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Perceptions of Healthcare Workers Toward Influenza Vaccination

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Abstract

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MPH, Walden University, 2007

BS, University of Nigeria, Nsukka, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Even though influenza vaccinations were provided free to all healthcare workers in the United States, healthcare workers were not 100% compliant. The non-compliance with influenza vaccinations may expose their patients, their families, and the public at large to a high-risk source of influenza infection. This study's research questions included – how registered nurses perceived influenza and influenza vaccination; registered nurses' self-reported incidents with influenza vaccination; and factors that contributed to registered nurses' non-compliance with influenza vaccination. Guided by the theory of reasoned action and the theory of planned behavior, the purpose of this qualitative study was to determine the factors that contributed to the non-compliance of registered nurses with receiving the influenza vaccination. Twenty participants from a healthcare facility in Florida were interviewed using an interview guide. Audio data was transcribed to text data; text data was coded and thematically analyzed by using ATLAS.ti software. Results revealed that 70% of registered nurses were afraid of influenza vaccination, while 80% of them saw influenza vaccination as ineffective; 90% of them had bad experiences or have seen colleagues/friends who have had bad experiences after influenza vaccination. In addition, 40% of registered nurses claimed that they already had good immunity, while 20% of them declined influenza vaccination because of personal choices. Research findings from this study may be utilized to bring positive social change to society at large. The findings may be utilized to enhance existing strategies or policies or even help formulate new policies and strategies that would address the concerns of HCWs, especially registered nurses.

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Dedication

This dissertation is dedicated to my dad who was not well educated but has constantly pushed me to get a doctorate degree. This dissertation is also dedicated to my beautiful wife, who has always encouraged me to achieve the highest educational qualifications and to aspire for the greatest achievements in life.

Acknowledgments

I acknowledge the immense support that I received from a prominent healthcare facility in Florida. The hard work, support and professionalism displayed by healthcare workers encouraged me to focus on this dissertation.

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Chapter 1: Introduction to the Study

Introduction

In this study I analyzed how healthcare workers (HCWs) perceived influenza and influenza vaccines. Influenza has been described as a contagious respiratory system disease often caused by influenza viruses, specifically Influenza A and Influenza B (CDC, 2014a). The influenza virus infection can lead to serious illness and eventually death if serious complications are not treated in time. The most common influenza viruses during influenza season are Influenza A, known as H1N1 and H3N2, and Influenza B (CDC, 2014a). To prevent influenza infection, HCWs are expected by their employers to get vaccinated against the virus every year. The components of yearly influenza vaccines vary depending on the prevailing influenza virus strains. Influenza vaccines help the body develop antibodies by about two weeks after the shot. The antibodies defend the body against the specific influenza strains in the vaccine. The benefits include preventing people from getting sick, making any influenza illness milder, and preventing serious illness or death. At the same time, the vaccinations potentially reduce the burden of healthcare cost (CDC, 2014a).

The nature of influenza infection makes it possible to be spread by coughing or sneezing. HCWs by their exposure to sick patients can easily transmit infection to their colleagues, patients, and the public. Vaccination of HCWs was thus geared toward the prevention of the virus. This study was necessitated by a compliance rate of only 64.4% versus a noncompliance rate of 35.6 % in influenza vaccination among HCWs in Florida in 2013 and 2014 (CDC, 2014b). To better understand noncompliance, I examined the

factors that contributed to non-compliance and made recommendations for positive change. I aimed to provide recommendations that will assist healthcare leadership in Florida to formulate new policies that encourage increased compliance to reduce influenza infection among HCWs themselves; prevent transmission of influenza infection to patients, stakeholders, colleagues, and the public; and reduce healthcare costs for the hospital community and government funders in Florida (Parry et al., 2011).

Background

Globally healthcare workers have been found to be noncompliant with influenza vaccination (Blasi et al., 2011). Even though healthcare workers belong to various specialties or disciplines, and are informed regarding the benefits of influenza vaccination, compliance remains low. In the United States and Europe, the rate of influenza vaccination compliance among healthcare workers is 64.4% (CDC, 2014a).

When looking at various reasons or factors elicited from participants in prior studies, the most common reasons for non-compliance were fear of vaccine safety and possible side effects, incomplete knowledge about the vaccine, and lack of trust regarding new vaccines. HCWs constitute a collection of diverse health professional – among them nurses, physicians, physical therapists, and certified nursing assistants – with each of them having different levels of knowledge about influenza and influenza vaccination (Boulton et al., 2014).

The consensus among various researchers was that healthcare workers had different reasons for non-compliance with influenza vaccination (Blasi et al., 2011; Brandt et al., 2011; Dube et al., 2011; Hellyer et al., 2011; Rebmann et al., 2012). Among

healthcare workers, nurses comprise the largest group. The compliance rate of influenza vaccination among nurses has been especially low when compared with that of physicians (Jaiyeoba et al., 2014). As the largest group of healthcare professionals, nurses have the most frequent contact with patients/clients. Their low compliance rates together with that among HCWs was consequently of great concern and should not be ignored (Rebmann et al., 2012).

In this study, I examined the perceptions of HCWs toward receiving the influenza vaccinations, and highlighted factors that contributed to their non-compliance and negative attitude toward it. Among the themes that emerged from prior studies are low risk perception, professional culture or ethos, vaccine side-effects, lack of knowledge, and poor communication between healthcare workers and health authorities (Blasi et al., 2011; Brandt et al., 2011; Dube et al., 2011; Hellyer et al., 2011; Rebmann et al., 2012).

Problem Statement

The influenza infection is a seasonal illness caused by the influenza virus. Influenza infection, a respiratory form of illness that can be transmitted from person to person by coughing or sneezing, causes mild-to-severe respiratory illness (CDC, 2014a). Since the people most exposed to influenza virus are healthcare workers, they have the greatest likelihood of getting a severe infection owing to the nature of their work (Wicker et al., 2014). HCWs after all have direct contact with patients, patient's family members, physicians, other healthcare workers, and visitors. HCWs likewise have the highest likelihood of transmitting the infection across all sections of the hospital community as well as to other people they meet.

Although influenza vaccination was provided free to healthcare workers and the vaccine was reliable and safe worldwide, HCWs were not compliant locally or globally (Brandt et al., 2011). The purpose of this research was thus to identify the factors that contributed to healthcare workers' low compliance with influenza vaccination. My aim was also to examine the awareness, knowledge, and perceptions of HCWs concerning influenza infection and the influenza vaccination, in addition to their attitude toward the latter. This study was intended to provide evidence based on its findings that will assist hospital leadership in creating well-defined plans and processes to change the current culture of non-compliance on the part of HCWs and replace it with a new culture of 100% compliance. Findings of the study may assist healthcare leaders to effect positive changes in this regard in medical centers outside Florida as well. The gap in the literature which I attempted to bridge in this study include the need to examine the differences in knowledge and attitude toward influenza vaccination among HCWs (Hellyer et al., 2011), and strategies to eliminated barriers to being vaccinated among nurses and other HCWs (Dube et al., 2011).

Purpose of the Study

The purpose of the study was to determine the factors that contributed to the non-compliance of HCWs about getting annual influenza vaccinations. My aim was to provide useful information through this study to assist hospital leadership in increasing compliance with the administrative expectations that all their staff will get influenza vaccinations. HCWs who worked in a hospital in Florida were used as the study participants.

Research Questions

RQ1. How do HCWs, especially registered nurses, perceive influenza and the influenza vaccination?

RQ2. What have been the self-reported incidents of HCWs, especially registered nurses with influenza vaccination?

RQ3. What factors contribute to HCWs', especially registered nurses', declining rate of influenza vaccination?

Theoretical Framework for the Study

The theories used to support this research were the theory of reasoned action and the theory of planned behavior. These theories are both concerned with motivational factors that determine the probability of the performance of a particular behavior, with behavioral intention highlighted as the most reliable predicting factor for a particular behavior. These theories emphasize attitude, subjective norms, and perceived control as constructs that predict health behavior. Constructs of the theory of reasoned action and the theory of planned behavior include behavior beliefs, normative beliefs, control beliefs, and external variables. The theory of reasoned action asserts that the most reliable predictor of behavior is the behavior intention. In order to provide more clarity about the components of the theory of reasoned action, perceived control was added to the components to control for extraneous factors which may interfere with an individual's intention and subsequent behavior. On the other hand, the theory of planned behavior asserts that perceived control determines intended behavior, attitude, and subjective norm (Ajzen & Fishbein, 1980).

The combination of the theory of reasoned action and the theory of planned behavior has been used repeatedly around the world for about 34 years to predict behavior intentions, including those toward getting the influenza vaccination (Glanz & Rimer, 2008). The theory of reasoned action and the theory of planned behavior were used to determine themes, which can be employed to plan for improved compliance with influenza vaccination among healthcare workers.

Nature of the Study

The nature of the study was qualitative. A qualitative study was a suitable approach, as it focused on the perceptions of HCWs toward influenza vaccination. In addition, the nature of the study aligned with the theories of reasoned action and planned behavior, and illuminated HCWs' behavior intentions and actual behavior regarding influenza vaccination (Glanz & Rimer, 2008).

The following illustration (see Figure 1) shows how the theories of reasoned action and planned behavior were applied to HCWs' attitudes and behavior concerning the influenza vaccination.

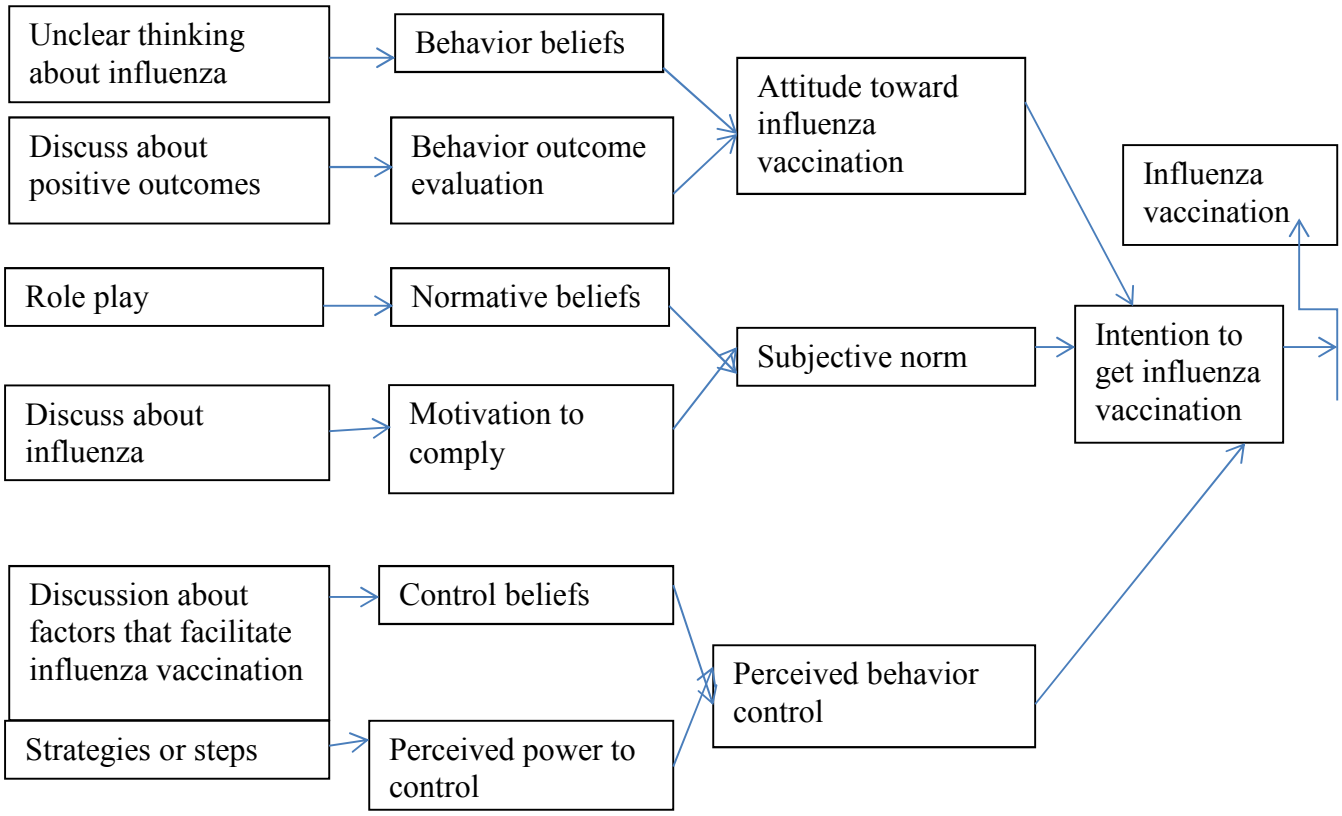

Figure 1: Application of Theory of Reasoned Action and Theory of Planned Behavior (Glanz & Rimer, 2008; Sharma & Romas, 2012)

Permission was granted by Jones & Bartlett Learning on 11/2/2015 and by Wiley Global on 11/2/2015.

The figure above describes the constructs of the theories of reasoned action and planned behavior. The upper two-thirds of the constructs represent the theory of reasoned action (TRA) and the lower third the theory of planned behavior (TPB). The theory of reasoned action posits that the most valuable determinants of behavior are the intention to act through attitudes and norms related to the intended behavior. Because the constructs of TRA were not sufficient to foretell behavior, TPB's constructs were added. The additions are control belief and perceived control. Control belief determines perceived

control in the presence or absence of factors, which encourage or discourage the intended behavior. TPB posits that perceived control is a determinant of behavior intention to an individual's attitude toward the intended behavior and subjective norm. TRA and TPB together connect all the constructs listed in the chart (Glanz & Rimer, 2008).

Definitions

The following is a list of definitions related to the study:

Behavior beliefs: – beliefs about the outcomes of the performance of a behavior (Glanz & Rimer, 2008).

Control beliefs: – supports or barriers for the performance of a behavior (Glanz & Rimer, 2008).

Fatalistic: – a society where the doctrine is to believe that all events in life are predetermined by fate and cannot be changed (Song, 2014).

Healthcare worker: – for the purpose of the study, HCWs included registered nurses only. A registered nurse is a graduate of an accredited school of nursing who has met all the requirements of a state, country, or licensing board (Canadian Nurses Association, 2015).

Hierarchical: – a society where people are ranked one above the other according to their social status or authority (Song, 2014).

Normative belief: – personal norm which drives one to perform a particular behavior (Glanz & Rimer, 2008).

Perceived behavior control: – belief in extraneous factors that are beyond an individual's control, which affect intentions and behavior (Glanz & Rimer, 2008).

Vaccine uptake: – the process of taking vaccine into one's body by injection (Mant & Mayon-White, 2011).

Assumptions

I assumed that HCWs in hospitals were knowledgeable about influenza, the influenza vaccines, and the risks of non-compliance with yearly influenza vaccination.

Scope and Delimitation

Within the scope of this research, a phenomenological approach to determine factors that contributed to the non-compliance of HCWs with regard to influenza vaccination was adopted. After several reviews of other approaches, the current study was considered adequate from a phenomenological point of view. Because a small number of participants was used for the study, the results were not applicable to a larger population. And with reference to the number of participants, Creswell (2013) suggested five to 10. Therefore, for the research, 20 participants were recruited initially for one-on-one interviews through purposeful random sampling. I continued to recruit participants until data saturation was reached. At the stage of planning for the study, there was no guarantee as to how many participants were willing to participate. The criteria for participants were that individuals were HCWs; at least 18 years old; and be able to read, write and speak English (Simon, 2014). I did not anticipate any problem about confidentiality with HCWs and did not consider the use of employees from another hospital or healthcare system in view of the need to get permission from other avenues.

Limitation

Because the study had 20 participants, generalization of the findings was not possible. However, the study provided potentially important variables for future studies as well as guidance for hospital administrators in creating more effective policies regarding full staff vaccination.

Significance

This study was significant, because of the wellbeing of HCWs translated to a workforce that did not compromise patient care (Amodio et al., 2014; Corace et al., 2013). When HCWs are not vaccinated against the flu, they may serve as its carriers to some or all their patients/clients. When patients/clients come to a hospital or healthcare center, they expect to be healed through the best care from HCWs who are supposed to be in good health. Patients do not anticipate acquiring an infection or influenza from the HCWs who care for them (Amodio et al., 2014; Corace et al., 2013). Influenza vaccination of healthcare workers will diminish the probability of their transmitting influenza infection to their patients, and may also shorten patients' hospital stays when influenza is not added to their problems (Amodio et al., 2014; Corace et al., 2013).

Summary

The theories of reasoned action and planned behavior show that behavior intentions and behavior themselves are driven by such factors as beliefs, intentions, control, and other extraneous factors beyond an individual's control. Many researchers have examined this phenomenon in several countries around the world, but each study is unique to its participants and environment as well as its focus (Aguilar-Diaz et al., 2011).

Previous study has shown that the noncompliance of HCWs with influenza vaccination has become a safety issue, and toward this end the present study may provide information and evidence of common themes to determine the attitudinal, cultural or peer-pressure factors responsible for their noncompliance with receiving this important inoculation.

Chapter 2: Literature Review

Introduction

Influenza infection is caused by the influenza virus, a seasonal infection that occurs in many countries around the world. Despite the free availability of influenza vaccine at their workplace, many HCWs refuse to get vaccinated. Noncompliance with influenza vaccination is thus a safety issue and a public health concern. This noncompliance on the part of HCWs sends the wrong signal to the public, and puts patients and their families at risk (Wicker et al., 2014; CDC, 2014b). Also at risk are the physicians as well as other members of a hospital community. Owing to the nature of HCWs work, they have the highest likelihood of transmitting influenza from patient to patient and to other people at their workplace (Wicker et al., 2014; CDC, 2014b) The purpose of this study was to find out why HCWs did not get vaccinated and to offer the results to the relevant healthcare leadership, who may use the information to develop more effective strategies to reduce or eliminate their HCWs 'noncompliance.

Literature Review

There is research to show that a 100% or near 100% compliance with influenza vaccination is in the best interest of HCWs, patients, and other members of a hospital community, and getting HCWs to be 100% compliant with influenza vaccination has been a major task in many countries around the world, as shown in a recent study in Australia (Lim & Seale, 2014).

Fear of Vaccination

The advent and success of vaccination programs have let to better health for children and adults alike (Ragan & Duffy, 2012). Because vaccination programs have been highly successful in the past, there has been a decline in vaccine preventable diseases, especially in materially advance countries around the world. On the other hand, the success of vaccination programs has brought the perception that morbidity and mortality from vaccine-preventable disease is now a thing of the past, and that vaccinations are no longer needed. In recent times, moreover, the fear of vaccines has resulted in an increasing number of parents refusing to let their children be vaccinated (Ragan & Duffy, 2012). This increasing refusal to vaccinate children has resulted in the resurgence of vaccine-preventable diseases like measles and pertussis. Fears related to vaccine-sterilization processes have also been linked to the decline in vaccine acceptance. Some parents in fact believed that the vaccination of children was unnecessary, because of the discomfort and pain experienced by them when they received multiple shots at once (Ragan & Duffy, 2012).

When the public and HCWs were surveyed to discover plausible contributing factors for noncompliance with an influenza-vaccination program, the outcomes differed (Blasi et al., 2012). Among HCWs (n=2,253) in Europe, influenza compliance was 17%, for both the public and HCWs (Blasi et al., 2012). The factors identified for noncompliance included fear and anxiety about the influenza vaccines to be used, vaccine side-effects and safety, mistrust of the local healthcare leadership, and poor communication between HCWs and that leadership (Blasi et al., 2012).

In an unprecedented study of HCWs (n=1,334) in 83 countries, Blasi et al. (2011) strived to determine the root cause of noncompliance with influenza vaccination among HCWs. In a web-based survey of the HCWs, the researchers determined that the following factors were responsible for noncompliance: fear of influenza vaccine safety and poor communication. But these factors may not have been the only ones at work. The present research study aim was to determine whether other factors that have not been uncovered for noncompliance with influenza vaccination among HCWs may also play a part.

In many places around the world, people see influenza infection as part of a natural course of things, while the sudden outbreak of pandemic influenza is considered unnatural (Prematunge et al., 2012). Even though the risks associated with pandemic and seasonal influenza are similar, HCWs showed more concerns about the former. Medical researchers have consequently recommended emphasizing the benefits of vaccination for all types of flu, and addressing the barriers to vaccination (Prematunge et al., 2012).

In Beijing, China, the fears of unknown negative results associated with influenza vaccination accounted for low compliance with influenza vaccination (Seale et al., 2012). When healthcare workers in Beijing were surveyed, about 758 out of 1,657 participants were afraid of the vaccine's possible side effects and considered that the vaccines had not been adequately tested. They had little or no knowledge about the vaccine's production process or the safety standards employed by the producers (Seale et al., 2011).

Low Risk Perception

When considering influenza risk perception among HCWs, the cohort study in Canada also sheds some light. The goal of this study was to assess risk for influenza among HCWs working in acute care versus non-HCWs during the first two waves of influenza A (h1n1) in 2009. The study consisted of HCWs and office workers (N=334). The study found no associations of HCWs between working in an acute-care hospital and their perceptions of risk of influenza infection. However, working in the ICU of a hospital was identified by them as a risk factor for contracting influenza (Kuster et al., 2013).

Focus group interviews carried out in Turkey with a view to determine factors responsible for HCWs reluctance to get influenza vaccination indicated that compliance with influenza vaccination was low (27.2%). Even though the study revealed that this reluctance was caused by incorrect information spread by emails and a related low perception of risk, the study attempted to determine which factors were particularly influential for HCWs. A prior study recommended providing them with health information form credible sources (Hidiroglu et al., 2010).

Dube et al. (2011) conducted semi-structured interviews with 42 HCWs in Canada. The participants were selected because of their refusal to get vaccinated. Their reasons included fear of the vaccine, low perception of risk, and incorrect information about influenza vaccine.

Brandt et al. (2011) conducted a survey of 16,349 HCWs in Germany to determine their reasons for non-vaccination against influenza. In the study, the

researchers determined the following reasons for non-compliance: fear of vaccine safety, low perception of risk, and lack of trust in the new vaccine.

When attempting to determine the factors contributing to the HCWs intention to get vaccinated, the theory of reasoned action and the theory of planned behavior were utilized (Myers & Goodwin, 2011). Moreover, in a recent study conducted in the United Kingdom, the theory of planned behavior and health belief model were successfully used to change reluctant healthcare workers' intention to be vaccinated (Myers & Goodwin, 2011). However, before participants could execute their intention, fear, anxiety and lack of confidence about the influenza vaccine set in and caused them to change their minds. These reactions were also related to lack of knowledge about the influenza vaccine in question, and the risk of lack thereof associated with it (Myers & Goodwin, 2011).

In an effort, not to portray HCWs as individuals who stubbornly refuse to obey rules or policies, there was a further examination of the barriers against and motivators for influenza vaccination among HCWs in Singapore (Hwang & Lim, 2014). Among the most striking barriers were misconceived ideas about the vaccination, negative peer pressure, perceived immunity for HCWs, and a perception of low risk (Hwang & Lim, 2014). Since nurses form the largest professional group in healthcare and their compliance with influenza vaccination has been low, a decision was made to introduce the benefits of influenza vaccination to student nurses in the United Kingdom. In a cross-section survey that included 430 student nurses, the reasons for wanting to reject the influenza vaccination were examined. Their refusal rate appeared similar to that of registered nurses around the globe (Hunt & Arthur, 2012). Only 12.2% of the students

received influenza vaccine yearly, while 27.6% have had influenza vaccine once in their lifetime, 19.8% intended to get vaccinated, and the remaining 40.4% of the students had no intention of getting vaccinated against influenza. Even though some of the student nurses voiced willingness to be vaccinated, their intentions did not translate into action. The most common reason for their refusal was low perception of risk. The researchers recommended more targeted and persuasive communication to ensure that nursing students would go through with getting vaccinated in future (Hunt & Arthur, 2012).

Fear about Vaccine Safety

Having confidence in vaccine safety is very important to the success of national and global immunization and vaccination programs. In a recent survey of many countries, especially those that manufacture and procure the vaccine, some shortcomings were discovered (Graham et al., 2012). Many of the facilities in these countries lacked the capacity to establish vaccine safety. They also lacked the requisite infrastructure, information technology, viable communication systems, and adequate human resources to effectively monitor vaccine safety. This situation obtained especially in developing countries. And because of fear on the part of employees about reporting such shortcoming, no reports were made. There was also a corresponding lack of a government willingness to implement vaccine pharmacovigilance. Consequently, vaccine safety could not be guaranteed in the affected countries. To ameliorate the situation, the World Health Organization has recommended a standardized, internationally centralized vaccine-safety reporting system, and improved vaccine surveillance system, and a global exchange of data about safety concerns (Graham et al., 2012).

The low rate of influenza vaccination compliance among HCWs, and especially among nurses, is obviously a matter of great concern. This phenomenon was highlighted by Hellyer et al. (2011) in Minnesota when their self-administered survey of 1600 HCWs revealed only a 37% compliance rate among HCWs for influenza vaccination. The factors they uncovered for this low compliance rate included a negative professional view toward the vaccination, potential or likely vaccine side effects, and feeling of "invincibility" on the part of the nurses. However, the factors named in the above study may not have accounted for all the factors responsible for this low compliance rate. One of the aims of the present research was to determine whether other factors may be involved in HCW refusal a well.

When student nurses in Israel were confronted with the need for vaccination against influenza, many of them were skeptical. Their actions were linked to poor or inadequate knowledge about influenza, vaccine safety, and the side effects (Teitler-Regev et al., 2011).

Influenza infection has no boundaries, as incidence and prevalence have been documented in most parts of the world. Thanks to lack of knowledge and inadequate surveillance data, many developing countries consider mortality and morbidity from influenza a myth. A recent mixed-method study in Kenya showed that influenza morbidity and mortality were found in Kenya. In that country alone, about 1200 cases of influenza infection were identified through hospital-based surveillance. A study of Kenyan HCWs demonstrated that about 89% of them knew about the existence of influenza infection and were willing to be vaccinated against it. The rest of the HCWs

had concerns about vaccine safety, side effects, and efficacy. The researchers recommended continuous health campaigns and persuasive communication to ensure actual vaccination (Oria et al., 2011).

Because HCWs spend more time taking care of their patients and become involved in the operation of their facilities, they are seen by patients as being part of the healthcare facilities themselves (Gesser-Edelsburg et al., 2014). When perception of HCWs about influenza vaccination was compared with that of the public, the researchers realized that HCWs were not part of the healthcare institutions where they work but were individuals with perceptions like those of the lay population among where they lived (Gesser-Edelsburg et al., 2014). In a recent survey in which HCWs and the public were studied simultaneously, 11% of HCWs were vaccinated against influenza while 36% of the public was vaccinated. The reason for low compliance with influenza vaccination was attributed to concern about the vaccine's safety. The researchers recommended that HCWs should be included in planning persuasive communication for both themselves and the public regarding the need to get an influenza vaccination (Gesser-Edelsburg et al., 2014).

Lack of Knowledge

Since lack of knowledge prevents bringing about the needed change, empowering HCWs and the public through education is required to provide informed decision making (Behzard & Ahmad, 2011). Giving HCWs the requisite knowledge or education enables them to move towards getting vaccinated. Without adequate empowerment through

education, there is no guaranteeing that the right decision will be made. Knowledge is essential for anti-flu vaccinations to take place (Behzad & Ahmad, 2011).

The actions and behavior of patients with cystic fibrosis are not different. In an interview with patient with cystic fibrosis in Paris, there was also widespread skepticism and refusal to accept influenza vaccination. The main reasons for their refusal were related to poor knowledge about the influenza vaccination and the risks associated with it (d' Alessandro et al., 2012).

Furthermore, in a similar study where physicians in Slovenia were faced with the need to get the influenza vaccination, knowledge played an important role in their intentions. Out of about 1,718 participants who were surveyed, however, only 41% got vaccinated. Their actions were linked to their low awareness of and knowledge about the influenza vaccination and the risks involved (Socan et al., 2012).

It has always been difficult to reach unionized HCWs or convince them of the need for getting a flu vaccination. It has been equally hard to reach their union leaders. In Canada about 79% of HCWs are unionized as compared to only 13% in the United States (Quach et al., 2013). In a recent interview of 23 immunization program planners in Canada, these individuals expressed frustration about the unsuccessful promotional and educational events put on to increase influenza vaccination compliance (Quach et al., 2013). And even more frustrating was the uncooperative attitude of union leaders, who did not support a policy for mandatory influenza vaccination. Lack of knowledge on the part of union leaders about influenza and influenza vaccination was suggested as the

cause for their stance against the mandatory influenza vaccination policy (Quach et al., 2013).

The attitude of pregnant women around the globe did not differ from that of HCWs. In a retrospective study of pregnant women, compliance with influenza vaccination was low because of poor knowledge about the disease and the related vaccination program (Yuen & Tarrant, 2014).

When households were examined, the negative concept of the influenza vaccination remained the same. Sometimes parents would try to protect their children by not taking them to be vaccinated, a decision informed by lack of knowledge regarding influenza vaccinations (Malosh et al., 2014). In a recent study of adults and their children in Ann Arbor, Michigan, compliance with influenza vaccine was remarkably high. There was a 54% compliance rate for adults and a 66% compliance rate for children (Malosh et al., 2014). Their compliance with influenza vaccination was related to the perceived benefits of being vaccinated – a belief which eliminated the barriers for many of those concerned. Meanwhile, those who did not comply attributed their actions to a perception of low risk, their concerns about vaccine safety, and their worry about possible side effects (Malosh et al., 2014). The researchers did not indicate whether the participants who did not comply with getting an influenza vaccination refused other forms of immunization for their children as well.

There have always been controversies regarding the health benefits of influenza protection for HCWs and the patients that they care for (Ahmed et al., 2014). Despite ongoing education and encouragement, many HCWs continue to see no need for vaccine-

based protection against influenza. Also in a recent study where some 6,092 studies were reviewed, influenza vaccination given to HCWs contributed to reduction in mortality and in development of new influenza cases among patients. Nevertheless, lack of knowledge may have prevented many HCWs from getting vaccinated against the disease to protect themselves and their patients (Ahmed et al., 2014).

The phenomenon of noncompliance of HCWs with the local influenza-vaccination program is, as we have seen, prevalent beyond the borders of United States, too. In Ireland, where healthcare workers were surveyed regarding the influenza vaccination, their compliance rate did not differ from that in the U.S. The compliance rate of HCWs with influenza vaccination was low, with the greatest concern being the level of noncompliance among nurses (O'Lorcain et al., 2014). It was a mere 12%. This statistic caused great concern in the country, since nurses form the largest group of healthcare professionals there and have the closest contact with patients and other members of the hospital community. Their low rate of compliance was attributed to lack of knowledge about influenza and influenza vaccines (O'Lorcain et al., 2014).

Efforts to boost compliance for all HCWs have not been successful. In a recent development at a facility where the influenza-vaccination policy was enforced, HCWs were required to wear mask during flu season in lieu of getting influenza vaccinations. This requirement stemmed from the fact that some groups of HCWs were adamant in their refusal to be vaccinated. Moreover, some even refused to wear a mask. Their actions were based on incorrect knowledge about influenza and the proven benefits of getting vaccinated (Lindley et al., 2014). To examine influenza vaccination trends around the

world, a review of 30 articles was undertaken (Aguilar-Diaz et al., 2011). It showed that the rate of influenza vaccination among HCWs around the world followed the same or similar pattern. The influenza vaccination compliance rate among HCWs ranged between 43.1% and 61%. The countries included in the review were France, China, Greece, Turkey, and Saudi Arabia. Apart from the low rate of influenza-vaccination compliance, another common finding throughout these countries was lack of knowledge and the presence of misinformation about influenza and influenza vaccines. The lack of accurate media sources of information was an additional factor that contributed to the low vaccination rate. The researchers recommended educational programs that would make HCWs more knowledgeable about the benefits of influenza vaccination (Aguilar-Diaz et al., 2011).

Even though the rate of compliance may be low among HCWs in general, some groups appear to have greater compliance than others. In a recent cross-sectional survey of HCWs on this topic, lack of knowledge was shown to be the major reason for non-compliance. Even physicians, whom one would think of as being more knowledgeable, had a vaccination rate of only 36% as against 22.4% for other HCWs. These rates are both low. So, the problem of noncompliance among HCWs remains to be solved. The researchers recommended that influenza-vaccination campaigns should include information about influenza-vaccine production processes and the safety standards followed in each process. These steps might allay fears and anxieties associated with vaccine safety and side effects, while broadening the knowledge base of HCWs (Tanguy et al., 2011).

As we have seen, the trend of low influenza-vaccination compliance rates among healthcare workers is prevalent throughout the world. A recent retrospective study of HCWs in Madrid (n=2,739) showed similar low acceptance. The vaccination rate was low, as was knowledge about influenza and influenza vaccines. The overall vaccination rate over a two-year period (2008-2010) was 23.7%. Physicians were reported to have been more compliant and more knowledgeable about influenza and influenza vaccination. The rates of influenza vaccination among Physicians were 38.8% for seasonal influenza and 32.2% for pandemic influenza. The researchers recommended the need for occupational-health specialists to provide influenza information to HCWs on an ongoing basis to eliminate their knowledge barrier as a possible way to increase influenza vaccination among them (Del Campo et al., 2011).

One might wonder if the specialties of HCWs has anything to do with influenza-vaccination compliance. The answer is no. An anonymous survey of critical-care and operating-room HCWs revealed that compliance with influenza vaccination was low among them too. Although the intention to be vaccinated was 43.8%, the actual vaccination rate was 19% for seasonal influenza. The reasons for this low vaccine uptake included poor knowledge of vaccine efficacy, worries over side effects, and safety concerns. The researchers recommended education and reassurance about vaccine safety and efficacy during influenza-vaccination campaigns (Parry et al., 2011).

Similarly, when knowledge about influenza infection and influenza vaccines was compared among HCWs, the groups that were more knowledgeable proved likelier to get vaccinated. When physicians and nurses were compared in a recent survey regarding

knowledge of influenza and their intention to vaccinate, the knowledge gap between the two groups was an influential factor in their relative intentions to get vaccinated. More of the surveyed physicians got vaccinated, while fewer of the nurses surveyed did so. Thanks to their knowledge about influenza vaccines, 88% of physicians were positive about getting vaccinated, while only 67% of nurses were thus inclined (Jaiyeoba et al., 2014).

It is generally assumed that HCWs are knowledgeable about influenza infection and vaccines (Albano et al., 2014). A recent survey of HCWs (n=720), however, proved this assumption wrong. The public and patients often rely on HCWs for health information or education ranging from healthy habits to disease prevention. When HCWs in Italy were recently surveyed, only about 36.1% of them were knowledgeable about influenza, its mode of transmission, and the risks associated with influenza and influenza vaccination (Albano et al., 2014).

Searching further for factors contributing to the non-compliance of HCWs with the requirement to be vaccinated, knowledge has been shown to be on obvious factor in the rate of influenza vaccination among HCWs. When 14 cross-sectional studies and one case study were reviewed, all of them showed that higher knowledge and acceptance of the scientific evidence involved played an important role in individuals getting vaccinated (Herzog et al., 2013).

Mandatory Vaccination Policies

Even though the statute in Florida states that “Influenza vaccines are not required by Florida law (Vaccine Awareness, 2010, p. 4), some employers recommend the

vaccines as part of a compliance policy for their HCWs. Some vaccines, e.g. hepatitis B, influenza, pneumococcal, MMR, and varicella, are recommended by employers, but none is required by law, not even as a precondition for employment. Given the state statutes, employers still clamor for a mandatory influenza policy (Vaccine Awareness, 2010).

HCWs are deemed to be at risk of acquiring and/or transmitting influenza (CDC, 2011). The CDC recommends that HCWs be vaccinated for hepatitis B, influenza, measles, mumps, and rubella (MMR), pertussis, varicella, and meningococcal meningitis as well. The Federal Standard issued in December 1991 and supported by Occupational Safety Health Act (OSHA) mandated that hepatitis B vaccine be made available to all HCWs. Even though annual influenza vaccination of HCWs was recommended for all persons aged or above 6 months old including HCWs who have no contraindications, there was no mandate for HCWs to receive influenza vaccine yearly (CDC, 2011).

The search for the determining factor for non-compliance with influenza vaccination has not been exhausted. In the present research study, I aimed to expose more factors. In the same vein, Rebmann et al. (2012) tried to determine additional factors. In the process, the researchers conducted a paper and online survey of some 615 HCWs. The reasons uncovered for the low rate of influenza vaccination was lack of mandatory policy enforcement and the provision of alternative means such as the wearing of a mask for prevention of influenza vaccination.

It was disappointing news for Norwegian health authorities to find out that in a recent comparison of influenza vaccination compliance between HCWs and residents of nursing homes in Norway, the rate of compliance among the residents was 71.7%, while

compliance rate for the HCWs was 0%. The exceptionally low rate of compliance among HCWs caused great concern among Norwegian health authorities and the healthcare community at large. Mandatory influenza was considered but not implemented for ethical reasons (Bentele et al., 2014).

As a way of determining the factors responsible for vaccination reluctance among HCWs in France, semi-structured interviews (n=17) and electronic surveys (n=2,485) revealed a low compliance of 23.4%, comparable to that of other healthcare centers around the world, e.g. in Australia, Canada, and the USA (Gavazzi et al., 2011). Even when the high influenza vaccination rate among residents of long-term care facilities did not protect patients and everyone was relying on HCWs to get vaccinated, compliance was still disappointingly low (Gavazzi et al., 2011). The study also attempted to discover whether this low HCWs compliance stemmed from lack of knowledge, negative attitudes, and/or personal beliefs with regard to getting the influenza vaccination (Gavazzi et al., 2011).

The quest for finding and effective solution to the issue of compliance with influenza vaccination has led many employers to try various policies. The mandatory influenza-vaccination policy has been viewed by many as the best answer; however, reality has not proved that to be so. In a recent case where a mandatory policy had been implemented, it was not well accepted by the HCWs. An average of 4.8% of HCWs refused influenza for various reasons, while 6.8% of those who claimed that they were forced to receive influenza vaccination reported vaccine-related side effects (Awali et al., 2014). Where mandatory policy was implemented the HCWs were unhappy, and many

sought employments elsewhere. The reluctance of some HCWs to receive their influenza vaccination reflected poor knowledge and misconceptions about vaccine risks and benefits (Awali et al., 2014).

To increase influenza vaccination among HCWs, employers across the nation have resorted to a mandatory policy, even though such policies have not been viewed favorably by many HCWs. In a recent survey of HCWs (n=925), 36% were opposed to a mandatory policy, since they regarded it as an infringement on their autonomy and freedom of choice. Despite the proven benefits of the vaccination to HCWs and their patients, the former cited freedom of choice and self-determination as reasons for non-compliance. The researchers recommended revising mandatory policies to address concerns of the HCWs and implementing yearly influenza education that coincided the flu season (Hakim et al., 2011).

A survey of 150 infection-control professionals in hospitals across the United States that compared hospital with and without mandatory influenza-vaccination policies revealed something unexpected. Even where mandatory policies were in place, vaccination was not 100% owing to various reasons. It was found that the vaccination rate in hospitals with mandates was only 21.9% versus 10.65% in those without. The researchers thus concluded that implementing mandatory policies alone would not guarantee a 100% compliance rate. They recommended the inclusion of additional strategies like access to vaccination, provision of incentives for vaccination, education regarding the vaccine, and tracking of compliance rates for improvement over time (Norwalk et al., 2013).

As more employees and HCWs are becoming afraid of losing their jobs, mandatory influenza-vaccination policies are being reviewed across many settings. Even when concern for the public is borne in mind and the need to protect everyone against influenza infection, manipulation of HCWs intentions has been seen in many quarters as coercion and an infringement of human rights. Informed consent to be vaccinated through education has been advocated instead (Winston et al., 2014).

Bullying at the Work Place

Workplace bullying between and among HCWs has also been keeping them from getting their annual influenza shots. Nurses more than other healthcare professionals have a higher prevalence of workplace bullying and behaviors that intimidate others in healthcare facilities (Quine, 2001). In addition, workplace bullying has been identified as the cause of many medical errors, increased healthcare cost, and overall patient satisfaction. This sort of behavior has proved responsible for more than average attrition among nurses, and has thus contributed to an ongoing nursing shortage in the United States. In order to prevent the attrition of nurses and assure respect for human rights and dignity, bullying in the workplace must be stopped (Lim & Bernstein, 2014).

Bullying in the workplace is a situation in which individuals see themselves at the receiving end of negative actions from one or more persons in authority, with the recipients unable to defend themselves (Nielsen et al., 2012). Because workplace bullying over time has been found to have caused psychological distress, it is considered a predictor of mental-health problems among HCWs (Nielsen et al., 2012).

When compared with healthcare employers who do not have a mandatory influenza vaccination policy in place, medical institutions with such policy stand a better chance of achieving a higher vaccination rate. Even though there were no incentives or monetary inducements, the mere presence of a mandatory vaccination policy was sufficient to encourage HCWs to comply. In a similar comparison of California HCWs with HCWs in other states, HCWs at organizations requiring flu vaccinations were 11.8% times more likely to be knowledgeable about influenza and were readier for the immunization than others. The present study reiterates the need for a mandatory influenza-vaccine policy in every healthcare facility or department as a way of encouraging HCWs to get vaccinated; however, bullying is not the answer (Harris et al., 2014).

Cultural and Social Norms in the Matter of Vaccinations

People in a group tend to behave in similar ways and collectively react to situations in different ways from other groups. These differences in behavior and reactions are related to their cultural differences. Moreover, cultural differences occur between individuals, groups, occupations, employers, and nations (Yates & de Oliveira, 2016). Culture influences both individuals and organizations in their daily activities and/or operations, while cultural persistence accounts for the continuous reproduction of behavior patterns over time. Personal values, embedded through formative experiences in early life, also play a significant role in the development and the later behavior of individuals (Yates & de Oliveira, 2016). Formative experiences include those which occur at home and in school. Social norms also play an important role in conveying

cultural patterns and beliefs about other people. These norms refer to what individuals believe and do as well as expect of each other (Yates & de Oliveira, 2016). Since some religions and cultures do not believe in vaccinations, they promote alternative means of disease prevention. Such objections to vaccination are related to the ethical dilemmas associated with the notion of human flesh being used to produce vaccines and the belief that the body is the temple of the Lord and thus sacred. Some belief systems consider it unethical to receive chemicals, blood, or tissues from animals. Some religions also emphasize that the body should be healed by God or by other natural means (The College of Physicians of Philadelphia, 2014).

Cultural and social norms played an important role in the reaction to the pertussis vaccination in the United Kingdom from 1967 to 2010 (Oraby et al., 2014). The behavior-incidence model explains how a vaccine scare can lead to very low vaccine coverage even long after the risk of a vaccine-preventable disease has subsided. Social and cultural norms may encourage low vaccine coverage during a vaccine scare. They also depress the vaccination rate in the face of frequent disease outbreaks. Also, long-term vaccination rates depend on whether cultural and social norms either encourage or discourage individuals to vaccinations (Oraby et al., 2014).

When it comes to getting vaccinated, the public does not differ much from HCWs. There has been great concern among the public regarding the re-emergence of preventable diseases (e.g., whooping cough and measles), but their rate of vaccination compliance has not been encouraging. This phenomenon was recently demonstrated in a study by Song (2014). There the researcher found that personal or group cultural

disposition contribute to their perceptions about vaccinations. Song (2014) also documented that cultures with hierarchical orientations tended to support vaccinations as having fewer risks versus cultures that are fatalistic.

Similarly, a society's norms have been identified as leading to noncompliance with influenza vaccination. The same is the case with some HCWs, who because of their professional values tailor their influenza vaccination decision making to their norms. In the already cited study conducted by Oraby et al. (2014), the researchers showed that many countries without mandatory vaccination policies could sustain low virulence of infectious diseases for a very long time. This type of success was attributed to thriving social norms like cleanliness, which inhibited the growth and spread of such diseases.

A study conducted in Hong Kong showed that some vaccines for children there were mandatory while others were voluntary. Even though parents complied with mandatory vaccines for their children, compliance with voluntary ones for children was suboptimal. Mandatory vaccines for children in Hong Kong, all of which are free, include those for B.C.G.; hepatitis B; diphtheria, pertussis, and tetanus (DPT); polio; pneumococcal pneumonia, and measles, mumps, and rubella (MMR). The voluntary vaccines for children in Hong Kong were to counter varicella, haemophilus influenza type B, seasonal influenza A, hepatitis A, Japanese encephalitis, rotavirus, meningococcal, and human papillomavirus (HPV). The actual vaccination rate was 1.1% for the general population in Hong Kong, while there was no data for the pA (H1N1) vaccination rate among the children. In Hong Kong, vaccination of children and adolescents is mostly controlled by the parents. The study showed social norms to be the

key factor that influenced parents' decisions about vaccination. The study was qualitative, comprising 23 participants, all new immigrant mothers (Wang et al., 2014).

In the face of ethnic diversity among HCWs, compliance with influenza vaccination was also low. Just as cities and communities are full of diverse ethnic and cultural groups, the same trend is present in hospitals and healthcare centers. In a study of ethnically diverse populations, compliance with influenza vaccination was low. Compliance with getting seasonal influenza vaccination was 31%, while for H1N1 was 38%. The reasons for low compliance were a conspiracy theory about influenza vaccines, poor prior experiences with healthcare providers, and concerns about the vaccine's potential side effects. The researchers recommended the need to dispel the conspiracy theories among diverse ethnic groups within HCWs and to target opinion leaders who had successfully received vaccinations as a good strategy to increase influenza vaccination among HCWs (Frew et al., 2012).

In addition, the socio-economic background of HCWs seems to have played a part in their compliance with influenza vaccination. A recent survey of an economically challenged public health clinic population and HCWs showed a low 21% rate of compliance with getting influenza vaccinations. The reasons identified for this result included low socio-economic status or background, and negative beliefs about the vaccine and its efficacy. The researchers recommended addressing socio-economically depressed populations with mass educational campaigns on the benefits of getting the influenza vaccination (Reddings et al., 2012).

Mental Models

A mental model is a representation that an individual has in mind about the system or object he or she is interacting with. It is the way a person thinks about a situation, phenomenon, or environment. Such mental models are based on individuals' life experiences, views, and general perceptions of the world around them. Constructed mentally, they can be run as computer programs to enable individuals to try possibilities out mentally before putting them into practice (Jones et al., 2011). The mental-model concept, which can provide ideas about how people understand their environments, can help motivate human behavior where other social constructs like attitudes, beliefs, and values have proved to be less effective. Mental models, for example, explain how people understand systems, how their beliefs might make them respond to interventions, and how they might also contribute to systemic interventions (Jones et al., 2011).

Individuals and organizations have been shown to influence decision making to be vaccinated (Awali et al., 2014). At the back of every plan lie some degrees of mental models which unconsciously shape behavioral intentions and decision-making processes. Conflict may occur in the form of resistance to or noncompliance with the organizational mental model or system thinking (Hamzah et al., 2014). In a recent study by Jee et al. (2013), participants developed different models for different themes or events. By means of semi-structured interviews, the researchers could examine the beliefs of the participants about viruses, vaccines, and the causes of infections. Then, when participants were compared by level of education, they differed in their mental models just as HCWs did with getting the influenza vaccination.

Quality of Vaccine Manufacturing

Influenza vaccines in the United States are made by private contract manufacturers. Nearly all of them use different approaches and technologies to meet the rigorous safety and efficacy standards stipulated by United States Food and Drug Administration (FDA). The approaches commonly used to produce influenza vaccines include the egg-based process, the cell-based process, and the recombinant process (CDC, 2015).

The egg-based influenza vaccine, which is the most common, has been in use for more than seventy years This process produces the inactivated vaccine (the influenza vaccine) and the attenuated vaccine (the nasal spray). The egg-based process, which requires the use of many chicken eggs, takes about 28 weeks to manufacture the needed vaccines. During the process influenza viruses are injected into fertilized chicken eggs and incubated for many days for the viruses to replicate. The viral fluid from the incubated fertilized eggs, after being taken out and killed for the influenza vaccine, is then purified and tested. For the nasal spray, the viruses, which are attenuated (weakened), go through a different production process. After purification and testing, the doses are place into vials, syringes, or nasal sprayers. As part of the safety and quality-control process, each lot must be tested and verified by FDA before e vaccines can be sold for use (CDC, 2015; Matthews, 2006).

The cell-based influenza vaccine has been in use since its FDA approval in 2012. The process follows the egg-growing of viruses, at which point the virus-filled fluid from the fertilized eggs is mixed with mammalian cells instead of being incubated. After this

mixing, the viruses are left for a couple of days to replicate. The virus-containing fluid is then purified and tested. Manufacturers put doses into syringes for the FDA to test and verify before the lots are approved (CDC, 2015).

The recombinant influenza vaccine has been in use since its 2013 approval by the FDA. The process does not use chicken eggs, but insect cells instead. It involves isolating the HA protein from the specific vaccine virus. The HA protein is then mixed with another influenza virus which thrives and grows well in insect cells. The mixture is then mixed again with insect cells and left for a couple of days to replicate. The influenza HA protein is harvested from the insect cells, purified, and tested for approval by the FDA before lots are released to the public. The recombinant influenza vaccine, which is 100% free of egg or egg products, can be produced in the shortest span of time (CDC, 2015).

Other Research Findings

To boost influenza vaccination by removing obstacles or barriers, the vaccine was provided free to HCWs as a new policy in some hospital in Australia. Based on a survey of 29 participants in a qualitative study (Seale et al., 2012), lack of resources and difficulty in getting the needed supply of vaccine contributed to only a limited increase in the Australian HCWs' compliance level.

When health authorities work alongside HCWs and provide incentives, good results can occur (Garcell & Ramirez, 2014). Such was the case recently in a very large healthcare facility in Qatar. The authorities provided continuous educational and promotional incentives and campaigns for influenza vaccination among the HCWs. The result, although not optimal, was promising. A review of two-year compliance at this

facility showed a 69.3% compliance rate for nurses and a 46.9% rate for other HCWs. Although the goal of 100% compliance was the dream of every facility, the result was a good starting point for additional improvement (Garcell & Ramirez, 2014).

According to an African adage, "If you teach your children the right path, they will not depart from it." In other words, catch them young, and they will continue in the same way. This saying applies to efforts made in a medical school in Michigan, USA to inculcate in their medical students the principles and benefits of getting influenza vaccination. In a brief survey of participants (n=124) before the intervention, about 83% of participants were knowledgeable about influenza, yet many of them did not get vaccinated. A second survey after the intervention, which consisted of education about and promotion of the benefits of the influenza vaccination benefits, yielded a 93% compliance rate. Without this campaign, this result would likely have not been achieved (Alfonso et al., 2014).

During a review of the factors associated with high vaccination rates, several factors came to light. Among the highlighted factors were high risk perception about the disease, perceived risk for severe influenza, anxiety about the vaccine, faith in its efficacy to ward off or prevent influenza, social pressure, the availability of legitimate sources of information, a local history of good results from prior vaccinations, older age, ethnic minority status, and being a doctor. Of all these factors, having had a good experience from a prior vaccination was the most frequent and reliable one for predicting future vaccination. To increase influenza vaccination, the researcher suggested offering it to

people over the age of 60 during home visits, and to spread information in society about the elders who got the vaccine (Bish et al., 2011).

In Italy, the situation was not different. Out of 2,267 HCWs surveyed, only 407 (18%) received the pandemic influenza vaccine. The low compliance rate may have been associated with a widespread allergic reaction to the vaccine at the time of the study. Researchers recommend an educational campaign directed at groups with the lowest compliance rate (Amodio et al., 2011).

In Barcelona, Spain, an influenza information campaign was implemented to increase knowledge, risk perception, and vaccination rates among HCWs. Instead of having a positive effect, the opposite occurred. A survey and interview of 470 HCWs before and after the campaign showed that the vaccination rate decreased from 39% in 2009 to 34% in 2010. The researcher concluded that increasing awareness and risk perception alone does not guarantee increased influenza vaccination (Llupia et al., 2013).

Working at the federal, state, or local government level appeared not to have affected the influenza vaccination rate among HCWs. With better pay and benefits, one would have expected 100% compliance with influenza vaccination among federal nurse employees. When 203 Veterans' Affairs nurses were surveyed regarding influenza vaccination, the results were not encouraging Out of 203 surveyed nurses, only 46% had been vaccinated, while 54% did not get the influenza vaccine. The factor associated with noncompliance was the personal belief of each nurse. The researchers recommended the increase of vaccination access, more and better educational programs, and team efforts to persuade them to comply (Jennings & Burant, 2013).

By increasing the coverage of influenza vaccination among HCWs, the number of preventable secondary influenza infections would be decreased, with resultant cost savings for the agency. Vaccination of HCWs with influenza vaccine has been shown to have a protective effect for the patients they meet. Influenza vaccination of HCWs is particularly important when the patients are elderly. For HCWs, influenza vaccination has a huge influence on the cost-effectiveness of the influenza vaccination by reducing the number of secondary influenza infections, preventing disease and death in elderly patients in long-term care, and preventing disease and death in patients with underlying illnesses (Blommaert et al., 2014).

Although the impact of influenza on worker absenteeism has not been adequately documented, recent research in Norway sheds some light on this subject. In a retrospective study, data from the Norwegian national registry were used to examine sickness and absence from work. An annual estimate of 2.868% of the working population ($n > 14,000$) took sick leave for influenza between 2015 and 2010. After 2010, moreover, the absence of sick-leave rate increased by one-and-a-half times for influenza and influenza –like illnesses (de Blasio et al., 2012).

Similarly, when 411 employees were surveyed in the United Kingdom regarding influenza and sick days, the results were dramatic. Employees who were ill with the flu or flu-like symptoms were confined to bed for 2.4 days and missed 2.8 days from work for each episode or period of sickness. And when employees returned to work, they showed reduced productivity and effectiveness and were also not able to resume full duty for 3.5 days. Each participant reported having had an average of 6.5 influenza-like

symptoms. The study showed, finally, the impact of influenza and influenza-like illness on the productivity of HCWs with the resultant cost to employers and employees alike (de Blasio et al., 2012; Keech, Scott, & Ryan, 1998).

Theoretical Foundation

As mentioned earlier, I applied two theories to this study: The theory of reasoned action (TRA) and the theory of planned behavior (TPB).

Origin and Source of These Theories

TRA was introduced by Fishbein in 1967 to clarify the relationship between attitude and behavior, because prior studies had not been able to clarify that relationship. Fishbein and Ajzen (1975) demonstrated that a positive attitude toward a behavior would more likely elicit that behavior than a negative attitude. With colleagues, moreover, this researcher showed that for an accurate prediction of behavior, all the constructs of TRA needed to be considered: beliefs about behavior, normative beliefs, control beliefs, intentions, external variables, and behavior measurements (Fishbein & Ajzen, 1975). In other words, TRA helps determine behavior by focusing on the intention to act. TRA is based on the assumption that the main determinant of behavior is intention, while the concept of perceived control was added to account for factors falling outside and individual's control.

Attitude toward a behavior entails belief that a behavior will lead to an outcome. If the likely outcome is considered good enough, the person will make an intention to behave in that way. Beyond individuals' intentions to act is the concept of a subjective norm, which is their perception of what friends or family members would expect the

individual to do. The act or intention to behave in a way is thus influence by family members, friends, peer groups, colleagues at work, and even fellow members of a religious or social institution. Furthermore, a belief that hard work leads to success in life may also influence a person's attitude, by causing that individual to work hard and become a responsible person. On the other hand, a person may decline to behave in a way because of policies or laws of the land which may prevent people from behaving in that way. A good example is speeding on the highway. Driving over the speed limit may lead to speeding tickets or other punishments, which deter some people from behaving in that way. In conclusion, attitude toward a behavior may or may not lead to expected actions or behaviors (Ajzen & Fishbein, 1980).

TPB was added in 1991 as an extension of TRA based on an insight that behavior was determined not just by intention but by behavior control as well. In fact, TPB considered that perceived control was a major determinant of an individual's intention. TRA, as has just been stated, assumes that behavior is derived from intentions which emanate from attitudes toward a behavior together with subjective norms. Behavior intentions according to TRA precede behavior and show the person's readiness for implementing a behavior. Attitude toward a behavior could be positive or negative depending on how the individual feels about performing that behavior. Subjective norms add and additional consideration by introducing to a decision maker the likely beliefs others will have regarding what should be done at a time. TPB asserts, in contrast, that healthy behavior is derived from an individual's attitude toward a behavior, the subjective norms, and perceived control. The addition of this final construct is to allow

for barriers to a behavior, like public policy or even a natural factor like gravity that are outside a person's control (Ajzen & Fishbein, 1980).

The major constructs of TRA and TPB as applied to this study include behavior beliefs, normative beliefs, control beliefs, attitudes toward influenza vaccination, subjective norms, perceived behavior control, intention to get an influenza vaccination, and behavior about getting vaccinated. External variables include uninformed thinking about influenza, discussions about positive outcomes, role plays, discussions about influenza and the factors that facilitate getting the influenza vaccination, and strategies or steps that lead to control. The internal variables include the behavior beliefs, normative beliefs, and control belief (Glanz & Rimer, 2008; Sharma & Romas, 2012).

To determine their future intention about whether or not to get an influenza vaccination, Myers and Goodwin (2011) conducted a survey of adults and HCWs (n=362) in the United Kingdom. The study was supported by the theory of planned behavior, with data collected both online and through a paper questionnaire. The results showed that TPB predicted 60% of the adults' intentions to get vaccinated with the following as the driving, or motivational factors: personal attitude, subjective norms, perceived control, feelings of regret if the vaccination were missed, and an intention to get vaccinated. There was only one perceived barrier, the lack of sufficient knowledge about the influenza vaccination. Meanwhile, the perceived benefit for the study participants was their perception of high risk if they refused to be vaccinated and the efficacy of the vaccine to prevent them from getting or giving the flu. The concepts of

TPB aligned with their intention to get vaccinated. The theoretical concepts thus drove both their motivation and ultimate behavior.

The selected theories consequently align well with other health-behavior studies, especially where attitude, intention, and behavior are all considered. Both theories have been used for decades for studies concerning health behavior. A good example is Ajzen and Fishbein (1980), which is now 37 years old. Both theories link beliefs about behavior, normative beliefs, and control beliefs to behavioral intentions, attitudes, subjective norms, and perceived power to control (Glanz & Rimer, 2008).

Summary

From the literature review I was able to highlight reasons for noncompliance with influenza vaccination as reflected in studies across many countries and cultures. Among the factors or reasons highlighted for noncompliance were fear of vaccine, a low perception of risk, lack of knowledge about the disease and the vaccines used to prevent it, dislike for mandatory immunization policies, bullying at the workplace, diverse cultural and social norms, inappropriate mental models, concerns about the quality of the vaccines, and other findings (Alfonso et al., 2014; Behzard et al., 2011; CDC, 2015; Graham et al., 2012; Jones et al., 2011; Kuster et al., 2013; Lim et al., 2014; Morris et al., 2012; Ragan & Duffy, 2012; Rosenthal et al., 2009; Vaccine Awareness, 2010; Zimmermann, 2015).

Despite all the above-listed factors, there are still gaps in the literature. These include the need to examine differences in knowledge and attitudes toward influenza

vaccination among HCWs (Hellyer et al., 2011) and strategies to eliminate the barriers to influenza vaccination among nurses and other HCWs (Dube et al., 2011).

Chapter 3 focuses on the methodology used in this study. It includes discussion of the research design and the procedures that were implemented to answer the selected research questions. Also, Chapter 3 gives details about the role of the researcher, sample-size selection and criteria for sample size, data-collection instruments, data analysis, and ethical considerations.

Chapter 3: Methodology

Introduction

I aimed to determine all factors that contributed to noncompliance of HCWs getting the annual influenza vaccination. I also aimed at providing healthcare leadership with information to assist them to formulate strategies to increase compliance among HCWs with receiving the influenza vaccination.

Statement of the Phenomenon under Study

Influenza infection is a seasonal illness caused by the influenza virus. Influenza infection, a respiratory form of disease that can be transmitted from person to person by coughing or sneezing, causes mild-to-severe respiratory illness (CDC, 2014a). The people with the highest likelihood of getting severe influenza infections are healthcare workers (HCWs), who are the most exposed to the influenza virus because of the nature of their work (Wicker et al., 2014). Healthcare workers have direct contact with patients, their family members, physicians, other healthcare providers, and visitors. Healthcare workers therefore have many opportunities of transmitting influenza across all sectors of the hospital community, as well as to people they meet outside of work.

Although the influenza vaccination is provided free to healthcare workers and has been shown to be reliable and safe worldwide, HCWs were not compliant throughout the world (Brandt et al., 2011). I aimed to identify the factors that contributed to low compliance with influence vaccination among healthcare workers. I examined the awareness, knowledge and perception of HCWs regarding influenza infection and

influenza vaccination, and looked at their attitude toward the influenza vaccination. The study may have provided evidence that will assist hospital leadership in creating effective processes to change the current culture of noncompliance and move their institutions and employees towards a new culture of 100% compliance with the influenza vaccination based on findings from this study. I hope that the latter will be used not just in the hospital where the HCWs were surveyed but in other hospitals and healthcare centers as well. As for the gaps in the literature, they included the need to examine the differences in knowledge and attitude toward influenza vaccination among HCWs (Hellyer et al., 2011) and strategies to eliminate barriers to influenza vaccination among nurses and other HCWs (Dube et al., 2011).

Research Questions

The following research questions guided the study:

RQ1. How do HCWs, especially registered nurses, perceive influenza and the influenza vaccination?

RQ2. What have been the self-reported incidents of HCWs, especially registered nurses, with influenza vaccination?

RQ3. What factors contribute to HCWs' especially registered nurses', declining rate of influenza vaccination?

The Research Tradition

In the literature that was reviewed, many protocols and approaches were discussed and used. The commonly used approaches in qualitative studies include

narrative, phenomenology, grounded theory, ethnography, and case study. The approach selected for this study is phenomenology.

Phenomenology research describes the meaning of a lived experience related to a phenomenon. An example of human experiences in the medical field that can be categorized as phenomena include undergoing surgery (Creswell, 2013).

Role of the Researcher

In qualitative study, the researcher was the instrument. I collected data through one-to-one interviews with the participants. I systematically collected and organized data based on theories and the approach selected for this study. In addition, I kept a detailed record of data and maintained a neutral position throughout. I also checked on my behavior periodically to prevent the inclusion of personal bias into the study. During the interview process, I controlled my emotions and personal views to provide a conducive environment for the interviews. I also provided open-ended questions and prompts to extract the optimal amount of information from the participants (Key, 1997; Patton, 2002).

Participants who had any kind of personal relationships with me arising out of the fact that both the study participants and I work at the same hospital in Florida were not selected for the study. The HCWs I interviewed included registered nurses. Participation in the study was voluntary, to ensure honest answers to the interview questions.

In the past, closeness to participants of studies has provided insights to research. Examples include Jean Piaget's closeness to the children he investigated, Sigmund Freud's closeness to his parents, and Darwin's relationship with nature (Patton, 2002).

My closeness to the participants in the study did not make biases inevitable any more than being far away from them guaranteed objectivity. Therefore, the maintenance of neutrality on my part prevented research bias. I was neither too close nor too far from the participants. I based my relationship on the research study only and not on power relationship at work, to guarantee the authenticity and trustworthiness of the research. The use of emphatic neutrality on my part prevented distortion of the information or data collected from the participants. Also, during the interview process, I was close to the participants, but remained strictly neutral with regard to the content of the information or data collected from them. Finally, I carefully reviewed data collected to reach explanations or interpretations that made sense of them without inserting my personal opinions or preconceived ideas (Patton, 2002).

There are many ethical issues related to qualitative studies. Among them are the explanation of the purpose of study, promises and reciprocity, risk assessment, confidentiality, informed consent, data access and ownership, the interviewer's mental health, advice, data-collection boundaries, and other ethical legal issues (Patton, 2002). However, some ethical issues are peculiar to doing a study at one's work site. They include the psychological impact of having more personal information about professional colleagues, receiving requests from participants for personal opinions or advice, and intruding on participant's personal lives. The interviews did not turn into personal confessions, especially given the umbrella of confidentiality (except in cases of spousal or child abuse or neglect). The gold standard for handling these ethical issues is to maintain professionalism and confidentiality, not to give advice but to ask questions for

data collection only, not to push too deeply into the personal lives of the participants, to know when and how to set boundaries in the data collection, and to advocate for and appreciate the provision of honest information.

Also, the issue of providing incentives to participants has been controversial among researchers for many years. Any incentives should not serve to get the desired answers to interview questions, but as a "thank you" for their contribution to greater public health and the advancement of knowledge, especially in this field (Patton, 2002).

Methodology

The population identified for this research was selected HCWs in Florida. The specific HCWs interviewed consisted of registered nurses. The participants were both male and female adults between the ages of 18 and 70. Virtually all the anticipated participants have been in healthcare for at least two years (Korb, 2012).

Identification of and Justification for the Sampling Strategy

The sampling strategy selected for this study was purposeful random sampling; at least one nurse was selected from each nursing unit or department. Simple random sampling is used in quantitative studies for statistical probabilities to allow for generalizations from a small representative sample of the general population. Simple random sampling in quantitative studies also serves to address selection biases. In qualitative studies, purposeful random sampling is used to improve the credibility of the study results and not for representation of the larger population. Purposeful random sampling is also useful when the purposeful sample is too large for qualitative study. A small purposeful random sample can be utilized to eliminate misconceptions or

suspicions about a selection process which does not allow for statistical probability or generalization. Purposeful random sampling was used in this study for the reasons listed above, to answer the research questions (Creswell, 2013; Patton, 2002).

Statement of the Criteria on Which Participants Selection Was Based

The sample selection criteria included the following: being a HCW for at least one year and ideally two, having been asked to be vaccinated against influenza in the recent past, being competent to give consent for participation and the release of any information presented, and being able to understand and speak English during the interview. The participants were selected, finally, because they had relevant information and useful experiences regarding the phenomenon under study (Creswell, 2013; Miles et al., 2014; Patton, 2002; Saunders, 2012).

Number of Participants and the Rationale

The quality and validity of the qualitative data collected are more important than the number of participants. However, since there needs to be a critical mass of participants to work with, I followed the rule of thumb for qualitative data collection, namely, continued to collect data until saturation was reached. Even then, Creswell (2013) suggested a sample of three to 10 and Saunders (2012) one to 12. For this study, a large number, approximately 500 of potential participants were available for purposeful random sampling. I started with a minimum of 20 participants and continued recruiting participants until data saturation was reached.

An initial sample size of 20 participants was selected to ensure that the sample size was big enough to provide most or all the perceptions of healthcare workers that may

be pertinent to the study. A smaller sample size that is less than 20 participants may produce an inadequate range of perceptions relative to the overall population of HCWs in Florida. With a larger number of participants, at least 20, the risk of omitting important HCW data useful for the study is minimized. A larger sample size will also reduce the likelihood of failure to discover important perceptions or themes, which will emerge from the data. In addition, and average of 20 to 30 one-on-one interviews has been known to uncover 90-95% of the perceptions of participants in previous studies (DePaulo, 2000).

A larger sample size of 20-30 participants is needed, moreover, to ensure that enough data are collected to ensure that the saturation point is reached. A smaller sample size rarely produces saturation point during data collection, and there has been evidence to prove that studies with 20-30 participants have been more impactful (Marshall et al., 2013). Based on reviews of several qualitative interviews in information system studies, a range of 20 to 30 participants has been recommended for qualitative studies (Marshall et al., 2013). Finally, a review of 561 qualitative studies revealed an average sample size of 30 and a sample-size range of 20-31. Moreover, most studies used multiples of ten for their sample sizes (Mason, 2010).

Procedure for Identifying, Contacting, and Recruiting Participants

The identification of participants was uneventful, since the participants were HCWs in Florida. Contacting them was preceded by the creation of rapport and camaraderie through socializing as much as possible. I recruited participants by invitation letters that were sent by email, regular mail or delivered by hand. I also attached written permission or consent forms along with the invitation letter for each participant to sign

and return. Out of the potential participants, 20 were initially selected by purposeful random sampling within the selection criteria as stated above. Finally, the recruitment was ongoing until data saturation was reached. Data saturation was reached when data collection showed repetition of already collected data and the process no longer yielded or revealed any new data (Creswell, 2013; Hall et al., 2013).

Relationship between Saturation and Sample Size

The number of participants required for an adequate sample size may vary from study to study based on time constraints and limitation of resources. The common range varies between 12 and 60, with 30 the average. For this study, 20 participants were recruited initially, with no more selected when repetition of data began to occur, indicating that the point of data saturation had been reached (Baker & Edward, 2012).

Identification of Data-Collection Instruments

These included one-on-one interviews and audio recorder.

How Prompts Were Used During the Research Interviews

Prompts or nondirective probes were used to solicit answers from participants without influencing their answers or putting words in their mouths. Prompts were also used to clarify answers or to probe further. The actual prompts are listed below. They included the terms why, how, how come, and then. The nondirective proves included, first, silent probes, i.e., I kept silent for about 10 seconds after asking each question to allow the participants to come up with answers or to start talking on their own. Encouragement probes were also used, e.g., the interviewer nodded or said yes to indicate agreement with what was just said or to show that he was listening to the participants.

The elaboration probe, finally, was accomplished by the asking for clarification to encourage the participant to add to and thus clarify the initial response (Information Management Association, 2009; Leech, 2002).

Interview Questions/Guide:

1. How do you feel about influenza and the influenza vaccination? Why do you feel that way?
2. What do you like or dislike about influenza and influenza vaccination? How come?
3. What do you hope to gain from getting an influenza vaccination? Why?
4. What are the advantages/benefits of getting an influenza vaccination?
5. What has been your experience with influenza and the influenza vaccination?
6. What are the disadvantages of getting influenza vaccination? Why?
7. Who would support your getting an influenza vaccination? Why?
8. Who would not support your getting influenza vaccination? Why?
9. What makes it easy for you to get an influenza vaccination? And why?
10. What makes it hard for you to get an influenza vaccination? Why?
11. If you want to get influenza vaccination, how certain are you that you will get it? Why?
12. What strategies or steps would help you overcome any obstacles or barriers to getting an influenza vaccination? Why?

13. What factors make you likely to accept or decline an influenza vaccination? Why?
14. What questions do you have about influenza and the influenza vaccination? Why?

Audiotape Recorder

I used a Jensen Cassette Recorder for recording all the interviews.

Establishing Sufficiency of Data-Collection Instruments to Answer the Research Questions

To ascertain the sufficiency of the data collection instruments to answer the research questions, the researcher briefly restated the research questions:

RQ1. How do HCWs, especially registered nurses, perceive influenza and the influenza vaccination?

RQ2. What have been the self-reported incidents of HCWs, especially registered nurses, with the influenza vaccination?

RQ3. What factors contribute to HCWs', especially registered nurses', declining rate of influenza vaccination?

The One-on-One Interview

In accordance with the phenomenological approach to qualitative research, the one-on-one interviews consisted of collecting in-depth information/data from participants to answer established research questions. The interview sessions were also aimed at extracting information from participants who had lived experience of the phenomenon under study. The interview questions, which were open-ended, focused on the central phenomenon of the study. The recruited participants were the ones who best answered research questions based on purposeful random sampling as earlier described. The one-on-one interviews were conducted face-to-face with each participant. The interview also allowed me to observe non-verbal body language. These interviews were recorded, transcribed, and then analyzed thematically.

The Researcher-Modified Instrument

The data-collection instrument was not developed entirely by me, but was based on a similar instrument used in 2007. The earlier instrument was modified for two reasons: first, there was no instrument available that correlated with the theories of reasoned action and of planned behavior or with the present study; second, the modified instrument was based on how the constructs of these two theories matched the present study, as highlighted below. The modified instrument was taken from the table of elicitation questions by Glanz & Rimer (2008, p. 83). The elicitation questions were used in a pilot study in Zimbabwe in 2007 (as cited by Glanz & Rimer, 2008) to examine the behavior of HIV patients toward the consistent use of condoms with regular partners.

Questions modified include the following. Note that permission was granted to use them.

1. "How do you feel about the idea of behavior X?
2. What do you like/dislike about behavior X?
3. What are the pluses of you doing behavior X?
4. What are some advantages of behavior X?
5. What are some disadvantages of behavior X?
6. Who would support your doing behavior X?
7. Who would … [go] against your doing behavior X?
8. What things make it easy for you to do behavior X?
9. What things make it hard for you to do behavior X?
10. If you want to do behavior X, how certain are you that you can?
11. What kinds of things would help you overcome any barriers to do [ing] behavior X?" (Glanz & Rimer, 2008, p. 83).

I modified these questions in the following ways: Behavior X in each elicitation question was replaced with influenza and/or the influenza vaccination followed by the prompts (Glanz & Rimer, 2008, p. 83). Question 5 on the interview question list for example asks, "What has been your experience with influenza and the influenza vaccination?" This question was added, as it evolved from the quest to know more about the lived experience of participants regarding the phenomenon under study (Creswell, 2013). Question 13 on the interview question list asks, "What factors make you likely to accept or decline the influenza vaccination? Why?" This set of two

questions evolved from decision-making about getting or not getting the influenza vaccination considering the theory of reasoned action (Glanz & Rimer, 2008). Question 14 on the interview question list, meantime, asks, "What questions do you have about influenza and the influenza vaccination? Why? These double questions were used to bridge any knowledge gaps about influenza and the influenza vaccination that participants might have during the interview sessions. The elicitation questions were modified to align them with the phenomenon under study and the qualitative nature of the study.

The Relationship between Selected Theories and the Present Study

The relationship between the selected and the present study was demonstrated by how the interview questions align with the constructs of the theories. The following show how the constructs of the theories and the interview questions align: Constructs of TRA – behavior belief. Interview question – What are the benefits of getting the influenza vaccination? Construct of TRA – behavior outcome evaluation. Interview question – What do you hope to gain from getting the influenza vaccination? What are the disadvantages of getting the influenza vaccination? Construct of TRA – normative belief. Interview question – Would you or would you not support getting the influenza vaccination? Why or why not? Construct of TRA – motivation to comply. Interview question – If you want to get the influenza vaccination, how certain are you that you will be vaccinated? Construct of TRA – attitude toward the influenza vaccination. Interview question – How do you feel about getting the influenza vaccination? What do you like or dislike about doing so?

Construct of TRA – subjective norm. Interview question – What factor(s) influence your decision about the influenza vaccination? Construct of TRA – intention to get the influenza vaccination. Interview question – What steps would help you overcome any barriers to getting the influenza vaccination? Construct of TRA – influenza vaccination. Interview question – What factors make you accept or decline the influenza vaccination? Construct of TPB – control belief. Interview question – What factors make the influenza vaccination easy or difficult to get? Construct of TPB – perceived behavior control. Interview question – If you want to get the influenza vaccination, how certain are you now that you will be vaccinated (Glanz & Rimer, 2008; Sharma & Romas, 2012).

Trustworthiness

Establishment of Content Validity

Content validity was established by triangulation. I collected data from many sources, utilized more than one theory to support the study, and provided supportive evidence. The main source of data collection was one-on-one interviews with HCWs. The two theories used to support the study were the theories of reasoned action and of planned behavior. Supportive evidence was provided from the audio-tapes used to record the voices of participants during their interviews. In addition, the following steps were taken to provide valid content: peer review, member checking, and rich and thick description of findings. Peers were invited to review the research process and content for confirmability and give suggestions for improvements. Such reviews helped clarify statements and remove researcher biases. For member checking, participants were invited to review their audiotapes and give their views regarding the interpretation of the data.

And rich, thick description of the findings enabled readers to decide on the transferability of those findings. Thick and rich description of the findings involved provision of more details about them and identifying themes and the interconnectedness of findings without adding my own opinion (Creswell, 2013).

Repeat interviews and interaction with participants were used to avoid false ideas or provision of insincere responses by individual participants. Spending a long time with participants gave me opportunities to understand their attitudes towards the influenza vaccination better and to collect more data about their vivid experiences with the phenomenon under study. Rich data collection, achieved by spending longer periods of time with the participants and repeating interview questions as needed, paved the way for collection of the rich and thick data that are detailed enough to provide a true picture of the phenomenon under study (Maxwell, 2013).

I identified discrepant data without exception and classified them as such. Discrepant data included negative or contradicting data and data that were different from the main data. Discrepant data were not discarded since they formed and integral part of the whole data collection. Findings were triangulated from at least three measures that agree. Triangulation was done by data source (participants, place, time), by method (interview document, observation), by researcher (invited a second researcher to review both the study and data sources), and by theory (used more than one theory to support the study). Triangulation reduced the risks associated with systematic biases related to the use of just one specific data collection method and made for better cohesion of the data (Maxwell, 2013; Miles et al., 2014).

In addition, I provided valid content through rich and thick descriptions which were meaningful, helped make sense of the data, and were convincing for the readers. Triangulation of methods and data sources enabled me to provide an all-encompassing conclusion. I offered clear, coherent, and systematically related findings which were considered accurate by participants through member-checking (Miles et al., 2014).

Furthermore, I ensured capture of meaningful and accurate information by giving participants enough time to respond to the questions without pressure or haste. I also ascertained that accurate data was collected through careful interview procedure, sampling, and recording of the data (Patton, 2002).

Potential Biases and Steps to Mitigate Them

Bias may be defined as a tendency to prevent unprejudiced consideration of ideas or questions. In research, bias occurs when error is introduced into sampling or by encouraging one outcome or findings over other outcomes or findings. Bias can occur at any stage of research; therefore, bold steps should be taken to prevent bias in research studies. Potential biases in a study and steps to mitigate them are as follows: If care is not taken, the researcher's own personal interests and prejudices may be inadvertently embedded in research questions, ideas, or findings. For the research to be credible, I avoided distortion of data to serve my personal interests or prejudices. I used honest, credible support for my finding. I also adopted a neutral stance throughout the study and allowed events to unfold naturally without privileging any perspective or manipulating the data to arrive at a predetermined result (Patton, 2002).

Selection bias may occur during the recruitment of participants. To avoid this bias, the study population was clearly defined, accessible, and a reliable source of information or data. And when the study population was identified, the selection criteria were the same for all participants without exception (Pannucci & Wilkins, 2010).

Interview bias occurs when the interviewer uses inconsistent standards on how information is solicited, recorded, or interpreted. Bias occurs when the interviewer uses his own formed opinions to solicit information from participant. Interview bias was eliminated from the study by the researcher being neutral and allowing events to unfold naturally (Pannucci & Wilkins, 2010).

Finally, citation bias occurs when the researcher is unwilling to provide or publish unfavorable findings. Citation bias was eliminated from this study by providing all findings and using negative findings as exceptions to evolving patterns of themes or findings (Pannucci et al., 2010).

Sufficiency of the Data-Collection Instrument

The instrument described was used to collect data to answer the research questions. There were three research questions and 14 interview questions. As mentioned earlier, each interview question was followed by probes or prompts. Overall, there was an average of three interview questions for each research question.

One-on-One Interviews

Data for each research question was collected from 20 participants during their one-on-one interviews. I served as both interviewer and data collector. Data was collected continuously daily until all the 20 participants were interviewed or until data saturation

was reached. Each interview session lasted for about 45-60 minutes, and each interview was audio-taped for transcription and data analysis. There was a good chance that I could recruit more than 20 qualified participants for the study; however, if too few responded to the recruitment invitation, I would have continued to recruit more participants until data saturation was reached.

Before the participants left their interview sessions, I summarized the information or data collected and asked participants for anything additional they might want to add. I also gave participants the opportunity to ask any question(s) they might have and in conclusion he thanked each participant for their time and effort.

Participants were also informed that they may be contacted for further questions or clarifications of the answers they provided during their interview. Contact telephone numbers for each participant were collected for follow up as needed (Janesick, 2011).

Data-Analysis Plan

From the one-on-one interview, I worked to understand how emerging themes or findings answered specific research questions, how the stories or findings shed more light on the research questions, and how emerging themes or findings indicated the need for additional data collection. Data was processed after each interview to include all the highlights surrounding that interview session. I also started data analysis as soon as data collection began, to allow thematic patterns to emerge as they related to the research questions. Identification of themes and patterns was followed by data reduction to concentrate on meaningful patterns and themes that connected to the research questions. Data was analyzed for content and themes. Data content analysis was done by coding

data for specific words or content, identification of patterns, and interpretation of their meanings. Content analysis was done by identification of words and phrases that connected or related to specific research questions. For thematic analysis, I grouped data into themes that related to or answered the various research questions (The Pell Institute, 2014).

The software that I used was the ATLAS.ti 7. This software was selected because it has been described as one of the most powerful tools for qualitative data analysis (ATLAS.ti, 2014). The software could handle accurately such large data types as multimedia, multiple documents, codes, coded segments, memos, and network views all in one place. I already viewed the training video tutorial several times, took the free training that came with purchase of the software before I began the interviewing. The incentives that came with the software enabled me to use the software to its full capacity. The incentives that came with the software included free video tutorials and unlimited access to video library for free training (ATLAS.ti, 2014).

Treatment of Discrepant Cases

Non-discrepant cases contribute to an emerging pattern of findings and to the overall body of knowledge. Also, discrepant or disconfirming cases are important in their own way, because they represent examples that do not belong to the emerging patterns of evidence. The discrepant cases served to create boundaries around emerging findings and were treated as exceptions that change the primary pattern of findings (Patton, 2002).

Credibility

Strategies to establish credibility included neutrality of the researcher who kept an open mind to recognize and understand findings as they unfold, collection of data from more than one source (e.g., one-on-one interviews, observation, recordings, and documents) allowed participants to listen to their own recorded interviews or read their interview transcripts and the findings. I also continued to collect data until data saturation was reached. Peers or mentors were invited to the research process from the beginning to the end and gave constructive criticism and recommendations before the final presentation of the findings (Patton, 2002).

Transferability

Strategies to establish transferability included careful selection of the key participants, being descriptive when taking notes, and provision of rich, thick, and deep description of the findings. Thick description serves as a good foundation for qualitative inquiry and reports, while it also takes the reader of the study into the scenario being described (Patton, 2002).

Dependability

Strategies to establish dependability included and audit trail and triangulation. For the audit trail, I kept for up to two years complete record of all the interviews, audiotapes, observation records, and transcripts to serve as evidence of the interview sessions and my observations. The records were kept secure in a safety-deposit box in the bank for others to see for verification of the findings. I described the entire study process from the beginning to end. These steps served as a record of what was done throughout the

research. An audit trail clearly showed the steps or activities that led to the emerging themes or findings. The transcripts of themes and central themes as well as the final report were clearly written up to make it possible for anyone to retract the steps taken. Furthermore, experts or peers were asked to assess the quality of data analysis. For triangulation, I collected data from more than one source through the one-on-one interviews, observations, recordings and the related documents (Patton, 2002).

Confirmability

Strategies to establish confirmability included being attentive and receptive to my own point of view and at the same time recognizing and being receptive to the points of views, cultures, and social lives of the participants. I took into consideration the participants' voices as spoken and recorded, their language, and their ideological backgrounds (Patton, 2002).

Reliability

Strategies to establish inter-coder reliability included the use of at least two different researchers to code the same text. The researchers used a systematic and replicable technique with transparency for reducing words in the text into themes. Use of two researchers to code the same text helped determine the categories and sub-categories that were most important and enabled other researchers to code the text and interpret the results in the same manner. I consulted with peers and experts to code the text for analysis (Mouter & Noordegraaf, 2012).

Institutional Permission

Permission to conduct research was granted on February 18, 2016. A confirmation email was sent to my Dissertation Chair from the Healthcare facility in Florida on the same date.

IRB Approval

Walden University Institutional Review Board approval number is 09-02-16-00017236.

Ethical Concerns Related to Recruitment Materials and Process and Plans to Address Them

Since recruitment of participants was done by email and face to face, the ethical concern related to the confidentiality of the emails and the possibility of other people eavesdropping on conversations with potential participants. Another ethical concern pertains to hierarchy in the healthcare sector, causing junior healthcare workers to be afraid that nonparticipation in the study could have negative repercussions for them.

To address these ethical concerns, I invoked the health-information privacy rule (Health and Human Services [HHS], 2002) and informed participants that this rule guards their confidentiality. Moreover, eavesdropping was prevented by holding research-related conversations or discussions in a secure, quiet place free from traffic or interruptions. This measure gave potential participants the chance to consider participation in the study without peer pressure or influence. Similarly, I informed all potential participants that participation in the study was strictly voluntary. I, finally, emphasized that all

information provided by participants was confidential except as needed for IRB and the research-committee chair and member reviews (Singleton & Straits, 2005).

Participants who refused to participate or withdrew early were not pressured to participate or remain in the study. On the contrary, they were informed that they had the right to withdraw from the study whenever they wanted without giving any reason for doing so. The researcher also explained to them that their participation was not mandatory and that they may decide to withdraw from the study at any time without reprimand. In addition, I made it clear to the participants that their participation or lack of thereof was not in any way going to affect their job or their friendship or collegiality with others, including the researcher. Participants were also informed that the I would maintain their anonymity and confidentiality even if the study was eventually published in a research journal.

Adverse Events

In response to an adverse event like a flood or hurricane, the study was going to be put on hold until the adverse event was over to give participants enough time to recover and to be in the right frame of mind to answer interview questions appropriately (Rudestam & Newton, 2015).

Treatment of Data

I used codes or pseudonyms to protect the identities of the participants, places and/or facilities. Data was stored electronically on a flash drive and kept in a bank safety-deposit box for a period of two years after which the data was destroyed. During data dissemination, I used appropriate language that was not offensive in terms of race,

gender, religion, or sexual orientation. Moreover, I was scrupulous in providing factual information without distortion. The only people who had access to the data were the dissertation committee chair and members, the URR, the IRB, and the participants. In the case of this last group, they had access to their own data only (Creswell, 2009; Maxwell, 2013).

When doing research in one's own work site or environment, several ethical issues must be considered. First, recruitment of participants was done by email or by face-to-face invitation. Next, data collection was done via one-on-one interviews, with the privacy of participants maintained by collecting data in a public building as preferred by the participants. In addition, to prevent perceived coercion to participants, especially where there was power difference with the researcher, potential participants were clearly informed that there was no obligation for them to participate and that their participation was quite voluntary. Participants were also told that they could discontinue or withdraw from the study as any time without reprimand or penalty. In conclusion, they were encouraged to provide honest answers to interview questions, since they were contributing to the body of knowledge on an important topic in public health (King's College London, 2012).

Summary

This chapter began with a brief introduction followed by a general overview of the phenomenon under study, the research methods, and the general approaches to qualitative research. The role of the study was clearly explained, and selection criteria for participants were itemized and described. The interview protocol for one-on-one

interviews was clearly stated. In addition, the issue of trustworthiness was explained. The institutional permission to do research was obtained as required, and the IRB approval was included after the oral defense of the research proposal. Also, of great importance are the ethical considerations in the study. All were clearly stated since they affect human participants, data collection and treatments, confidentiality, and issues of doing research at one's work site. This chapter also provided full details about the role of the researcher.

Chapter 4: Results

Introduction

In this study I determined factors that contributed to non-compliance of Healthcare workers (HCWs), especially nurses, with influenza vaccination. I also aimed to provide leaders in the healthcare industry with information that may assist them to formulate strategies or policies to increase compliance with influenza vaccination among HCWs.

Research Questions

The following research questions were used for the study:

RQ1. How do HCWs, especially registered nurses, perceive influenza and the influenza vaccination?

RQ2. What have been the self-reported incidents of HCWs, especially registered nurses, with the influenza vaccination?

RQ3. What factors contribute to HCWs', especially registered nurses' declining rate of influenza vaccination?

Settings

I conducted all interviews in private settings. In order to ensure that private settings were also convenient and comfortable for participants, I interviewed all the 20 participants onsite at a Healthcare Facility in Florida in private rooms, lounges, classrooms, and library. There was no personal or organizational condition that influenced participants or their experience at this time of study. I conducted all interviews as planned.

Demographics

The participants interviewed were from various backgrounds, the participants being; White Americans, African Americans, European Americans (From Poland, Germany, Italy, and Russia), and Hispanic Americans (From Cuba and Mexico). Participants were adults above the age of 18 years and 17 of them were women; only 3 were men. All participants reside in Lee and Charlotte counties in Florida, USA.

Data Collection

I recruited all the 20 participants individually at a healthcare facility in Florida. A letter of invitation was provided (See Appendix B) followed by consent form. Some participants gave appointments for the interview, while others opted for an immediate interview. Most interview sessions lasted between 30-35 minutes each with the aid of the interview guide (See Appendix C). The response for interview started in trickles, followed by high volume response. On the first day only one participant was recruited and interviewed, on the second day one participant was recruited and interviewed, on the third day seven participants were recruited and interviewed, on the fourth day two participants were recruited and interviewed, on the fifth day six participants were recruited and interviewed, and on the sixth day three participants were recruited and interviewed. Recruitment was done by approaching and talking with participants individually.

Each interview session started with a brief introduction, and exchange of pleasantries to create rapport and readiness for the interview. Each participant was mandated to read the invitation letter and the consent form before appending signature

and before proceeding with interview. All participants declined to have a copy of their signed consent forms. Each interview was recorded on cassette tape recorder and each participant was appreciated after interview. Interview sessions started on October 12, 2016 and ended on October 29, 2016. Interview session lasted for about two weeks, which was a bit quicker than expected.

Each interview was transcribed on paper within 24 hours and typed on personal computer within 48 hours. Each transcript was saved on a flash drive after typing for safe keeping (See Appendix C for example of interview transcript).

Data Analysis

Each recorded data was transcribed and typed on personal computer. All data transcription and typing on personal computer was completed within 48 hours of interview completion. The first and second rounds of data coding were completed on November 11, 2016. The first and second round of data coding were completed by using ATLAS.ti software, whereas the final coding and thematic analysis were done manually to avoid duplication and to sort out pertinent themes. I used 14 interview questions (See Appendix B) to collect data for research questions. Each research question answer was categorized into units based on frequency of occurrence. Participants were asked how they felt about influenza and influenza vaccinations (see tables 1-4 and figures 2-4)

Codes	Responses
Vaccine not 100% effective	80%
Afraid of vaccine side effects	70%
Dislike for vaccination	60%
Influenza vaccine as a foreign agent	40%
No belief in vaccine	35%
Low risk	25%
Uncertainties	20%
No assurance	15%
Poor knowledge	15%
No trust in manufacturers	10%
Skeptics	10%
Vaccine contains previous virus strains only	10%
Vaccine may introduce virus into body	10%
Faulty vaccines	10%
Causation of other diseases	5%
Poor technology	5%

Table 1. RQ1 – How HCWs, especially registered nurses, perceive influenza vaccination

Codes were derived from participant's answers to questions 1-4 of the data collection instrument (See Appendix B). The numbers in the first column show nurses' perception in order of relevance.

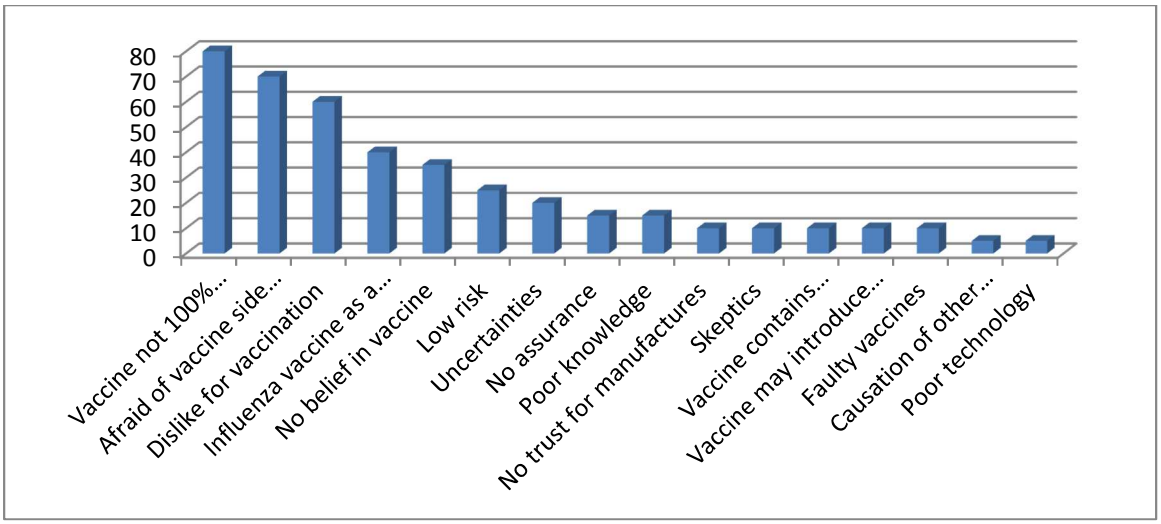

Figure 2: RQ1 - How HCWs, especially registered nurses, perceive influenza and influenza vaccination (Percentage)

Codes	Responses
Friends' bad experience	40%
Experienced cold chills	20%
Soreness at injection site and sore muscle	10%
Chest tightness, respiratory distress	5%
Colleague collapsed	5%
Difficult to breathe	5%
Got sick	5%
Serious side-effects	5%

Table 2. RQ2 – What have been the self-reported incidents of HCWs, especially registered nurses, with influenza vaccination?

Codes were derived from participants' answers to questions 5-10 of the data collection instrument (see Appendix B). The numbers on the side show nurses' self-reported incidents in order of relevance.

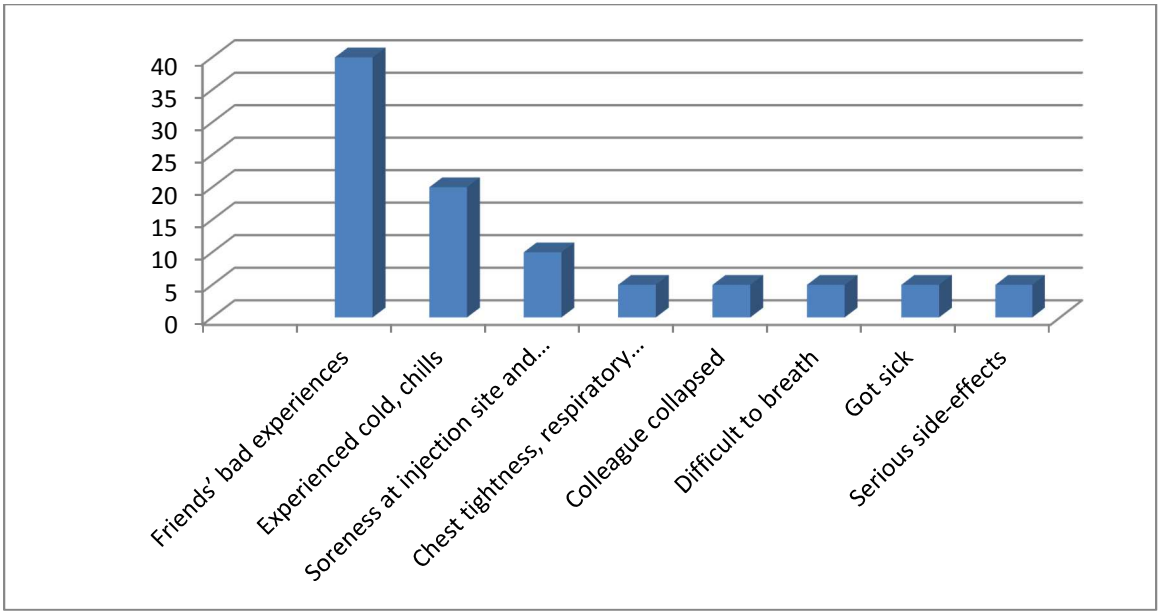

Figure 3: RQ2 - Self-reported incidents of HCWs, especially registered nurses, with influenza vaccination (Percentage)

Codes	Responses
Good immunity/low risk	40%
Option to wear mask	25%
Personal choice	20%
Don't want to get sick	15%
Lack of knowledge	15%
No support from family members	15%
Experiences	15%
Vaccine ineffective	15%
No support from prior vaccine victims	10%
Vaccine side-effects	10%
Difficult work and scheduling	5%
Uncertainties	5%
Vaccine recalls	5%

Table 3: RQ3 – What factors contribute to HCWs', especially registered nurses', declining rate of influenza vaccination (N = 20)?

Codes were derived from participants' answers to questions 6-14 of the data collection instrument (see Appendix B). The numbers on the left side show factors by relevance.

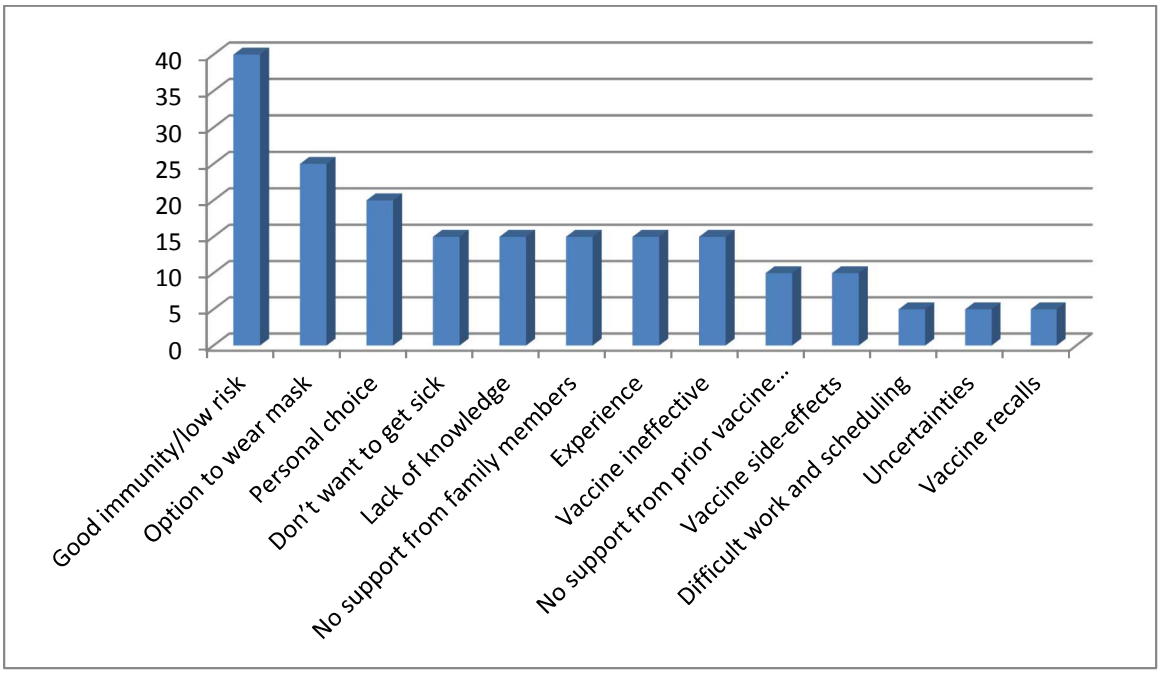

Figure 4: RQ3 – What factors contribute to HCWs', especially registered nurses', declining rate of influenza vaccination (Percentage)

Themes	Related Codes
Fear of influenza vaccination	Influenza vaccination as a foreign agent.
	Skeptical about influenza vaccination due to friends' bad experiences.
	Serious side-effect like pain at injection site.
	May introduce virus into body.
	Don't want to die from respiratory distress.
	Causation of other diseases (e.g. Guillaine-Barre syndrome).
Lack of family support	No support from husband.
	No support from wife.
	No support from prior vaccine victims.
	Wife as obstacle to get vaccine.
	No support from parent.
Wear mask instead	Wear mask instead.
Ineffective vaccine	Lack of confidence in vaccine.
	Too many virus strains not covered by vaccine.
	Not certain about vaccine effectiveness.
	Vaccine contains prior virus strains only.
	Vaccine not 100 % effective.
	High influenza incidence among the vaccinate.

Low risk perception	Good immunity.
	Body heals self.
	Low risk for me.
	Strong body defense.
Negative parental influence	Mum is a nurse, never got vaccine, never got sick.
Bad experience	Friends' bad experience.
	Bad experience turned life to the worse.
	Saw colleague collapse after vaccination.
	Cold and chills after vaccination.
	Fainting after vaccination.
	Too risky, soreness and nervousness.
	Past experience.
	Soreness at injection site and muscle.
	Sickness after vaccination.
	Pain and respiratory distress.
	Chest tightness, respiratory distress and soreness at injection site.
	injection site.
Lack of vaccination enforcement	Will comply if vaccination is enforced.
	No vaccination enforcement.
Personal choice	Dislike for vaccination.
	No belief in vaccination.

Vaccination related absenteeism	Absent from work due to sickness after vaccination.
Lack of Knowledge	Not certain about what we get in vaccine.
	No vaccination benefits.
	No gain in vaccination.
Fear of vaccine safety	Influenza vaccine not reliable.
	No confidence in vaccine.
	Causation of other diseases.
	Vaccine recalls due to faulty vaccines.
	No guarantee.
	Unsafe vaccine.
Lack of trust in vaccine manufactures	Not certain about vaccine manufacture.
	Not certain about what we get in vaccine.
	Is vaccine effective or just for the money?
	Poor technology.

Table 4. Themes and codes related to influenza and influenza vaccination.

Six major themes were derived from the answers provided by participants during interviews. These themes include:

- Fear of influenza vaccination
- Lack of family support
- Ineffective vaccine
- Low risk perception
- Bad experience with prior vaccination(s)
- Fear of vaccine safety

Theme 1: Fear of influenza vaccination

70% of participants were afraid of vaccine side-effects, 40% of participants saw influenza vaccine as a foreign agent that could never be introduced into their body, and 10% of participants believed that influenza vaccine may introduce live virus into their body. Also, 60% of the participants had a general dislike for vaccination in view of needle stick, soreness at injection site and the uncertainties surrounding influenza vaccination.

Theme 2: Lack of family support

15% of participants claimed that they did not get support from their spouses or family members, whereas 10% of the participants did not get support from colleagues and family members who were victims of bad experience from influenza vaccination in the past.

Theme 3: Ineffective vaccine

About 80% of participants felt that influenza vaccine was not 100% effective; they still got sick after influenza vaccination, they have seen lots of patients who have been vaccinated and came back to the emergency rooms in large numbers with sickness after influenza vaccination. 10% of participants had no confidence in the vaccine, 10% of participants claimed that may virus strains were not covered by vaccines, and 15% of participants were not certain about vaccine effectiveness.

Theme 4: Low risk perception

40% of participants claimed that they had good immunity and they cannot fall sick from influenza. They had the opinion that their body could heal itself, and therefore they do not need to be vaccinated against influenza.

Theme 5: Bad experience

95% of participants claimed that they had bad experiences; chest tightness with respiratory problems, felt cold with chills, got sick, saw friends that collapsed after influenza vaccination, or soreness at injection site and sore muscle. 95% of the participants with bad experiences vowed never to get influenza vaccine again.

Theme 6: Fear of vaccine safety

5% of participants claimed that vaccines were faulty, 10% of participants had no confidence in vaccines, 15% of participants had no trust in vaccine manufacturers mainly because vaccine manufacturers use poor technology, and 5% of participants claimed that vaccine are unsafe.

Discrepant cases

There was no discrepant case to report.

Evidence of Trustworthiness

Credibility

Strategies used to establish credibility included neutrality on the part of the researcher by keeping an open mind to recognize and understand findings as they unfolded, collected data from one-to-one interview, observation, cassette recordings, documents, and allowing each participant to listen to their own interview recordings. There were no changes in responses. The researcher continued data collection until data saturation was reached (Patton, 2002).

Transferability

Strategies to establish transferability included purposeful random selection of the key participants, which provided rich, thick and deep description of findings. Thick description serves as a good foundation for quality inquiry and reports, while it also takes the readers of the study into the scenario described (Patton, 2002).

Dependability

Strategies to establish dependability included an audit trail and triangulation. Triangulation was achieved by collecting data from different registered nurses across different units; triangulation was done to double check and validates data in order to elucidate or highlight emerging themes. For audit trail, I kept all the complete records of interviews, audiotapes, and transcripts for a period of two years. The records were kept in bank safe-deposit box for others to see and verify findings. I also kept the diary of research events and the interview transcripts to show the activities that led to emerging themes and findings. The transcript, preliminary codes, themes and findings were clearly written to make it possible for others to follow the same steps to arrive at the same findings (Patton, 2002; Rudestam & Newton, 2015).

Confirmability

Strategies used to establish confirmability included being attentive and receptive to point of view, cultures and social lives of participants. I took into consideration the participants' voices as spoken and recorded, their language and their ideological backgrounds (Patton, 2002).

Results

Findings from data analysis indicated that: 70% of registered nurses were afraid of influenza vaccination, whereas 80% of them saw influenza vaccination as ineffective, and 90% of them have had bad experiences or have seen colleagues/friends who have had bad experiences after influenza vaccination. In addition, 40% of registered nurses

claimed that they have good immunity, whereas 20% of them declined influenza vaccination due to personal choices.

Research Question 1

How do HCWs, especially registered nurses, perceive influenza and influenza vaccination? The answers provided during interviews indicated that: 70% of nurses were afraid of influenza vaccination, 60% of nurses disliked vaccination, and 40% of nurses viewed influenza vaccines as foreign agents that need not be introduced into their bodies.

Research Question 2

What have been the self-reported incidents of HCWs, especially registered nurses, with influenza vaccination? The answers provided by participants during interviews indicated that: 40% of participants have seen many of their friends and patients alike who have come back to the Emergency room sick after influenza vaccination, 20% have experienced cold and chills, 10% have had soreness at injection site with sore muscles, 5% had chest tightness with respiratory distress, 5% have seen their colleagues collapse after influenza vaccination, 5% had difficulty with breathing, 5% got other serious side-effects like dizziness after influenza vaccination.

Research Question 3

What factors contribute to the declining rate of influenza vaccination among HCWs, especially registered nurses? The answers provided by participants indicated that nurses declined influenza vaccination because: 40% claimed that they had good immunity, 25% indicated that they had the option to wear a mask instead, 20% declined as a personal choice, 15% don't want to get sick, 15% declined for lack of knowledge,

15% declined for lack of support from their family members, 15% declined due to past experiences, 15% declined due to vaccine ineffectiveness, 10% declined due to vaccine side-effects, 10% declined for lack of support from prior vaccine victims, 5% declined due to difficult work scheduling, 5% declined due to vaccine uncertainties, and 5% declined due to vaccine recalls and lack of trust in vaccine manufactures.

Summary

This chapter details the processes of data collection, coding and thematic analysis of data. Data was collected by individual interviews of 20 participants. Each interview was recorded on audio cassette recorder, transcribed and thematically analyzed. Data was collected from all participants and six major themes were derived from the data. The six major themes derived include the following: fear of influenza vaccination, lack of family support, ineffective vaccines, low risk perception, bad experiences, and fear of vaccine safety.

The result of each research question was presented as they related to perceptions, self-reported incidences and factors responsible for declining compliance rate of influence vaccination. Looking at the data analysis, it was evident that participants: were afraid of influence vaccination, viewed influenza vaccine as ineffective, have had bad experiences, and claimed to have low risk of infection due to good immunity. Data analysis also gave the impression that there was inadequate knowledge of influenza and influenza vaccination among registered nurses, hence the need for more education about influenza and influenza vaccination for registered nurses.

Chapter 5 presents the interpretation and limitations of the study. The chapter also highlights pertinent recommendations for future research studies and discusses the implications of this study, as it might influenza social change.

Chapter 5: Discussion, Recommendations, and Conclusions

Introduction

I aimed to determine factors that contributed to non-compliance of HCWs, especially registered nurses, with influenza vaccination. One of the aims of the study was also to provide leaders in the healthcare industry with information that may assist them to formulate policies and/ or strategies to increase compliance among HCWs.

I collected data by interviewing 20 participants, who were all registered nurses who declined influenza vaccination despite easy accessibility and free vaccine availability at their work place. I recorded data on audio cassette player and I thematically analyzed data.

Key Findings

The theory of reasoned action and the theory of planned behavior supported the data collection instrument that was used as an interview guide for the study. The six major themes developed from data analysis are:

- Fear of influenza vaccination – participants perceived influenza vaccines as foreign agents or toxins that could be dangerous in their bodies.
- Lack of family support – participants claimed that they had no family support due to prior experiences and or the fear of the unknown.
- Ineffective vaccine – participants had no confidence in the vaccines.
- Low risk perception – participants claimed to have good immune systems or good body defense mechanism.

- Fear of vaccine safety – participants had concerns about vaccine recalls and faulty vaccines; they also believed that influenza vaccine might cause other diseases.
- Bad experiences – participants had bad experiences in the past and had seen friend, colleagues, and close relatives who had almost died from an influenza vaccination.

Interpretation of findings

Extended Knowledge

There was no other study on record that used the combination of the theory of reasoned action and theory of planned behavior to examine perception of HCWs, especially registered nurses, in Florida towards influenza vaccination. The result of this study provides evidence which adds to the current body of knowledge regarding factors that contributed to non-compliance with influenza vaccination among HCWs, especially registered nurses.

This study adds evidence to the current literature by stating that the HCWs' declining to get vaccinated was based on factors that include: personal choice, fear of side-effects, lack of family support, and a perception that they will not contact influenza.

Findings that Contribute to the Literature

This study contributed to a prior study by Ragan and Duffy (2012) where the researchers found that fear of vaccines resulted in an increased number of parents who refused influenza vaccines for their children. Findings by Blasi et al. (2012) also identified fear and anxiety as the reasons for non-compliance with influenza vaccination

among HCWs. Also, Blasi et al. (20110 in their study of 83 countries identified fear of vaccine safety as the root cause of non-compliance with influenza vaccination among HCWs. Seale et al. (2011) confirmed that fear of negative outcomes with influenza vaccination was responsible for low compliance in Beijing, China.

In addition, data from this study contributes to findings by Hidiroglu et al. (2010) that participants refused influenza vaccination because of low perception of risk. This study again confirms findings by Brandt et al. (2011), who declared that participants were not compliant with influenza vaccination due to fear of vaccine safety, low risk perception and lack of trust in vaccines. Further confirmation of findings by this study are the findings by Myers and Goodwin (2011) that fear, anxiety, and low level of confidence about the influenza vaccine had caused HCWs to change their minds and decline influenza vaccination.

Also, this study supplements the study by Hwang and Lim (2014) that perception of low risk contributed to non-compliance with influenza vaccination among HCWs. Fear of vaccine safety as described by Graham et al. (2012) was also supported by this study. Graham et al. (2012) found that participants declined influenza vaccination because vaccine manufacturers had no safety standards – vaccine manufacturers had inadequate infrastructure, inappropriate technology and inadequate human resources to monitor safety.

In this study, some participants stated that they would get influenza vaccination if it was mandatory. Some other participants stated that they would only get influenza

vaccination if it carried a 100% guarantee that the vaccine would be effective and that the vaccine would have no side-effects.

Theoretical Framework Application

The theories that support this research are the theory of reasoned action and theory of planned behavior. These theories were used to examine motivational factors that determine the probability of the performance of a particular behavior, with behavior intent as the most reliable predicting factor. These theories lay emphasis on attitude, subjective norms, and perceived control as constructs that predict health behavior. Constructs of these theories include; behavior beliefs, normative beliefs, control beliefs, and external variables. The most reliable predictor of behavior is the behavior intention, while perceived control determines intended behavior, attitude and subjective norm (Ajzen & Fishbein, 1980). The TRA and TPB were used to determine themes that emanated from data collected.

Theoretical Interpretation

With reference to TRA, the determinants of a person's behavior are the intent of the behavior with the capacity to control the behavior (Ajzen, 1991). TPB on the other hand claims that perceived control determines behavior intention, attitude and subjective norms (Ajzen, 2002).

It may be logical to say that the weaker the intentions the weaker the behavior and the findings from this study show that influenza vaccination was provided free of charge at work place and there were no obstacles or barriers to getting the vaccine. Some participants claimed that they were unable to get access to the vaccine due to their own

work load or schedule – these factors did not positively influence the intent to get vaccinated.

The behavior belief of participants indicated that influenza vaccine was dangerous, caused more illnesses and side-effects, resulting in negative intent and negative behavior toward influenza vaccination. Normative belief findings from participants in the form of personal choice negatively affected intent to get vaccinated, even though there was considerable encouragement by their employers.

Findings did not show that participants were given mandatory education about influenza and influenza vaccination anytime in the past, either before or during influenza season.

Limitations of the Study

I was not certain if participants gave their honest responses to interview questions. All participants were recruited from one worksite during influenza season, and activities at the site during influenza season may have influenced participants' responses to interview questions. I was the sole data collector, and there was no peer review of each interview session to improve the trustworthiness of each interview session.

Recommendations

I recommended that this study should be repeated with focus groups in order to bring up more responsive discussions. Health care leaders need to provide education and evidence to show the positive results of taking influenza vaccination, and present evidence of how many employees have experienced side-effects from it. Such education should be mandatory for all HCWs, especially registered nurses, to coincide with

influenza season and influenza vaccination drives. Education and persuasive communication, rather than coercion from healthcare leaders toward HCWs, especially registered nurses, are likely to improve influenza vaccination compliance rates or change the stance of HCWs who have declined or who may decline influenza vaccination now or in the foreseeable future.

Implications

Positive Social Change

Research findings from this study may be utilized to bring positive social change to society at large. The findings may be utilized to enhance existing strategies or policies or even formulate new policies and strategies that would address the concerns of HCWs, especially registered nurses. More awareness through educational opportunities and persuasive communication rather than coercion may bring positive change of stance about influenza vaccination. By making use of findings in this study, healthcare systems or healthcare leaders can renew and implement strategies to improve compliance with influenza vaccination. By increasing compliance of HCWs, especially registered nurses, in getting their influenza vaccination, a healthy workforce will be created which will eventually increase heard immunity in the communities where they work and live. Widespread herd immunity in our society will eventually lead to increased protection against influenza and make for a healthy society in the long run.

Methodological and Theoretical Implications

The use of phenomenological approach coupled with TRA and TPB was appropriate for this study, and it can also be appropriate for future researches to examine perceptions of healthcare workers, especially registered nurses, regarding influenza and influenza vaccination. Any qualitative study that uses the phenomenological approach to collect data would end up obtaining deep and rich data from participants. The constructs of TRA and TPB are well structured to capture the needed data from participants about influenza and influenza vaccination.

Conclusion

The aim of this study was to examine the perceptions of HCWs, especially registered nurses, towards influenza and influenza vaccination. The findings showed that 95% of the nurses had bad experiences; 80% view influenza vaccination as ineffective; 70% were afraid of influenza vaccination; 40% had low risk perception for influenza infection; 15% lacked family support for influenza vaccination; and 5% were afraid of vaccine safety issues.

There was no barrier or obstacle for access to influenza vaccination; hence control belief was not a factor to non-compliance with influenza vaccination among participants. Behavior beliefs and normative beliefs may be influenced for positive outcomes by; offering mandatory education, formulating employee friendly policies, use of persuasive communication with HCWs, and offering incentives for influenza vaccination. When correctly implemented, the recommendations may yield positive intent towards influenza vaccination. Increased compliance with influenza vaccination among registered nurses

would greatly impact society in a positive way, since registered nurses form the largest group of healthcare professionals nationally (Blythe et al., 2012).

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Appendix A – Letter of Invitation

Letter of Invitation to Participate in a Research Project

I am a student at Walden University and I am presently involved in a research project. The research project is about perceptions of healthcare workers (especially registered nurses) toward influenza vaccination. The research project is required in partial fulfilment of my PhD degree in Public Health at Walden University. My Dissertation Committee Chair is Dr. Cheryl Cullen.

Your participation in this research study will provide useful information and add to the body of knowledge. To qualify for participation, you must be above 18 years old, a Registered Nurse, and must have spent at least 1 year in healthcare and speak English language. You will participate in a 1:1 interview that will last between 30-45 minutes.

For this research study participation is voluntary and all collected data will be treated as confidential (except for duty to report cases of child or elder abuse). Participants will be treated with respect and you may withdraw from the study at any time without reprimand or penalty.

Thank you for your help,

Amos Adedokun, RN

239-671-8130

Appendix B – The Interview Guide

Interview Questions/Guide:

How do you feel about influenza and the influenza vaccination? Why do you feel that way?

What do you like or dislike about influenza and influenza vaccination? How come?

What do you hope to gain from getting an influenza vaccination? Why?

What are the advantages/benefits of getting an influenza vaccination?

What has been your experience with influenza and the influenza vaccination?

What are the disadvantages of getting influenza vaccination? Why?

Who would support your getting an influenza vaccination? Why?

Who would not support your getting influenza vaccination? Why?

What makes it easy for you to get an influenza vaccination? And why?

What makes it hard for you to get an influenza vaccination? Why?

If you want to get influenza vaccination, how certain are you that you will get it? Why?

What strategies or steps would help you overcome any obstacles or barriers to getting an influenza vaccination? How?

What factors make you likely to accept or decline and influenza vaccination? Why?

What questions do you have about influenza and the influenza vaccination? Why? (Glanz et al., 2008).

Appendix C – Sample of Interview Transcript

RNPEDKM – I do not agree with getting the influenza vaccination even when working in the healthcare industry. I feel that I should not expose myself to toxins or vaccines that are not necessary for my life and wellbeing. It is a virus and viruses mutate. The vaccine only protects people from last year's strains and not from the current strains. We don't have advanced technology that can think ahead to know the influenza virus mutate. I do not hope to gain anything from influenza vaccination. Influenza vaccination is not medically necessary for my health and my wellbeing. The influenza vaccine may reduce the effects of last year's virus strains only. I have received influenza vaccination in the past, I have not received influenza vaccination in the last five years and I have not had any influenza infection since then. The disadvantages of getting influenza vaccination include; it is an invasion of my body, it is medication that I don't need at this time in life. I am young and healthy and I am not immunocompromised, so I don't feel the need to add toxins to my body. My family and colleagues would definitely support me if I want to get the influenza vaccination. I don't think that my people will not support me if I want to get the influenza vaccination. It is easy to get the influenza vaccination because it is free where I work. It is not hard to get influenza vaccination because it is provided free at work and easily available in some pharmacy stores. If I really want to get the influenza vaccination I am 100% sure that I will get it. I don't have any obstacles or barriers to get influenza vaccination; it is just my personal choice not to get the influenza vaccination. For me to accept the influenza vaccination there has to be a guarantee that I

will not get the influenza infection. I decline the influenza vaccination because it does not work against future influenza virus strains; it only works for past influenza virus strains. Influenza vaccines are made from egg and I am nervous about getting salmonella and other diseases that are acquired form egg. I do not have any question about influenza or influenza vaccination at this time.