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Re-educating Healthcare Providers on Hand Hygiene Practice

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This is to certify that the doctoral study by

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Walden University
2016

Abstract

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MSN, Holy Names University, 2012

BSN, Nevada State College, 2010

Proposal Submitted in Partial Fulfillment

of the Requirement for the Degree of

Doctor of Nursing Practice

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Abstract

The Centers for Disease Control (CDC) and the World Health Organization (WHO) estimate that there are approximately 1.4 million cases of hospital acquired infections (HAIs) at any given time worldwide. Recent reports indicate that 722,000 patients acquire HAIs, with 75,000 or more succumbing to the infections and dying. This quality improvement project focused on the value of re-educating practicing nurses on hand hygiene practices as an approach to reduce the incidence of HAIs. Pre-intervention rates of HAIs were compared with post-intervention rates of HAIs across 2 units (Unit A and Unit B) in an acute care setting to determine if re-educating nurses about hand hygiene was a plausible strategy in reducing HAIs in the acute care setting. The pre-intervention mean rate of Unit A was 0.146% and the post-mean rate was 0.00%. A Wilcoxon signed-rank test showed that the educational intervention did not elicit a statistically significant change in infection rates ($z = -1.63$, $p > 0.05$). Similarly, the pre-intervention mean rate of Unit B was 0.12% and the post-mean rate was 0.00%. A Wilcoxon signed-rank test showed that the educational intervention did not elicit a statistically significant change in infection rates ($z = 1.732$, $p > 0.05$). Despite the lack of statistical significance, there was a reduction in the mean rate to 0.00% following the educational intervention. The results of this quality improvement project suggest a value in re-educating nurses on the importance of hand hygiene as a strategy to reduce and prevent HAIs in health care organizations in order to promote positive patient outcomes.

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Dedication

This project is dedicated to my late father, Moses A. Ubah, who taught me that hard work pays off at the end in-spite of the hiccups you encounter through the process. It is also dedicated to my son, Grant, who told me that I can accomplish whatever I set my mind on, but that it will take a step at a time with a lot of perseverance. Finally, to my three younger children, Valerie, Vanessa, and Garrett who have also thought me to be patient and always look up to the sovereignty of God's grace in all life's challenges.

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Section 1: Overview of the Evidence-Based Project

Introduction

Thorough and proper hand hygiene significantly helps eliminate cross-contamination and the reduction of hospital-acquired infections (HAIs) among hospitalized patients (U.S. Centers for Disease Control [CDC], 2011). However, in recent years, HAIs have been on the increase, prompting serious investigations as to whether healthcare providers, specifically nurses, utilize best practices with regard to hand hygiene. Global statistics indicate the rate of HAIs in developed countries varies between 5.1% and 11.6% among hospitalized patients (Allegranzi et al., 2011). In a study by Song, Stockwell, Floyd, Short, and Singh (2013), when healthcare providers adhered to hand hygiene practices in a neonatal intensive care unit (NICU), compliance increased from 50.3% pre-intervention to 84.0% post-intervention. This comprehensive measure resulted in a savings of 11.6 NICU days and $66,397 in hospital charges per month.

In 2011, the CDC estimated that 722,000 patients contracted an infection during their stay in an acute-care hospital, with 75,000 of the patients dying as a result, which is approximately 205 deaths from HAIs every day. More than half of all HAIs were contracted outside of the intensive care unit (CDC, 2011), with the most common hospital-acquired infections being central-line-associated bloodstream infections, catheter-associated urinary-tract infections, surgical site infections after surgery, and *Clostridium difficile* infections. These are some of the most common bacterial HAIs that pose a threat to patients' safety, which could be prevented through hand hygiene.

The World Health Organization (WHO), CDC, and the Joint Commission (JC) have acknowledged the significance of hand hygiene in addressing HAIs. For example, the WHO recommends five situations when healthcare workers ought to observe hand hygiene: (a) before having contact with patients, (b) before any antiseptic task, (c) after exposure to bodily fluid, (d) after contact with a patient, and (e) after coming in contact with the patient's surroundings. Healthcare workers are expected to comply with these guidelines in order to minimize hospital-acquired infections. While existing evidence indicates hand-hygiene practices among providers reduces HAIs, compliance rates for hand-hygiene practices, such as hand washing and gelling, remains low (CDC, 2011). For example, Parker and Smith (2010) hypothesized compliance with hand-hygiene practice averages 39% among health providers. Borges, Rocha, Nunes, and Filho (2012) concluded poor compliance with hand-hygiene practices among healthcare workers is due to heavy workloads, infrequent glove use, and lack of accessibility to infrastructure, such as, a lack of sinks or empty alcohol gel dispensers.

Moreover, hand hygiene, while an essential component of the treatment process, is often neglected by healthcare providers and their organizations. Some healthcare organizations do not have appropriate structures or guidelines to enforce hand hygiene. Some healthcare workers also neglect hand hygiene even though it is a simple exercise that should be repeated frequently during the treatment process (Behnke, Gastmeier, Geffers, Mönch, & Reichardt, 2012). As a result, patients suffer from the lack of adequate structures or healthcare worker negligence regarding hand hygiene.

Re-education is a multimodal intervention used to improve compliance with hand-hygiene practices (Storr & Kilpatrick, 2013). Re-education is based on the theoretical framework

of behavioral change at the individual, interpersonal, and organizational level. At the individual level, re-education provides healthcare workers with the right motivation and education to help individual accept hand-hygiene practices. At the interpersonal level, re-education empowers patients to understand the importance and impact of hand hygiene (Stewardson, Allegranzi, Perneger, Attar, & Pittet, 2013). At the organizational level, re-education includes a shift in thinking, a restructuring of the organizational structure, and the development of appropriate philosophies aimed at supporting proper hand-hygiene practices to reduce HAI rates.

Problem Statement

Hospitals and other healthcare facilities played a key role in treating and preventing the spread of diseases. However, the increasing rates of HAIs make hospitals unsafe for patients and undermine the role of these healthcare facilities in promoting good health. Dennison and Provost (2012) attributed the prevalence of HAIs to a lack of adherence to hand hygiene in healthcare settings. Lack of adherence to hand-hygiene practices was due to various issues, including negligence on the part of healthcare workers, inadequate care, and lack of sufficient knowledge and training regarding the importance of hand-hygiene practices (Glanz & Bishop, 2010). However, Glanz and Bishop (2010) concluded that efficiency can be ensured in healthcare settings by placing emphasis on the significance of hand-hygiene practices as an important aspect of the treatment process. If the situation is not checked or addressed adequately, patients will continue to suffer and in some cases die from HAIs. Re-educating healthcare workers is one plausible solution to the important role hand-hygiene practices have on the treatment process.

Purpose Statement

The purpose of this project was to determine if re-education of hand hygiene practices reduces HAI rates among patients in a hospital setting and to provider recommendations regarding the sustainability of the re-education initiative following the completion of the project.

Project Objective

At the end of this project, I expect the following objectives to be achieved:

- To re-educate healthcare practitioners regarding the importance and significance of hand hygiene practices to reduce HAIs.
- To compare HAI rates before and after the re-education of healthcare providers regarding hygiene practices.
- To provide recommendations regarding the sustainability of the re-education initiatives following the completion of the project.

Evidence-Based Significance of the Project

This hand hygiene project was very significant in the healthcare industry. First, hand hygiene is directly linked to the quality of healthcare services(Glanz & Bishop, 2010). Hospital workers who do not adhere to hand-hygiene practices often undermine the quality of their work, thus leading to poor patient outcomes and, in some situations, patient deaths (Boyer et al., 2009). The failure to observe hand hygiene often occurs because of the need to care for an increasing number of patients and to complete work in the shortest time possible. In some cases, the failure to observe hand hygiene results from sheer negligence, where the healthcare workers overlook

the importance of hand hygiene in the treatment (Bull et al., 2011). The result is poor delivery of healthcare and the inability of healthcare providers to meet their objectives.

Second, the prevention of injuries and sickness through the use of high quality lighting and temperature-controlled environments, for example, was fairly standard, but the prevention of infections continues to be a challenge (Boyer et al., 2009). Healthcare providers need to ensure asepsis whenever caring for a hospitalized patient, that is, a state where the patient has an environment free of external pathogens that can cause infections during the period of treatment (Hix, McKeon, & Walters, 2009). Nurses in close contact with patients should have the knowledge on various techniques to prevent the patient from coming in contact with potentially harmful bacteria. The main responsibility of ensuring a safe and healthy environment rests on the nursing staff, who accepted the concept that negligence accounts for most of the infections that occur (CDC, 2011)

Implications for Social Change in Practice

Compliance with hand-hygiene practices by nurses affects social change in preventing infection, which means that the practice is becoming entrenched in the daily practices of the healthcare workers. Social change refers to significant alterations in the behavioral patterns, cultural norms, and societal values. Healthy lifestyles often depend on how people change their lifestyles and adopt recommended ways of managing their health in order to prevent the spread of diseases (Costers, Viseur, Catry, & Simon, 2012).

Hand-hygiene practices have huge implications for social change because behavior varies significantly among both patients and healthcare workers in a given healthcare setting.

Therefore, individual features such as method of learning and skills set have a major role to play in determining how individuals respond to hand hygiene and their health behavior in general.

Social psychologists tried to help others understand these individual features, such as social–cognitive determinants, which can determine an individual's hand-hygiene behavior (Allegranzi et al., 2011). Individual behavior is best understood as a function of the different perceptions and attitudes of individuals rather than as a function of their lives (Allegranzi et al., 2012). In this regard, it is easier to understand that individual behavior is shaped through a process of socialization in the different societies in which one lives and their physical environment. Through appropriate behavioral models, it is easier to understand and influence individual behavior when initiating change.

Hand-hygiene practices require social change at three levels in the community in order to be effective (Darouiche et al., 2010). At a personal or intra-personal level, social change requires individuals to change their attitudes and beliefs toward hand hygiene. This can be achieved through access to information about hand hygiene, its benefits, and its implications to health. At the interpersonal level, hand-hygiene practices require social change in terms of how the different social networks promote healthy practices (Allegranzi,et al, 2011).

Social units, such as families, are the basic units for socialization. If individuals are properly socialized in their families and their relationships with peers and friends, it is easier for them to respond to social change. Families need to appreciate hand-hygiene practices and include them in their socialization processes. On the other hand, at the community level, hand-hygiene practices require that the community structures create an appropriate environment for health practices and promote compliance to hand-hygiene practices. Policy and decision makers in the

community need to focus on setting up appropriate frameworks where hand-hygiene practices can thrive (Hhs.gov, 2014).

Assumptions and Limitations

There were a number of assumptions in this project; key among them was the participants' cooperation. I assumed all participants selected for the project would respond and participate fully from the beginning to the end of the project. I also assumed that sufficient cases of HAIs existed in the hospitals and that change in the incidence of HAIs could be successfully traced. I also assumed that healthcare workers in different hospitals but on the same working unit, or ward, would demonstrate varied hand-hygiene habits, and if cases of HAIs were reported during the study, then I would be in a position to directly trace the infections to the healthcare workers with poor hand-hygiene behavior. I also assumed the secondary data gathered from the hospitals was sufficient, reliable, relevant, and up-to-date to assist in drawing effective conclusions about the project's results. I planned to use both pre- and post-data about the incidence of HAIs, and the only identified source for this information was from the infection control and quality and risk management departments of the hospital involved in the project.

I identified a number of limitations. Key among these limitations was the number of participants involved in the project and the period of the project. The project results do not meet the test for generalizability because the population of the project was not representative of the general population of nurses. The sample was drawn from a hospital in a single state, owing to a lack of adequate resources, so the results cannot be generalized to the entire nation. The time allocated for the project, 6 months, was also not adequate to carry out the project effectively, making it another major limitation of the project.

The fact that the focus of the study was on healthcare workers with poor hand hygiene without considering those with high compliance to hand-hygiene practices was also a major limitation of this research project. Another major limitation was the use of a wide range of hand-hygiene techniques in different hospitals, as this study did not give the true relationship between a particular hand-hygiene technique (hand washing) and HAI rates in a healthcare setting.

Summary

This project proposed re-education as a way of increasing healthcare hygiene as a plausible solution to reducing HAIs. Re-education was a multimodal intervention aimed at improving compliance with hand-hygiene practices. This intervention was based on theoretical frameworks of behavioral change at the individual, interpersonal, and organizational level. At the individual level, re-education aimed at providing healthcare workers with the motivation and education that will help them adopt a culture that included hand-hygiene practices (Brownson, 2011). The re-education program placed greater emphasis on certain elements of hand hygiene that healthcare providers relied on to help reduce the rates of HAIs. Healthcare providers also learnt about the main causes of HAIs and be involved with patients by managing their health using hand-hygiene practices (Goldsteen, Goldsteen, & Graham, 2011).

Section 2: Review of Scholarly Evidence

Theoretical Framework

The health belief model is a psychological health behavioral change theory that helps predict health-related issues of individuals and their use of health services. This theory gained popularity in 1952 after it was developed by Irwin Rosenstock, Howard Leventhal, Godfrey Hochbaum, and Stephen Kegeles who were social psychologists in the Public Health Service. The theory was based on the premise that people's health behavior was determined by their beliefs about health problems, self-efficacy, and their perceptions about the benefits and barriers relating to healthy lifestyles (Brownson, 2011). The key tenets of this theory were that the changes in behavior of individuals were related to the messages they receive from the community. This project used this model as a basis for instituting social changes in the community with regard to health by helping people understand the significance of hand-hygiene compliance.

The health belief model was easily applied to this hand-hygiene project in various ways. First, the theory predicts social change in terms of behavioral alterations being made to instill a culture of hand hygiene among healthcare workers. The theory was useful for social change at both the interpersonal and intrapersonal level, where social change could be achieved through changing the beliefs, perceptions, and attitudes towards healthcare. Thus, this theory was an effective foundation for communicating promotional messages that resonates with the beliefs and attitudes of the people involved.

Relevance to Nursing Practice

The major goal of healthcare services has been to treat, cure, and prevent the occurrence of diseases that can threaten the lives of human beings. Therefore, nurses are expected to work hard to ensure patients received the best possible care to help them overcome their health challenges (Brownson, 2011). One main critical factor in the provision of healthcare services is the environment in which the healthcare is provided (Glanz& Bishop, 2010). Thus, it was expected generally that hospitals have a favorable environment for patients while undergoing treatment.

However, some hospital environments have become a threat to patients' health due to an increase in HAIs (Song et al., 2013). One study indicated the number of patients who had died while undergoing treatment due to HAIs had increased in recent years (HHS, 2014). The new wave of hospital-acquired infections indicated the ease for patients to acquire diseases while hospitalized, which made it difficult for patients to respond to their treatment, and unfortunately, patients often eventually died from the HAIs (HHS, 2014). While there were many factors that contributed to the increased rate of hospital-related infections and deaths of patients who had acquired an HAI while hospitalized, hand hygiene emerged as the most common factor (Song et al., 2013).

Local Background and Context

I completed this literature review using online medical databases and libraries such as, CINAHL, AVID, IHI, and Medline. The search terms that were used in identifying the most relevant articles included *hand hygiene*, *hand-hygiene compliance*, *hospital-acquired infections*, *hand-hygiene re-education*, and *hygiene practices*. Thirty-eight articles were identified, however;

only 10 articles were selected based on their dates of publication and relevance to the topic. The selected articles provided a clear background of the topic as well as an exploration of the different issues associated with hand-hygiene re-education and hospital-acquired infections.

Of the 10 articles identified, two of them were quantitative studies on hand-hygiene practices and compliance rates, five were qualitative studies, two were literature reviews, and one was an anecdotal paper. All the articles that I selected related to the state of hand-hygiene compliance in Canada and the United States and are dated between 2009 and 2014 in order to provide the most updated and recent information on hand-hygiene practices and compliance rates. The synthesis of the articles produced the following themes: hand-hygiene practices, compliance, managing hospital-acquired infections, re-education as a strategy of increasing compliance rates, and the impact of noncompliance on hand-hygiene practices.

Hand-Hygiene Practices. Thorough and proper hand hygiene significantly helps eliminate cross-contamination and reduce incidences of hospital-acquired infections (Wilson, Jacob, & Powell, 2011). However, compliance with hand hygiene has always been low, with the average compliance rate at only 39% (Wilson et al., 2011). Improving hand hygiene in healthcare settings has the potential to prevent infections and patient harm, thereby decreasing hospital stay and costs. Re-education is expected to increase compliance rates because it would help nurses and other healthcare providers' access relevant resources for improving healthcare delivery outcomes (Scheithauer et al., 2013).

Compliance. Maskerine and Loeb (2009) acknowledged that there was a strong connection between re-educating healthcare providers and increasing compliance to hand-hygiene practices. In their study, the authors found that most nurses were not aware of the

significance of hand-hygiene practices such as hand washing. The nurses were not familiar with many issues related to hand hygiene, including the role of hand hygiene in limiting the spread of hospital-acquired infections. The authors concluded that re-education of these nurses could enhance their understanding of the scope and role of hand-hygiene practices in delivering positive healthcare outcomes and therefore facilitate their compliance.

Managing Hospital-Acquired Infections. Gould and Drey (2013) & Jayaraman et al. (2014) demonstrated that re-education programs must be tailored to the needs of patients and healthcare providers. Patients deserve to be protected from any preventable diseases while undergoing treatment in hospitals. Similarly, healthcare providers need to have a supportive working environment where re-education focused on helping healthcare providers in their work, creating a healthy environment for both patients and nurses in achieving positive healthcare outcomes (Monistrol et al., 2012).

Re-Education as a Strategy of Increasing Compliance Rates. There was a strong connection between hand-hygiene re-education among healthcare providers and high compliance rates. Thus, the need for re-educating healthcare providers on hand-hygiene practice was paramount (Storr& Kilpatrick, 2013). Chavali, Menon, and Shukla (2014) found a strong connection between hand-hygiene practices and reduction in hospital-acquired infections, therefore, when healthcare providers complied with hand hygiene, the incidence of HAIs reduced. Strict adherence to hand-hygiene practices could have improved the delivery of positive healthcare outcomes by making hospitals and other healthcare facilities much safer for both patients and healthcare providers. Nevertheless, research showed that there were very low rates of compliance to hand hygiene among healthcare providers (Chavali et al., 2014). One proposed

way to increase compliance rates was through re-education of healthcare providers in order to reinvigorate their knowledge on hand hygiene so they were equipped with the latest strategies and techniques for providing quality safe care.

Impact of Noncompliance on Hand-Hygiene Practices. According to Ford, Boyer, Menachemi, and Huerta (2014), re-education of healthcare providers improved compliance rates to hand hygiene. In their study, they found that a visual cue to use hand-hygiene products and equipment increased the compliance rate and lead to a reduction to HAIs. Most healthcare providers underestimate the importance of hand hygiene because it is not properly emphasized. Consequently, many nurses do not have sufficient knowledge and resources to facilitate their compliance. Therefore, re-education helps them by underscoring the significance of hand-hygiene compliance, which improves the quality and safety of healthcare delivery (Ford et al., 2014).

Re-education of Healthcare Providers. Re-educating health providers also went a long way in improving the cost of healthcare management. Healthcare costs reportedly shot up to 16 billion when hand hygiene was not used, and most of the costs involved in treating patients, who stay longer in the hospital, were the result of contracting an infection. Compliance to hand hygiene was vital for measuring the rates of success of the various healthcare interventions that patients received (Mathai, Allegranzi, Kilpatrick, &Pittet, 2010). Re-education of healthcare providers helps bring attention to these statistics and the appropriate mechanisms of resolving any discrepancies.

For instance, nurses will be taught how to prevent further diseases through simple acts, such as, hand washing or gelling. This will reduced the costs involved in treatment, as no further

costs were incurred for treating hospital-acquired infections (Randle, Firth, & Vaughan, 2013). Re-education equipped the nurse managers with adequate skills in financial management to control the amount of money being spent in the health sector treating preventable diseases like hospital-acquired infections.

Role of DNP Student

Nurses form the largest division of the health profession, hence the need for the nursing practice. The doctor of nursing practice (DNP) degree prepares learners to address critical expertise skills that are needed to conduct practice, measure groups of communities and patients outcome, and enhance the system of care, all derived from evidence-based care (In Rundio & Wilson, 2015). The practice is established through the focus on competences as well as focusing on the academic research, though not on a very detailed level. The students on this course are exposed to a variety of projects that are related to the nursing practice.

The DNP student is entitled to conduct projects. A nursing project involves searching for an improved way of doing nursing practice (EBP) by finding solutions to some of the sector's challenges (In Chism, 2016). Therefore, the DNP student has a variety of areas to choose from when dealing with the research project. These range from leadership to administrative roles. The student may base the projects on informatics, education, public policy, administration or public health. With all these areas to pick from, DNP students can choose to do their projects in their areas of interest.

Increasing the number of trained nurses is essential because of the increasing collaboration of professionals as well as the increase of team-based care (In Caputi, & National League for Nursing, 2014). Due to this increase, it is important for the students of DNP to

conduct various clinical projects on different fields. On the other hand, it is expedient for learners of various degrees, including DNP to carry out clinical research on different areas so as to improve the sector.

Summary

The systematic review of the nursing and healthcare articles exposed an abundance of studies related to hand hygiene and healthcare compliance. The literature review focused on the following themes: hand-hygiene practices, compliance, managing hospital-acquired infections, re-education as a strategy of increasing compliance rates, and the impact of noncompliance on hand-hygiene practices. The findings in this literature provided information for reduction in HAIs, re-education of healthcare providers, and maximization of resources for greater healthcare outcomes. The health belief model was reviewed as a framework for the project.

Section 3: Collection and Analysis of Evidence

Introduction

This project compared hospital infection rates for two hospital units before and after implementation of the hand-hygiene program. Following approval from Walden University Institutional Review Board (IRB) 08-22-16-04053332, I reviewed the HAI rates of all hospital units for 3 months (February 2016 to April 2016) and identified two units with the highest HAI rates (Unit A and Unit B). Following identification of the units, a re-education program (Appendix A) was given on each of the units and the following 3 months of HAIs rates were recorded. The re-education program was based on best practices and demonstrated hand-hygiene practices to help improve compliance in order to reduce HAIs. All nurses on the two units were invited to attend the programs. The program was held over the course of two weeks at various times to ensure all providers had the opportunity to attend.

Practice-Focused Questions

- Will re-educating healthcare practitioners regarding the importance and significance of hand hygiene practices reduce HAIs?
- Will providing recommendations regarding the sustainability of the re-education initiatives following the completion of the project help maintain infection free health organization?

Population and Sampling

The sample for the project was practicing nurses working on the identified units. The inclusion criteria were all nurses working on the unit. The exclusion criteria were nurses not

working on the two identified units. The nurses were invited to attend a 960-minute educational intervention. The objective of the intervention was to re-educate nurses regarding the importance of hand hygiene practices in reducing HAIs. The educational intervention focused on best practices of hand-hygiene as well as how to prevent healthcare-acquired infections. Flyers with the dates and times of the intervention were placed in the nurses' mailboxes and in the breakroom. The intervention was delivered to the nurses via PowerPoint presentation followed by return demonstrations. No information was collected from the participants who attend the educational intervention.

Data Collection

I looked at infection rates 3 months before the commencement of the program and 3 months after the completion of the program. Data collection from this study was obtained from the medical record department utilizing the electronic data system. Infection rates between the two periods were compared to see if there is a difference in the rates.

Data Analysis

The mean rates of HAIs were estimated using descriptive statistics. A Wilcoxin signed-rank test was used to estimate if there was a difference in rates. Recommendations were made regarding the value of re-education and the sustainability of the program.

Project Evaluation Plan

HAIs are undoubtedly a serious public health concern not only in the United States but across the globe (The Joint Commission, 2009). There are several methods that are used to evaluate a project (summative, formative, impact and outcome evaluation) according to Hodges and Vidato (2011). This project focused on the pre- and post-re-educational data result to

determine if an improvement was accomplished. In an event where the comparable result of the program indicated a favorable outcome, The project director will offer recommendations to the sustainability of the program over time. An impact program evaluation determined whether the positive result was attributive to the program (Kettner et al., 2013). Hand washing among health workers stood out as one of the most effective ways of eliminating HAIs (Yokoe et al., 2008).

Summary

Hand washing is a very basic procedure, yet it is vital in the prevention of HAIs spread by healthcare personnel. This project was designed to establish the effects of poor hand hygiene in the propagation of HAIs. Statistics by the CDC (2011) indicated that almost half of all patients admitted in hospitals suffered from HAI-related complications. CDC documented and established through research that these infections resulted in a significant number of deaths (approximately 75,000 annually). Death was the ultimate effect of the infections.

Section 4: Findings, Discussion, and Implications

Introduction

Following effective hand hygiene practices is an important strategy to reduce the transmissions of pathogens and subsequently, the incidence of HAIs in most health care organizations. The literature demonstrated that, while most healthcare workers know the importance of hand hygiene, it is difficult to ascertain adherence or non-adherence to hand-hygiene. Preventing HAIs in healthcare organizations is paramount to patient and organizational outcomes. The purpose of this quality improvement project was to determine if re-education of hand hygiene practices reduces HAI rates among patients in a hospital setting and to provide recommendations regarding the sustainability of the re-education initiative following the completion of the project.

Summary of Findings

I selected a local healthcare organization with an average daily census of 1800 patients for this project. I reviewed the HAI rates of all hospital units for 3 months (February 2016 to April 2016) and identified two units with the highest HAI rates (Units A and B). Following identification of the units, a re-education on proper hand hygiene was implemented on each of the units and the following 3 months of HAIs rates were recorded by me. The re-education program was based on best practices and demonstrated hand-hygiene practices to help improve compliance in order to reduce HAIs. The pre-intervention mean rate of Unit A was 0.146% (Table1) and the post-mean rate was 0.00% (Table2). A Wilcoxon signed-rank test showed that the educational intervention did not elicit a statistically significant change in infection rates ($z = -1.63$, $p > 0.05$) (Table3). Similarly, the pre-intervention mean rate of Unit B was 0.12% (Table1)

and the post-mean rate was 0.00% (Table 1) A Wilcoxon signed-rank test showed that the educational intervention did not elicit a statistically significant change in infection rates (z = 1.732, $p > 0.05$) (Table C).

Discussion of Findings

Ebbing, Keith, and Preeti (2010) concluded that hand hygiene is the most efficient measure that reduces microbial pathogen cross-transmission and other healthcare-associated infections in healthcare organizations. The health organization observed that healthcare providers' hands are the most significant sources for transmitting of the healthcare-associated pathogens from one patient to other in the healthcare environment (CDC, 2014). Hand hygiene practices play a major role in reducing healthcare-associated infections rates and developing the healthy environment in healthcare organizations. While the findings of this project demonstrated that re-educating healthcare providers on hand hygiene practices did not show a statistically significant difference, I concluded that the re-education intervention improved the nurses' awareness of hand hygiene as demonstrated by the decrease in rates across the units.

Recommendations

Based on the findings of this project, I offer the following recommendations. First, the project demonstrated the need for frequent education programs. Specifically, the hand hygiene education practices in this organization were found to assist in decreasing the rates of HAIs across two units. It is theorized that the educational intervention assisted in creating awareness among the nurses and other medical staff, thus, may have been the impetus for the nurses to engage in effective hand hygiene. Statistically, there was no difference in rates before

intervention; however, the rates on both of the units dropped to 0%. This is clinically significant and shows that effective hand hygiene practices reduce infection (Ebbing et, 2010).

Secondly, I recommend that hospital management make strategies for healthcare educating programs periodically to protect patients from infections. Cross-contamination is the most common reason of increasing infections in a hospital. The awareness programs for hand hygiene practices on a continuous basis will be a better preventive tool to deal with the issues such as cross-contamination and other hygiene related infections. Also, hospitals will save costs by not spending on the treatment of the infections acquired by the hospital.

Thirdly, the organizations should develop the supportive working environment where re-education is commonly focused on helping healthcare providers in their work and establishing the healthy environment in the healthcare organizations for both patients and nurses. There is a significant need of hand-hygiene re-education for improving awareness among nurses and other workers. It plays an important role in promoting the healthy and safe working environment and developing positive outcomes (Storr & Kilpatrick, 2013).

Lastly, the organizations should develop a supportive working environment where re-education commonly focuses on helping healthcare providers in their work to establish the healthy environment for both patients and families. Re-educating the healthcare providers is the most effective way of reducing the hospital-acquired infections in the organization. Re-education delivers effective information to nurses and other healthcare providers' for accessing relevant resources to improve healthcare delivery outcomes and enhance quality care in the hospitals (Scheithauer, et al., 2013).

Project Strengths and Limitations

Strengths. The literature review benefited from extensive searches of multiple databases that focused on the concept of the project. The method used supported the project question, goals, objectives and the implementation and comprehensive description of the interventions was an essential part of the project. The health belief theory was based on the premise that people's health behavior was determined by their beliefs about health problems, self-efficacy, and their perceptions about the benefits and barriers relating to healthy lifestyles (Brownson, 2011).

Additionally, data gathered from the hospital was sufficient, reliable, relevant, up-to-date and assisted in drawing effective conclusions about the project's results. This is because I planned to use both pre- and post-date about the incidence of HAIs, and the only identified source for this information was from the infection control and the quality and risk management departments of the hospital.

Limitations. I identified the following limitations during my analysis of the study, which included a small sample size, a limited number of healthcare providers, and missed opportunities to include other departments that aid in the collaborative measure to care for the patients. Additionally, only two units participated in this re-education project, thus, the pre and post data outcome of the project are not generalizable for a larger setting.

Section 5: Dissemination and Analysis of Self

Dissemination

Circulation of project findings is a critical part of the project process. To encourage, support and improve social change, the dissemination of the project findings will occur through a variety of methods, such as posters, oral presentations, flyers and manuscripts to educate and train health care professionals, patients and families.

Scholar

Through this project on hand hygiene, I have developed positive changes among healthcare workers and the healthcare organization as an entirety regarding proper hand hygiene. I have learned that there is a need for doctors, nurses, and other healthcare providers to do more by ensuring that they establish hand hygiene guidelines and comply with them to prevent and stop hospitalized patients from getting infections. It is important to stress that some health experts ignore basic and inexpensive hygiene procedures like hand washing, which threatens the safety of patients. HAIs are an expensive and avoidable problem, but inadequate hand hygiene practices hinder recovery of patients and make existing health conditions worse, which reduces health quality. The most efficient method to prevent infections is regular and proper hand hygiene practices. With adequate willpower, it is possible for medical centers to enforce proper hand hygiene and safeguard their patients from unnecessary HAIs.

Practitioner

I have experienced positive changes among healthcare workers and the healthcare organization as an entirety regarding proper hand hygiene. I have discovered that there is an essential need to understand hand hygiene practices among healthcare workers in planning healthcare interventions. Whereas a majority of people know when to practice proper hand hygiene in their personal lives, it is expected that health care workers who encounter patients perform proper hand hygiene numerous times during the entire meeting. Such indications for proper hand hygiene ought to be described in professional policies and guidelines in hospitals and enforced regularly. In a single meeting with a patient, there are many times when proper hand hygiene is performed. There is need for continuing education to inform and remind healthcare workers of hand hygiene indications; it should be clear when healthcare providers perform proper hand hygiene with regards to patient contact. However, it is vital to consider the way that healthcare provider practices proper hand hygiene and if the person uses an adequate product. For instance, a quick rinse under the sink or a brief rub between palms with an alcohol-based hand rub cannot be thorough enough to eradicate possible germs. Thus, as a practitioner, professional policies ought to explain the proper procedure that should be followed by healthcare providers and when to use water and soap rather than hand rub. It is vital as a practitioner to relate hand hygiene action with hand hygiene indications explained in the professional policies.

Project Developer

I made positive changes in the practices of healthcare workers and the health organization overall with this hand hygiene project. The majority of healthcare employees struggle to follow the appropriate process in hand hygiene to reduce HAIs, thereby exposing patients in health environments to infections. The knowledge and skills I have gained enable me to develop a plan, cost-analysis, and timeline for any project. According to Zaccagnini and White (2011), a project is a "sequence of tasks with a beginning and an end that is bounded by time and resources, and that produces a unique product or service" (p. 404). Therefore, the knowledge I gained developing this proposal will serve as a guide to creating future proposals that would persuade the organization stakeholders and staff that a project was needed to improve the organization' mission and improve outcomes. As a project developer I learned that organizational features, for instance, reminders, the involvement of leadership, employee workload along with the convenient presence of products affect the performance of hand hygiene practices. Thus, healthcare institutions have to integrate proper hand hygiene into the routine mechanism and put in place strong support and monitoring systems as well as enhance the right behavior of staff.

Summary

Ample literature findings suggest that appropriate hand-hygiene practice can reduce hospital-acquired infections by over 50%, yet compliance remains low. This project indicated that re-education of the nurses on hand-hygiene practices helped to enhance compliance and subsequently reduce HAIs. However, there is an inconsistent pattern showing an improvement and subsequent decline of the hand-hygiene compliance. This indicated that there is need to package a robust intervention strategy that ensures a consistent improvement of hand-hygiene

practices by health care providers. Some of the suggestion was to have policy framework at the hospital level, the relevant authorities to supply requisite resources to ensure there is consistency in hand-hygiene practice.

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Appendix A: Outline of Educational Program

Education Program

The long-term goal of this project is to decrease hospital-acquired infections and increase compliance by staff over time.

Essentials to HH: Washing, sanitizing and skin care.

What staff need to know

Impact: It is important to inform staff on the core lessons of hand hygiene;

-infection control and prevention

-patient and staff safety

Technique: The proper hand hygiene technique should be taught and demonstrated to staff indicating the processes, wet hands with water, apply soap and rub hands together for a full 15 minutes, rinse hands with water, dry and apply lotion. A return demonstration is expected from staff.

Highlight the five moments that require hand hygiene practices in healthcare setting as described by the World Health Organization (WHO), before touching patient, before clean and aseptic procedure, after bodily contact, after touching patient and after touching patient surrounding.

Get input from front-line nurses on the appropriate location for equipment and products insulation for easy accessibility.

Awareness

Continuing Education: Hand hygiene training will not end in the education test but should be incorporated in the annual competencies mandatory to staff. Posters will be made visible in strategic places for constant awareness.

Program education key: Although hand hygiene is simple, yet it is very difficult to inculcate in health care staff behavior. For a culture of effective hand hygiene compliance, leaders should consistently encourage, educate and enforce hand hygiene practices and maintain compliance over time. Reminding nurses of the amount of labor, time, and financial resources saved by preventing and moderating infections in a healthcare setting is imperative (WHO, 2010).

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Appendix B

Table1: Pre-Intervention Rates

Unit A			
	Cases	**# of Patients**	**% by Rates**
February 2016	2	868	0.2%
March 2016	1	868	0.12%
April 2016	1	868	0.12%
Mean Rate			**0.146% (0.04)**

Unit B			
	Cases	**# of Patients**	**% by Rates**
February 2016	1	868	0.12%
March 2016	1	868	0.12%
April 2016	1	868	0.12%
Mean Rate			**0.12% (0.0)**

Appendix C

Table 2: Post-Intervention Rates

Unit A			
	Cases	**# of Patients**	**% by Rates**
May 2016	0	868	0%
June 2016	0	840	0%
July 2016	0	868	0%
Mean Rate			**0.0% (0.0)**

Unit B			
	Cases	**# of Patients**	**% by Rates**
May 2016	0	868	0%
June 2016	0	840	0%
July 2016	0	868	0%
Mean Rate			**0.0% (0.0)**

Appendix D

Table 3. Wilcoxin-signed rank test

Unit	Pre-Intervention Rates Mean (SD)	Post-Intervention Rates Mean (SD)	Z, p
Unit A	0.146%	0.00%	-1.633, p = 0.102
Unit B	0.120%	0.00%	-1.732, p = 0.083