.02	2.23	.03	4.76	2	351	.01

a Predictors: (constant), evidence based practice, transformational leadership

Table 12

Coefficients from Regression Analysis

Model	*B*	*S.E.*	*β*	*t*	*p*	95% *CI* for B		Collinearity statistics	
						LB	UB	Tolerance	VIF
Constant	3.97	.74							
Transformational leadership	.35	.13	.14	2.61	.01	.09	.62	.91	1.09
Evidence based practice	.18	.22	.04	.82	.41	-.26	.62	.91	1.09

Hypothesis 5

$H0_5$: There are no differences in vaccination intent based on RN demographics.

Ha_5: There are differences in vaccination intent based on RN demographics.

Gender

There were several analyses conducted to assess this hypothesis. Initially, I conducted an independent samples *t* test to determine if there was a significant difference in vaccination intentions based on gender. The results indicated that no difference exist in vaccination intentions based on gender (t (352) - .92, $p > .05$). The results mean that males and females at both hospitals intended to vaccinate at the same rate. Males ($n = 26$) intended to vaccinate ($M = 5.85$, $SD = 2.18$) and females ($n = 328$) intended to vaccinate

(M = 5.60, SD = 2.26). The vaccination intent rate difference of (MD = .24) was not significant.

I conducted an ANOVA test among the age by group (three levels) and vaccination intent to determine if there were significant differences based on age group. A Levene's *t*est of homogeneity of variance indicated that there was no significant difference in the variance of the groups ($p > .05$). The result was not significant (F (2, 351) = 1.10, $p > .05$) and indicated that there were no significant differences in vaccination intent based on age group.

Education Level

I conducted an analysis of the education (four levels) and vaccination intent utilizing the ANOVA test. The results were significant (F (3, 350) = 3.67, $p < .05$), indicating that there was a significant difference in vaccination intent based on education level. The results indicated that I needed to conduct a multiple comparison analysis to understand where the differences existed among the groups. The Dunnett C analysis, used for instances of unequal variances, was beneficial since there were indications of some differences in the homogeneity of variance provided by the Levene's test of equal variance ($p < .01$).

The follow up analysis indicated that there was a significant difference in vaccination intent between RNs (n = 20) who earned a hospital diploma (M = 6.61, SD = 1.58) and RNs (n = 96) who earned an Associate's degree (M = 5.07, SD = 2.58) at the .05 significance level. The results indicated that of all levels of education, those RNs with

a hospital diploma had the highest influenza vaccination intent and RNs holding Associate's degrees had the lowest intent to vaccinate. Notable, the intent to vaccinate among RNs with an Associate's degree was reasonably high. The descriptive results are presented in Table 13.The results of the ANOVA test are presented in Table 14 and the results of the follow up test are presented in Table 15.

Table 13

Descriptive Results of Vaccination Intentions Based on Education Level (N = *354*)

					95% *CI* for mean	
	N	*M*	*SD*	*S.E.*	Lower	Upper
Hospital diploma	20	6.61	1.36	.30	5.98	7.25
Associated degree	96	5.07	2.58	.26	4.54	5.59
Bachelor's degree	195	5.73	2.12	.15	5.43	6.03
Master's degree	43	5.88	2.17	.33	5.22	6.55

Table 14

Results of ANOVA Test of Vaccination Intention Based on Education Level

	SS	*df*	*MS*	*F*	*P*
Between groups	54.69	3	18.23	3.67	.01
Within groups	1737.37	350	4.96		
Total	1792.06	353			

Table 15

Results of Post Hoc Test Using the Dunnett C Method (N = *354*)

				95% *CI*	
		MD	S.E.	Lower	Upper
Hospital diploma	Associate's	1.55[a]	.40	.45	2.64
	Bachelor's	.88	.34	-.06	1.82
	Master's	.731	.45	-.50	1.96
Associate's degree	Hospital diploma	-1.55[b]	.40	-2.64	-.45
	Bachelor's	-.67	.30	-1.46	.13
	Master's	-.82	.42	-1.94	.30
Bachelor's degree	Hospital diploma	-.89	.34	-1.82	.06
	Associate's	.67	.30	-.13	1.46
	Master's	-.15	.36	-1.12	.82
Master's degree	Hospital diploma	-.73	.45	-1.96	.50
	Associate's	.82	.42	-.30	1.94
	Bachelor's	.15	.36	-.82	1.12

[a] Indicates significance at the .05 level

[b] Indicates significance at the .05 level

Experience Level

An examination of vaccination intentions based on experience level required utilizing an ANOVA test. The levels of experience were low level (1-15 years)

experience (n = 112), medium level (16 - 30 years) experience (n = 126), and high level (31 - 45 years) experience (n = 116). The results of a Levene's homogeneity of variance test show no difference in variance among the groups ($p > .05$). The results of the test were not significant (F (2, 351) = 1.16, $p > .05$) indicating that there was no difference in vaccination intent based on the experience level of RNs. The descriptive results found in Table 19 showed that at all levels of experience, RNs indicated high levels of vaccination intent. No follow up test is required since there is no difference in vaccination intent among the groups. The results of the ANOVA test are presented in Table 20.

Table 16

Descriptive Analysis Results from ANOVA test of Vaccination Intentions Based on Experience Level for RNs (N = *354*)

					95% *CI* for Mean	
	N	*M*	*SD*	S.E.	Lower	Upper
Lower level experienced	112	5.73	2.12	.20	5.34	6.13
Medium level experienced	126	5.38	2.32	.21	4.97	5.79
High level experience	116	5.77	2.29	.21	5.35	6.20
Total	354	5.62	2.25	.12	5.38	5.86

Table 17

Results of ANOVA Test of Experience based on Experience Level

	SS	*df*	*MS*	*F*	*P*
Between groups	11.74	2	5.87	1.16	.32
Within groups	1780.32	351	5.07		
Total	1792.06	353			

Hours by Category

An ANOVA test was conducted to determine if there was a significant difference in vaccination intent based on part- time (1-35 hours per week), full-time (36-40 hours per week), or more than full-time (41 - 84 hours per week) worked. The results were not significant (F (2, 351) = 2.17, $p > .05$), indicating that there were no significant differences in vaccination intent based on the categories of hours worked. The results of the descriptive analysis for all RNs in Table 26 showed that although RNs who work part-time have less intent to vaccinate when compared to RNs who work full-time and more than full-time, the differences were not significant at the .05 level. The results of the ANOVA test are presented in Table 27. No multiple comparison analysis was necessary because there are no significant differences in vaccination intent based on the category of hours worked.

Table 18

Results of Descriptive Analysis for Vaccination Intentions based on Category of Hours Worked

					95% *CI* for Mean	
	N	*M*	*SD*	S.E.	Lower	Upper
Part-time	51	5.10	2.59	.36	4.38	5.83
Regular fulltime	244	5.64	2.20	.14	5.36	5.91
More than fulltime	59	5.99	2.09	.27	5.45	6.54
Total	354	5.62	2.25	.12	5.38	5.86

Table 19

Results of ANOVA Test for Vaccination Intentions based on the Category of Hours Worked

	SS	*df*	*MS*	*F*	*p*
Between groups	21.89	2	10.94	2.17	.12
Within groups	1770.18	351	5.04		
Total	1792.06	353			

Table 20

Results for All Hypotheses

Hypotheses	Results
$H0_1$: There is no positive relationship between transformational leadership and vaccination intent.	Rejected
Ha_1: There is a positive relationship between transformational leadership and vaccination intent.	Accepted
$H0_2$: There is no positive relationship between transactional leadership and vaccination intent.	Retained
Ha_2: There is a positive relationship between transactional leadership and vaccination intent.	Rejected
$H0_3$: There is no positive relationship between attitudes toward evidence-based practice and vaccination intent.	Retained
Ha_3: There is a positive relationship between evidence-based practice and vaccination intent.	Rejected
$H0_4$: Transformational leadership and attitudes toward evidence-based practice cannot predict vaccination intent.	Rejected
Ha_4: Transformational leadership and attitudes toward evidence-based practice can predict vaccination intent.	Accepted
$H0_5$: There are no differences in vaccination intent based on RN demographics.	Rejected
Ha_5: There are differences in vaccination intent based on RN demographics.	Accepted

Discussion

Over 80% of nurses in the sample reported moderately strong to strong intentions to receive influenza vaccination. The statistic is higher than recently published CDC

statistics for the 2011-2012 season where as few as 62% of RNs reported receiving influenza vaccination. I understood that there is a difference between intent and reported behavior (Peng-jun et al., 2013). Although the sample statistic of 80% is encouraging, the number is 10% below the 90% national benchmark for HCP influenza vaccination identified by CMS and Healthy People 2020(CMS, n.d.; Healthy People 2020, 2011). The statistic of 80% is, however, above the 70% interim benchmark statistic suggested for 2015 (CMS, n.d.; Healthy People 2020, 2011).

It is also noteworthy that 18% of the sample reported no intent to receive influenza vaccination. The 18% non- intention to vaccination rate is well above the 10% allowed by the CDC indicating that there was a moderate risk for the transmission of influenza (Healthy People 2020, 2011). The results demonstrated that efforts directed towards RNs with low vaccination intent must continue.

In terms of gender, the sample was representative of national RN statistics. Nationally, women represented 92.1% of RNs (United States Department of Labor, n.d.). The project sample was similar to the national statistics with females accounting for 93%, and males accounting for 7% of the RNs. Males and females intended to receive influenza vaccination at similar rates and gender was not a factor in influenza vaccination intent.

The average age of the RNs in the study was 45.8 and this is similar to the average age of 45.5 years seen in employed RNs nationwide (American Nurses Association [ANA], 2011). Young, middle aged, and older-RNs intended to receive

influenza vaccine at similar rates. Age was not a factor in vaccination intent among the sample.

I contrasted the project findings with the CDC data that Peng-jun et al. (2013) reported for age and HCP influenza vaccination. Nationally, HCP aged 65 and above had higher rates of influenza vaccination coverage (Influenza vaccination coverage among health care personnel - 2011-12 influenza season, United States, 2012). Similarly, in the 2011- 2012 season, increased age among individuals in the public was associated with increased levels of influenza vaccination (Peng-jun et al., 2013). The project results suggested that all age groups intended to vaccinate at high levels are a marked improvement from previous studies.

RNs possessing a bachelor's degree represented 55% of the sample, while countrywide; RNs with a bachelor's degree make up 50% of all RNs (ANA, 2011). Likewise, 12% of project participants had earned masters or doctoral degrees compared to 13.2% of RNs in the nation. When compared to national statistics, a higher percentage RNs in the sample were educated at the baccalaureate level and a slightly lower percentage of RNs possessed graduate degrees. The project sample is well educated and is representative of the national RN workforce.

Level of education yielded a significant difference in vaccination intent in the study sample. RNs, who had earned a hospital diploma, had a significantly higher intent to receive influenza vaccination than did RNs who earned an Associate's degree, although RNs with Associate's degrees had reasonably high levels of influenza vaccination intent.

The results indicated that because the overwhelming majority of RNs with hospital diplomas were in the oldest group of RNs, age rather than education is a confounding factor in vaccination intent among participants in the sample.

CMS (n.d.) data supported previous findings and reported that higher levels of education were associated with increased rates of influenza vaccination in HCP. In addition, among pregnant women in Massachusetts, higher levels of education were associated with higher uptake of seasonal influenza vaccination and Peng-jun, (2013) demonstrated that there were increasing levels of influenza vaccination with higher levels of education(Influenza vaccination among pregnant women - Massachusetts 2009-2010, 2013).

The project results indicated that although gender and age were not factors in influenza vaccination intent among RNs, education was a factor in young and middle-aged RNs intent to receive influenza vaccination at high rates. The project results also indicated that RNs were well educated and were capable of using results of studies like this to support their decisions for vaccination.

Overall, nursing experience level for the sample was high. There were no demonstrated differences in vaccination intent among RNs with low experience, medium experience, and high experience. All mean values for RNs at all levels of experience were high. The fact that RNs with less experience intend to receive vaccine at high rates suggested that vaccine education is helpful in increasing vaccination rates.

There was no significant difference in vaccination intent based on part-time, full-time, or more than full-time employment. The results suggested that a majority of nurses follow the influenza vaccination recommendations regardless of age, gender, experience level, or number of hours worked. Given the fact that many RNs start their career early in life, earn high levels of education, and are well experienced, it was reasonable to conclude that RNs are well equipped to understand the importance of influenza vaccination.

Transformational leadership was effective on increasing RNs intent to vaccinate and correlated positively with influenza vaccination intent. The results of this study demonstrated that using transformational leadership within and throughout hospitals was effective for promoting and increasing vaccination intent. The strength of the relationship between transformational leadership and vaccination intent was small, was significant between the variables, and indicated that as transformational leadership in hospitals increased, vaccination intent also increased. There was no relationship between transactional leadership and vaccination intent.

Overall, the variable evidence-based practice did not correlate with vaccination intent. An analysis of each hospital's sample showed conflicting results and demonstrated the importance of sample size. The larger, well-powered sample of the two hospitals showed that evidence-based practice relates significantly to vaccination intent, whereas; the smaller underpowered sample did not demonstrate a significant relationship.

Evidence-based practice showed a significant relationship with vaccination intent in Hospital A.

This project was the first to report a positive relationship between attitudes toward evidence based practice and influenza vaccination intent. It is likely that the underpowered sample size affected the results for Hospital B. Regression analysis demonstrated that transformational leadership style and attitudes toward evidence-based practice were useful in predicting vaccination intent. Together, transformational leadership and attitudes toward evidence-based practice accounted for 3% of the variance in influenza vaccination intent with the remaining variance unexplained. Regression analysis results indicated that transformational leadership and evidence- based practice could predict influenza vaccination intent. Transformational leadership contributed significantly to the model and attitudes toward evidence-based practice were not significant but did contribute to the model. The results related to evidence-based practice were likely due to a small sample size, particularly in one of the hospitals.

Implications

Historically, high-level evidence demonstrating the benefits of influenza vaccination of HCP has been missing from the literature. Recent studies have demonstrated the positive effect of influenza vaccination on disease burden, death from heart attack, averted cases of influenza, and a reduction in medical costs (Kostova et al., 2013; Udell, 2013). Peng-jun et al. (2013) suggested the need to provide HCP educational programs that targeted vaccine efficacy, influenza carriage and spread, and the multiple

benefits of influenza vaccination for patients and their families and HCP and their families. More high quality studies will to add to the body of knowledge regarding how to educate regarding the benefits of influenza vaccination and how education affects vaccination rates among RNs.

This project is the first study to report a significant positive relationship between transformational leadership and influenza vaccination intent, indicating a closure of a gap in the literature. Transformational leadership uses the strategies of idealized influence, inspirational motivation, intellectual stimulation, and individualized respect to guide members of an organization to realize future challenges (Doody & Doody, 2012; Tinkham, 2013).

Raising influenza vaccination rates among RNs and other HCPs may prove challenging since the ANA has not joined the majority of other professional organizations in recommending mandatory influenza vaccination for all HCP (Tucker & Poland, 2013). Despite the ANA's lack of support for an influenza vaccination mandate, hospital nursing leaders who are confident in their knowledge of influenza vaccination and evidence-based practice and committed to improving patient safety and enhancing patient quality must incorporate HCP influenza vaccination into the mission and vision of the hospital organization.

The results of this study demonstrated that transformational nursing leaders are influential on vaccination intent. Such nursing leaders must place influenza vaccination of HCP high on the organization agenda. These dynamic leaders must act as role models

in influenza vaccination campaigns by visibly receiving influenza vaccination annually and encouraging vaccination by employees (Peng-jun, 2013; USDHHS, 2013). In addition, actions that inspire RNs to receive influenza vaccination such as the institution of policies that promote an emphasis on patient safety and evidence-based practice are helpful in increasing influenza vaccination rates among RNs (Tucker & Poland, 2013). Demonstration of resolve and perseverance in tackling the controversial issue of increasing influenza vaccination rates among HCP and mentoring influenza vaccination champions may inspire emulation among RNs and all HCP.

Transformational leadership results in this project suggest that influenza vaccination goals for RNs need to be clearly stated, and the achievement of the goals disseminated among staff. The CMS and Healthy People 2020 suggested a goal of health care personnel influenza vaccination rates of 90% by 2020with an interim goal of 70% by 2015(CMS, n.d.; Healthy People 2020, 2011). An example of this form of leadership behavior would be placing the goal of achieving the national benchmark for HCP influenza vaccination rates in the hospital strategic plan. RNs need to be aware that the organization needs to reach the 90% benchmark by 2020. Evidence-based education, targeting the benefits of influenza vaccination, must be offered regularly and updated often (Tucker & Poland, 2013). Nursing leaders must encourage influenza vaccination education and maintain the organizational focus on goal achievement (Swartz, Spencer, Wilson, & Wood, 2011).

Feedback on RNs and other HCP vaccination rates to all employees through hospital communications, dissemination of study results, and publication of project results will keep staff engaged in the initiative to increase influenza vaccination rates and informed of progress towards the goal. The hospitals in the sample are on track to meet the national goals of 70% influenza vaccination rate by 2015 and 90% influenza vaccination rate by 2020 in the RN employee population. This project finding of influenza vaccination intention needs translation to influenza vaccination behavior. The intent rate for influenza vaccination enjoyed by RNs in the sample needs to translate into behavior and adopted by all HCP.

Nursing leaders must reassess beliefs about influenza vaccination among staff, identify challenges, and find novel solutions (Tucker & Poland, 2013). For example, to solve the problem of RNs declining influenza vaccination due to egg allergy, inclusion of the new mammalian cell-culture influenza vaccine in the hospital formulary may prove helpful in creating an environment of evidence- based practice. Team building will benefit this effort to respect differences in the employee population (Tucker & Poland, 2013). Masking, therefore for non-vaccinated HCP, is a novel solution that will decrease transmission of the influenza virus and promote patient safety. The consequence of masking may influence some HCP to receive vaccination.

Communicating, interacting, and mentoring around influenza vaccination among RNs will promote respect within the organization, empower RNs, and align the views of RNs with those of the hospital administration. HCP who believe that influenza

vaccination is safe and effective in protecting them and individuals around them and who see influenza as a health threat, received influenza vaccination at higher rates than those individuals who did not share those beliefs (Peng-jun et al., 2013). Influenza rates were lowest among HCP who believed that people could contract influenza from the vaccine (Peng-jun et al., 2013).

Courageous, evidence-based, patient-centered leadership is needed to increase influenza vaccination rates, and the use of transformational leadership by hospital leaders is significantly associated with increased levels of influenza vaccination intent. In contrast, transactional leadership style did not correlate with vaccination intent and showed no positive influence on influenza vaccination intentions among RNs. Further, transactional leadership style may hinder positive results when promoting education and immunization programs.

The results of this project demonstrate that the subject of influenza vaccination and RNs warrants further study. Future studies on this topic should include a replication of this study utilizing a sufficiently large sample from each hospital to avoid influences such as organizational culture and RN involvement that affects the outcome of the study. Additionally, further studies can include the effects of ethical behavior, patient safety, patient centered care along with transformational leadership, and evidence based practice on vaccination intent to understand if the independent variables increase the variance explained in a statistical model. Further, qualitative studies may provide beneficial understanding on the feelings of nurses, who indicated low levels of vaccination

intentions in their workplace. Finally, repeating this study to include sub units within hospitals such as critical care units, emergency departments, pediatrics, oncology units, and other to determine if there are significant differences in vaccination intent based on nursing units is of interest.

Project Strengths and Limitations

DNP project strengths are the quantitative nature of the study and the rigorous statistical models used to analyze the relationships among the variables. The currency of the topic, the relevance to best practices, and the overall large sample size are additional study strengths. Limitations of the study include the relatively small sample size of Hospital B and limitations of time and resources.

Analysis of Self

The DNP project enhanced my ability to respond to organizational and system issues in health care by providing a student experience that offered skill development in the areas of evidence-based project development and implementation, and DNP project and research project development. This experience was unique because I completed this real world, real time DNP project with the guidance of faculty experts. This experience enhanced my leadership abilities and my competencies by working in collaborative groups with nurses and members of other disciplines.

One of our early media presentations at Walden University described the Doctor of Nursing Practice (DNP) degree as a way to achieve professional parity. Physicians, physical therapists, and pharmacists have practice doctorates as their terminal degree and

nurses with a DNP degree will join this elite group of leaders and decision makers. The phrase used in the media presentation on the DNP degree was a seat at the table, and other students have mentioned the phrase that I remember at various times during the program. Earning a seat at the leadership and decision making table was important to me, and the DNP project experience at Walden University helped me achieve that goal.

My proficiency in quality improvement strategies and in creating and sustaining changes at the organizational and policy levels has improved because of the DNP project experience. The opportunities to improve practice are numerous and after completion of the DNP project, I have the ability to see a problem, research a strategy, implement a project, and evaluate it with confidence. I have implemented change in my work setting and the practicum experience has given me improved methods for implementation and evaluation. Following completion of the DNP project, I am confident in my abilities and I am comfortable in the knowledge that I have not only earned a seat at the table, I possess the capabilities to be a participant in the discussion and a leader of those who sit at the table.

Summary

We now know that transformational leadership correlates significantly with influenza vaccination intent. We know that RNs are a well-educated, highly experienced component of the larger HCP workforce and are capable of making decisions about influenza vaccination intent. We also know that attitudes toward evidence-based practice

contribute to the model for influenza vaccination intent and that the relationship needs further study.

A gap in the literature is closed. I identified facilitators to influenza vaccination of RNs and the results of this study provide a solution such as increasing transformational leadership in hospitals working to increase influenza vaccination rates among HCP. As influenza vaccination rates among HCP rise, carriage and transmission of influenza decreases, HCP absenteeism decreases, nosocomial spread of influenza decreases, organizational cost is reduced, the health care process is streamlined, and HCP experience a better quality of life, the societal threat posed by influenza is decreasing.

I presented the summary and evaluation of findings in Section 4. I identified transformational leadership style as a facilitator to influenza vaccination intent. I discussed the findings in the context of the literature and frameworks. I described the implications for clinical practice, future research, and social. I detailed self-analysis as a scholar, practitioner, project developer, and professional.

Section 5: Scholarly Product for Dissemination

Achieving the national benchmark for HCP influenza vaccination rates is an item that is on the agenda of every healthcare organization in the nation. Reporting requirements for HCP influenza vaccination rates from the Joint Commission and the CMS are now submitted annually to the National Quality Forum. The goal is to reach 90% by the year 2020 with an interim benchmark of 70% by 2015. Efforts to increase influenza vaccination rates among HCP are important because we know that as HCP influenza vaccination rates rise, nosocomial influenza, influenza like illness, morbidity, and mortality decrease during influenza season (USDHHS, 2013). Yearly influenza vaccination is the best method to prevent influenza (CDC, 2012). As hospitals look to increase quality and improve patient outcomes in a safe and ethical environment, influenza vaccination is a useful strategy to achieve these goals.

The purpose of this project was to understand the relationship between leadership styles and attitudes towards adoption of evidence-based practice and the intent to vaccinate among RNs in the state of New Jersey. I selected a power point presentation detailing the findings of this DNP project as the dissemination product because this format will enable me to share the findings of my project with a relatively large group of stakeholders from hospitals that granted permission to conduct the project. RNs, including all staff, managers, and administrators who attend the Nursing Research Day conference will have the opportunity to hear the results of the study and will be able to participate in the discussion. In addition, this power point presentation will be shared at

the July 2014 meeting of the New Jersey Immunization Network, a statewide advocacy group. Appendix K contains the handout version of the power point presentation. Sharing a power point presentation of the DNP project findings will stimulate discussion and will give those present at the conference ideas and tools that they can bring to their units and organizations and put to immediate use.

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Appendix A: Permissions

From Dr. Aarons to use the Innovation Scale:

Subject:	RE: Permission to use the EBPAS
Date:	Mon, Apr 15, 2013 11:42 AM CDT
From:	**Greg Aarons <gaarons@ucsd.edu>**
To:	Pamela Paparone <pamela.paparone@waldenu.edu>
Reply To :	
Attachment	Aarons_EBPAS-Scale_w-ref_2004-05-03.pdf Aarons_EBPAS_Scoring_2004-05-03.pdf

Dear Pamela,

This email provides permission to use the EBPAS in your research.I have attached two pdf files with the EBPAS and scoring instructions.If you make modifications to the EBPAS for your study, please provide me with the modified version and a brief rationale for the adaptation.Good luck with your study.

Best regards,

Gregory A. Aarons, Ph.D.
Professor of Psychiatry
University of California, San Diego
9500 Gilman Drive(0812)
La Jolla, CA 92093-0812
Tel: 858-966-7703 x3550
Fax: 858-966-7704
Web: http://psychiatry.ucsd.edu/faculty/gaarons.html

not disclose it to others. Please notify the sender of the delivery error by replying to this message, then delete it from your system & destroy all copies. Thank you.

From: Pamela Paparone [mailto:pamela.paparone@waldenu.edu]
Sent: Sunday, April 14, 2013 12:55 PM
To:gaarons@ucsd.edu
Subject: Permission to use the EBPAS

Dear Dr Aarons (gaarons@ucsd.edu),

I am a nurse practitioner who is pursuing a doctoral degree in nursing at Walden University.

The focus of my research study is influenza vaccination among health care personnel, evidence-based practice and innovation.

I am writing for permission to use The Evidence-Based Practice Attitude Scale (EBPAS) in my research study.

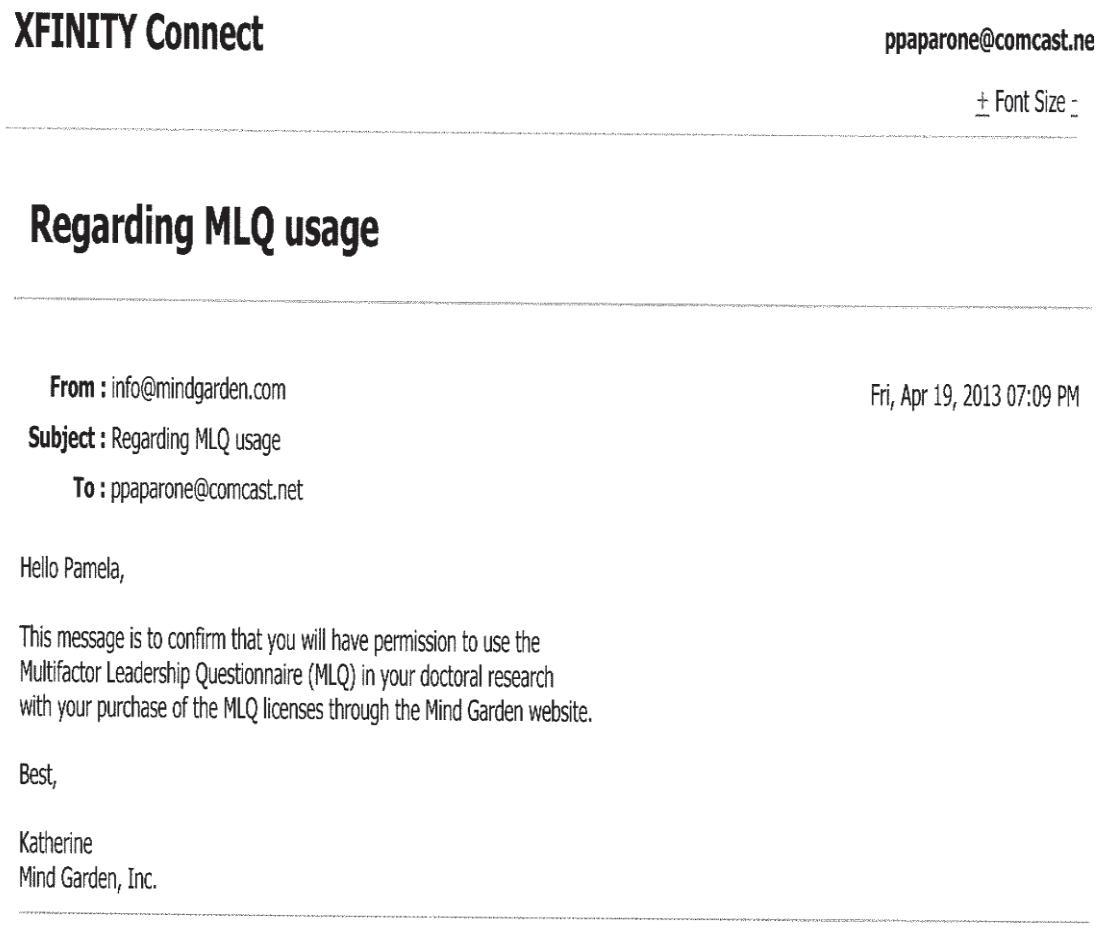
The project proposal is due on May 21, 2013.

Sincerely,

Pamela Paparone, MSN, APN

Nurse Practitioner/Clinical Nurse Specialist

Permission from Mind Garden to use the MLQ questionnaire.



XFINITY Connect

ppaparone@comcast.ne

+ Font Size -

Regarding MLQ usage

From : info@mindgarden.com

Fri, Apr 19, 2013 07:09 PM

Subject : Regarding MLQ usage

To : ppaparone@comcast.net

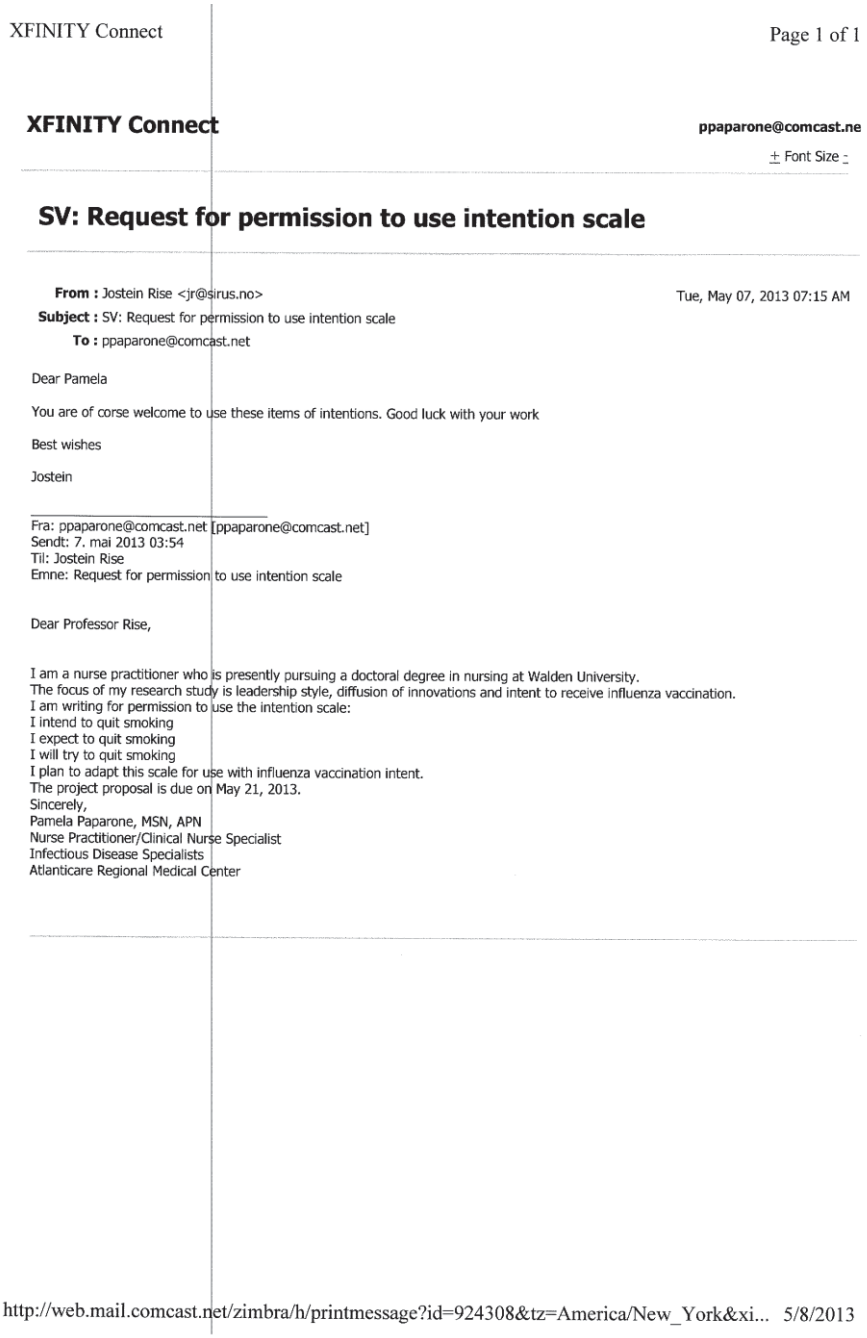
Hello Pamela,

This message is to confirm that you will have permission to use the Multifactor Leadership Questionnaire (MLQ) in your doctoral research with your purchase of the MLQ licenses through the Mind Garden website.

Best,

Katherine
Mind Garden, Inc.

Permission from Professor Rise to use intention scale:



XFINITY Connect

Page 1 of 1

XFINITY Connect

ppaparone@comcast.ne

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SV: Request for permission to use intention scale

From : Jostein Rise <jr@sirus.no>

Tue, May 07, 2013 07:15 AM

Subject : SV: Request for permission to use intention scale

To : ppaparone@comcast.net

Dear Pamela

You are of corse welcome to use these items of intentions. Good luck with your work

Best wishes

Jostein

Fra: ppaparone@comcast.net [ppaparone@comcast.net]
Sendt: 7. mai 2013 03:54
Til: Jostein Rise
Emne: Request for permission to use intention scale

Dear Professor Rise,

I am a nurse practitioner who is presently pursuing a doctoral degree in nursing at Walden University.
The focus of my research study is leadership style, diffusion of innovations and intent to receive influenza vaccination.
I am writing for permission to use the intention scale:
I intend to quit smoking
I expect to quit smoking
I will try to quit smoking
I plan to adapt this scale for use with influenza vaccination intent.
The project proposal is due on May 21, 2013.
Sincerely,
Pamela Paparone, MSN, APN
Nurse Practitioner/Clinical Nurse Specialist
Infectious Disease Specialists
Atlanticare Regional Medical Center

Appendix B: Research Participation Consent Form

Dear RN,

Hi, my name is Pam Paparone. I am a doctoral student at Walden University and I am conducting a study for my Doctor of Nursing Practice (DNP) project, in partial fulfillment for the DNP degree from Walden University.

INVITATION TO PARTICIPATE: You are being asked to participate in a research study entitled "Leadership Styles and Attitudes toward Evidence-based Practice on Influenza Vaccination" because you are a registered nurse working at a medical center. All registered nurses are invited to participate in a study that will evaluate the effects of leadership on the adoption of evidence-based practice. This form is part of the informed consent process that will allow you to understand this study prior to deciding whether to take part.

VOLUNTARY NATURE OF THE STUDY: Your participation in this study is voluntary. Your decision whether or not to participate in the study will be respected. There are no consequences for a decision to participate or not to participate in the study.

RISKS AND BENEFITS OF PATICIPATING IN THIS STUDY: The risks associated with participating in this study are minimal and some people may have formed opinions about influenza vaccination. Fatigue, stress, or becoming upset are minimal risks and can be encountered in daily life. Being in this study will not pose any threat to your safety or wellbeing.

Your participation in this study will help the nursing profession understand the relationships between leadership styles, attitudes toward evidence-based practice, and influenza vaccination. The results of this study will help the nursing profession, nursing educators, administrators, and clinical nurse specialists understand how to reduce the spread of influenza. If you agree to participate in this study, you will be asked to complete one survey.

COMPENSATION: There is no financial payment for participation in this study however, as a nurse, I value your time, and I am grateful for the time and effort given in completing this brief survey.

CONFIDENTIALITY: Participation in this study is confidential, responses are anonymous, and there is no information linking the respondent with the survey. Should you decide not to complete the survey once you have started, you may do so and exit the survey. This study is not connected to your employer in any way and participating in this

study will not jeopardize your relations with the any employer. If you have questions concerning the study, please contact me by phone at 609-652-2240 or email me at pamela.paparone@waldenu.edu.

If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368Ext 1210 or directly at 1-612-312-1210.

IMPLIED CONSENT TO PARTICIPATE: To ensure the utmost privacy and anonymity, signatures are not being collected. If you agree to participate, completion of the survey indicates consent. Please print or save a copy of the Consent.

CONFLICTS OF INTEREST: There are no conflicts of interest to disclose.

DATA COLLECTION PROCEDURE: An electronic survey is used to collect data for this study and is expected to take approximately 15 minutes to complete the survey.

PURPOSE OF THE RESEARCH: The purpose of this study is to determine the relationships between leadership styles, evidence-based practice, and influenza vaccination.

I have read all of the above information and I feel that I understand the study well enough to make a decision regarding my participation.

I understand and agree with these statements. I acknowledge that I am a registered nurse (RN) and I work in the state of New Jersey.

By clicking NEXT, I agree to the terms described above.
If you choose not to participate, you may close this page to exit the survey by clicking the red X in your browser.

Researcher: Pamela Paparone

Walden University IRB approval # 09-20-13-0324560

Expiration 9/19/2014

Next

Appendix C: Survey Questions

Leadership Styles and Attitudes toward Evidence-based Practice on Influenza Vaccination (*Some questions were redacted per MLQ copyright restrictions)*

Top of Form

NOTE: Please respond to each question as truthfully as possible. Remember, your responses are anonymous and in no way affect your employment or are connected to you personally. I appreciate your participation in this important study.

The following questions ask you to describe the leadership style of the organization, specifically your manager, as you perceive it. Please answer all items on this answer sheet. If an item is irrelevant, or if you are unsure or do not know the answer, leave the answer blank. Please make one choice for each statement.

Circle the extent to which you agree with each item using the following scale:

0 = Not at all 1 = Once in a while 2 = Sometimes 3 = Fairly often 4 = Frequently if not always

THE MANAGER I AM RATING...

My manager provides my with assistance in exchange for my efforts

0 Not at all	1	2	3	4 Frequently if not always

My manager re-examines critical assumptions to question whether they are appropriate

0	1	2	3	4

My manager fails to interfere until problems become serious

0	1	2	3	4

My manager focuses attention on irregularities, mistakes, exceptions, and deviations from the standards

0	1	2	3	4

[redacted]

[redacted]

[redacted]

[redacted]

Prev Next

Bottom of Form

Page 2

The following questions ask about your feelings about using new types of therapy, interventions, or treatments. Manualized therapy refers to any intervention that has specific guidelines and/or components that are outlined in a manual and/or that are to be followed in a structured/predetermined way.

Circle the extent to which you agree with each item using the following scale:

0 = Not at all 1 = Once in a while 2 = Sometimes 3 = Fairly often 4 = Frequently if not always

I like to use new types of therapy/interventions to help my clients

0 1 2 3 4

I am willing to try new types of therapy/interventions even if I have to follow a treatment manual

0 1 2 3 4

I am willing to use new and different types of therapy/interventions developed by researchers

0 1 2 3 4

I would try a new therapy/intervention even if it were very different from what I am used to doing

0 1 2 3 4

Prev Next

Page 3

If you received training in a therapy or intervention that was new to you, how likely would you be to adopt it if:

0 = Not at all 1 = Once in a while 2 = Sometimes 3 = Fairly often 4 = Frequently if not always

Top of Form

It was intuitively appealing
0 1 2 3 4

It "made sense" to you
0 1 2 3 4

It was required by your supervisor
0 1 2 3 4

It was required by your agency
0 1 2 3 4

It was required by your state
0 1 2 3 4

It was being used by colleagues who were happy with it
0 1 2 3 4

You felt you had enough training to use it correctly
0 1 2 3 4

Prev Next

Leadership Styles and Attitudes toward Evidence-based Practice on Influenza Vaccination

Page 4

The following statements ask about your intention to receive influenza vaccine. Circle the extent to which you agree with each item using the following scale:

Please indicate your agreement with the following statements by selecting one choice for each question.

0 = Not at all 1-2 = Once in a while 3-4 = Sometimes 5-6 = Fairly often 7 = Frequently if not always

I intend to receive influenza vaccine						
1	2	3	4	5	6	7
I expect to receive influenza vaccine						
1	2	3	4	5	6	7
I will try to receive influenza vaccine						
1	2	3	4	5	6	7

Prev Next

Leadership Styles and Attitudes toward Evidence-based Practice on Influenza Vaccination

Please tell me about you

How old are you?

What is your gender?

Female

Male

How many years of experience do you have as an RN?

How many hours do you work per week on average?

In addition to your RN license, what is your highest level of education completed?

Associate's Degree | Bachelor's Degree | Master's Degree | Doctoral Degree

Prev Next

Leadership Styles and Attitudes toward Evidence-based Practice on Influenza Vaccination

End of Survey

Thank you for your participation in this project.

Prev Done

Appendix D: NIH Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Pamela Paparone** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 05/05/2012

Certification Number: 908308

Appendix E: Letter of Introduction

Dear < Participant >

I am Pamela Paparone and I am completing the requirements for my Doctor of Nursing Practice degree at Walden University. This letter is an invitation to participate in a study on leadership style, attitudes toward evidence-based practice and influenza vaccination. The individuals who are being studied are Registered Nurses (RNs) who are employed New Jersey.

The study will take about 15 minutes to complete. I am an RN working in the state of New Jersey and as a nurse; I understand the value of your time. To volunteer to participate in the study, please click on the link for the online location of the survey. The first page of the survey is the participant consent form. At the end of the form, you will be asked to agree to the terms outlined in the form.

Thank you for considering participating in this important study.

Pamela Paparone

Doctor of Nursing Practice student

[Placeholder for link to consent form]

Appendix F: Reminder to Participate Letter

Dear <Participant>:

Recently I sent you an invitation to participate in a study concerning leadership style, attitudes toward evidence-based practice, and influenza vaccination.

The study is close to ending and your needed participation is appreciated. The study requires 210 people and you can be one of them. You are eligible to participate in the study if you are a registered nurse (RN) and you received this e-mail.

To volunteer to participate in this study, please click on the link below for the online location of the survey.

This study is not related to your job, responses to the survey questions are anonymous, and the information is kept highly confidential.

Thank you for your participation in this important study.

Pamela Paparone

Doctor of Nursing Practice student

[Placeholder for survey link]

Appendix G: Letters of Cooperation

August 19, 2013
Amy Glasofer
Virtua Center for Learning
1200 Howard Blvd.
Suite 100
Mt. Laurel, NJ 08054

Dear Pamela Paparone,

Based on my review of your research proposal, I give permission for you to conduct the study entitled "Leadership and Attitudes Toward Adoption of Evidence-based Practice on Influenza Vaccination," within the Virtua Voorhees hospital upon obtaining approval from Virtua and Walden IRBs. I have been informed of the purposes of the study and the nature of the research procedures. I have also been given an opportunity to ask questions of the researcher. As part of this study, I authorize you to designate a project facilitator who will post recruitment posters in report rooms, collect and use e-mail addresses of RNs to participate in the project, and redirect participants to Survey Monkey for the consent and survey. You may analyze the anonymous data, and report the findings without identifying our institution in any publication. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: voluntary participation of a project facilitator to hang recruitment posters and upload e-mail addresses to Survey Monkey with a unique password. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,
Amy Glasofer

Amy Glasofer DrNP(c), RN, ONC
Senior Educator
Virtua Center for Learning
1200 Howard Blvd.
Suite 100
Mt. Laurel, NJ 08054
(856)761-3806 (phone)
(856)761-3834 (fax)

AtlantiCare
REGIONAL MEDICAL CENTER

August 27, 2013

Pamela Paparone
AtlantiCare Regional Medical Center
1925 Pacific Ave.
Atlantic City, NJ 08401

Dear Pamela Paparone,

Based on my review of your research proposal, I give permission for you to conduct the study entitled "Leadership and Attitudes Toward Adoption of Evidence-based Practice on Influenza Vaccination," within the Atlanticare Regional Medical Center hospital system. I have been informed of the purposes of the study and the nature of the research procedures. I have also been given an opportunity to ask questions of the researcher. As part of this study, I authorize you to post recruitment posters in report rooms, collect and use e-mail addresses of RNs to participate in the project, redirect participants to Survey Monkey for the consent and survey, analysis of the anonymous data, and report the findings. Individuals' participation will be voluntary and at their own discretion.

We understand that our organization's responsibilities include: participation of a project facilitator to hang recruitment posters and upload e-mail addresses to Survey Monkey with a unique password. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,

Robyn Begley DNP RN NEA-BC
Vice President of Nursing/CNO
AtlantiCare Regional Medical Center

Appendix H: Recruitment Poster

Department of Nursing, Walden University

Pamela Paparone, DNP, APN

REGISTERED NURSE VOLUNTEERS NEEDED FOR RESEARCH SURVEY ON LEADERSHIP, ATTITUDES TOWARD EVIDENCE-BASED PRACTICE AND INFLUENZA VACCINATION

RN volunteers are needed to complete a survey on leadership, attitudes toward evidence-based practice and influenza vaccination. As a participant in this project, you would be asked to complete an electronic survey. The survey will take about 15 minutes to complete.

If you are interested, check your hospital e-mail for an invitation to participate in the study.

Thank you!

This project has received Institutional Review Board Approval from

Walden University and Virtua

Department of Nursing, Walden University

Pamela Paparone, DNP, APN

REGISTERED NURSE VOLUNTEERS NEEDED FOR RESEARCH SURVEY ON LEADERSHIP, ATTITUDES TOWARD EVIDENCE-BASED PRACTICE AND INFLUENZA VACCINATION

RN volunteers are needed to complete a survey on leadership, attitudes toward evidence-based practice and influenza vaccination. As a participant in this project, you would be asked to complete an electronic survey. The survey will take about 15 minutes to complete.

If you are interested, check your hospital e-mail for an invitation to participate in the study.

Thank you!

This project has received Institutional Review Board Approval from

Walden University and AtlantiCare

Appendix I: Letters of Confidentiality

CONFIDENTIALITY AGREEMENT

Name of Signer: Danielle Glogovsky, MSN, RN

During the course of my activity in collecting data for this research: "Leadership and Attitudes Toward Adoption of Evidence-based Practice on Influenza Vaccination " I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: D Glogovsky pa **Date:** 8/23/13

CONFIDENTIALITY AGREEMENT

Name of Signer: Angela Migliaccio

During the course of my activity in collecting data for this research: "Leadership and Attitudes Toward Adoption of Evidence-based Practice on Influenza Vaccination " I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

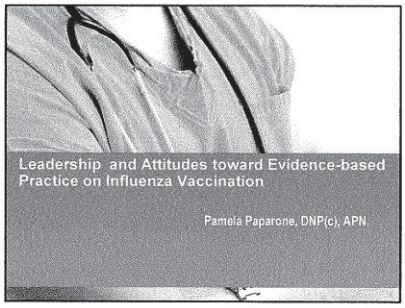
1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

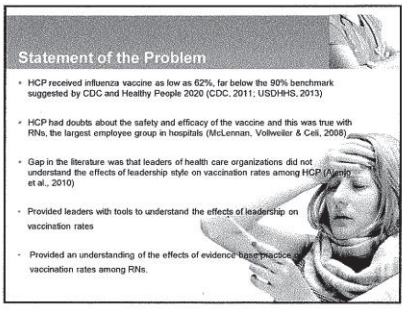
Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

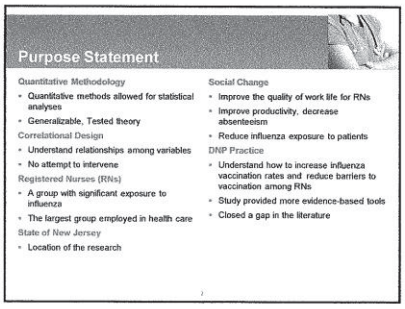
Signature: Angela Migliaccio **Date:** 8-27-13

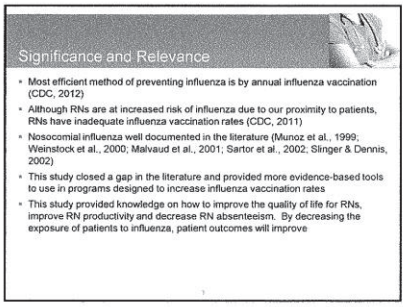
Appendix J: Research Results Presentation

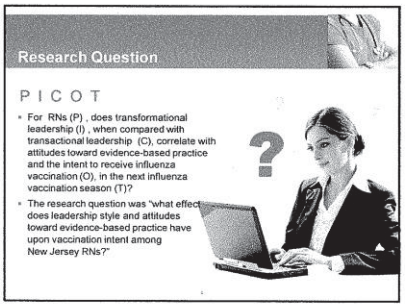
Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

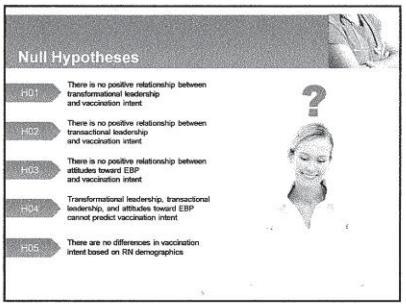












Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

Assumptions, Limitations, Delimitations

Assumptions

- RNs conveyed the true nature of their attitudes, had an opinion about influenza vaccine, and were capable of making decisions about influenza vaccine

Limitations

- The subject matter was complex and this study could not cover all aspects of the topic
- The study concerned influenza vaccination intent

Delimitations

- Allergy, prior reactions to the influenza vaccine, religious beliefs and co-morbidities of the respondents not considered
- Not all HCPs were considered in this study, only RNs

Influenza

Influenza Literature

Influenza: an acute, highly contagious infection of the respiratory tract (CDC, 2012)

Populations at greater risk for developing complications are the elderly (over 65), young children (under the age of 2), pregnant women, the immunocompromised, critically ill, and those people with chronic medical conditions (CDC, 2012)

Nosocomial influenza has been documented on internal medicine units, in nursing homes, on solid organ transplant units, on oncology units, and on pediatric units (Munoz et al., 1999; Weinstock et al., 2000; Mahvash et al., 2001; Bartlett et al., 2002; Bridges & Demers, 2002)

Leadership Literature

Transformational Leadership

- Idealized influence
- Inspirational motivation
- Intellectual stimulation
- Individual respect (Dowdy & Dowdy, 2012)

Transactional Leadership

- High quality—interpersonal relationships, engaged and supportive
- Low Quality—exchange of elements that were agreed on contractually (Dowdy & Dowdy, 2012)

Bystander Effect

- Health care organizations have failed to act

Theoretical Framework

Diffusion of Innovations

Theories provide us with a structure for using the nursing process to solve a clinical problem

- People experience numerous innovations in life
- Complexity of the idea, trialability, visibility of idea helpful (Rogers, 2003)

Diffusion of Innovations

- Process whereby novel ideas in thinking clinical practice, and community customs transition from an idea to an innovation over time (Rogers, 2003)

Diffusion of Innovations: Five domains

- Knowledge: Innovation is discovered, Need for knowledge, Awareness of knowledge
- *Persuasion:* Opinion, attitude toward the innovation is structured
- Decision: Choice, judgment, and commitment
- Implementation: Application of innovation, innovation moves from thought to action
- Reinvention: Innovation adopted for individual institutional usage
- Confirmation: Involves reinforcement of the decision (Rogers, 2003)

Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

Theoretical Framework

Evidence Based Practice

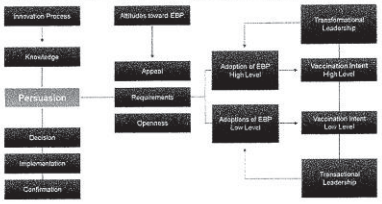
Attitudes toward the adoption of EBP involves the persuasion domain of diffusion of innovations (Aarons, 2004)

EBP is the continuously evolving process whereby careful evaluation of current best practices, expert clinical judgment, and patient preferences are synthesized to form a plan of care for the patient (Titler, 2010)

EBP Dimensions:

- Appeal
- Requirements
- Openness (Aarons, 2004)

Theoretical Model



Project Design

Quantitative methodology, correlational design

- No intent to use an interventional approach
- Instrument included the MLQ, EBPAS, and the BIS scales that measured the independent and dependent variables

Independent variables:

- Leadership style, attitude toward adoption of evidence-based practice, and demographic variables

Dependent variable:

- Vaccination intent

Population and Sampling

Population:

- All RNs employed at two hospital organizations hospital system A and hospital system B

Convenience Sample:

- Accessible
- All RNs were invited to participate in research study
- Recruitment posters in the report rooms
- Notice of invitation to participate sent to all RNs via e-mail

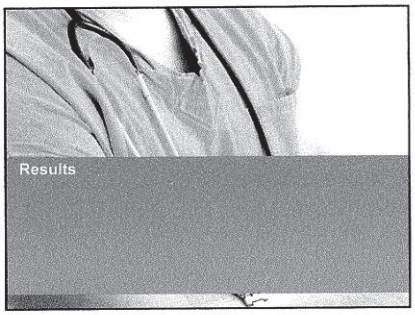
Bias:

- Addressed by large sample size
- Assistance of project facilitators who collected e-mail addresses and uploaded the e-mail addresses to an e-mail collector in Survey Monkey

Data Collection

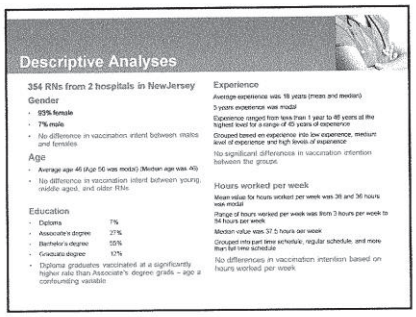
Prospective participants received an e-mail with a link to survey on Survey Monkey

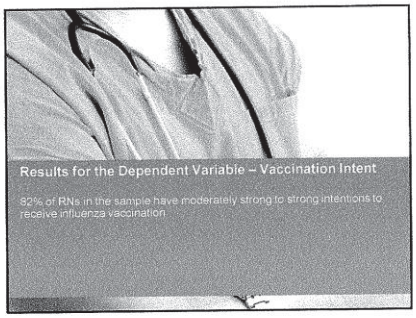
- First page of survey was the consent
  - Decision: not to participate and exit the study
  - Decision: to participate, clicked "next" and re-directed to survey
- Survey took about 15 minutes to complete
- Reminder letters (3) sent weekly to non responders
- E-mail addresses were disassociated from responses to preserve confidentiality Responses were anonymous

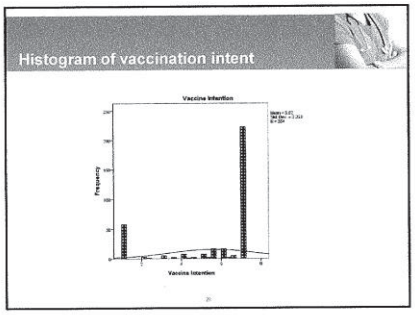


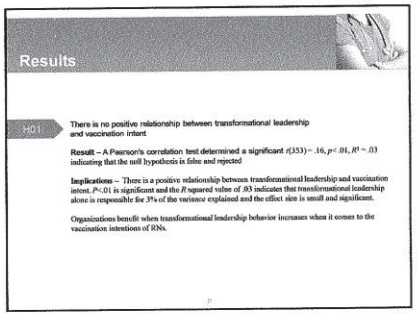
Results

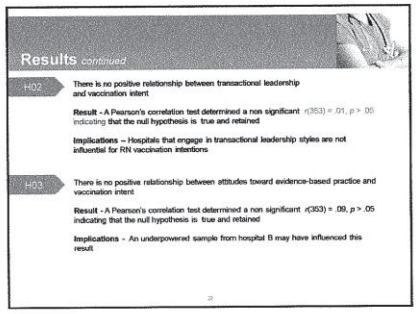
Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

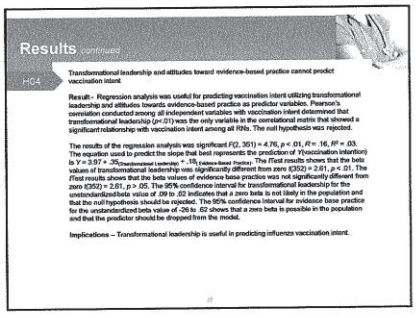












Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

Results *continued*

H05

There are no differences in vaccination intent based on RN demographics

Gender Result – An independent samples ttest showed that no differences exist in vaccination intent based on gender ($t(352) = .92$, $p > .05$. The results mean that males and females at both hospitals intends to be vaccinated at the same rate. Males ($n = 26$) intend to be vaccinated ($M = 5.85$, $SD = 2.18$) and females ($n = 328$) intends to be vaccinated ($M = 5.60$, $SD = 2.26$). The vaccination intention rate difference of ($MD = .24$) is not significant.

Education Level Result - An analysis of the education by four levels and vaccination intention was conducted. ANOVA results were significant $F(3, 350) = 3.67$, $p < .05$, indicating that there was a significant difference in vaccination intentions based on education level. The results indicated a need for multiple comparison analysis to be conducted to understand where differences existed among the groups. The Dunnett C analysis, used for instances of unequal variances, was beneficial since there were indications of some differences in the homogeneity of variance results provided by the Levene's test of equal variance ($p < .01$).

The follow up analysis indicated that there was a significant difference in vaccination intent between RNs ($n = 20$) who only earned a hospital diploma ($M = 6.61$, $SD = 1.58$) and RNs ($n = 90$) who earned an Associate's degree ($M = 5.07$, $SD = 2.58$) at the .05 significance level. The results indicate that of all levels of education, those RNs with just a hospital diploma had the highest influenza vaccination intentions and RNs holding Associate's degrees had the lowest intent. Notable, the intent to vaccinate among RNs with an Associate's degree was reasonably high.
Age was determined to be a confounding variable as Diploma grads were in the highest age group.

Results *continued*

H05

There are no differences in vaccination intent based on RN demographics

Experience Level Result- An examination of vaccination intent based on experience level utilized an ANOVA test. The levels of experience were low level ($n = 112$), medium level ($n = 126$) and high level ($n = 116$) experience. The results of a Levene's homogeneity of variance test show no difference in variance among the group ($p > .05$). The results of the test was not significant $F(2, 351) = 1.16$, $p > .05$ indicating that there was no difference in vaccination intentions based on the experience level of RNs. At all levels of experience, RNs indicated high levels of vaccination intentions. No follow up test was required since there is no difference in vaccination among the groups.
Implications - Males and females intend to vaccinate at the same rate. RNs at all educational levels had high intentions to vaccinate. RNs with diplomas as the highest level of education had significantly higher intentions to vaccinate when compared to RNs holding an Associate's degree. Age was considered a confounding variable.

Results *continued*

H05

There are no differences in vaccination intent based on RN demographics

Hours Worked Result –
The sample was predominantly female, well educated, highly experienced, hard working and influenza vaccination intent in this sample was moderately high to high. An ANOVA test was conducted to determine if there was a significant difference in vaccination intentions based on part time, full time, or more than full time hours worked. The result was not significant $F(2, 351) = 2.17$, $p > .05$, indicating that there was no significant difference in vaccination intent based on hours worked. Although RNs who work part time have less intentions of vaccination compared to RNs who work fulltime and more than full time, the differences are not significant at the .05 level. No multiple comparison analysis was necessary because there are no significant differences in vaccination intentions based on hours worked category.

Implications – Regardless of a part-time, full time, or more than full time schedule, RNs intended to vaccinate at the same rate

Overall

The sample was predominantly female, well educated, highly experienced, hard working sample of RNs and influenza vaccination intent in the sample was moderately high to high in 82% of the sample.

Summary

The use of transformational leadership is effective on RNs intent to vaccinate and correlates positively and significantly with vaccination intent

No relationship between transactional leadership and vaccination intent

Overall, the variable attitudes toward evidence-based practice did not correlate with vaccination intent

Transformational leadership and attitudes toward evidence-based practice correlated with influenza vaccination intent

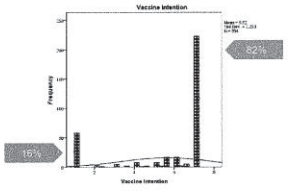
Summary

Future study on the subject is warranted

Project strengths are the quantitative nature of the study, rigorous statistical models, currency of the topic, and relevance to best practices

Project weaknesses are relatively small sample size of hospital B and limitations of time and resources

Recommendations



Leadership and Attitudes toward Evidence-based Practice on Influenza Vaccination Intent

Recommendations *continued*

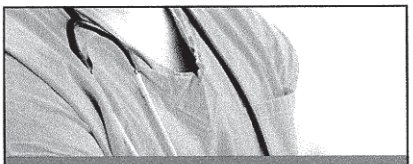
- Nursing Administration
- **Leaders in this initiative**
- Role Models
- Strategic Plan
  - Clearly Stated Goals
- Influenza Vaccination Policy Review
- Nursing Education
- Evidence-based Practice Education
- Patient Safety Education
- Ethical Practice Education

Surprise Results

The overall number and of RNs who participated in this study (*N* = 354)

The enthusiasm shown for the study by the RNs

The effort put forth by the project facilitators



Thank You!

Questions?

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Appendix K: Curriculum Vitae

Pamela Ann Paparone, DNP, APN, FACCWS
ppaparone@comcast.net

Professional Education

Walden University, School of Nursing
Minneapolis, MN
Doctor of Nursing Practice, 2014

Seton Hall University, Graduate School of Nursing
South Orange, NJ
Master of Science in Nursing, 1977

Rutgers University, College of Nursing
Newark, NJ
Bachelor of Science in Nursing, 1974

Professional Work Experience

Infectious Disease Specialists, AtlantiCare Regional Medical Center
Galloway, NJ
Clinical Nurse Specialist, Adult Nurse Practitioner
July 1978 to present

New Jersey State Department of Health
Home Agency Assembly
Princeton, NJ
1980

Richard Stockton College
Pomona, NJ
Lecturer in Nursing, Division of Professional Studies
Joint Appointment
1978 to1980
Preceptor, nurse practitioner students
2000 - Present

Atlantic City Medical Center, Mainland Division
Pomona, NJ
Clinical Nurse Specialist
Joint Appointment
1978-1980

Atlantic County Health Department
Northfield, NJ
Consultant, Health Assessment of Public Health Nurses
1979

Russell Sage College
Troy, NY
Instructor, Department of Nursing
1977 to 1978

Atlantic City Medical Center, Mainland Division
Pomona, NJ
Surgical In-service Nurse
1975 to 1976

Atlantic City Medical Center, Atlantic City Division
Atlantic City, NJ
Registered Nurse
1974 to1975

Professional Background – Awards and Honors

Fellow of the American College of Certified Wound Specialists
FACCWS ID 912

National Nurse Educator of the Year, 1989
American Association of Office Nurses

Sigma Theta Tau, International Honor Society of Nursing

Certifications

American Nurses Credentialing Center
Adult Nurse Practitioner
Certification Number 0176371
January 1, 2012 to December 31, 2016

American Academy of Nurse Practitioners
Adult Nurse Practitioner
Certification Number A0194038
January 1, 2014 to December 31, 2018

American Nurses Credentialing Center
Clinical Specialist in Medical-Surgical Nursing
Certification Number 0145928
January 1, 2011 to December 31, 2015

American Academy of Wound Management
Certified Wound Specialist
CWS Number 0146
October 1, 2007 to October 1, 2017

Presentations

Adult Immunization and Reimbursement in the state of New Jersey
New Jersey Immunization Network
Full Committee
April 23, 2014

Influenza Vaccination Rates among HCP in the State of New Jersey
New Jersey Immunization Network
Adult Immunization Committee
January 9, 2014

Adult Immunization and Reimbursement in the state of New Jersey
New Jersey Immunization Network
Adult Immunization Committee
January 9, 2014

AtlantiCare Regional Medical Center
Atlantic City, New Jersey
Podium Presentation: Motorized Scooter Injuries
June 3, 2013

AtlantiCare Regional Medical Center
Atlantic City, New Jersey
Nursing Research Day
Podium Presentation: Achieving the National Benchmark for Health Care Personnel Influenza Vaccination - An Evidence Based Approach

American Nurses Association National Convention
Indianapolis, IN
Speaker and Workshop Coordinator
Lyme disease, 2001

Publications

Paparone, Pamela. (2013). Feature Article. Lower extremity ulceration caused by medical scooter injury: A case series. *Geriatric Nursing* , *34*(1), 25-29.

Paparone, Pamela & Paparone, Paige. (2010). Sarcoid ulcer of the leg: A challenging chronic wound. *Wounds, 22*(1), E1-E5.

Paparone, Philip, Paparone, Philip &Paparone, Pamela. (2009). Post traumatic pyoderma gangrenosum*. Wounds, 21*(4), 89-94.

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Research

Sub-Investigator – AUG-0901. An Open Label Study of Augmentin Therapy in Patients with Early Phase Lyme disease.
July 1991 to July 1993

Sub-Investigator – Azithromycin/CP-62, 993 Protocol No. 066-129/ Azithromycin in the Treatment of Early Lyme disease. A Multicenter Double Blind, Double-Dummy Study.
July 1991 to July 1992

Clinical Research Coordinator – CAE-426A Randomized, Investigator Blinded, Multicenter Comparison of the Efficacy and Safety of Cefuroxime Axetil and Doxycycline in the Treatment of Patients with Early Lyme disease.
April 1990 to September 1993

Professional Standing

Member, State of New Jersey Immunization Network
Adult Immunization Committee
October, 2013 to present

Member, State of New Jersey Medical Reserve Corps,
2008 to present

Member, American Nurses Association, New Jersey State Nurses Association
1974 to present

Vice President, New Jersey State Nurses Association, District Number 9
1981 to 1983

Council on Practice of the New Jersey State Nurses Association
November 1979 to December 1980

Member, Board of Directors of the New Jersey State Nurses Association
January 1979 to October 1979

Member, American Academy of Nurse Practitioners

Member, Wound, Ostomy, and Continence Nurses Society

Member, International Society of Travel Medicine