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Exploring the Influences of Culture on Hand-Hygiene Beliefs of Foreign-Born Healthcare Workers

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Abstract

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MSN/MHA, Phoenix University, 2012

BSN, Adelphi University, 2009

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The hand-hygiene practices of nonadherent health care workers (HCWs) are a major threat to patient safety and thus continue to be a concern for healthcare leaders and administrators worldwide. Healthcare-associated infections (HAIs), which are linked to HCWs' unclean hands, are prevalent throughout global healthcare settings. Global migration in the nursing profession and intercontinental travel among direct patient care providers make it challenging for healthcare leaders to sustain HCWs' adherence to hand-hygiene practices. The purpose of this grounded study was to explore the influence of the cultural beliefs about hand-hygiene practices of foreign-born HCWs. The theory of planned behavior was used to frame and support the study. Survey Monkey was used to recruit and distribute open-ended questions to 22 foreign-born HCWs in the United States over the age of 18. MAXQDA software data helped analyze, organize, and code the data and identify themes. The "Cultural Influential Hand-hygiene Belief Actional Model for HCWs," which was derived from the emergent themes, may help to effect positive social change by providing administrators with valuable information about how culture influences HCWs' hand-hygiene practices. Contributing salient factors of this model that highlight the foreign-born HCWs' cultural attitudes toward hand-hygiene are positive outlook, native cultural religious beliefs pertaining to hand-hygiene, cultural personal experiences, foreign-born hand-hygiene culture, cultural guidance, barriers, and facilitators. Further, this study adds importance to social change because the findings of this study provide needed information of how foreign-born HCWs' culture and beliefs influence their intent to perform hand-hygiene practices, which can be used to help healthcare administrators foster and improve hand-hygiene-adherent practices among HCWs.

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Dedication

I dedicate this study to the loving memory of my mother Alverta O. Branch for always inspiring me and motivating me to be a compassionate lifelong learner and for always being proud of me throughout my quest to do better. My mother raised me on the premise that respect of others and education should always be at the forefront. I love you mom. Thank you, for instilling in me the importance of celebrating each accomplished short-term or long-term goal. I would also like to dedicate this study to my husband Jewell Davis for loving me, being my rock and motivating me to never give up. To my daughter Shakira Cinalli for being my pillar and my strength. To my son Gilbert A.N. Robinson for words of encouragement and hope. I love you both. To my sister Barbara Weathers and Brother-in-Law John Weathers for your support and love. To Jean Fleischman, MD for always believing in me and encouraging me to do more. To Jean Poulard, MD, for inspiring me to want to do more. To my friends Van Parsaud, Alohan Abiodun, Marlene Dackens, Mei Kong, and Ruth Penn your support and love throughout my dissertation journey was priceless.

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Chapter 1: Introduction

The purpose of this qualitative research was to understand the influence of culture on the hand hygiene beliefs of foreign-born healthcare workers (HCWs). Their search for safety and for healthcare jobs that offer better pay has increased the rate of globalization and intercontinental travel. Globalization has both advantages and disadvantages. For instance, it gives healthcare leaders an opportunity to rapidly fill jobs in the healthcare industry that would otherwise remain vacant for long periods of time. Therefore, healthcare leaders may find it challenging to develop training programs that foreign-born workers can easily adopt. Furthermore, Chen, Auerbach, Muench, Curry, and Bradley (2013) found that immigrants who migrate to the U.S. may find it difficult to navigate between their own culture and the culture of their adopted country.

Ergin and Belgin (2017) noted that nurses comprise most of the healthcare services workforce and analyzed both the positive and negative effects of globalization. They found that two different thought processes are associated. For instance, the first thought process is that globalization affects culture by creating a global and growing world culture with several similarities Moreover, the second thought process is a growth in the emergence of a more diverse culture has been observed because of the interaction between several cultures and populations, such as nurses seeking employment and safety in richer countries.

However, Ramira, Peraza-Smith, McLeod, and Clark (2018) found that though, medicine, and nursing opportunities, such as jobs are provided through globalization cultural challenges: exist within the migrating HCW population. Thus,

healthcare leaders need to consider the difficulties that HCWs encounter in adapting to the culture of their adopted country. Healthcare leaders also need to consider the challenge of preventing health care-associated infections (HAIs) linked to HCWs' unclean hands. According to Hong et al. (2015), their unclean hands minimize their ability to deliver an optimal level of care to patients.

Challenges with HCWs adjusting to their new organizational hand-hygiene protocols may exist, despite healthcare leaders continued efforts to develop educational programs and implement policies to minimize HCWs' nonadherent hand-hygiene practices. While globalization can help migrating nurses secure better pay and living conditions, their interactions with other cultures may cause an environment of concern for healthcare leaders (Ergin & Akin, 2017). Therefore, healthcare leaders continue to search for more tangible ways to fortify behaviors within healthcare systems that promote hand-hygiene adherence among HCWs.

Chang et al. (2016) noted that hand-hygiene remains a challenge for healthcare leaders given that 100,000 deaths occur annually and over 2 million patients contract a preventable HAI during their hospital stay. On the other hand, Yang et al. (2017) suggested that cultural background, health literacy, and socioeconomic status should be taken into consideration when developing polices and guidelines to improve HCWs' hand-hygiene behaviors. Likewise, the World Health Organization (WHO) depicts that HCW's adherent hand-hygiene practices can vary from country to country, local setting, culture, and habit (Baccolini et al., 2019). Nonetheless, many healthcare leaders are focused on hand-hygiene variations and inconsistencies in hand-hygiene protocols that are designed to help improve HCWs' adherent hand-

hygiene behaviors. Hence, the WHO developed hand hygiene guidelines that could be adapted to in any setting. However, Santosaningsih (2017) suggested that healthcare leaders may need to adapt WHO guidelines to their own setting, culture, and resources. Furthermore, HCWs migrating to the United States may find difficulty in adapting to the values of their adopted country Thus, posing as a patient safety risk for administrators already challenged with subpar hand-hygiene practices (Pfafflin et al, 2017).

Healthcare administrators who seek to improve HCW's hand hygiene practices may benefit from gaining greater insight into, how HCW's cultural values and beliefs are ingrained into their everyday cultural environment. For instance, Lee and Brann (2015) pointed out that various cultures pass on their values, beliefs, attitudes, and practices from generation to generation. But Diwan et al. (2016) noted that hand-hygiene behaviors depend on country and setting. Nonetheless, few studies exist that depict how social influences affect hand-hygiene behaviors (Piras, Lauderdale, & Minnick, 2017). Dahl, Dahlen, Larsen, and Lohne (2017) found that although nurses who migrate to other countries may follow the practices and education of the country they migrated to, they continue to value their own country's cultural beliefs. Since more than 1.3 million nurses are working in healthcare settings and providing 92% of patient care, improving nurses' hand-hygiene practices can help to reduce HAIs (Piras, Minnick, Lauderdale, Dietrich, & Vogus, 2018)

In this chapter I identify the background of this study and the gaps in the literature and in practice. In this chapter I also identify the problem statement, purpose of the study, and research questions that are described in association with the

identified gaps. The theoretical framework and nature of the study based on the problem statement, purpose of the study, and research questions are included in this chapter. The definitions, assumptions, limitations, scope, and delimitations are also included in this chapter. This study can promote positive social change by giving healthcare administrators insights into how foreign-born HCWs' cultural beliefs can influence their intent to perform hand-hygiene. By gaining greater insights into how cultural beliefs influence hand-hygiene practices among HCWs' may help to improve HCW's low hand hygiene practices and reduce the risk of patients acquiring HAIs.

Background

Low hand-hygiene adherence and inadequate hand washing facilities in developing countries increase the risk of patients developing a HAI that is associated with HCWs' subpar hand-hygiene practices (Pfafflin et al., 2017). The nursing shortage in the United States and other countries has reinforced the need for global healthcare leaders to recruit foreign-born nurses, despite the philosophical views of the international educated nurse (IEN) and the differences in ingrained social beliefs compared to the nurse educated in western society (Sherwood & Shaffer, 2014). Moreover, IENs' philosophical views are already incorporated into their nursing practices and social beliefs prior to migrating and integrating into the U.S. workforce (Sherwood & Shaffer, 2014). Therefore, increasing the risk and prevalence of ethical quality and safety issues that can occur because of nurses working in a culturally diverse environment that is different from their own (Sherwood & Shaffer, 2014).

Tam, Edge, and Hoffman (2016) suggested that the global shortage of 7.2 million workers including physicians, nurses, midwives, and other healthcare

professionals increased the risk of healthcare systems being unable to provide adequate care and treatment in emergent and life-threatening situations. Foreign-born nurses are working in the United States to help fill the nursing shortage despite the cultural barriers, the difficulty in adjusting to American culture, and other culture-related challenges. Healthcare administrators who understand that foreign-born nurses may have difficulty in adjusting to the cultural beliefs of the country that they migrated to; may have a greater opportunity to enhance the experiences of the organizations' foreign-born nurses.

In a phenomenological study, Jose (2011) found by using Giorgi's principles of data analysis and narratives that were extracted from 29 IENs that the participants reported they had shared experiences of culture shock. The 29 IENs who participated in the study were from India, the Philippines, and Nigeria. Participants also reported a shared experience of a need to rise above challenges, a need to perform better. and a feeling of loneliness when interacting with cultures unlike their own

Kawi and Xu (2009) conducted a study to better understand the barriers to adjustment of foreign-born nurses in the healthcare environment. The study reported that the IENs' who participated in the study believed that differences in cultural lifestyles, support, language, and communication, served as barriers to adjustment within Australia, Canada, Iceland, the United Kingdom, and the United States (Kawi & Xu, 2009). They also believed that differences in nursing practice, inadequate education, and unequal opportunities. served as barriers. Although the migration of IEN's into the United States. and other countries is helpful in filling the void,

migration generates challenges to the HCWs that are associated with adapting to the culture and values of the country that they migrated to.

Although globalization can help strengthen the healthcare workforce, cultural challenges are prevalent within the migrating workforce. A grounded theory study was conducted in Ontario, Canada, to determine the experiences of IENs (Tregunno, Peters, Campbell, & Gordon, 2009). Novice nurses who migrated to Ontario between 2003 and 2005 perceived their nursing experiences in Canada as different from their place of origin. The IENs also revealed that they were not familiar with different cultures nor with culturally competent care. Moreover, no research was found on how foreign-born HCWs' cultural beliefs influence their hand-hygiene practices. However, research has indicated that IENs encounter challenges with adjusting to the country that they migrated to. These studies confirm the need to gain better insights of how understanding the role that foreign-born HCWs' cultural influences play in their intent to perform or not perform basic hand-hygiene practices.

This study's implication for positive social change are that HCWs' hand-hygiene practices can be improved by gaining better insight into the influences of cultural beliefs about foreign-born HCWs' intent to perform hand-hygiene practices in a healthcare setting. Furthermore, implications for positive social change are by improving HCW's hand hygiene practices, potential HAIs may be minimized, and preventable deaths stemming from HCW's unclean hands may be reduced.

Literature indicates that healthcare leaders focus on hand-hygiene training and development programs, barriers associated with hand-hygiene adherence, and the allocation of hand-hygiene resources. But no research was found on hand-hygiene

training programs for foreign-born HCWs, including the influence of their cultural beliefs and their intent to adhere to hand-hygiene practices. Furthermore, I was unable to find in the literature a focus on the influences of cultural beliefs on the hand-hygiene practices of foreign-born HCWs despite quantitative research indicating that there is a need to improve HCWs' nonadherent hand-hygiene beliefs.

White et al. (2015) guided by the WHO five moments of hand-hygiene explored the experiences of 27 registered nurses and their hand-hygiene beliefs associated with performing hand-hygiene. The study indicated that nurses working in five wards across three Queensland, Australia hospital-based settings had perceived their colleagues as being the essential supportive factor in their performance of hand-hygiene (White et al., 2015). In addition, White et al. reported that the availability of sinks and hand-hygiene products was essential to their controlled beliefs.

White et al. (2015) implied that the belief-based framework of the TPB was used in the study to examine attitudinal, normative, and control beliefs underpinning nurse's decision to perform hand-hygiene according to the most recent national guidelines. White et al. identified various themes associated with the advantages and disadvantages of hand-hygiene performance. For instance, the protection of patient and self was perceived as an advantage of performing hand-hygiene whereas constraints of time, hand damage, and unsupportive patients were perceived by participants in the study as disadvantages of performing hand-hygiene (White et al., 2015).

White et al. (2015) also revealed that doctors perceived unsupportive patients, provision of training and reminders, emergency situations, time constraints,

accessibility of sinks and products, and skin irritation as barriers of adequately performing hand-hygiene. On the other hand, Piras, Lauderdale, and Minnick (2017) reported in a study aimed at understanding critical care nurses' social influences using TPB depicting attitudes, normative referent, and control beliefs that critical care nurses consider their nurse leaders and colleagues as hand-hygiene referents. The study also reported that critical care nurses believe that hand-hygiene is a protective behavior that requires time. They further opined that hand-hygiene equipment and products, such as sinks, and hand sanitizers should be easily accessible. Using TPB as a framework can help healthcare leaders to better understand the underlying causes of HCWs' nonadherent handwashing behaviors.

Longtin, Yax, Allegranzi, Schneider, and Pittet (2011) noted that Muslim HCWs can use alcohol-based hand sanitizers, while on the other hand, Ahmed, Memish, Allegranzi, and Pittet (2006) suggested that the Muslim population might view female Muslim HCWs who use an alcohol rub as going against their religious beliefs. Moreover, Edwards, Monk-Turner, Poorman, and Rushing (2002) reported that 184 subjects were observed washing their hands in public restrooms in a regional college; the study found that 90% of the 81 females observed washed their hands. In comparison, Ahmed et al. (2006) reported that only 70% of the 86 males observed performed hand-hygiene practices. Ahmed et al. found that race was not a significant factor in the study; however, they suggested that culture may have an instrumental role in shaping hand-hygiene behaviors and that previous hand-hygiene studies have not focused on cultural behaviors, race, or ethnicity. Therefore, hand-hygiene studies

that focus on handwashing behaviors and culture may help improve and maintain HCWs' hand-hygiene-adherent practices (Edwards et al., 2002).

Despite several studies focusing on improving hand-hygiene performance among HCWs, hand-hygiene rates among HCWs are alarmingly low. For instance, Mete and Akin (2018) observed that although the rate of handwashing increased after hand-hygiene training, handwashing compliance remained low among nurses who participated in the study. Another study reported that despite global healthcare leaders in developing and underdeveloped countries implementing and continuing to promote programs aimed at improving HCWs' hand-hygiene practices; such as the five moments of hand-hygiene, maintaining adequate hand-hygiene rates among HCWs is challenging (Pfafflin et al., 2017). Furthermore, though literature cites hand-hygiene as one of the most effective and essential measures to reduce HAIs, maintaining HCWs' hand-hygiene practices are a challenge and concerning among healthcare leaders (ODonoghue, Suk-Hing, Suen, & Boost, 2016). These studies confirm that in addition to the traditional educational and knowledge-based hand-hygiene programs; integrating religion, gender, and culture may help to increase HCWs' hand-hygiene adherence rates.

Waltman, Schenk, Martin, and Walker (2011) suggested that programs that link hand-hygiene barriers with CDC's hand-hygiene guidelines, are more likely to improve adherent hand-hygiene rates among HCWs. For instance, CDC (2019a) noted that CDC's hand-hygiene guideline in healthcare settings consists of a review of scientific data pertaining to hand antisepsis and hand-hygiene in the healthcare setting. Additionally, Hong et al. (2015) found that an estimated 98,000 Americans

are at risk for acquiring a HAI during their hospital stay. These alarming statistics help to highlight the importance of healthcare administrators developing and implementing strategies that may help improve and sustain HCWs' adherent hand-hygiene practices. Hence, hand-hygiene programs that take into consideration HCWs' cultural influences may help to reduce hand-hygiene barriers.

Research has shown that culture can play a significant role in shaping hand-hygiene practices, nonetheless quantitative studies have focused on HCWs' knowledge-based aspects of hand-hygiene practices and not on cultural behaviors, race, or ethnicity. For instance, Edwards et al., (2002) noted that hand-hygiene studies that include an investigation of the cultural aspects of hand-hygiene practices are needed to help improve local and global hand-hygiene rates. Diwan et al. (2016) however, found that handwashing adherence among HCWs remains subpar although healthcare leaders, infection preventionists (IP), and healthcare administrators continue to develop and implement hand-hygiene programs.

While Diwan et al. reported that only 50% of HCWs worldwide wash their hands, Kaur and Kaur (2015) argued that healthcare leaders are challenged with improving HCWs' hand-hygiene rates above 40%. These two studies confirm that despite healthcare leaders and infection preventionists (IP) developing hand-hygiene programs and distribution of hand-hygiene resources among HCWs, nonadherent hand-hygiene practices continue to show little improvement within healthcare systems. Despite, an overwhelming amount of evidence that HAIs are associated with HCWs' unclean hands, programs involving cultural influences related to HCWs'

hand-hygiene beliefs are not generally integrated into HCWs' hand-hygiene programs.

Yet, although an overwhelming amount of evidence indicates that maintaining hand-hygiene practices can save lives, reduce HAIs, and improve patient safety, there is a gap in the research exploration of how foreign-born HCWs' cultural beliefs influence their hand-hygiene behaviors (WHO, 2016). Furthermore, understanding the role that cultural influences play in foreign-born HCWs' intent to perform hand-hygiene practices can help to reduce the existing data of 100,000 annual patient deaths associated with HCWs' unclean hands (Chang et al., 2016).

Problem Statement

Nonadherent HCWs' hand-hygiene practices worldwide are at an alarmingly low rate. It is estimated that globally, hundreds of millions of patients annually will contract a HAI (Abdella et al., 2014). The cost associated with HAIs to hospitals in the United States. ranges from $35.7– 45 billion, while the annual impact on Europe is estimated at $6 billion (Storr et al., 2017). Furthermore, 10% of the patients admitted to modern hospitals contract one or more HAI during their period of stay (Freeman et al., 2016). These studies confirm the need to improve HCWs' nonadherent hand-hygiene practices. Furthermore, by gaining better insights into the cultural influences associated with hand-hygiene practices potential HAIs and its associated cost may be minimized.

Hand-hygiene challenges among healthcare leaders continue to exist despite, healthcare leaders' integration of hand-hygiene strategies and interventions into their day-to-day operations. Research suggests that HCWs' adherent hand-hygiene

practices is essential to reducing HAIs (McInnes, Phillips, Middleton, & Gould, 2014). These strategies and interventions focused on improving HCWs' hand-hygiene practices consisted of installation of additional sinks and hand sanitizers, staff education and training, prompts and reminders, monitoring and providing staff feedback, and organizational change (McInnes, Phillips, Middleton, & Gould, 2014). On the other hand, Kaur and Kaur (2015) noted that HCWs who frequently perform basic hand-hygiene practices can help to reduce the risk and spread of cross-contamination of harmful pathogens. Likewise, Wiles, Roberts, and Schmidt (2015) noted that if HCWs do not follow appropriate hand-hygiene practices and recommendations, patients' exposure to organisms during HCWs' everyday encounters with patients can result in the transmission of microorganisms from patient to patient or HCW to HCW. Moreover, although literature shows that hand-hygiene practices can help to save lives and reduce the spread of harmful pathogens from patient to patient and HCW to HCW, increasing global hand-hygiene rates is daunting.

Abdella et al. (2014) noted that HAIs are a major contributing factor to mortality and morbidity. In addition to research indicating that HAIs can increase patient healthcare costs, prolong patient's length of hospital stay, research has also indicated that HAIs are a major contributing factor to unnecessary ordering of lab tests (Abdella et al., 2014). Ten percent of patients admitted to modern hospitals will contract one or more HAIs during their period of stay (Freeman et al., 2016). Thus, O'Donoghue et al. (2016) argued that despite research indicating that hand-hygiene is

the most effective and tested measure for reducing HAIs and improving hand-hygiene behaviors, HCWs' hand-hygiene practices are subpar.

A study aimed at better understanding providers and hygiene practices in an Ethiopian hospital was conducted using WHO's five moments of hand-hygiene checklist and a questionnaire (Abdella et al., 2014). The study indicated that overall, low hand-hygiene rates were associated with a lack of hand-hygiene training and lack of knowledge of hand sanitizers. Thus, the study indicated that the knowledge of hand-hygiene training and use of hand sanitizers are necessary to help increase hand-hygiene performance. However, despite efforts by healthcare organizations to reduce HAIs by integrating the five moments of hand-hygiene WHO guide into their hand-hygiene programs, recent worldwide events such as the Middle East respiratory Coronavirus and Ebola, indicate a need for IP to develop more resilient infection control and prevention programs (Storr et al., 2017). These studies confirm that developing hand-hygiene programs that have a single modality approach, such as removing hand-hygiene barriers, may not be enough to increase hand-hygiene rates among HCWs.

HCWs though, are generally educated and provided with information pertaining to HAIs and appropriate hand-hygiene practices, little research has explored the understanding of how foreign-born HCWs' culture and beliefs influence their hand-hygiene practices. A gap has been identified through a literature review in the understanding of how foreign-born HCWs' cultural beliefs influence their hand-hygiene practices. Al-Tawfiq and Pittet (2013) noted that though hand-hygiene among HCWs has shown improvement through system changes, understanding

behavioral considerations is essential to motivating HCWs' hand-hygiene-adherent practices. This study helped to initiate a discussion on how the influences of foreign-born healthcare workers' cultural beliefs helped to predict the intent to perform adherent hand-hygiene practices.

Grounded theory was used to help explore the influences of cultural beliefs pertaining to foreign-born HCWs' hand-hygiene-adherent practices through emerging themes and patterns derived from an online survey. Hence, despite healthcare leaders' efforts to improve hand-hygiene practices and reduce HAIs, CDC (2016) highlighted that additional efforts are required to improve HCWs' hand-hygiene rates. Similarly, Al-Tawfiq and Pittet (2013) noted that although hand-hygiene among HCWs can be improved through system changes, understanding behavioral considerations is essential to motivating HCWs' adherent hand-hygiene practices. Furthermore, Squires (2013) suggested that understanding physician and resident barriers, or unknown barriers to hand-hygiene, and their knowledge translations can help to improve hand-hygiene-adherent behaviors.

Diwan et al. (2016) argued that traditional hand-hygiene programs targeted at improving HCWs' hand-hygiene rates are not enough, although a lot of work has been undertaken on improving HCWs' hand-hygiene practices. This study used TPB as a framework to understand the influences of cultural beliefs on the hand-hygiene practices of foreign-born HCWs. This qualitative study will address the social change implications of exploring the influences of cultural beliefs associated with the hand-hygiene practices of foreign-born HCWs, working in an in-patient healthcare facility setting.

Purpose

There is little research on the role of cultural influences on HCWs' hand-hygiene behaviors. Thus, the main purpose of this qualitative study was to explore the influences of cultural beliefs on the hand-hygiene behaviors of foreign-born HCWs. This study used TPB as a framework to better understand the rich knowledge gained from the study participant's shared experiences that helped to shape the phenomenon of this study. The TPB was also used to better identify, describe, and add meaning to foreign-born HCWs' influences of cultural beliefs, and their intent to perform hand-hygiene adherent practices.

A secondary purpose of this study was to better understand the implications associated with improving HCWs' nonadherent hand-hygiene behaviors. A third purpose of this study was to provide healthcare leaders with a framework aimed at improving HCWs' adaptability to adhere to hand-hygiene practices. Understanding the behavioral intent of HCWs to perform hand-hygiene is crucial to gaining better insights into the HCWs' readiness to perform hand-hygiene practices (Ajzen, Icek & Fishbein, 2010). Thus, while several healthcare leaders focus on improving HCWs' hand-hygiene practices by gaining better insights into barriers and HCWs' knowledge deficit regarding HAIs, a fourth purpose of this study was to gain better insights into identifying the cultural beliefs of HCWs associated with hand-hygiene practices. Open-ended survey questions designed around the TPB framework helped to improve the quality of the information collected. Moreover, this study addressed the gap in the literature pertaining to understanding how foreign-born HCWs' cultural beliefs influenced their hand-hygiene practices. Equally important, understanding how

foreign-born HCWs' cultural beliefs influence their hand-hygiene practices is critical in helping to minimize patients' risk of acquiring a HAI linked with HCWs' unclean hands.

Research Questions

The overarching research question was whether cultural beliefs influence the hand-hygiene beliefs of foreign-born HCWs. The following three research questions guided the study:

1. RQ1: What are the beliefs of foreign-born HCWs towards hand hygiene?
2. RQ2: How do the cultural attitudes of foreign-born HCWs' native culture influence their hand-hygiene-adherent practices?
3. RQ3: How does the environment of foreign-born HCWs influence their hand-hygiene-adherent practices?

Theoretical Framework of the Study

The theory of planned behavior (TPB) was the framework for this qualitative study. Grounded theory was the research approach that allowed the development of a new theory. This approach also permitted a greater and more in-depth understanding of the foreign-born HCWs' influences of cultural beliefs on their hand-hygiene practices. Most studies that have utilized a grounded theory approach are based on models such as the TPB (Nicol, Watkins, Donovan, Wynaden, & Cadwallader, 2009). Additionally, Cooper et al. (2009) noted that theory is developed from data collected and saturation of the collected data. Thus, TPB provides evidence on how people act in association with their perception of control over a behavior such as with the intent to perform hand hygiene (Ajzen 2001). Additionally, TPB helps to gain greater

insight into how intentions are subsequently influenced by an individual's personal attitude, towards the behavior, subjective norms, and perceptions of behavioral control (Ajzen 2001).

Subsequently, Stedman-Smith, DuBois, and Grey (2012) noted that TPB is founded on attitudes, subjective norms, and perceived behavioral control predicting the intent to perform a behavior that subsequently transcends the performance of a behavior. Nonetheless, attitudes of HCWs' are associated with the HCWs' intent to adhere to adequate hand-hygiene practices. For instance, literature depicts that HCWs' who perceive hand-hygiene adherence in a positive stance; are more likely to adhere to perform hand-hygiene practices (Stedman-Smith et al., 2012). In comparison, literature depicts that HCWs' who perceive hand-hygiene performance in a negative stance are less likely to perform adequate hand-hygiene practices (Stedman-Smith et al., 2012). Similarly, the Joint Commission (2009) suggested that HCWs' intent to perform hand-hygiene can be predicted by their attitude, beliefs, perception of social pressures to perform the behavior (subjective norm), and perception of the level of control (ease or difficulty) in performing the behavior.

Moreover, healthcare leaders may help to improve HCW's hand hygiene behaviors by focusing not only on how HCW's unclean hands are associated with increased risk of spreading harmful pathogens to patients, but also by focusing on HCW's intent to perform hand hygiene.

Al-Tawfiq and Pittet (2013), Kim and Oh (2015), and White et al. (2015) noted that TPB can be used to help predict HCWs' hand-hygiene behaviors while Sicilia, Sáenz-Alvarez, González-Cutre, and Ferriz (2015) suggested that TPB allows

for the mapping and predicting of individuals intent to carry out future behavior reflecting their self-determined behaviors. Similarly, Nicol et al. (2009) identified that TPB is effective as a framework to help improve existing infection prevention education and training. In other words, these studies confirm that it is appropriate to use the TPB to help understand the influences of the social aspects of HCWs' behaviors. Moreover, TPB may help healthcare leaders improve HCW's hand hygiene behaviors by predicting when HCWs in the healthcare setting will perform appropriate hand-hygiene practices. (Sicilia, et al., 2015).

TPB can help healthcare leaders justify how gaining a better understanding of the cultural influences of foreign-born HCWs pertaining to hand-hygiene practices, can help to decrease the rate of nonadherent behaviors among HCWs. For instance, although literature highlights that TPB can help healthcare leaders gain better insights into the intent of HCWs to perform hand-hygiene practices; gaps in the literature exist in understanding how cultural beliefs influence foreign-born HCWs' hand-hygiene practices. Additionally, TPB can be used to better understand the influences of the social aspect of HCWs' hand-hygiene beliefs (White et al., 2015). Thus, TPB can be used as a guide to help construct survey questions. In other words, TPB can help to predict and understand perceived hand-hygiene behaviors and social influences on behaviors, and predict the behaviors being studied and the willingness to change the behavior (Erasmus et al., 2009).

The existing hand-hygiene strategies and tools are not enough to improve HCWs' basic hand-hygiene practices. Therefore, there is not only an increase in the focus of healthcare leaders to use tools and strategies that would help to sustain

HCWs' adherent hand-hygiene practices, but to also predict the beliefs and intent of HCWs to perform hand-hygiene practices. For instance, theoretical frameworks such as the TPB can be used to help predict hand-hygiene practices among foreign-born HCWs and can help to highlight predictors related to the individual intent of behavior (Kim & Oh, 2015). The Joint Commission (2009) noted that although healthcare leaders and administrators continue seeking the best practices to decrease the rate of HAIs related to HCWs' poor hand-hygiene performance, strategies to sustain HCWs' adherent hand-hygiene behaviors and practices are challenging. Furthermore, health care leaders and public health leaders' inability to find strategies and innovations that would help to increase hand-hygiene practices among HCWs has resulted in an increase in HAI deaths throughout the United States, developing, and under-developed countries.

Nature of the Study

This qualitative study adhered to Walden University's IRB requirements This qualitative study used the grounded theory approach to conceptualize the similarities and differences in the experiences of foreign-born HCWs' beliefs pertaining to how their hand-hygiene practices are influenced by their own culture and the culture of the setting. The grounded theory approach was employed to better understand how the participants contextualized hand-hygiene practices pertaining to their own cultural beliefs and to develop a new theory through emerging themes.

This new developing theory led to new insights into how foreign-born HCWs' cultural beliefs influenced their hand-hygiene practices. The grounded theory approach was also selected to better understand the phenomenon being studied

through the theoretical development process. Glaser and Strauss (1967) suggested that the development of a new theory should be founded on the researcher's collected data. Additionally, the grounded theory approach was used to discover emerging data that is systematically obtained, interpreted, saturated, and analyzed from this qualitative study. Moreover, Lewis-Pierre, Kovacich, and Amankwaa (2017, p.1270) suggested that the grounded theory approach can be used to help understand the theoretical development process of the phenomenon. Furthermore, grounded theory helped to identify gaps and TPB framework was used to guide the study pertaining to influences of cultural beliefs pertaining to hand-hygiene behaviors of foreign-born HCWs.

Purposeful sampling was used to identify appropriate study participants. Participants were recruited from social media and online internet web-based sites. Flyers were posted on LinkedIn. Flyers were also posted on the Sigma Theta Tau, International (STTI) Omicron Delta website. The responses of the 22 foreign-born HCWs over the age of 18 were collected through the researcher's Survey Monkey account. The data collected from participants who completed the online survey in Survey Monkey was downloaded to a PDF, secured on a password-protected flash drive, and then uploaded to MAXQDA for analysis. The constant comparative method was used to code the collected data, compare the similarities within the data, make constant sequential comparisons, and compare with other collected survey data (Charmaz, 2014).

Definitions

Adherence: Similar to compliance is the extent to which the behavior is in alignment with the agreed recommendations or guidelines. The term "adherence" has

been adopted by several leaders in the healthcare industry in an attempt to emphasize that HCWs' adherence with hand-hygiene guidelines is a deliberate decision (TJC, 2009).

Antibiotic/antimicrobial resistance: Microbes resist the effect of drugs, allowing germs to survive and perpetuate (CDC, 2017)

Attitudes: The favorable or unfavorable latent disposition or tendency to respond to a psychological object (Ajzen & Fishbein, 2010). Attitudes may be rigid or can vary depending on behavioral beliefs or perceived disadvantages (De Wandel, 2017).

Culture: Shared values are beliefs belonging to a cohesive group of people who profoundly communication and understand each other (Hunter, 2020). Culture is a set of behaviors and guidelines used by individuals to understand how the world works and how to live in it (Seeleman, Suurmond, & Stronks, 2009).

Cultural beliefs: Are beliefs of family, friends, and extended family within the setting and the ongoing relationships of their perceived values founded on past actions and manifested beliefs (Akkuş, Postmes, & Stroebe, 2017).

Healthcare-associated infection: HAIs are infections that patients contract while receiving care for a medical or surgical condition. Many of these HAIs that patients' contract is preventable. Patients can also contract an HAI through invasive devices and procedures that are used to treat patients and to help them recover. HAIs may also include Infections associated with the devices used during surgical or medical procedures such as catheters or ventilators (Office of Disease Prevention and Health Promotion, 2020).

Foreign born: Refers to anyone who is not a citizen at birth; this includes those who have become citizens through naturalization. The U.S. Census Bureau uses the term "foreign born" to refer to anyone who is not a U.S. citizen at birth. This includes naturalized U.S. citizens, lawful permanent residents (immigrants), temporary migrants (such as refugees and asylees), and unauthorized migrants (United States Census Bureau, 2016).

Globalization: Globalization has the potential for both positive and negative on development in healthcare. Globalization refers to the increased interconnectedness and interdependence of people and countries. Globalization usually includes two inter-related elements, such as the opening of international boarders to increasingly fast flow of goods, services, finance, people, and ideas, and the changes of institutions and policies at national and international levels that facilitate or promotes such flows (WHO, 2019).

Hand hygiene: Hand-hygiene refers to cleaning your hands with either (soap and water), aseptic hand wash, aseptic hand rub (alcohol-based hand sanitizer, including foam, or gel, or surgical antisepsis (CDC, 2018).

Healthcare facility: A healthcare facility is a place to work in, provide services, and receive care (WHO, 2017).

Healthcare workers (HCW): Individuals who have the potential for exposure to infectious materials, including bodily substances, contaminated medical equipment and supplies, contaminated environmental surfaces, or air. These include but are not limited to healthcare providers, physician's assistants, nurse practitioners, registered nurses, licensed practical nurses, patient care technicians, nurses' aides, pharmacists,

pharmacist technicians, laboratory technicians, respiratory therapists, emergency medical personnel, transporters, phlebotomist, health educators, social workers, administrators, clerical aides, housekeepers, student trainees, and dental, maintenance, dietary, and food and nutrition aides (CDC , 2019).

Infection preventionist: IP's direct intervention protects patients from HAIs in clinical and other settings around the world. They work with clinicians and administrators to improve patient and systems-level outcomes and reduce HAIs and related adverse events through implementing local and national policies, managing outbreaks, performing infection control audits, and educating patients and families in infection control (Pegram & Bloomfield, 2015).

Indication: The reason hand-hygiene is necessary at a given moment. It is effective in preventing the spread of harmful pathogens in a healthcare setting (CDC, 2020).

Migrating nurses: Recruitment of foreign-born nurses to the U. S. has created an environment of globalization and nurses migrating from their own country seeking work in the healthcare field seek better pay, clinical resources, technological advancement, and higher economic standards (Hernandez, 2017).

Nosocomial infections: Infections that occurred in the hospital or other healthcare facilities in a patient in whom the infection was not present during the time of admission (WHO, 2020)

Assumptions

Assumptions are necessary because the credibility of a study will be affected if the researcher is unable to maintain a nonjudgmental approach to the emerging data (Markey, Tilki, & Taylor, 2014)

This study was based on five assumptions. First, the study participants would be truthful during the survey process and want to provide rich and meaningful survey data; that could help to minimize harmful pathogens. Second, participatory truthfulness would be ensured to help achieve data saturation; therefore, a new theory would emerge from the rich information provided. Third, participants may not want to accurately describe the influences of their native cultural beliefs pertaining to their hand-hygiene practices, because of having a prior understanding of how HCWs' unclean hands share a link with HAIs. Fourth, the selection of purposeful sampling was appropriate for the study and would allow the participants in the study to provide information that is rich and in alignment with the phenomenon of the study.

Scope and Delimitations

The scope of the research problem included exploring the influences of cultural beliefs on the hand-hygiene practices of foreign-born HCWs. The theoretical framework of TPB was the foundation and boundary of this qualitative study. TPB is founded on attitudes, subjective norms, and perceived behavioral control predicting the intent to perform a behavior that subsequently transcends the performance of a behavior (Stedman-Smith, DuBois, & Grey 2012). The participants in the study were limited to foreign-born HCWs who worked in a healthcare facility in the United States and included physicians and registered nurses.

The participants represented a mixture of gender and ethnicity. Neither, race, nor education limited participation. However, exclusion criterion of the study consisted of participants under the age of 18 years old, as well as participants in the study must be foreign-born. External validity, such as transferability and credibility, include a rich and thick description of the study that requires the researcher to give specific details about the setting (Hadi, & José Closs, 2016). For instance, inclusion and exclusion criteria of the study include sample characteristics, data collection, and sample size. The findings from this study provided information that can transfer to HCWs in a similar situation or context, without losing meaning or inferences which was founded on this final and completed study (Houghton, Casey, Shaw, & Murphy, 2013).

Limitations

A limitation of this study was that TPB could shape, limit, and bias the findings because TPB requires the researcher to take into consideration the behavioral, normative, and control beliefs of the population of interest. The TPB implies that the researcher will consider the perspectives of culture (Ajzen & Fishbein, 2010). For example, it is expected that the salient beliefs identified with respect to a given behavior vary from culture to culture. However, the consequences for certain behaviors, such as performing hand hygiene, may also vary from culture to culture (Ajzen & Fishbein, 2010). This theory also assumes that I can reasonably apply TPB to certain contexts and under certain circumstances (Ajzen & Fishbein, 2010). For instance, TPB may no longer act as a theoretical foundational guide in certain circumstances that are related to strong influences linked with emotions, such

as fear and addiction (Ajzen & Fishbein, 2010). Nonetheless, TPB also implies that when used correctly, I should be able to elicit a predictive behavioral response irrespective of a western or nonwestern society (Ajzen & Fishbein, 2010). Questions guided by TPB may shape the participants response because of the questions designed around the researcher's topic of interest. For instance, the participants may be asked likely consequences that pertaining to hand-hygiene that would not be important to the participant, prior to participating in the study. This may encourage a response bias related to assessing participant beliefs, attitudes, and power influences linked to perceived behavioral control (Ajzen & Fishbein, 2010).

Another limitation of this study was that participants may have avoided sharing their personal experiences about the influences of their cultural beliefs on hand-hygiene behaviors because they did not want to be viewed as being nonadherent.

Additionally, a limitation of this study is a small sample size may enhance justifying early saturation (Charmaine, 2014). Hence, though sample size, may be difficult to predict prior to conducting the research study, research indicates that a sample size ranging from 20-35 participants interviews are adequate (Woods, Gapp, & King, 2016). Woods et al. suggested that data saturation may be reached with a sample size of 20-50 participants. Furthermore, Woods et al. noted that data saturation may be reached after no new data emerges and no new categories emerge.

Significance

The significance of this study was that it provided better insights and greater understanding of how foreign-born HCWs' culture and beliefs influence their hand-hygiene practices. This knowledge could help global healthcare administrators to

foster, improve, and strengthen hand-hygiene practices among HCWs. For instance, gaining better insights into how culture influences foreign-born HCWs' intent to perform hand-hygiene may contribute to positive social change by integrating HCWs' cultural influences into new and existing hand-hygiene training programs. In addition, this study has the potential to enhance healthcare leaders' efforts to reduce HAIs related to HCWs' unclean hands. This study also has the potential to contribute to healthcare systems 'administrative policy and procedures founded on the fundamentals of reducing increased expenses associated with potentially preventable HAIs. Furthermore, this study could give healthcare leaders and practitioners a new behavioral hand-hygiene theory that could be used to improve HCWs 'hand-hygiene practices.

Summary

Literature has shown that, although hand-hygiene is recognized as the number one way to reduce HAIs, HCWs' hand-hygiene is subpar. Despite the ongoing strategies of healthcare leaders and administrators to promote better hand-hygiene behavior, no studies were found that highlighted how the foreign-born HCW's culture influences HCWs' beliefs pertining to hand-hygiene practices. These strategies include promoting hand-hygiene behaviors founded on HCW's positive attitudes and highlighting social influences that promote hand-hygiene performance among HCWs (De Wandel, 2017).

Hand-hygiene behaviors of HCWs though have been studied in healthcare, scholarly peer-reviewed literature highlighted a need to better understand how culture may influence hand-hygiene behavior. Piras, Lauderdale, and Minnick (2017) noted

in a qualitative study aimed at identifying critical care nurses' hand-hygiene attitudinal, normative referents, and control beliefs that nurses had perceived patient and institutional protection against bacterial and pathogens, transmission, and cross contamination as advantages associated with attitudinal beliefs. Nurses had associated their nurse leaders with hand-hygiene normative referents as positive referents of performing hand-hygiene and medical providers and other HCWs as negative referents of performing hand-hygiene. In addition, critical care nurses associated control beliefs with adequately stocked supplies and available hand-hygiene resources close to the patient's room. This study also highlighted that critical care nurses perceived time and emergent situations as primary barriers, to performing hand-hygiene.

This qualitative study also addresses that there were no prior studies found reflecting cultural beliefs and attitudes related to foreign-born HCWs' hand-hygiene practices. Stewardson, Allegranzi, Sax, Kilpatrick, and Pittet (2011) suggest that despite hand-hygiene being deeply rooted in many ancient and significant traditions, religions, and cultures; little exploration pertaining to HCWs culture and hand-hygiene behaviors have been explored.

Understanding the HCW's beliefs that motivate their hand-hygiene- practices is an important aspect of improving hand-hygiene behaviors (Al-Tawfiq & Pittet, 2013). TPB was used to construct a guide for structured interviews. Earlier studies indicate that the TPB may help to predict and understand perceived hand-hygiene behaviors, social influences on behaviors, predicting the behaviors being studied, and the willingness to change the behavior (Erasmus et al., 2009). Moreover, this

qualitative study used the grounded theory approach to help conceptualize the similarities and differences of how foreign-born HCWs cultural beliefs can influence their hand-hygiene practices. Hence, grounded theory is useful when a gap in existing knowledge has been identified (Markey et al, 2014).

Chapter 2 includes a detailed review of the literature, literature search strategy, and key concepts of the study related to the literature review, identified gaps and a further need to conduct the study. Chapter 2 also depicts the details of the conceptual framework, the theory of planned behavior and a summary and conclusion. Chapter 3 includes the research design and methodologies used to explore the influences of culture on hand-hygiene beliefs of the foreign-born HCWs. Chapter 4 includes the analysis of the study and the results obtained from the collected and emerging data. Chapter 5 summarizes the key findings of the study and provides a detailed analysis of the study participants responses to the online survey. I will discuss in chapter 5 the interpretations of the findings. I will also present in Chapter 5 the limitations of the study, recommendations for future research, implications for social change,

Chapter 2**:** Literature Review

Introduction

Chapter 2 includes an investigation of the current and past literature highlighting essential hand-hygiene behaviors and practices of a diverse group of HCWs. I identified a need for continued research to explore how foreign-born HCWs' cultural beliefs influence their hand-hygiene practices. These studies have focused on addressing HCWs' nonadherent behaviors and their intent to perform hand-hygiene practices by gaining better insights into the HCWs' level of knowledge regarding HAIs, hospital-wide hand-hygiene training protocols, and knowledge of systemwide hand-hygiene policy and procedures. These studies have also addressed HCWs' nonadherent hand-hygiene practices by using a multimodal approach to improving hand-hygiene adherence. The multimodal approach includes assessing HCWs' knowledge of organizational policies and procedures and implementing hand-hygiene-training protocols. This focus leaves little room regarding exploration into the influences of cultural beliefs pertaining to hand-hygiene behaviors of foreign-born HCWs. Moreover, a review of this literature has indicated that there is a need to better understand the role that culture plays in foreign-born HCWs' intent to perform adherent hand-hygiene practices. Chapter 2 also provides details of the theoretical framework TPB and the phenomenon of the study. The TPB is used as the theoretical foundation to support this qualitative study and to better understand the HCWs' intent to perform a behavior, such as adherent hand-hygiene practices. Ajzen (2011) suggests that an individual's beliefs are formed through their behavioral, normative and control beliefs, their attitudes towards the behavior, their subjective norms, and their perception of behavioral control. Factors such as socioeconomic conditions and

cultural differences are rarely taken into consideration by healthcare leaders, when developing programs designed to improve HCWs' nonadherent hand-hygiene behaviors (Grayson, 2015). Despite the WHO recognizing hand-hygiene as the most critical aspect of reducing HAIs, global hand-hygiene rates among HCWs are consistently low. Stewardson et al. (2016) suggests that a novel approach to increasing hand-hygiene rates among HCWs is needed to help improve HCWs' hand-hygiene adherence.

A salient purpose of this study was to identify the gap that exists in understanding how foreign-born HCWs' cultural beliefs influence their intent to perform hand-hygiene practices. Squires (2013) argued that despite healthcare leaders implementing tools and strategies to improve hand-hygiene practices, HCWs' hand-hygiene adherent rates worldwide are less than 50%. Moreover, Walker et al. (2014) noted that HCWs' unclean and contaminated hands are a major factor in patients contracting HAIs.

HCWs' suboptimal hand-hygiene practices increase the risk of patients acquiring harmful germs associated with HCWs' unclean hands; (Walker et al., 2014). Yet, healthcare leaders continue to focus on the link between HCWs' nonadherent hand-hygiene practices and high rates of morbidity and mortality to help improve their organizational hand-hygiene rates (Wilson, Jacob, & Powell, 2011). Hence, despite past and current literature highlighting hand-hygiene as an effective deterrent against the spread of preventable HAIs; Walker et al. (2014) and Hong et al. (2015) have pointed out that approximately 100,000 Americans die annually; because of HAIs, associated with HCWs' unclean hands.

Literature Review Coverage and Search Strategy

To identify peer-reviewed articles relate to the influences of cultural beliefs and foreign-born health-care workers' intent to perform appropriate hand-hygiene practices, I conducted a detailed search using Walden University's digital library. ProQuest was used as the primary scholarly database to obtain relevant peer-reviewed articles essential to conducting the literature review. The database also included SAGE, CINAHL Plus with Full Text, ESBSCOHost, Elsevier, and Google Scholar. Government websites such as the WHO and CDC were used to access relevant information. General search terms that I used as the basis for inquiries were *hand-hygiene, compliance, adherence, HCWs, monitoring, HAIs, increased hospital stay, cost related to hand-hygiene practices, culture, beliefs, pathogens, microorganism, and antibiotic microbial. Additional terms used were infection prevention, leadership, behaviors, predictors, healthcare systems, foreign-born, religion, public health, globalization, patient safety,* and *third world developing countries.* The date ranges used in the literature search were studies that were primarily conducted within the last five years. Earlier studies that were relevant and in alignment with the research topic were used. Furthermore, I consulted the references in the articles found to identify the additional relevant sources. Finally, a literature review was conducted and exhausted with no research findings related to the hand-hygiene behaviors and cultural influences of foreign-born HCWs.

Theoretical Foundation

The theoretical foundation used for this qualitative study was the TPB. The TPB is an extension of the theory of reasoned action (TRA) which indicates that after

the behavior of interest is identified the determinants associated with the behavior can be explored (Ajzen & Fishbein, 2010). Ajzen (2005) suggested that TPB is as with the 1967 theory of reason of action is based on the assumption that human beings will generally behave in a specific manner: while taking into consideration the available information and the implications of their actions. On the other hand, the original expectancy-value model consisted of the perception that attitudes were determined by the individuals' outcome beliefs associated with performing the behavior (Ajzen & Fishbein, 2010). Moreover, the normative construct weighted by motivation to comply and comparable to the attitude construct and subjective norms representing the social pressure aspect of the theory was added to illicit an individuals' underlying beliefs and to measure the theory's constructs (Ajzen & Fishbein, 2010). Nonetheless, in 1980 Ajzen and Fishbein transitioned from the expectancy-value model to the TRA model (Ajzen & Fishbein, 2010). Thus, Ajzen added the perceived behavioral control construct to TRA after recognizing through further testing and evaluation that many goals and behaviors are not in an individual's control (Ajzen & Fishbein, 2010). Ajzen (2005) noted that understanding the behavior in alignment with identifying the determinants of behavioral intentions is more important than simply predicting the behavior. On the other hand, TPB is used in healthcare to help predict the intent of an individual to perform a certain behavior. Moreover, Cole (2016) noted that hand-hygiene behaviors are habitual in nature. In other words, behaviors in healthcare such as adherent hand-hygiene practices can have a habitual stance depending on the level of risk and the perceived threat of safety to the HCW.

HCWs' inconsistencies in adherent hand-hygiene practices have resulted in 40% of HCWs globally following basic hand-hygiene practices (McCay, 2015). However, the most important determinant of the action for an individual is the intent to perform or not to perform a specific behavior (Ajzen, 2005). According to the TPB, both intentions and behavioral intentions are immediate functional determinants that are of a personal nature, aligned with social influences and consist of perceived issues of control. For instance, Gaube et al. (2018) suggested that Ajzen's TPB is a widely used theory in healthcare to explain hand-hygiene behavior as being driven by the intent to perform the action.

In alignment with Ajzen (2005), Gaube et al. (2018) noted that the intent to perform a behavior is driven by the following three factors: (a) attitude, which is formed by knowledge and beliefs about hand-hygiene and its outcome, (b) subjective norms that are shaped by a person's perception of how others think about hand-hygiene, and (c) perceived behavior control, which reflects beliefs about the ease or difficulty of performing hand-hygiene. O'Boyle, Henly, and Larson (2001) conducted a longitudinal observational study with nurses pertaining to motivational factors and unit specific variables and reported that the three intermediate variables; attitudes, normative beliefs, and control beliefs are determined by how strong the perceived beliefs are regarding the outcome of the behavior pertaining to hand-hygiene. O'Boyle et al. reported that the intent to perform hand-hygiene practices associated with self-reporting consisted of nurses' attitude or belief regarding the value of performing hand-hygiene practices, nurses' perception of social pressure to perform,

or not perform hand-hygiene, and nurses' perception of how easy or difficult it is to perform hand-hygiene practices, within their setting or environment.

Personal Attitude

An attitude is a personal disposition to respond favorably or unfavorably to an object, person, institution, or event. For example, nurses' attitudes towards their cultural influences pertaining to hand-hygiene beliefs (O' Boyle etal., 2001).

Subjective Norms. The perception of social pressure from others who are valued within an individual's culture. For instance, foreign-born HCWs' cultural social norms motivate to perform or not to perform hand-hygiene practices (O' Boyle etal., 2001).

Perceived Behavioral Control. The perception of how difficult or easy it is to perform hand-hygiene practices in foreign-born HCWs' cultural environment or setting (O' Boyle etal., 2001).

TPB can also help to predict the hand-hygiene behaviors among foreign-born HCWs and simultaneously help to highlight the predictors related to the individual intent of behavior (Kim & Oh, 2015). Hand-hygiene behaviors and patterns are generally determined early in childhood (Curtis, Danquah, & Aunger, 2009). Therefore, programs that integrate factors such as societal norms and cultural influences may prove to be more effective in increasing HCWs' hand-hygiene rates (Wilson, Jacob, & Powell, 2011). Hence, these studies confirm that health care leaders who work at improving HCWs' handwashing behavior practices may benefit from using TPB as a framework to guide their hand-hygiene programs.

The TPB was used to develop a focus group interview guide in a tertiary care hospital in the United Arab Emirates (UAE) (Ng, Ramon & Thea, 2017). The study was designed to better understand hand-hygiene knowledge and beliefs of health care professionals. Ng et al. noted that participants in the study in alignment with behavioral beliefs reported an advantage to performing hand-hygiene as self-protection. In addition, participants in the study in alignment with TPB normative beliefs, associated their leaders, supervisors, and consultants as most influential in their intent to perform hand-hygiene (Ng et al., 2017). Moreover, in alignment with TPB control beliefs participants in the study associated skin irritation as a reason for their nonadherent hand-hygiene practices. While on the other hand the participants in the study perceived the accessibility of supplies as a motivator of performing hand-hygiene (Ng et al., 2017). Ng et al. also reported that participants in the study highlighted their personal beliefs in alignment with the TPB framework as indicating that hand-hygiene was performed at home to protect families and for ritual reasons. For example, Ng et al. reported that Muslims performed hand-hygiene rituals prior to prayers. They also reported that a mixed study design using a focus group yielded similar results regarding the hand-hygiene knowledge of doctors and nurses.

Ng et al. (2017) found that although hand-hygiene knowledge was demonstrated among doctors and nurses who had worked directly with patient care, hand-hygiene behaviors of doctors and nurses had to be reinforced. The study also reported that HCWs' beliefs about hand-hygiene and HAIs was examined using 24 items in a 5-point Likert scale based on TPB. Though nursing staff had scored higher on the hand-hygiene belief scale than doctors the difference was not significant (Ng

et., 2017). Finally, the study reported that physicians in the healthcare setting are viewed by colleagues as essential leaders. Therefore, understanding the physician's hand-hygiene beliefs may help to improve hand-hygiene practices among physicians in the healthcare setting.

Belela-anacleto, Kusahara, Peterlini, and Pedreira (2015) conducted a descriptive study in a nine-bed pediatric intensive care unit in Sao Paulo, Brazil using the TPB as its foundation. The study was designed to identify the intent of HCWs to perform hand-hygiene behaviors (Belela-anacleto et al., 2015). Social pressures were identified as a salient factor to staff performing hand-hygiene or not performing hand-hygiene (Belela-anacleto et al., 2015). For instance, HCWs associated social pressures and social influences of certain groups with the hand-hygiene behaviors (Belela-anacleto et al., 2015). Furthermore, the study reported that a global analysis of behavioral determinants of HCWs in PICU identified social pressure as a deciding factor of their intent to perform hand-hygiene during patient care (Belela-anacleto et al., 2015).

These studies have confirmed that predicting and understanding foreign-born HCWs' hand-hygiene behaviors and practices may help healthcare leaders to improve HCWs' hand-hygiene practices. On the other hand, Mascherek, Gehring, Bezzola, and Schwappach (2015) suggested that the subjective norms are stronger if attitudes are more favorable. Nonetheless, the intent of the behavior is more likely to be adhered to if the perceived behavioral norms are greater. Additionally, the study highlighted that TPB should be taken into consideration when designing hand-hygiene programs. These studies indicated that HCWs' intent to perform hand-hygiene is more likely

influenced by their own beliefs and norms, suggesting that the TPB consists of constructs that may help to predict the intent to perform a behavior (Jenner, Watson, Miller, Jones, & Scott, 2002).

Behavioral, normative, and control beliefs are the three dimensions reported by online students as necessary to improving basic hand-hygiene behaviors (Alemagno, Guten, Warthman, Young & Mackay, 2010). Similarly, the TPB is guided by three different beliefs, control beliefs, behavioral beliefs, and normative beliefs that relate to the expectation of others and the motivation to want to adhere to expectations (Prapavessis et al., 2005).

Normative behavioral beliefs can impact hand-hygiene practice whereas behavioral beliefs indicated that dirty hands cause an illness and that handwashing occurs when colleagues' hands are exposed to germs and hand-hygiene is performed (Smith, DuBois, & Grey, 2012). Control beliefs such as hand sanitizers, sinks, and posters are salient reminders that can indicate a need for HCWs to perform hand-hygiene (Stedman-Smith et al., 2012). Stedman-Smith et al. (2012) suggested that the intent to perform a behavior depends on attitudes, subjective norms, and behavioral control. In addition, Stedman-Smith et al. suggested that the subjective normative belief aspect of the TPB is essential to determining the perceived pressure from others to perform the adherent behavior or not perform the behavior. Therefore, these studies confirm that health care leaders who seek to understand HCWs' normative beliefs and subjective norms may be better positioned to predict the intent of the HCWs' to perform the behavior.

Erasmus, Otto, De Roos, Rianne, Vos, Burdorf, and Ed, (2020) reported that the belief-based framework of the TPB was used to develop a questionnaire designed to explore habitual and at-risk hand-hygiene behaviors of medical interns. Eramus et al. found that medical student interns are mostly influenced by habit and the perceived ability to perform hand-hygiene. On the other hand, Awoke, Geda, Arba, Tekalign, & Paulos (2018) reported that 116 nurses who worked on medical, surgical, ICU, pediatrics, and maternity units at Hiwot Fana Specialized University Hospital, participated in a study based on WHO's five moments of hand-hygiene, had performed hand-hygiene prior to touching patients at a low rate of 15.6%. Awoke et al. also found that different studies reported that nurses preformed hand-hygiene prior to touching patients at higher rates, such as 41.7%, 38.6%, and 43.8% These studies confirm that using the TPB as a framework can help health care leaders better understand HCWs underlying the causes of nonadherent hand-hygiene behaviors.

Literature Review Related to Key Concepts of Hand-hygiene

HCWs' hand-hygiene behaviors and practices are low on a global scale and throughout varying countries. As migration continues to move forward from country to country and HCWs find jobs in America and other countries, healthcare leaders may find challenges with improving HCWs' hand-hygiene practices. Thus, Ahmed et al. (2006) pointed out that religious experiences are instrumental in improving hand-hygiene rates within healthcare systems. Hence, understanding varying cultural beliefs and religious practices may help healthcare leaders design healthcare programs that various cultures can more effectively identify with.

Ahmed et al. (2006) noted that the Muslim population represents a rapidly growing and staggering population of 1–2 billion and that understanding the beliefs and attitudes towards their hand-hygiene practices and the hand-hygiene beliefs of their colleagues is critical to helping improve hand-hygiene-adherent practices. Ahmed et al. reported that there are no systematic reviews that specifically address religion and culture in the context of HCWs' hand-hygiene practices. In addition, Ahmed et al. suggests that raising awareness of the importance of colleagues being sensitive to cultural and religious beliefs, may help to improve hand-hygiene practices among HCWs. On the other hand, Stavrova (2014) found that an analysis of data from 70 countries that links religion to social pressures indicated that individuals are more likely to be committed to their values if they believe that their values are not socially imposed and of their own choice. Moreover, Zhao, Yang, Yu-Ying, and Chen (2018) conducted a study designed to gain better insights into hand-hygiene interventions and characteristics of 200 nurses, working in three Taiwanese tertiary care hospitals. Zhao et el. reported that nurses were more likely to comply with hand-hygiene guidelines, if the intervention was associated with their own personal hygiene habits, such as with past experiences, peer observation, convenience of resources, and a need to perform hand-hygiene. Despite, healthcare leaders recognizing simple and consistent hand-hygiene behaviors and practices as being the most important line of defense against the spread of harmful micro-organisms, HCWs' nonadherent hand-hygiene behaviors remain a concern of public health leaders (Arntz et al., 2016).

Healthcare leaders, despite low hand-hygiene adherence among HCWs continue to focus on improving hand-hygiene rates above 40% (Chassin, 2013). For

example, overwhelming evidence from the WHO (2016) highlights that over 80,000 people die annually, a statistic which implies the occurrence of approximately 200 deaths a day in the United States Moreover, developing countries are at an even greater risk of fatalities related to HAIs than developed countries (WHO, 2016). Despite, such evidence, HCWs' hand-hygiene adherence remains low.

WHO (2016) found that prevalence studies have indicated that hospital-wide infection rates are 15% higher in developing countries than those in developed countries. WHO also reported that over 4,000 children die every day because of HAIs that is equivalent to the number of deaths from a plane crash every hour. In developing countries 50% of the patients admitted to the Neonatal Intensive Care Unit (NICU) will contract a HAI and half of those in an NICU will die because of HAIs (WHO, 2016). Santosaningsih et al. (2017) suggested that over-crowdedness and supply shortage in developed and underdeveloped countries can potentiate the prevalence of HAIs.

A cross-sectional study reported that on a NICU affiliated with Tabriz teaching hospitals that most participants from the 150 employed nurses invited to participate in the study lacked knowledge regarding basic hand-hygiene principles (Asadollahi et al., 2015). The study also reported that 67% of the nurses in the study expressed a need to renew hand-hygiene training (Asadollahi et al., 2015). Likewise, Wiles et al. (2015) found that HCWs were not following basic hand-hygiene recommendations and practices. Furthermore, the study reported that patient exposure to organisms and HCWs' everyday encounters with patients can cause an increase in the transmission of harmful pathogens from patient to patient or HCW to HCW

(Wiles et al., 2015). Despite Sendlhofer et al. (2015) and Santosaningsih et al. (2017) suggesting that 1.4 million people are suffering from nosocomial infections and that approximately 5–10% of patients residing in industrialized countries will contract one or more infections during their hospital stay hand-hygiene adherence among HCWs' is low. Abdella et al (2014) reported that 5 to 10% of patients worldwide will develop an HAI.

Abdella et al. (2014) noted that microorganisms during patient encounters remain on HCWs' unclean hands for 60 minutes. While on the other hand, McInnes et al. (2014) argued that despite universal information reporting that hand-hygiene adherence can decrease HAIs, hand-hygiene adherence among HCWs remains less than adequate. Thus, McInnes et al. (2014) suggests that more work needs to be done to improve HCWs' hand-hygiene adherent practices. These studies indicate that despite health care educators developing hand-hygiene programs and healthcare leaders providing available resources for hand-hygiene program development within healthcare systems, HCWs' hand-hygiene adherence is less than adequate.

A vast and overwhelming amount of evidence-based literature has indicated that HCWs' unclean hands impact patients' overall health and can increase patient's length of stay in the hospital. Although,HCWs' nonadherent hand-hygiene behaviors are a known source for spreading harmful pathogens from patient to patient, improving HCWs' adherent hand-hygiene practices remains a challenge for local and global healthcare and public health leaders. Hence, Diegel-Vacek and Ryan (2016) reported that though, healthcare leaders implementing hand-hygiene programs and strategies in the healthcare setting targeted at improving HCWs' adherent hand-

hygiene behaviors, HAIs in the United States are a leading cause of morbidity and mortality.

Mearkle, Houghton, Bwonya, and Lindfield (2016) noted that developing countries have higher morbidity and mortality rates because of HCWs' unclean hands and spread of harmful pathogens (Mearkle et al., 2016). These empirical findings have prompted increased attention and global awareness by WHO (2016) on how HCWs' unclean hands are associated with not only an increase in HAIs but also in mortality and morbidity rates. Nevertheless, despite HCWs' knowledge of HAIs linked to unclean hands, HCWs' nonadherent behaviors, and spread of harmful pathogens between patients and HCWs, subpar hand-hygiene associated with HCWs unclean hands; remains a significant concern among healthcare leaders and infection control preventionists.

Although Ford, Boyer, Menachemi, and Huerta (2014) reported that bathrooms were identified as a source and spread of harmful germs, pathogens, and microorganisms associated with HCWs' unclean hands, HCWs' nonadherent hand-hygiene practices remain subpar. A further study that involved monitoring over 97,000 HCWs' hand-hygiene opportunities, by using newly installed automated towel dispensers and usage of soap in eight public bathrooms over ten weeks, indicated that visual cues are important factors in promoting hand-hygiene behaviors and practices (Ford et al., 2014).

HCWs' infrequent hand-hygiene behaviors in healthcare are less than adequate despite their knowledge and awareness of the potential to cause patient harm by transmitting harmful pathogens between patients (ODonoghue et al., 2016). On the

other hand, CDC (2016) highlighted a need to reduce HAIs despite healthcare leaders developing hand-hygiene programs targeted at increasing the rate of HCWs' adherent hand-hygiene practices. These studies indicate that it is difficult for healthcare leaders to predict when HCWs in the healthcare setting will perform appropriate hand-hygiene. Finally, HAIs continue to remain a global concern of healthcare leaders in their ongoing efforts to improve HCWs' hygiene behaviors and practices (Diwan et al., 2016).

Healthcare-Associated Infections (HAIs)

Literature has depicted that HAIs are associated with HCWs' nonadherent hand-hygiene behaviors. Despite, an overwhelming amount of evidence indicating that HAIs can cause patients to stay in hospitals longer and are associated with increased healthcare costs, HCWs hand-hygiene practices remain less than adequate (Santosaningsih et al., 2017). Significantly, Borchgrevink, Cha, and Kim (2013) noted that most people often underestimate the importance of performing appropriate hand-hygiene and the role that handwashing plays in preventing infections. Moreover, Wiles et al. (2015) argued that inappropriate HCWs' hand-hygiene practices and everyday patient encounters can cause patients to become susceptible to organisms and germs and cause the spread of harmful pathogens from patient to patient and HCW to HCW. Nonetheless, HCWs continue to wash their hands on an infrequent basis.

According to CDC (2016), one in 25 hospitalized patients are at risk of acquiring a preventable HAI in their lifetime. In addition, ten percent of patients admitted to modern hospitals will acquire one or more HAIs during their length of

stay (Freeman et al., 2016). Nonetheless, despite a host of evidence suggesting that a change in HCWs' hand-hygiene behaviors can help to decrease the rate of patients contracting an HAI; minimal research has been conducted pertaining to the understanding of how foreign-born HCWs' own cultural beliefs can influence their hand-hygiene behaviors (Curtis, Danquah, & Aunger, 2009).

Healthcare leaders are baffled by the daunting and consistently low rates at which HCWs perform hand-hygiene practices; to the point of purchasing pocket hand sanitizers for HCWs, while monitoring HCWs' hand-hygiene practices through direct observations. Pfafflin et al. (2017) reported that low adherence to hand-hygiene at baseline rates is caused by the low availability of hand-hygiene resources such as basic soap and water. For instance, Pfafflin et al. reported that one provider did not want to use his pocket hand sanitizer due to fear of making others who did not have a pocket hand sanitizer, feel shameful and envious (Pfafflin, et al., 2017).

Pfafflin et al. (2017) found that the Ethiopian hospital's hand-hygiene baseline of 47.6 % increased over a 4-year period to 66.2% after the implementation of the WHO multimodal hand-hygiene improvement strategy. Stewardson et al. (2016) conducted a study to promote hand-hygiene practices among Swedish HCWs using the multimodal WHO Five moments of hand-hygiene and a patient partnership approach. In addition, patients in the study received a hand-hygiene brochure and a pocket-sized hand sanitizer (Stewardson et al., 2016). Patients were also encouraged to ask HCWs to wash their hands (Stewardson et al., 2016). Furthermore, the study reported that patient participation depended on local and social norms and performance feedback (Stewardson et al, 2016). Despite healthcare leaders ongoing

efforts to alert HCWs of the importance of performing hand-hygiene and providing HCWs with knowledge and resources on how hand-hygiene can help to prevent potential HAIs; hand-hygiene remains a challenge and a potential global threat to patients and communities. Pfafflin (2017) reported that direct observations were responsible for the rise in hand-hygiene practices among HCWs in an intensive care unit (ICU). However, Wu et al. (2017) argued that there are biases with direct observations such as observer and selection bias and observation bias known as the Hawthorne effect that can be eliminated when HCWs are not aware of being observed. It was further reported in another study that self-protection is a prominent factor in healthcare professionals' and physician's decision-making and intent to perform hand-hygiene practices (Squires, 2013). The study was designed with a behavior-based theory to identify barriers and enablers to physician hand-hygiene adherence and their perception of multilevel factors that influence their hand-hygiene behaviors (Squires, 2013). For instance, the study helped to identify how important physicians' attitudes are towards performing hand-hygiene practices (Squires et al., 2013). Furthermore, despite global and local healthcare leaders considering hand-hygiene as a proven multifaceted measure to help reduce the spread of HAIs; HCWs' nonadherent hand-hygiene practices remain a top concern of healthcare leaders. Strategies such as investigating hand-hygiene behaviors that yield high rates are used by global healthcare leaders. For instance, a study aimed at understanding HCWs' hand-hygiene practices in an ophthalmology setting in two Uganda hospitals reported that HCWs washed their hands more often after touching a patient, identifying 288 missed opportunities for hand-hygiene improvement and only 57 opportunities as

being observed, resulting in 80% of missed hand-hygiene opportunities (Mearkle et al, 2016).

HCWs' nonadherent behaviors associated with performing basic hand-hygiene practices in the healthcare setting further contributes to the increase and prevalence of preventable HAIs in healthcare systems (Spruce, 2013). For instance, Spruce suggests that using WHOs' hand-hygiene guidelines and tools, such as hand-hygiene brochures and posters may help to improve hand-hygiene knowledge among perioperative nurses and therefore, help minimize HAIs in perioperative services. Moreover, a study reported that HCWs performed hand-hygiene for self-protection in an Indonesian hospital and that the presence of role models was noted to be a strong influence in HCWs performing hand-hygiene (Santosaningsih et al., 2017). Likewise, Pittet et al. (2004) suggested that hand-hygiene behaviors are influenced by the groups that HCWs belong to. These studies indicate a need for healthcare leaders to foster hand-hygiene programs in healthcare that take into consideration how cultural influences can help to improve HCWs' hand-hygiene practices.

Curtis et al., (2009) reported that infectious diseases and hand washing behaviors vary from country to country. A review of current literature found that handwashing with soap can help to prevent 30 to 47% of childhood diarrhea; however, disgust was the salient factor in promoting hand-hygiene behaviors as opposed to hand-hygiene behaviors already learned (Curtis et al., 2009). High mortality and morbidity rates emerging from HAIs because of HCWs' lack of performing hand-hygiene have left several health care leaders frantically seeking new

ways to increase HCWs' hand-hygiene rates. HCWs who do not perform basic hand-hygiene on a frequent basis continue to pose a threat to patient safety.

McInnes et al. (2014) noted that hospital managers' beliefs of current innovative strategies could help to improve hand-hygiene practices. In addition, it was argued that despite already implemented handwashing programs, hand-hygiene adherent behaviors will require health care leaders to collaboratively develop new and innovative hand-hygiene programs (Tai et al, 2009). Furthermore, healthcare leaders who function as role models for hand-hygiene behaviors; in alignment with the belief that HCWs can change their nonadherent hand-hygiene behaviors over time, may be better positioned to develop and sustain effective hand-hygiene programs (Tai et al, 2009).

Healthcare programs aimed at improving HCWs' adherent hand-hygiene practices are essential in helping to decrease HAIs associated with HCWs' unclean hands. A study observing washing-in and washing-out behaviors indicated that a shift from an 80% hand-hygiene adherence level to a 90% level would help to decrease HAIs (Sickbert-Bennett et al., 2016). Nonetheless, healthcare leaders worldwide are challenged with reducing HAIs and developing programs that help to minimize cross-contamination of harmful pathogens, to patients associated HCWs' unclean hands (Kaur & Kaur, 2015). In other words, global and local hand-hygiene rates are low despite ongoing efforts of global and local healthcare leaders.

It was further reported that students who participated in monitoring 900 hand-hygiene observations of HCWs, reported that self-awareness in performing hand-hygiene practices can help to improve basic hand-hygiene practices among HCWs

(Waltman, et al., 2011). However, a further report identified that the hands of HCWs can be contaminated not only through nonadherent hand-hygiene behaviors but also through self-contamination (Megeus et al., 2015). These studies have indicated that HCWs' knowledge of HAIs may not be enough to minimize HCWs' nonadherent hand-hygiene behaviors.

Healthcare leaders continue to focus on barriers that may impede HCWs' from performing basic hand-hygiene practices. However, Sickbert-Bennett et al. (2016) suggested that hand-hygiene observations linked with a structured surveillance program for device-associated and non-device-associated procedures when embedded into HAI programs may be more useful in helping to decrease the rate of HAIs. Moreover, Sickbert-Bennett et al. suggested that HAI programs led by IPs and aligned with the CDC and the National Health Care Safety Network case definitions, can help to improve hand-hygiene adherent rates among HCWs.

Public health leaders struggle with sustaining high rates of hand-hygiene practices throughout local and global communities. In support of the WHO hand-hygiene campaign toolkit, Tan and Olivo (2015) assessed the knowledge base of healthcare professionals regarding HAIs and hand-hygiene practices and found that although some healthcare workers possessed knowledge of HAIs, several HCWs perceived that there was a 0–10% chance that a patient in the hospital would develop an HAI. HAIs are a global problem and pose a threat to the quality of patient care and patient safety whereas 10% of the patients admitted that in modern hospitals, they will contract one or more HAIs during their length of stay (Freeman et al., 2016). This

high percentage is unpromising because hospitalized patient populations throughout various countries including the U. S. are at risk of catching HAIs.

Sahai, Eden, Glustein, and Nesdole (2016) noted that first and second-year family medical students were more likely to wash their hands prior to touching patients than physcians. The study reported that first- and second-year family medical students in Canada were less knowledgeable about the importance of performing basic hand-hygiene practices than those in Kingston and Ontario. Sahai et al. also found that hand-hygiene programs and systems designed to promote hand-hygiene behavior from childhood and in graduate school may help to ensure that performing basic hand-hygiene practices is the norm. Taking into consideration already learned behaviors and cultural beliefs of HCWs may help healthcare leaders to gain better insights into HCWs' nonadherent hand-hygiene practices.

Alemagno, Guten, Warthman, Young and Mackay (2010) noted that increasing awareness and knowledge of HCWs' understanding of hand-hygiene guidelines may help to minimize HAIs. However, a further report revealed that an exploration of self-reported practices, knowledge, and attitudes of hand-hygiene practices among HCWs in a rural teaching hospital setting in India noted that healthcare workers always practiced hand-hygiene in selected situations with hand washing ranging between 40–90% (Diwan et al., 2016). Though, a body of research has been documented and established pertaining to barriers and challenges of HCWs' hand-hygiene adherence, HCWs' hand-hygiene practices remain a challenge for healthcare administrators (Nicol et al., 2009). Moreover, Decker, Cipriano, Tsouri, and Lavign, (2016) reported a global concern of fewer than half of providers adhering

to hand-hygiene indications and methods. The rate of HCWs' nonadherent hand-hygiene practices and behaviors can vary in the perception of HCWs' hand-hygiene practices despite being low. Fouad, Halim, Algebaly, and Maher (2018) suggested that HCWs who know that they are being observed may avoid activities that require hand-hygiene adherence during the time of a hand-hygiene audit. On the other hand, a study aimed at gaining better insight into the effects of the visual observation of bacterial growth; from handprints of 40 HCWs' compliance with hand-hygiene in medical and post-operative cardiac surgical units, reported that the visual effects of bacterial growth, on the handprints before and after the use of alcohol disinfectants can help to improve hand-hygiene compliance (Fouad et al., 2018). Furthermore, though unavailable resources may not be the main source of HCWs' nonadherent hand-hygiene behaviors, literature depicts that available resources are an essential aspect to HCWs' ability to perform hand-hygiene practices (Diwan et al., 2016).

Pearson et al. (2013) reported that identifying current basic behaviors associated with hand-hygiene, hygienic hand drying, and covering one's nose and mouth, during coughing and sneezing, may help to identify highlight behaviors that may help to reduce the spread of HAIs. For instance, Pearson et al. conducted a qualitative study to better understand basic behaviors associated with Kenyans hygienic hand drying behavior, covering one's nose and mouth during coughing and sneezing, and behavior involving daily living activities (Pearson et al., 2013). Pearson et al. noted that performing hand-hygiene practices without drying one's hands can add to the risk of HAIs. In addition, Pearson et al. noted that many of the Kenyan women in the study had reported using a section of their clothing wrap to dry their

hands. On the other hand, Curtis et al. (2009) discovered that only 43% of mothers washed their hands after changing a dirty diaper. Moreover, Freeman et al. (2016) reported that only 19% of the population worldwide wash their hands after contact with substances discharged from the body. Despite the ongoing efforts of infection control preventionists and global healthcare leaders to improve HCWs' nonadherent hand-hygiene practices ensuring that patients' experiences are not jeopardized because of HCWs' unclean hands remain a challenge for healthcare leaders.

Incorporating the cultural beliefs and norms of HCWs is essential to ensuring patient safety and saving lives. Adherent hand-hygiene practices and behaviors of HCWs can help improve patient safety, save lives, and help to minimize the burden of increased cost placed on healthcare administrators due to HAIs (WHO, 2016). Additionally, appropriate hand-hygiene practices and recommendations when followed by HCWs can help to reduce the risk of patient exposure to organisms during HCWs' daily encounter with patients, decrease transmission from patient to patient, and minimize the risk of transmission from HCW to HCW (Wiles et al., 2015). Nonetheless, healthcare leaders and administrators continue to search for strategies, best practices, and innovations that would help to improve overall handwashing behaviors among HCWs. Furthermore, designing systems that integrate HCWs' behavioral considerations is essential to motivating HCWs to perform adherent hand-hygiene practices (Al-Tawfiq & Pittet, 2013).

Foreign-Born HCWs

The global shortage of 7.2 million workers including physicians, nurses, midwives, and other healthcare professionals has increased the risk and threat of

healthcare systems possessing the ability to adequately provide care and treatment in emergent and life-threatening situations (Tam et al., 2016). However, the U.S. as with other countries, is challenged with providing quality and safe care while adopting the practice of recruiting foreign-born HCWs to help reduce the impending nurse shortage in global healthcare systems (Sherwood & Shaffer, 2014). Though, the nursing profession may provide a host of opportunities for migration, the challenge for healthcare leaders is in helping the migrating nurse to adapt to the cultural influences of the healthcare system within the adopted country (Moyce, Lash, &Siantz, 2016).

Tam et al. (2016) noted that the migration of nurses from lower-income countries to more affluent countries such as Australia, Canada, UK, and the U.S. prompted the WHO to adopt a voluntary code of practice in May 2010. Additionally, the code of practice was implemented to help minimize tensions between migrating workers who have the right to migrate and the countries that they are migrating from (Tam et al., 2016). However, Megeus, Nilsson, Karlsson, Eriksson, & Andersson (2015) noted that hand-hygiene behavior changes in the healthcare setting are difficult to implement because they are often linked to social behaviors established early in life and for self-protection.

Thereby, making it difficult for healthcare leaders to predict when HCWs in the healthcare setting will perform appropriate hand-hygiene practices. Moreover, HCWs' varying cultural aspects, childhood behaviors, and relationships formed early in life can add to HCWs' difficulties in changing nonadherent hand-hygiene behaviors. Despite, the growing need for HCW migration and healthcare leaders

advocating for migration and safe practices, hand-hygiene behaviors change depending on the country and setting and thereby pose a greater challenge for health care leaders (Diwan et al., 2016).

IENs' philosophical views may already be incorporated into their nursing practice and social beliefs prior to migrating and integrating into the U.S. workforce, and could thereby increase the risk and prevalence of ethical quality and safety issues, that may occur when nurses work in a cultural environment different from their own cultural settings (Sherwood & Shaffer, 2014). In addition, despite cultural barriers, adjustments to the American culture, and culture-related challenges, healthcare leaders understand that foreign-born nurses are working in the United States and other countries to help fill the nursing shortage. Therefore, developing hand-hygiene programs that include cultural influences can help to maintain system-wide hand-hygiene training programs.

A phenomenological study using Giorgi's principles of data analysis and narratives extracted from 29 IENs from India, the Philippines, and Nigeria found that IENs shared experiences of culture shock, a need to rise above challenges, and a desire to do better, despite their perceived feelings of loneliness and experiences with cultures unlike their own culture. On the other hand, Kawi and Xu (2009) conducted a study based on Cooper's five stages of integrated research review; aimed at understanding the barriers to the adjustment of foreign-born nurses in the healthcare environment. In addition, the study reported that IENs' perceived differences in cultural lifestyles, language and communication, support, differences in nursing practice, inadequate education, and inequality opportunities are barriers to adjustment

within Australia, Canada, Iceland, UK and the U.S. (Kawi & Xu, 2009). Tregunno et al. (2009) conducted a grounded theory study in Ontario, Canada, to determine the experiences of IENs who worked in Ontario as novice nurses from 2003 to 2005. The study reported that nurses perceived their nursing experiences in Canada as different from their place of origin. Additionally, the IENs revealed through the study that they were not familiar with varying cultures and culturally competent care. Furthermore, Grayson et al. (2015) suggested that a culture-change approach can help to influence hand-hygiene adherence. These studies confirm the need for healthcare leaders to design hand-hygiene programs that would take into consideration the HCWs' country of origin in alignment with cultural differences and influences of the foreign-born HCWs.

Administrative Hand-Hygiene Improvement Strategies

Research has shown that despite the implementation of many programs by healthcare and public health leaders, hand-hygiene behaviors and practices among health care professionals remain less than adequate. The increased cost associated with HAIs because of HCWs' unclean hands and patient encounters has made the quest to ensure that HCWs are washing their hands a high priority among healthcare leaders and administrators. On the other hand, the Centers for Medicare and Medicaid Services (CMS) will no longer pay for HAIs (McGuckin, Govednik, & Leal, 2015).

Sickbert-Bennett et al. (2016) reported that knowing hand-hygiene rates can help healthcare administrates reduce HAIs associated with HCWs' unclean hand-hygiene practices by integrating the knowledge of hand-hygiene rates into a healthcare system's hand-hygiene strategic plan. An additional benefit that this study

has is the potential to provide a foundation for the leadership of healthcare organizations and healthcare systems to be at a lesser risk of not receiving Medicare and Medicaid financial reimbursements.

Nicol et al. (2009) noted that healthcare leaders who incorporate strategies to increase HCWs' understanding of infection prevention practices in their hand-hygiene programs can help to improve their hand-hygiene-adherent rates. Although many strategies have been implemented by healthcare leaders and administrators to promote hand-hygiene behaviors, behavioral factors remain including a possible role for cultural beliefs as a barrier to hand-hygiene practices. On the other hand, Cavnar, Van, and Hobby-Burns (2017) reported that practicing hand washing behaviors through simulation may help to improve handwashing behaviors. Moreover, Cavnar et al. suggested that hand-hygiene behaviors need to become a habit and should be practiced prior to a student completing school and becoming a HCW. Borchgrevink, Cha, and Kim (2013) suggested that gender may play a role in increasing hand-hygiene rates. In addition, Borchgrevink et al. reported that men need more encouragement to wash their hands than women.

Borchgrevink et al. (2013) reported that 35.1 % of men wet their hands without soap in comparison to only 15.1% of women who wet their hands without using soap. These studies indicate that improving hand-hygiene rates among HCWs is challenging and if healthcare leaders do not take into consideration factors such as cultural beliefs and gender, a greater risk of an inability to sustain an effective hand-hygiene program in a diverse and evolving healthcare system is more likely to emerge.

Diwan et al. (2016) noted that hand-hygiene behaviors among HCWs' intent to perform adequate hand-hygiene can vary from country to country. Likewise, Pfafflin et al. (2017) found that despite evidence proving that hand-hygiene adherence among HCWs varies between countries and settings, global rates of hand-hygiene are low. Therefore, as with Edwards et al. (2002), these studies suggest that developing hand-hygiene programs without considering how cultural beliefs can vary from country to country and setting to setting may lessen the effectiveness of the program (Edwards et al., 2002).

Little research has been explored or conducted pertaining to the understanding of how foreign-born workers' cultural beliefs influence their hand-hygiene behaviors. A study by Flynn and Hartfield (2016) revealed that leadership style can affect hand-hygiene performance, thereby indicating that a top-down approach and culture change may affect hand-hygiene practices. Healthcare leaders who work towards reducing HAIs associated with HCWs' unclean hands may find value in developing hand-hygiene programs that can help sustain identified cultural beliefs.

A study designed to monitor hand-hygiene accountability and adherence consisted of a prototype system aimed at tracking behavior modification (Hong et al., 2015). The prototype design consisted of a doorway tracker sensor, two sanitizer dispenser sensors, a microprocessor, and an alarm. Furthermore, the prototype compliance checking system had a 98.75% accuracy rate and had simulated during the testing pilot phase and found 40 compliant HCWs and 40 noncompliant HCWs in a single patient pre-holding room (Hong et al., 2015).

Healthcare leaders, in addition to bearing the responsibility of decreasing the spread of harmful microorganisms from patient to patient and HCW to HCW, are thus burdened with the responsibility of decreasing increased costs because of HAIs. However, healthcare leaders and administrators throughout healthcare systems are unable to sustain hand-hygiene rates among HCWs; despite implementing hand-hygiene strategies such as visual hand-hygiene reminders and informational materials.

Alarmingly, HAIs are increasing because of healthcare leaders' inability to increase HCWs' basic hand-hygiene practices beyond 40% (Chassin, 2013). A further mix-method study was conducted in England, at a university hospital to gain knowledge related to inherent or elective hand-hygiene practices using a new direct observation monitoring process (Dawson, Wells, Mackrill, & Prevc, 2017). The Dawson et al. study included direct observations on a renal hemodialysis unit and a cardiothoracic ward. These units were considered to have low blood exposure. In addition, 20 nurses or healthcare support staff were selected from each unit. Furthermore, the study revealed confusion among employees with hand-hygiene performance data and concluded that a common language of performance data was needed with visual feedback aligned with training (Dawson et al., 2017).

Scheithauer, Batzer, Dangel, Passweg, Widmer (2017) suggested that workload can affect hand-hygiene adherence. For instance, a quantitative study monitoring hand-hygiene practices prospectively following the WHO guidelines was conducted through electronic surveillance in a hematology ward at a tertiary care center in Europe to better understand the staff workload. The study revealed that through usage of electronic hand rubs workload may indirectly affect nurses' hand-

hygiene adherence (Scheithauer et al., 2017). On the other hand, Stedman-Smith, DuBois, and Grey (2015) reported that staffing concerns and indirect cost of overtime pay are added incentives for healthcare leaders to improve hand-hygiene behaviors among HCWs. Thus, despite hand-hygiene rates requiring a multifaceted approach, gaining better insights into HCWs' workload and staffing levels may help with increasing hand-hygiene adherence.

Although, resources and money are made available by healthcare leaders to help ensure the employment of infection control preventionists, to foster healthcare systems and employee educational and developmental programs, which are designed, to reduce HAIs, and improve HCWs' nonadherent behaviors and practices, HCWs' hand-hygiene performance remains less than adequate. For example, the five moments of hand-hygiene was developed and implemented by the WHO, to help improve HCWs' hand-hygiene behaviors in both developing and developed countries. The five moments of hand-hygiene is a strategy used by global leaders, to help HCWs understand the appropriate times to perform hand-hygiene in patient care settings. In addition, healthcare administrators throughout healthcare systems have adopted the five moments of hand-hygiene, as an approach and guide to help improve HCWs' hand-hygiene behaviors and reduce the cost of HAIs. Nonetheless, despite the global adoption of WHO's five moments of hand-hygiene, healthcare leaders are challenged with finding innovative, and creative ways; to stop the spread of harmful pathogens from patient to patient because of HCWs' unclean hands.

CDC (2017) although argued that HCWs clean their hands in less than half of the time required to clean their hands, the CDC suggested that distributing posters and

hand-hygiene visual reminders may help to improve HCWs' hand-hygiene behaviors. In addition, CDC suggested that healthcare leaders integrate role modeling; as a strategy to help improve HCWs' hand-hygiene practices, in alignment with identifying hand-hygiene as a social behavior since it may help to improve hand-hygiene practices. Despite, the efforts of healthcare leaders and administrators to raise awareness of how HCWs' nonadherent hand-hygiene practices; can increase the spread of HAIs and antibiotic-resistant pathogens that are almost impossible to treat, they are being challenged with sustaining behavioral changes that would improve HCWs' hand-hygiene practices (CDC, 2017).

Behavioral Changes

HCWs' behaviors and intent to perform hand-hygiene practices can affect patients' overall care and outcome. Although hand-hygiene behaviors vary from country to country, hand-hygiene is low globally and remains a worldwide health threat. For example, Cavnar et al. (2017) suggested that hand washing behaviors among HCWs are only at 35 to 40%, and 99,000 people die in the United States in the United States annually because of HAIs. Cavnar et al. also noted that the cost of HAIs can range from 28.5 - 45 billion dollars.

Understanding the behavioral changes exhibited by HCWs is instrumental and remains a constant concern for healthcare leaders. Additionally, motivational factors that influence behavioral changes are used by healthcare leaders to help change HCWs' nonadherent hand-hygiene behaviors to behaviors that are in alignment with healthcare system leaders' perceived goals of increasing handwashing behaviors among HCWs. Understanding behaviors that motivate HCWs' hand-hygiene-adherent

practices is an important aspect of improving hand-hygiene behaviors (Al-Tawfiq & Pittet, 2013). Nonetheless, an increase in intervening events can help to change the behaviors of specific populations (Ajzen, 2011). Furthermore, Ajzen (2011) suggested that normative or controlled beliefs, attitudes, subjective norms, or perceptions of control may formulate a revision of intentions. In addition, changes of this kind can help to reduce the validity of the intent to predict the behavior assessed prior to the changes being implemented.

Srigley et al. (2015) designed a study to evaluate 11 intensive therapy units and 22 acute care units among the elderly general medical wards and implemented the feedback Intervention Trial (FIT) in 13 English and Welsh hospitals. The FIT intervention was informed by behavioral theory and, specifically, goal setting, control, and operant learning theories and used personal goal settings and action planning to potentiate the feedback. Additionally, notices to participants involved in the study were posted on units explaining that HCWs were being observed for their hand-hygiene behaviors and practices.

Real-time feedback was shared with participants presenting nonadherent hand-hygiene behavior. The feedback consisted of helping the HCWs to instantly form an action goal and plan to help improve hand-hygiene behaviors. In addition, it was reported that over two-thirds of the 207 recorded explanations were explained by three domains, consisting of memory, attention, and decision making (Srigley et al., 2015). The study reported knowledge as the top indicator for nonadherent behaviors among 87 out of 207 participants. 44% of the participating population was subdivided into the following three themes: memory, loss of concentration, and distraction by

interruption, and as possessing knowledge with two themes related to specific hand-hygiene indications (Srigley et al., 2015). Thus, health care leaders continue to look for new ways to modify and increase HCWs' hand-hygiene behaviors.

Cultural Beliefs of Foreign-born HCWs and Hand-Hygiene

Taking into consideration HCWs' cultural beliefs aligned with understanding the HCWs' willingness to participate in cultural ideologies that reflect other subgroups, may not only help to foster hand-hygiene adherence but may also help to identify cultural links and gaps. Understanding cultural gaps may help to better understand HCWs' cultural influences pertaining to their hand-hygiene practices. HCWs nonadherent hand-hygiene practices can negatively affect healthcare systems throughout local and global communities.

Piras et al. (2018) reported in a study focused on nurses' hand-hygiene attitudes, subjective norms, and perceived behavioral control in alignment with observed and self-reported hand-hygiene behaviors that nurses observed hand-hygiene rates were at 55%. The study also revealed that the tendency to self-report was at a much higher rate of 90%, thereby indicating that nurses' subjective norms and perceived control are linked to observed and self-reported hand-hygiene performance. The study indicated that HCWs overestimate their hand-hygiene performance. In addition, the findings of the study suggest that both self-reported and observed hand-hygiene performances were associated with nurses' hand-hygiene subjective norms and perceived behavioral control. Furthermore, the study also indicated that although nurses identified nurse leaders as their hand-hygiene normative referents, future research is required to help change nurses' hand-hygiene behaviors.

Understanding both foreign-born HCWs' hand-hygiene adherent behaviors and the cultural behaviors of foreign-born immigrants; may help to gain a better insight into the norms that are already embedded into cultures. A qualitative study guided by grounded theory was conducted to better understand the effects of immigration on Chinese immigrants in Canada and the U.S. and was designed to explore the smoking-related experiences of Chinese immigrant fathers (Mao, Bottorff, Oliffe, Sarbit, & Kelly, 2015). The Chinese immigrant population is the second largest visible minority group in Canada, reflecting immigration influencing reduction in smoking because of the lower rates than their counterparts in China (Mao et al., 2015).

The study consisted of 22 Chinese individuals who were fathers and had migrated to Canada. Their smoking patterns were influenced by their sense of masculinity, the health of their children, and diverse Chinese cultural norms (Mao et al., 2015). Understanding the cultural and behavioral influences of specific groups can provide information on how groups will react in various situations such as work and home. There also exists a paucity of research regarding the factors that influence the cancer-screening behaviors of the Korean population, although lung cancer is a commonly occurring cancer in the United States among American Korean men.

A report by Sin and Taylor (2015) was designed to better understand the sociocultural barriers to lung cancer screening in the Asian immigrant population; and studied American Korean men living in Seattle Washington. It was identified that the passive approach to healthcare adopted by Korean American men has led to higher healthcare costs (Sin & Taylor, 2015). Understanding the culture and aspects of

sociocultural barriers to foreign-born HCWs; can help leaders to gain a better understanding of how to improve programs and design systems that would decrease increasing healthcare costs and decrease the burden of costs associated with HAIs.

In a further report using a questionnaire survey based on a behavioral theory model, consisting of 148 nurses in a 40-bed ICU unit in a university hospital revealed that although social influence and knowledge regarding hand-hygiene guidelines had no predictive value; time-related attitude and one's own self-efficacy were strong predictors of hand-hygiene behavior (De Wandel, et al., 2010). On the other hand, Steffen and Merrill (2011) conducted a study with 336 Mexican participants to determine if religion affiliation affects the decision-making process of immigrants who are part of a dominant culture achieving Anglo acculturation. For instance, the study revealed that being a part of a dominant culture may increase the likelihood of Anglo acculturation. It was also noted in the study that immigrants will generally work on the process of acculturation; so that their cultural identity could be sustained to some degree while becoming involved with other groups (Steffen & Merrill, 2011).

Steffen and Merrill (2011) also discovered that various cultures adopt four possible acculturation strategies. For instance, the integration of one's culture while becoming involved in a new cultural behavior involves leaving one's culture behind while becoming involved in a new culture. Separation relates to not becoming involved and leaving one's own culture behind. Marginalization relates to leaving one's culture behind without becoming involved with a new culture. These studies confirm that improving hand-hygiene-adherent practices among foreign-born HCWs consists of healthcare leaders reaching a better understanding of that although the

integration process of combining one's own cultural beliefs with the beliefs of other cultures is adopted; HCWs can maintain their own cultural influences.

A study consisting of a voluntary online survey was administered to a randomly selected sample-size of 1,600 full-time employees working in a mid-western U. S. university consisting of 5,504 workers (Stedman-Smith et al., 2015). In addition, the study consisted of a five-point Likert scale to measure four major TPB-related constructs. The survey included self-reported hand-hygiene behavior practices and four distinct beliefs consisting of normative expectations of others' normative and behavioral beliefs, and control reflecting control beliefs (Stedman-Smith et al., 2015). Furthermore, the study was not only conducted to understand better the workers' perceptions of when to perform hand-hygiene practices but also consisted of measuring a fourth construct pertaining to workers' beliefs (Stedman-Smith et al., 2015).

The researchers reported that the participants in the study had revealed three top beliefs regarding protective hand-hygiene practices as always or usually being conducted after using a urinal or toilet (97.2%), before eating or handling food (79.2%; Stedman et al., 2015). Stedman-Smith et al. also noted that behavioral changes are more complex throughout the healthcare system than in a university. These studies confirm how understanding HCWs' intent to perform hand-hygiene practices in critical and post-units can help to gain better insights into how HCWs' own culture may influence their hand-hygiene decision-making process.

Summary and Conclusions

In conclusion this chapter consisted of a review of literature that highlighted a need to investigate cultural beliefs and attitudes of foreign born HCWs related to their hand-hygiene practices. Though, hand-hygiene has been identified as the most fundamental and easiest way to reduce microorganisms and antibiotic resistance, HCWs' infrequent hand-hygiene practices are alarming (Diegel-Vacek & Ryan, 2016). A review and summary of several studies exposed a gap and need to further explore cultural beliefs, and attitudes of foreign born HCWs related to their hand-hygiene practices. The theory of planned behavior was used as a framework and guide to depict three behaviors of the theory of planned behavior constructs. These three behaviors consist of the HCWs' attitude and position towards the behavior, subjective norms associated with HCWs' perceived social pressure to perform the behavior, and behavioral control as it relates to the ability to perform the behavior related to external and internal factors. Piras et al. (2017) used TPB to elicit and gather critical care nurses' salient beliefs and barriers associated with hand-hygiene outcomes through an open question format. For instance, the Piras et al. study reported that the nurse's salient beliefs were analyzed in relationship to nurses' subjective responses based on three open-ended questions (Piras et al., 2017). These questions focused on benefits, advantages, and general beliefs pertaining to hand-hygiene (Piras et al., 2017). Nurses participating in the study perceived self-protection as a major aspect of performing hand-hygiene (Piras et al., 2017). Nurses in the study also identified their nurse leaders as positive referents to performing hand-hygiene, convivence of hand-hygiene supplies within proximity to a patient's room (Piras et al., 2017). Furthermore, time

was perceived by critical nurses participating in the study as a barrier to performing hand-hygiene (Piras etal., 2017). This study addressed the literature Gap of no prior studies found pertaining to cultural beliefs and attitudes of foreign born HCWs related to their hand-hygiene practices.

Healthcare leaders although have implemented various strategies aimed at promoting and improving HCWs' hand-hygiene practices, little work has been undertaken around exploring HCWs' cultural beliefs as a barrier to hand-hygiene practices. However, global healthcare leaders who aim to seek different ways to improve hand-hygiene-adherent practices among HCWs are challenged with decreasing HAIs and length of stay (LOS) associated with HCWs' nonadherent hand-hygiene practices. Additionally, it was noted that HAIs are not only a leading cause of morbidity and mortality in the United States in the United States but are also the primary contributors to increased cost throughout healthcare systems (Diegel-Vacek & Ryan, 2016). These studies confirm that understanding the influences of the social aspect of foreign-born HCWs to perform hand-hygiene practices needs further exploration.

A further study reported that although hand-hygiene adherence in both developed and underdeveloped countries is low, after implementing five moments of hand-hygiene, providing education and posters such as the five moments of hand-hygiene, hand-hygiene practices among HCWs increased (Pfafflin et al., 2017). However, Al-Tawfiq and Pittet (2013) noted that although hand-hygiene among HCWs can be improved through system changes, understanding behavioral

considerations is essential to motivating HCWs' adherence to hand-hygiene-adherent practices.

Squires (2013) conducted a study to better understand and help improve physicians' and residents' hand-hygiene behaviors' barriers and noted that hand-hygiene knowledge translated into improved hand-hygiene adherent behaviors (Squires, 2013). On the other hand, Srigley et al. (2015) conducted a study to better understand HCWs' challenges with respect to hand-hygiene performance. Participants in the study were provided with real-time feedback pertaining to their nonadherent hand-hygiene behaviors. The feedback also consisted of helping the HCWs immediately form an action goal and plan to help improve hand-hygiene behaviors (Srigley et al., 2015).

HAIs are the most common adverse events and are at an epidemic state, although IPs work diligently toward finding innovative ways to decrease HAIs associated with HCWs' unclean hands (Aziz, 2013). Hence, despite dire and critical warnings and alerts from world health leaders that the spread of harmful pathogens to patient to patient and HCW to HCW; increases the rate of admitted patients developing a potential HAI, directly associated with HCWs' nonadherent hand-hygiene behaviors and practices, hand-hygiene among HCWs remains subpar.

Literature has indicated that behaviors that motivate HCWs' hand-hygiene-adherent practices are an important aspect of improving hand-hygiene behaviors (Al-Tawfiq & Pittet, 2013). However, literature has also depicted that hand-hygiene behaviors and practices among HCWs can vary from country to country (Pfafflin, 2017). Therefore, inconsistencies in the methods proposed to improve hand-hygiene

rates among HCWs; has created an environment where healthcare leaders find difficulty in sustaining an effective hand-hygiene program (O'Donoghue et al., 2016).

Findings can be used to decrease the spread and transmission of harmful healthcare pathogens associated with HCWs' nonadherent hand-hygiene practices. Furthermore, gaining better insights into the knowledge gap associated with how HCWs' cultural influences can help to improve HCWs' nonadherent hand-hygiene practices.

In Chapter 3, I will explain the methodology that will be used to explore the influences of culture pertaining to hand-hygiene practices of foreign-born HCWs.

Chapter 3: Research Methods

Introduction

The purpose of this qualitative study was to explore the influences of cultural beliefs on the hand washing behaviors of foreign-born HCWs. This includes understanding the influence of cultural beliefs on HCWs' intention to adhere to hand-hygiene practices. Previous studies have addressed nurses' nonadherent behaviors to perform hand washing practices through education, feedback, equipment management, and seeking to gain better insight into HCWs' hand washing knowledge and understanding of hand washing education (Piras et al., 2018). TPB has also been used to help address HCWs' educational needs in the food industry (Stedman-Smith et al., 2012). On the other hand, Mete and Akin (2018) found that the rate of hand-hygiene observations increased after hand-hygiene training. However, hand-hygiene compliance remained low among nurses who participated in the study. Gaube, Tsivrikos, Dollinger, and Lermer (2018) suggested that Ajzen's theory of planned behavior (TPB) is a widely used theoretical framework to help better understand the intent of the HCW to perform hand-hygiene practices. Gaube et al. undertook a study involving electronic monitoring devices that were installed on top of hand rub dispensers in patient rooms. A frowning face emoticon was displayed prior to performing hand-hygiene practices indicating that hand-hygiene should be initiated. TPB was used as a framework in the study to highlight the association with the emoticon and hand-hygiene behaviors. This study revealed that using subjective norms such as the emoticon served as an additional hand-hygiene reminder as opposed to using hand rubs without emoticons (Gaube, et al., 2018). However, no

study has addressed the influence of culture and hand washing practices on foreign-born HCWs'.

Chapter 3 covers the following topics: the research design and rationale, role of the researcher, methodologies used to explore foreign-born HCWs' cultural influences pertaining to their hand-hygiene beliefs, ethical procedures, data security and confidentiality. a review of data collection and management, data analysis, and issues of trustworthiness. a review of validity, confirmability, reliability, and dependability.

Research Design and Rational

The aim of the study was to understand the cultural influences pertaining to foreign-born HCWs' hand-hygiene behaviors. This study addressed the following research questions:

1. RQ1- Qualitative: What are the attitudes of foreign-born HCWs towards hand hygiene?

2. RQ2- Qualitative: How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?

3. RQ3- Qualitative: How does the environment of foreign-born HCWs' influence their hand-hygiene practices?

The central phenomenon of this study was to seek a better understanding of how foreign-born HCWs' cultural attitudes influence their hand-hygiene behaviors. The influences will consist of the cultural attitudes of foreign-born HCWs pertaining to their intent to perform hand washing practices. The aim of the study was to gain

better insights and understanding of the cultural beliefs of foreign-born HCWs and to investigate how their cultural beliefs can influence their handwashing practices.

The qualitative research approach was used as the tradition for exploring the influences of culture on hand-hygiene beliefs of foreign-born HCWs. Qualitative research is generally exploratory in nature and allows the researcher during the analysis process to identify emerging themes (Wolf, 2016). For instance, qualitative research involves the researcher collecting rich and descriptive data that are in the form of words or pictures derived from in-depth study participant survey questions (Peter, 2015). Nadai and Closs (2016) defined qualitative research as non-numerical data used to explore and understand a diverse of interpretative methods. Peter (2015) noted that qualitative research involves an observation of both the participant setting and behaviors of the participants. Similarly, Flannery (2016) highlighted that the setting of which the phenomenon is examined in is important in qualitative research, because when an individual is removed from the natural setting that the problems or interest occurs in, it changes. Peter argued that qualitative research grounded in the social sciences and humanities may help researchers understand complex problems in healthcare. While, Wolf (2018) suggested that qualitative research may help healthcare leaders find solutions to problematic areas through uncovering the underlying issues.

The grounded theory method was used to help develop new and emerging theory from the data collected and to better understand the influences of cultural beliefs on hand-hygiene behaviors of foreign-born HCWs. According to Harris (2015) grounded theory indicates the way a theory emerges from the research and is

grounded, or justified, by the data collected. Harris argued that grounded theory is often used as a qualitative approach in healthcare and in the social sciences to explain human behavior. Similarly, Nicol et al. (2009) suggest that studies that have been grounded in theory are based on models such as TPB (Nicol et al., 2009). Subsequently, the goal of using grounded theory as a qualitative research approach is to generate data founded on participant's experiences and to ultimately develop a theory out of the emerging data (Hays, & Wood, 2011).

Cooper, Endacott, and Chapman (2009) suggested that theory is developed from the data collected and saturation. Moreover, grounded theory allows the researcher to gather participant experiences through their own lens and not through the lens of the researcher (Charmaz, 2014). The grounded theory method as indicated by Lewis-Pierre et al. (2017, p.1270) was used to better understand the phenomenon of the study through the theoretical development process.

Foley and Timonen (2015) suggested that the grounded theory method is one of the most used and well-known qualitative approaches. In addition, they also suggested that research teams that are dedicated to qualitative methods could have most of their questions of inquiry answered by using a grounded theory approach. Additionally, Foley and Timonen suggested that when grounded theory is used in health services, researchers are more likely to better understand meanings and patterns associated with social practices in the field of healthcare. Furthermore, the qualitative grounded theory method was used to help generate emerging themes.

The rationale for using the qualitative inductive grounded theory method is that this research tradition allows for generating questions from emerging data

(Harris, 2015). For instance, Harris (2015) argued that grounded theory concepts and theory emerge through the process of constantly comparing data, generating questions, helping to explain the behavior, and testing the data through additional data collection. Hence, in support of qualitative in-depth interviews Malagon-Maldonado (2014) pointed out; that historically in-depth interviews are widely used among healthcare professionals as a data collection method. However, Buchanan and Hvizdak (2008) highlighted that online surveys are accepted by professionals in the social sciences, as a purposeful and meaningful way, to conduct formal scientific surveys, and collect behavioral thoughts from people or groups while explaining a phenomenon.

There are various analytical approaches that researchers can use for their qualitative data analysis, including the phenomenological approach; narrative approach; grounded theory approach; ethnographic approach; and the case study approach (Alase, 2017). Alase argued that the grounded theory approach begins with the researcher developing a theory of action. Furthermore, grounded theory was used to better understand through participant's experiences and perspectives, how their cultural beliefs may influence the intent to adhere to hand-hygiene practices. Grounded theory was used as a qualitative method to add meaning and to further understand the behaviors emerging from various situations (Maz, 2013). Moreover, Harris (2015) suggested that the grounded theory approach is used to add meaning and to validate the theory generated from the research study.

The goal of using grounded theory was to help provide a better understanding of the influences of culture on hand-hygiene beliefs of foreign-born HCWs through

interpreting the viewpoints and experiences of study participants through emerging data (Sorsa, Kikkala, Astedt-Kurki Paivi, 2015). Glaser and Strauss (1967) argued that an element of theory converted from insights gained and considered valuable takes all the collected data into consideration Furthermore, grounded theory was used to discover emerging data that is systematically obtained, interpreted, saturated, and analyzed from this qualitative study (Glaser & Strauss, 1967).

Role of the Researcher

According to Peter (2015) the role of the researcher is to serve as the key instrument of data collection. Therefore, I am the primary instrument in this study. I was responsible for coordinating and communicating effectively with the source of my study participants (Creswell, 2009). In addition, my role as the primary investigator required me to have an in-depth understanding of Survey Monkey's policy and data security system. My role as the researcher also consisted of ensuring that study participants were recruited. Thus, my role of the researcher included ensuring that persaonl and professional biases were minimized.

I do not have any personal or professional relationships with any of the potential participants. Kross and Giust, (2019) argued that an essential aspect to ensuring that researchers minimize the risk of personal biases is to be aware of their own biases. For instance, recognizing my own viewpoint and stance of positivism is important to ensuring that my personal biases are not embedded into my data analysis process (Hadi & Closs, 2016). Moreover, Kross and Guist (2019) suggests that personal bias can be minimized through awareness of the researchers' own underlying theoretical assumptions and understanding of the role and position with their study

participants. Nonetheless, personal biases were minimized by focusing on research questions relevant to my study topic of interest, thereby helping to avoid collecting sensitive data that is not needed (Peter, 2015).

Participant Selection

Participants was selected through purposeful sampling. Purposeful sampling was used to help identify appropriate study participants and gain better insight into understanding the research study's phenomenon of interest (Duan, Bhaumik, Palinkas, & Hoagwood, 2015). Avula (2013) defines purposeful sampling as the selection of a sample that the researcher believes is representative of the participant population of the study. Purposeful sampling also helped to ensure that a wide range of the perspectives of the sample population are included (Avula, 2013). Furthermore, purposeful sampling allowed for an in-depth review of participant perspectives through data uncovered during the online survey and analysis process.

Creswell (2013) argued that purposeful sampling allows the researcher to select the study participants aligned with the research participants' experiences with the study topic of interest. Nonetheless, Plinkas et al. (2015) suggested that purposeful sampling allows the researcher to select participants from an organization or systems' larger sample based on participants meeting the same criterion. Hence, the criterion of the study participants assumed that they possessed knowledge and experiences of the phenomenon of interest (Plinkas, et al., 2015). Participants' selection criteria consisted of physicians and registered nurses who had worked in a healthcare system in the United States. physicians and registered nurses who were invited to participate in the study had work at least 35 hours weekly with patients, in a 24-hour in-patient

healthcare setting. Physicians and Registered Nurses who were also invited to participate in the study provided direct in-patient care activities, consisting of in-patient care treatment and services, and performed patient care assessments. Additional criteria consisted of adult aged 18 years or more; male and female; foreign-born HCWs; who understood and spoke the English language.

Literature has indicated that although saturation is used as the foundation to determine sample size; purposefully selected samples can help researchers to identify rich information (Hennink, Kaiser, & Marconi, 2017). However, Vasileiou, Barnett, Thorpe, and Young, (2018) noted that saturation in grounded theory involves emerging theoretical categories as oppose to data gathered through population characteristics. Nonetheless, in principle sampling and saturation share a common thread; highlighting saturation as being the gold standard to determining sample sufficiency (Vasileiou et al., 2018). On the other hand, Hennink et al. compared code saturation and meaning saturation to assess saturation and found that it will take 16-24 interviews to reach meaning saturation. Hennik et al. also suggested that a range of at least 4-24 interviews is required to reach code saturation. Furthermore, Creswell and Monrouxe (2018) selected a total of 25 medical students, junior doctors, and medical educators to participate in their qualitative study aimed at exploring their attitudes and beliefs aimed at hand-hygiene practices.

McInnes, Phillips, Middleton, and Gould (2014) selected 13 purposefully sampled senior managers to participate in a qualitative study consisting of face-to-face interviews. The study's aim was to identify senior managers views on current and innovative strategies to improve hand-hygiene (McInnes et al., 2014). Dixit,

Hagtvedt, Ballermann, and Forgie, (2012) selected 22 pediatric residents to participate in their qualitative study pertaining to attitudes and beliefs about hand-hygiene among pediatric residents. Nonetheless, I selected the number of participants needed for this study, until data saturation was met, and no new information was uncovered. Moreover, based on literature reviewed 20 participants would be used for this study, or more, until saturation is met, involving exploring influences of culture on hand-hygiene beliefs of foreign-born HCWs.

The primary criteria for participant selection were that respondents must be a physician or registered nurse, be foreign-born, and work in a healthcare facility setting within the United States. Additionally, the Physician or Registered Nurse must have provided direct in-patient care activities, consisting of in-patient care treatment and services, as well as perform patient care assessments. Participants were recruited via posting a flyer (Appendix B) on my International Theta Tau Omicron Delta website page and my Linked in web page for two weeks. The informed consent and screening questions were provided through Survey Monkey prior to advancing to the survey questions. The participates who completed the screening questions and met the participant criteria could have access to the survey.

Instrumentation

An open-ended questionnaire survey was developed with the researcher as the sole data collector and analyst of the study. I have chosen to use Survey Monkey as a method to explore viewpoints and critical insights of the study participants because of the flexibility, ease, and low cost associated with online surveys (Philip, 2015). Moreover, online surveys can allow researchers to interact with diverse group of

participants who otherwise may be difficult to find (Morgan, Jorm, & Mackinnon, 2013). I conducted the survey through Survey Monkey to also help reduce research question variations (Buchanan & Hvizdak, 2009). Furthermore, an online survey questionnaire was used to collect the qualitative data, related to cultural influences of foreign-born HCWs who perform direct patient care, associated with the intent to perform hand-hygiene practices.

The Piras et al. (2018) study was used as a basis for the open-ended online survey protocol and followed up with additional questions as needed. For instance, the Piras et al. study consisted of an interview open-ended questionnaire designed to illicit nurses' salient responses; pertaining to hand-hygiene behavioral attitudes reflecting benefits and disadvantages, normative referents associated with positive and negative, and control-beliefs reflective of barriers and facilitators. Nonetheless, Vasileiou, Barnett, Thorpe, and Young (2018) suggests that structured and open-ended questions are important aspects to generating thick and rich data from participant interviews (Vasileiou etal., 2018). Hence, to ensure content validity of the data; a pilot test was conducted to measure the appropriateness of the semi-structured survey questions. The pilot test helped to determine if the online questionnaire sufficiently measures the foreign-born HCWs attitudes and beliefs associated with cultural influences pertaining to their hand-hygiene practices. Moreover, sufficiency of the data instrument was used to ensure data saturation was reached, and no new data emerges, such as themes and codes (Vasileiou et al., 2018).

Pilot Study

I conducted 3 cognitive pilot telephone survey interviews. The cognitive testing method founded on social and psychology was used to better understand why or how the participants answered the survey questions and if there are any factors that may have influenced the answer (Collins, 2003). While Collins (2003) suggested that cognitive pilot testing will also be conducted to help better understand if the respondents understood the survey questions (Collins, 2003). Lee, Mcclain, Webster, and Han (2016) suggests that study participants are more likely to try to interpret what the researcher means as oppose to understanding the literal wording of the question. Moreover, Collins (2003) suggest that researchers who understand the question-and-answer model, consisting of four actions, such as comprehension, retrieval, judgement, and response are better positioned to understand how respondents answer survey questions. For instance, cognitive pre-testing helped to better understand if the survey questions relating to the foreign-born HCW influences of culture pertaining to hand-hygiene beliefs were interpreted as intended. Furthermore, cognitive testing helped to gain insights into any difficulties that the participants, may have encountered with answering the survey questionnaire (Collins, 2003).

I also conducted a pilot test of the online survey questions that I developed to collect data rich information pertaining to participants experiences with the study topic. Mitchell (2015) suggested that participants resembling the participants in the actual study can help the researcher better understand if the qualitative research questions are appropriate questions to ask the study participants. A pilot study consisting of a sample size of three was implemented to help test the survey

instrument and to uncover possible barriers associated with the survey collection instrument, such as inability to reach meaning and understanding of the study topic (Watson, 2016). Mitchell suggested that a pilot study of one or two participants may help to uncover concerns with instrumentation of semi-structured questions.
Pilot studies can help researchers revise research plans, eliminate wasteful data collection, and add rigor of the research (Watson, 2016). Moreover, pilot testing can help researchers gain better insights into whether the questionnaire instrument designed will illicit meaning from the participant responses (Watson, 2016). Additionally, the pilot test was used to enhance the credibility of the study through improving revisions made to the survey questions based on the pilot study (Kim & Oh, 2015). Data Collection

The participant online survey process involved using the web-based company Survey Monkey. After approval was granted from Walden University' IRB the recruitment online participant process was initiated. The data collection methods for this qualitative study consisted of online survey open-ended survey questions. A survey collection tool (Appendix A) was used as a method to help the researcher collect rich data relevant to the participant data collection process (Doody & Noonan, 2013). Moreover, online surveys are used to enhance the electronic sharing of the participant experiences that otherwise may not be shared in a traditional face to face encounter or telephone interview (Rhodes, Bowie, Hergenrather, 2003). The online survey helped the participants share rich and in-depth data pertaining to their attitudes and beliefs associated with cultural influences pertaining to their hand-hygiene practices.

The qualitative study of inquiry consisted of a sample size of 22 participants, which ensured that data saturation was reached. The screened participants from social media and web-based sites such as LinkedIn who volunteer to participate in an individual online survey questionnaire agreed to an informed consent (Appendix B) prior to participating in the study. The informed consent involved prior to conducting the online survey questionnaire, informing study participants the purpose of the study and that the online Survey Monkey link would be shared with study participants after the screening process was completed and the potential study participant met the requirements of the screening process. Recruitment commenced after approval from Walden University's IRB. The targeted population consisted of physicians and nurses who provided direct patient care activities, such as in-patient care treatment and services, and who had performed patient care assessments. Registered Nurses were recruited through flyers posted on my International Theta Tau Omicron Delta website and my Linked in web page. My Walden University's' email address and a contact telephone number used for participants' response to volunteering was included in the participant recruitment flyer (Appendix B).

The participants who provide informed consent were subsequently given the opportunity to participate in the online survey. The survey questions were asked in alignment with the purpose of the study. Participant survey questions will consist of data collection questions asked during the Survey Monkey survey questionnaire. Prior to ending the participant qualitative open-ended online survey; participants will be asked if there is anything else that they would like to add. I also informed the study participants that if desired they could share any additional responses or comments

prior to ending the survey questionnaire, and if needed they could email me at my Walden University email or contact me through the telephone number provided.

Data Analysis Plan

Data analysis for this qualitative study used the grounded theory approach to explore the influences of culture on hand-hygiene beliefs of foreign-born HCWs and to help generate theory from the emerging data (Green, 2014). Charmaz (2014) noted that an essential goal of the analysis process is to make analytical sense of the data collected. Consistent with grounded theory; data collection and the data analysis process will occur simultaneously (Corbin and Strauss, 2015). Equally important, theory on the other hand is constructed and derived from the collected data during the research process and then analyzed (Corbin and Strauss, 2015). The concepts derived from the analyzed data will fundamentally help to lay the groundwork for further data collection (Corbin and Strauss, 2015). Hence, documentation of field notes and memos will occur after each individual online survey. Charmaz (2014) noted that an essential goal of the analysis process is to make analytical sense of the data collected. Therefore, memos were used to help construct the audit trail for developing theory (Harrison, 2014). Furthermore, memos were not only used to help interpret the collected data, but also to help compare developing codes and emerging themes during the analysis phase (Tong et al., 2018). The grounded theory approach was also used to help conceptualize the similarities associated with experiences of foreign-born HCWs cultural influences pertaining to their hand-hygiene practices and the culture of the setting.

The constant comparative method is used to generate questions to elicit the developing theoretical explanation of foreign-born HCWs' cultural influences, pertaining to their hand-hygiene beliefs, and testing of these beliefs will occur with further data collection (Harris, 2014). In addition, the constant comparative method, consistent with grounded theory was used to help code the collected data, compare similarities within the data, and make comparisons with other collected participant data (Charmaz, 2014). While, Corbin & Strauss (2015) defines the constant comparative method as breaking down data into organized components, whereas each emerging component is compared for similarities and differences; Glaser and Strauss (1967) define the constant comparative method as consisting of four stages. Stage one compares incidents applicable to each category, such as looking for themes in each category. Stage two consisted of integrating categories and their properties. In this stage, I highlighted and compared identified themes. Stage three delimiting the theory, included integrating categories to help decrease the number of categories identified. Stage four consisted of writing the theory.

I also compared online surveys and incidents for comparison with other participant statements and incidents. Glaser and Strauss (1967) noted that the researcher starts by coding each incident in the data into as many categories of the analysis process as possible, and that emerging data may fit into an already existing category. For instance, the category of HCWs' cultural influences pertaining to the intent to perform hand-hygiene practices may not only emerge from the responses of HCWs' experiences with hand-hygiene practices but, may also fit into an existing category. The initial step in the coding process will consisted of open coding. Open

coding reflects the major categories generated from respondents and inquiry of the phenomenon (Creswell, 2013). The second step in the coding qualitative analysis process axial coding consisted of codes carefully constructed and integrated into categories reflecting the participants' experiences (Charmaz, 2014). Charmaz defines axial coding as linking categories to subcategories and specifying properties and dimension of a category. Similarly, Whiting and Sines (2012) suggested that axial coding links data and categorizes the data, while establishing categories and subcategories. I also used steps outlined by Soklaridis (2009), such as reading through the collected data, identifying specific segments of information, labelling the segments of information to identify categories, and reducing redundancies among categories. Identified categories were organized to help ensure that the data analysis plan is followed and completed (Soklaridis, 2009). Moreover, Charmaz suggests that researchers are better positioned to align their study with the empirical world; when codes constructed and categorized reflect the participant's experiences. Hence, the anonymous participants' data remained de-identified during the time of transcription, secured, and password protected (Parker, Latt, & Schwartz, 2011). The final step selective coding involved interrelating the categories to highlight participant experiences through linking categories with memos and diagrams (Creswell, 2013). Furthermore, an important element of the data analysis plan included developing a secure matrix system, to identify emerging data generated from the study participants (Creswell, 2013).

MAXQDA is the qualitative software package that I used to facilitate coding, retrieve segments of data, promote the accuracy in identifying data. MAXQDA was

also used to assist in tallying the coded segments. In addition, MAXQDA software was used to help extract themes, sub-themes, understand patterns, and identify quotes and phrases from study participants (Schönfelder, 2011). Addittionally, MAXQDA was used to attach memos to codes and create mapping and visualization of aspects of the qualitative study (Eshan, Javad, Bahrami, & Reza 2018). Furthermore, MAXQDA was used to categorize quotes and codes (Mohammadinia, et., 2018).

Issues of Trustworthiness

The researcher is integral to not only the entire study and survey process but also to the issues of trustworthiness including credibility, transferability, dependability, and confirmability of the data gathered. Shento (2004) suggests that qualitative researchers who are guided by Guba's four criteria, such as credibility, transferability, dependability, and confirmability are more likely to add trustworthiness and rigor to their qualitative study. On the other hand, qualitative researchers who conduct surveys, interpret, and analyze their own data may be at risk for interpreting and analyzing the collected data founded on their own personal biases (Hadi & Closs, 2016). The trustworthiness of this qualitative study will be ensured through focusing on all four components of trustworthiness, such as credibility, transferability, dependability, and confirmability of the study.

Multiple methods of data collection, memos, and self-reflectivity were used as startegies to help ensure internal validity, reliability, and objectivity. Raising self-awareness and reflecting on my own biases and influences associated with this study will help to ensure trustworthiness, value, rigor, and credibility of the study (Baillie, 2015). While, Hadi and Clos (2016) noted during a mini research review of 10 clinical

pharmacists' qualitative research studies only two of the studies highlighted the importance of using strategies such as member checking and peer debriefing to enhance trustworthiness and rigor of the study. Baillie (2015) pointed out that audibility, reflexivity, and rich description are essential to evaluating and providing quality of the research study. Moreover, Ravitch & Carl (2016) argued that instead of replicating the study design, thick descriptions allow readers of the study to take into consideration various factors. Furthermore, validity was validated through results from the study being transferable to the population which it was drawn from (Andrade, 2018).

Credibility

Cope (2014) defines credibility as following a prepared open-ended survey questionnaire guide and focusing on the survey questions. On the other hand, Colorafi and Evans (2016) defined credibility as relating to qualitative work and promoting a descriptive and evaluative understanding. Moreover, Heale and Forbes (2013) defined triangulation as ensuring credibility and confirmability of a study through using more than one data point to research the question of inquiry. Another definition of triangulation includes using multiple data points consisting of prolonged engagement with participants, persistent observation, peer debriefing, member checking, and reflective journaling (Connelly, 2016). Credibility of this study was ensured through multiple methods of triangulation, consisting of data from the online surveys, notes from the reflexive journal, scientific literature, and using the constant comparison method of the collected data (Corbin & Strauss, 2015). Nonetheless, the collected data were reviewed multiple times to help ensure credibility of the study (Connelly, 2016).

Equally important, Hadi and Closs (2016) highlighted that reducing researcher bias requires the researcher to acknowledge their own biases by reflecting on their past beliefs, training, and admitting that these may have influenced their research findings. Hence, honesty, integrity, and the credibility of the study will also be ensured by informing the study participants, that they have the right to withdraw from the study at any time, and they would be reminded that there are no right or wrong answers. Furthermore, validity, and credibility of the data will be ensured by minimizing personal bias, participant validation, and review of the respondent transcripts (Baillie, 2015).

Transferability

Connelly (2016) defined transferability or external validity as findings being useful by others in different settings. Similarly, Shento (2004) defined transferability as finding value in determining if the results are the same for varying people in different settings. The thick and rich details from the study may help to determine if the findings of the study are transferrable to another setting (Baillie, 2015). The focus of this qualitative study as with quantitative studies is not on generalizability, but instead this qualitative study's' focus is on gaining better insights into participants' experiences, associated with the cultural influences pertaining to hand-hygiene beliefs. Therefore, as a strategy to help assure transferability, I provided a detailed thick and rich description of the assumptions of the study's context and setting to help determine if the assumptions within the contextual setting are understood and transferable. Moreover, Morse (2015) suggests that thick and rich data overlaps therefore, researchers are better positioned to determine areas of replication.

Furthermore, a greater understanding of how other researchers can test the findings of this study can help to provide additional insights into other studies and settings (Coloarfi & Evans, 2016).

Dependability

Brown, Steven, Troiano, and Schneider (2002) noted that dependability represents the changing conditions of the phenomenon being studied. On the other hand, Connelly (2016) defines dependability as maintaining stability of data over a period of time and the conditions of the study. Dependability of this study was achieved through using methods of triangulation such as, in-depth online survey questions, thick descriptions, and audit trails (Ravitch and Carl, 2016). Grounded theory methodology was used to ensure that coding and emerging themes are accurate. In addition, the research studies' online survey questions were based on TPB (Colorafi & Evans, 2016).

Studies that use the qualitative approach grounded theory should conduct the study with the same structure as other grounded theory studies (Connelly, 2016). Moreover, in this study, I ensured reliability of the study by measuring what, I intended to measure, the consistency of the instrument, and by ensuring that the study participants will be provided the opportunity to answer the survey with trustworthiness. Thus, reliability will be met by ensuring that data collection tools are free from bias (Andrade, 2018). Additionally, audit trails were used to help establish dependability. Astroth and Chung (2018) suggested that audit trails, such as journals and field notes can help the researcher to achieve dependability. Furthermore, detailed

documentation was used throughout the research process to help others gain better insight into how the conclusions of the study were reached (Hadi & Closs, 2016).

Confirmability

Connelly (2016) defines confirmibility as the degree to which findings are consistent and can be repeated. Connelly suggested that reserachers keep a detail note of their decisions and ongoing analysis of the study. These notes may be reviewed by a colleague, or discussed in a peer debreifing session (Connelly, 2016). Additionally, verbatim transcripts, and coding notes were used to ensure that another researcher can confirm the study if presented with the same data (Brown et al., 2002). In addition, the awareness of my personal biases and assumptions were in alignment with the scope of this study. Colorafi and Evans (2016) suggested that reporting own research biases in the study can help to minimize incorporating personal researcher biases and assumptions into a research study.

Ethical Procedures

The role of the Institutional Review Board (IRB) is to provide protection to human subjects through prompt modifications of proposed studies and to improve the accuracy of consent forms (Gearhart, 2010). Tsan and Tsan (2015) noted that the federal policy for the protection of human subjects, also known as the common rule, was established based on ethical principles under the Belmont Report, which includes respect for persons, beneficence, and justice. Additionally, the IRB is responsible for oversight and the welfare of human subjects, the ethical review, and approval or disapproval of human subjects' research protocols (Tsan & Tsan, 2015).

Seeking approval to conduct the study from the IRB consisted of appropriate forms being filled out, completed, and then submitted to the IRB. I requested permission from the IRB to conduct the study. Approval from the IRB (# 02-25-20-0637293) to conduct the study was granted prior to the data collection process. Participants' consent was obtained prior to participation in the study to help minimize ethical concerns with participant recruitment.

The study's participant consent forms included a summary of the purpose of the study, duration of the participant survey, transparency, capacity, understanding, the autonomous permission of the participant, and whom to address grievances to (Judkins-Cohn, Kielwasser-Withrow, Owen, & Ward, 2014). Although the study poses mimium risk to the study participants, Judkins-Cohn et al. indicated that explaining consent to the study participants can help to ensure the quality of the study. The study participant recruitment process consisted of distributing flyers (Appendix B). Additionally, participants read the informed consent and agreed to participate in the study prior to its commencement. Participants were informed of the right to withdraw from the study at any time.

Moreover, to ensure that ethical concerns are not an issue, all data were kept secured, confidentially, decoded, and deidentified by using MAXQDA software system on a password protected computer system. Additionally, MAXQDA was used to help ensure that the risk of an ethical breach does not occur and that the study participants' confidentiality is maintained. For instance, participant information remained de-identified after the transcription process of the study and participants and identified by color-coded numbers during the study. As the researcher I was the only

person who had access to the participant data. Hence, participant data was stored via iCloud and backed up via an encrypted USB. Equally important, participant data will be stored for five years (Lin, 2009). Furthermore, data from the participant online survey, memos, and audible recordings was entered into the secure password protected MAXQDA software system.

As the researcher, I understand that a key aspect of conducting this study is being aware of my personal biases. I included a study design and recruitment participant practice that was fair, just, and protects the participants from harm (Parker et al., 2016). Furthermore, I practiced mindfulness and maintained awareness of my biases, personal experiences, and influences that may affect the analysis process.

Identifying and developing the skills that would help to identify ethical issues is an essential component of the code of ethics (Thomas, 2004). Mindfulness of the following ethical principles and their alignment with my personal values was a top priority of the study. For example, my beliefs and values reflect a notion that coincides with ensuring that public health is based on mutual respect and that gaining trust for individuals and communities is a human right. In addition, my values included being mindful of diverse cultures beliefs, values, and norms.

Summary

The aim of Chapter 3 was to provide an introduction and justification for this qualitative study of exploring the influences of cultural beliefs on the hand-hygiene beliefs of foreign-born health HCWs. This chapter included a discussion on the research design and rationale, role of the researcher, methodology, strategy of inquiry, data analysis and coding, issues of trustworthiness and the significance of ensuring

ethical procedures. For instance, criterion sampling of homogenous groups was used to gain better insight into the experiences of the study participants (Colorafi & Evans, 2016). A criterion of the study was that study participants who participate in the study are 18 years and older. The recruitment process did not occur until after the IRB granted permission to conduct the study. After I received approval from the IRB the recruitment phase begun through flyers and word of mouth.

Chapter 3 consisted of an overview of the data collection process involved using a prepared online survey questionnaire, consisting of open-ended questions for the participants. The grounded theory methodology was appropriately used to ensure that coding and emerging themes are accurate. This chapter involved understanding the role of the researcher and the importance of assuring confidentiality, validity, and credibility of the study. Practicing reflection and being mindful of my personal biases was included in this section. Chapter 3 included assurances addressing ethical concerns such as keeping the collected data secure and confidential.

Chapter 3 provided the rationale behind using the qualitative grounded theory approach. The rationale for choosing the theory of planned behavior and grounded theory to help guide the study and exploration of the cultural beliefs and influences associated with hand-hygiene practices of foreign-born HCWs and to capture emerging theory was discussed. This section consisted of details pertaining to the open-ended qualitative survey questionnaire. Chapter 3 provided details pertaining to the use of MAXQDA for transcribing purposes. In Chapter 3, I addressed the treatment and storage of data collected from study participants.

In Chapter 4, I will discuss the analysis of the study and the results obtained from the collected and emerging data.

Chapter 4: Results

Introduction

The purpose of this qualitative study was to explore influences of cultural beliefs on the hand-hygiene behaviors of foreign-born HCWs. TPB was used as a framework to help gain better insights into the phenomenon of this study and to better understand the HCWs' specific behavior practice (Rolland, 2020). I used the grounded theory approach to help identify themes, patterns, and trends which emerged, during the analysis process of the collected data. This study addressed the central research question of whether cultural beliefs influence the hand-hygiene beliefs of foreign-born HCWs.

The research questions were developed as the foundation of the study:

1. RQ1- Qualitative: What are the attitudes of foreign-born HCWs towards hand hygiene?

2. RQ2- Qualitative: How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?

3. RQ3- Qualitative: How does the environment of foreign-born HCWs' influence their hand-hygiene practices?

Chapter 4 details, participant recruitment, demographics, setting, data collection, analysis, and results of the study conducted. I also presented the data collection and data analysis in full detail. In addition, I presented participant excerpts to support the generated themes. The participant excerpts are taken directly from the participant responses to the open-ended anonymous Survey Monkey questions. Additionally, I presented evidence of trust worthiness through credibility,

dependability, Confirmability, and transferability. Finally, I will present the results of the study the conclusion, and summary.

Pilot Test Study

A pilot test was conducted to improve and validate the online open-ended survey questions and collect data rich information pertaining to participants experiences with the study topic. Moreover, the purpose of the pilot study was to confirm clarity of the survey questions through gaining greater insights, into whether the study participants would answer the research questions in alignment with what was being asked. The sample population consisting of foreign-born HCWs was similar to the main study's' population. Nonetheless, the pilot study was done independent of the main study and were not reported in my overall findings. The pilot study participants were recruited via posting a flyer on my International Theta Tau Omicron Delta website page and my Linked in web page for 2 weeks. The informed consent and screening questions were provided through Survey Monkey prior to advancing to the survey questions. The participates who completed the screening questions and meet the participant criteria could have access to the survey. I received four responses and three completed survey responses. Although, participant 1, responded "yes" to being a foreign-born registered nurse and country of origin as being Germany; participate 1, was disqualified from completing the survey because of responding (no) to the screening question: Are you a foreign-born physician or nurse working at least 35 hours weekly in a 24-hour in patient healthcare setting in the United States? The three respondents who completed the survey were as follows: P2, Physician, origin of country, Trinidad, P3, registered nurse, origin of country Nigeria,

and P4, registered nurse, origin of country, Nigeria. All of the participants answered the questions reflecting the survey questions as well as the pilot study questions generated rich, thick, and in-depth participant data. Therefore, I concluded that the study participants had no difficulty in understanding or interpreting the research questions.

Pilot Cognitive Interviews

A pilot cognitive test was conducted with three of my former colleagues via individual telephone survey interviews. The former colleagues were similar to my main study target population. The purpose of the pilot interviews was to help ensure that the accuracy, sequence, and flow of the questions being asked were sufficient (Ikart, 2018). This was done independent of my main study as well as the results were not reported in my overall findings. Moreover, the cognitive pilot test was conducted to help ensure that study participants understood the questions being asked. Nonetheless, the cognitive pilot test was conducted to help gain greater insights into whether the participants had no difficulty in interpreting the questions being asked. The three volunteers who participated in and completed the telephone interviews were as follows P-A, registered nurse, Origin of country, Philippines, P-B, registered nurse, origin of country Nigeria, and P-C, Physician origin of country Haiti. Additionally, the participants were asked while responding to the research questions to think a loud and verbalize their thoughts as they emerged (Liani, Martire, & Pitrone, 2015). Furthermore, all participants expressed that they had no difficulty in understanding and interpreting the questions as well as they mentioned that they would not change the sequence or flow of the questions.

Setting

I received approval to begin data collection from Walden's University Institutional Review Board on February 25, 2020 (IRB approval number 02-25-20-0637293). I chose to collect my study participant responses via an anonymous Survey Monkey survey. Therefore, the study participants could complete my online survey, at their convenience, in a setting of their choice, without my influence, or personal bias. I posted my recruitment flyer with an embedded Survey Monkey link, on my Theta Tau International Omicron Delta website for two-weeks beginning May 2020. I also posted my recruitment flyer with the embedded survey link on my LinkedIn page for a two-week period beginning May 2020. The survey was comprised of 11 screening questions and 14 open-ended survey questions see table 2. The saturation number was 20 and 22 participants (100%) responded and completed the survey.

Participant Demographics

The population criteria for this study were foreign-born registered nurses and physicians who worked at least 35 hours in a 24-hour health care setting in the United States. The characteristics of the study population who responded and completed the survey were 21 registered nurses and 1 physician who provided direct patient care activities consisting of in-patient care, treatment, services, and who provided patient care assessments. The 22 respondents who participated in the study reported that they were foreign-born and 18 years of age or older. The study participants were comprised of mainly female participants. A total of 21 female registered nurses (95%) and 1 male physician (5%) completed the survey

(see table 1).

Table 1

*Participant Demographics (*N=*22)*

Participant Code	Over 18	Ethnicity	Gender	Country Born in	Physician	Registered Nurse	Work in the United States
P1	Yes	Guyanese	Female	Guyana	No	Yes	Yes
P2	Yes	Asian	Female	India	No	Yes	Yes
P3	Yes	Other	Female	India	No	Yes	Yes
P4	Yes	Asian	Female	Philippines	No	Yes	Yes
P5	Yes	Philippines	Female	Philippines	No	Yes	Yes
P6	Yes	Asian	Female	India	No	Yes	Yes
P7	Yes	Asian	Female	Philippines	No	Yes	Yes
P8	Yes	Asian	Female	Philippines	No	Yes	Yes
P9	Yes	Black	Female	Haiti	No	Yes	Yes
P10	Yes	Black	Female	Haiti	No	Yes	Yes
P11	Yes	Black	Female	Jamaica	No	Yes	Yes
P12	Yes	Asian	Female	India	No	Yes	Yes
P13	Yes	Asian	Female	India	No	Yes	Yes
P14	Yes	White Eastern Europe	Female	Ukraine	No	Yes	Yes
P15	Yes	Asian	Female	India	No	Yes	Yes
P16	Yes	Black	Female	Haiti	No	Yes	Yes
P17	Yes	Asian	Female	India	No	Yes	Yes
P18	Yes	Black	Female	Haiti	No	Yes	Yes
P19	Yes	Asian	Female	Philippines	No	Yes	Yes
P20	Yes	Greek	Female	Greece	No	Yes	Yes
P21	Yes	Afro-Caribbean	Male	Haiti	Yes	No	Yes
P22	Yes	African American	Female	Nigeria	No	Yes	Yes

Table 2

Open-Ended Survey Questions

Survey Questions	Research Question
1. Please tell me what country you were born in?	See Demographic (Table 1)
2. What role does religion play in your hand-hygiene beliefs?	RQ2

	How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
3. What role does cultural traditions and customs play in your hand-hygiene beliefs?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
4. What are some of your cultural beliefs toward hand-hygiene?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
5. Please tell me advantages of your cultural beliefs that you observe pertaining to performing hand-hygiene prior to providing patient care, treatment, or services?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
6. What are some of the disadvantages of your cultural beliefs that you observe while providing hand-hygiene during patient care, treatment, or services?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
7. Please tell me how your culture attitudes influence your hand-hygiene beliefs?	RQ1 What are the attitudes of foreign-born HCWs' toward hand-hygiene?
8. What role do your cultural attitudes paly when you think about performing hand-hygiene in your work area?	RQ1 What are the attitudes of foreign-born HCWs' toward hand-hygiene
9. Please tell me about those people or groups who are important to you that would approve or think you should perform hand-hygiene when providing patient care, treatment, or services?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
10. Sometimes when we are not sure of what to do, we look around to see what others are doing, Please tell me about the individuals or groups that you look up to in your culture and are most likely to perform hand-hygiene prior to preforming patient care, treatment, or services?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
11. Please tell me about individuals or groups in your culture who would disapprove of you performing hand-hygiene when providing patient care, treatment, or services?	RQ2 How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
12. Please tell me about your own cultural beliefs that would make it easier	RQ2

or serve as a barrier to enable you to perform hand-hygiene prior to providing patient care, treatment, or services?	How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?
13. Please tell me how your environment makes it easier to perform hand-hygiene in your work area?	RQ3 How does the environment of foreign-born HCWs' influence their hand-hygiene practices?
14. Is there any additional information that you would like to share with me at the point of this survey? a) Is there anything else that you would like to tell me?	

Data Collection

Data was collected from 22 foreign-born participants via an anonymous online survey. The Survey Monkey link was embedded into my recruitment flyer and posted on my Theta Tau International Omicron Delta website and my Linked in page for two weeks. I reposted my flyer with the Survey Monkey link three times on my Theta Tau International Omicron Delta website and my Linked in page. I also checked my Survey Monkey page every day for responses. The 22 respondents who volunteered to participate in the survey by clicking the Survey Monkey link read the consent page prior to completing the survey. All the 22 study participants met the study criteria and completed the survey. I used an alphanumeric system, P1 to P22, to identify the anonymous participants. I closed the survey two weeks after posting and data saturation was reached. No variations from chapter 3 or unusual circumstances was found.

Data Analysis

I used the grounded theory approach and the comparative method to analyze and help generate theory from my collected data (Ligita, Wicking, Francais, Harvey

& Nurjannah, 2019). Each of the anonymous study participants Survey Monkey data was imported to the software data analysis program MAXQDA 2020 via a PDF. The data analysis consisted of organizing, categorizing, coding, development of emerging themes, and sub themes. After each completed survey was collected through Survey Monkey, I simultaneously started the analyzation process. MAXQDA 2020 was used to manage and store the anonymous collected data. I looked for similarities and comparisons of data within my MAXQDA software program. The constant comparative method, consistent with grounded theory helped to code the collected data, compare similarities within the data, and make comparisons with other collected participant data. I also used hand coding and memos to help code the emerging themes and construct the audit trail derived from the collected data. I used the steps outlined by Glaser and Strauss (1967). I compared incidents applicable to each category and looked for themes in each category, then I integrated categories and their properties, highlighted and compared identified themes, finally, categories were integrated to help decrease the number of categories identified. I also started with open coding and axial coding, whereas codes were carefully constructed and integrated into categories reflecting the participants' experiences. Charmaz (2014) defines axial coding as linking categories to subcategories and specifying properties and dimension of a category. I also read and reread the collected data. MAXQDA helped to facilitate coding, label the collected data, retrieve segments of data, and promote the accuracy in identifying data. MAXQDA was used to assist in color coding and tallying the coded segments. In addition, MAXQDA software in-vivo coding was used to help select words for coding, understand patterns, color-code sub-

themes, and extracted themes. MAXQDA also helped to identify quotes and phrases from my collected data. MAXQDA was also used to attach memos to codes, customize codes during third rounds of coding, categorize parent and sub codes that I created. A total of seven parent codes were found and I identified 737 codes. After further review of data, word frequency count, and third round of coding a total of 390 codes were identified. Additionally, I used MAXQDAs' visualization tools to create mapping and help visualize themes associated with my qualitative research study. I found no discrepant concerns. Finally, A total of seven codes and seven themes were identified directly related to the overarching research question and in alignment with both the 3 research questions. The identified codes included positive attitudes of HCWs, referents to cleanliness and Godliness, cultural experiences and knowledge gained, cultural hand-hygiene importance, ancestors, relatives, experienced, inhibitors, accessible, and functionality were placed into categories. The codes served as the foundation for my emergent themes. Below are the Categories, codes, and emergent themes that were developed from my data analysis process see table 3. The seven themes that emerged after careful and thoughtful analysis are

1- Positive Outlook

2- Religion

3- Personal Cultural Experience

4- Foreign-born Hand-hygiene Culture

5- Cultural Guidance

6- Barriers

7- Facilitators

Table 3

Research Questions, Categories, Codes, Themes

Research Questions	Survey Questions	Categories	Codes	Themes
RQ1: What are the attitudes of foreign-born HCWs' toward hand-hygiene?	Q7, Q8	How do the attitudes of foreign-born HCWs drive their Hand-hygiene practices?	Positive attitudes of foreign-born HCWs (*n*=54)	1. Positive Outlook
RQ2: How do cultural beliefs of foreign-born HCWs' native culture influence their hand-hygiene practices?	Q2, Q3, Q4, Q5, Q9, Q10, Q11	Beliefs of how the foreign-born HCWs' native culture influences their overall hand-hygiene practices.	Referents to cleanliness and godliness (*n*=14)	2. Religion
			Cultural experiences, knowledge gained (*n*=49)	3. Personal Cultural Experience
			Cultural hand-hygiene importance (*n*=88)	4. Foreign-born Hand Washing Culture
			Ancestors, relatives, experienced (*n*=85)	5. Cultural Guidance
RQ3: How does the environment of foreign-born HCWs' influence their hand-hygiene practices?	Q6, Q12, Q13, Q14, 14a	Ways environment impacts the foreign-born HCWs' hand-hygiene practices	Inhibitors (32)	6. Barriers
			Accessible, functionality (*n*=68)	7. Facilitators

Evidence of Trustworthiness

Rigor, quality, and evidence of trustworthiness was enhanced through focusing on four essential and quality driven aspects components such as credibility, transferability, dependability, and confirmability (Johnson, Adkins, & Chauvin, (2020). Nonetheless, evidence of trustworthiness of this study was achieved through data collection, analysis, reporting of the findings, and triangulation. Triangulation involved using multiple data points to ensure credibility of the study, such as memoing, reflexive journaling, constant review of the raw data, and scientific literature. Moreover, I ensured that my study was free from any of my personal beliefs or biases, through self-awareness, reflecting on my own biases, and influences associated with this study. Furthermore, trustworthiness of this study was ensured through generating patterns and themes reflecting the study population and phenomenon of the study (Golinski, 2018).

Credibility

Credibility of this study was ensured through participant data that was accurately documented via Survey Monkey and uploaded as written by participants to MAXQDA. Triangulation helped to establish credibility in this qualitative study through using multiple data points (Moon, 2019). Multiple data points consisted of using the constant comparative method of comparing participant data with incoming participant data and rereading the data, (Johnson, Adkins, & Chauvin, 2020). Moreover, to achieve credibility and accuracy of the interpreted data, the data analysis process included writing memos, and checking the analyzed data at various points

throughout the data analysis process. Furthermore, the study participants were informed that they could withdraw from the online survey at any time.

Transferability

Gaining better insights into participants' experiences, associated with the cultural influences pertaining to hand-hygiene beliefs helped to better understand, if this study was transferable to another setting or population. Several of the participant responses were noted to be similar. Therefore, indicating that saturation was inevitable. Nonetheless, transferability of the study was achieved through providing a detailed thick and rich description of the assumptions of the study's' context (Kongsuwan, Khaw, Chaiweeradet, & Locsin, 2019).

Dependability

I established dependability through consistently maintaining stability of the collected data and conditions of the study (Connelly, 2016). Therefore, if the study was repeated in the same context the findings of the study should be the same (Golinski, 2018). Grounded methodology was used to accurately extract codes and themes. Moreover, I presented the study with clarity and in a way that the reader could follow. The study was also presented in a manner whereas the reader could understand the decision-making and interpretation process (Gauche, Beer, & Brink, 2017). Furthermore, audit trails, such as memoing was used to help to achieve dependability (Astroth and Chung 2018).

Confirmability

I achieved confirmability through keeping an audit trail and documenting all steps of data collection and analysis of this study (Abeasi, & Emelife, 2020). Thereby,

making it easier for others to follow this research study. Additionally, participants' transcripts and coding notes was used to ensure that another researcher could confirm the study if presented with the same data. Furthermore, I was mindful of my own personal biases to ensure that I did not incorporate my own personal biases or assumptions into the study results (Colorafi & Evans, 2016).

Results

The purpose of this qualitative study was to explore the influences of culture on hand-hygiene beliefs of foreign-born HCWs. This study also includes understanding the influence of cultural beliefs on HCWs' intent to adhere to hand-hygiene practices. The overarching research question that guided this study was the question of whether cultural beliefs influence hand-hygiene practices of foreign-born HCWs. The collected participant data derived from Survey Monkey was uploaded to MAXQDA the qualitative software package. Seven main themes associated with the research questions as depicted in Table 2 were derived from rereading, coding, and constantly comparing participant data. Themes by research questions are presented below.

Research Question 1- What are the attitudes of foreign-born healthcare workers toward hand-hygiene?

Theme 1: Positive Outlook

Participant open-ended questions revealed that the study participants believed that their positive cultural attitudes toward hand-hygiene, helped to enhance their hand-hygiene practices, and prevent spreading infections. Many of the participants shared that the importance and need to wash their hands was ingrained in them since childhood. One of the registered nurses who participated in the study when asked

about her cultural attitudes toward hand-hygiene stated, “We have a positive outlook through avoiding spread of infection” (P2). Other study participants expressed the belief that positive cultural attitudes influence hand-hygiene such as, “Positive attitude…important to wash hands for both the patient, and the employer” (P3). While one participant shared “Plays a positive role…adapted the practice since childhood” (P10). Other participants shared “…we do not want to be seen as unclean” (P10). Plays a positive role because it was embedded in our culture since childhood” (P11). “My cultural attitudes lead to strict compliance regarding hand-hygiene,”” It helps me to treat my patients with respect and dignity” (P18). “It plays a positive role, since I am extending to my work area what I am already practicing in my personal life” (P20). One of the participants shared “My cultural attitudes make me feel grateful, that I have what it takes to practice proper hand-hygiene, for I have done medical missionary work…water and soap were luxury” (P21). Another participant shared “it encourages me to wash my hands” (P22).

Research Question 2- How do cultural beliefs of foreign-born HCWs’ native culture influence their hand-hygiene practices?

Theme 2: Religion

Many of the participants expressed referents to hand-hygiene and religion. One participant shared “Cleanliness is next to godliness” (P8). Another participant also shared “Cleanliness is next to Godliness” (P11). One participant shared “Family, co-workers, church community, friends, and relatives” (P17). P17 also shared “Help yourself…so God can help you” While another participant stated “family…church community…and relatives” (P18). In alignment with other participants, one

participant shared “Cleanliness is next to godliness” (P19). Nonetheless a participant shared “I am convinced as a Christian…have to do all well” “hand washing in healthcare delivery is doing one’s job well” (P21).

Theme 3: Personal Cultural Experience

Many of the participants expressed that because their personal cultural experiences pertaining to hand-hygiene was formed early on in childhood; they believed that hand washing was integral, to protecting self, and others from infection. A registered nurse shared “I practice hand-hygiene from a child and that makes it easier,” I can use the same practice, I learned” (12). Another registered nurse stated “I was taught by my parents to wash my hands before and after certain activities of daily living…to prevent self-contamination and the spread of germs” (P18), One registered nurse shared, “It is already instilled in me that; I have to wash my hands to prevent infection to myself and others” (P20). P20 also shared “I was taught the importance to wash my hands since I was a little kid,” “most people from my culture are sharing the same values, like me so most of us are performing hand-hygiene prior and after providing care.” A physician who participated in the study said, “I’ve been raised to believe that proper hand-hygiene is a good way to promote healthy living and to prevent disease” (21). Another registered nurse shared “if a child washes his or her hands properly the child is permitted to eat with kings” (P22).

Theme 4: Foreign-born Hand Washing Culture

Many of the participants described how their culture influences their hand-hygiene beliefs. One of the participants shared “In my culture we wash our hands before and after meals as well after we use the restroom” (P1). Another participant

shared “Indian culture believes that hands should be washed prior to touching food, or cooking, prior to touching any utensils in the kitchen, after elimination, no toilet paper is used, using toilet paper is considered as the person unclean” (P3). P3 also shared “as per our culture hand washing prior to entering the house is a must, as it is believed that no germs are carried from outside into the house, hand-hygiene can be performed by using turmeric or neem leaves in water to remove toxins/germs.” One participant stated, “We were taught the importance of hand-hygiene especially prior to eating and touching something dirty” (P7). P7 also shared “Following my cultural beliefs makes it easier for me to stick to hand washing policies.” One participant shared “In our culture one is considered dirty if hand is not washed after using the facilities, before, and after each meal” (P10). P10 also shared “Consequently my existing culture of hand washing coupled with my experience as a healthcare provider has aptly prepared me to strictly observe hand washing hygiene on and off duty as an RN” (P10). In addition, P10 shared “in the Caribbean studies have shown that our rate of hepatitis was low and also less respiratory infection.” Other participants shared “Our culture determines that hand-hygiene is performed before and after meals, we believe that hand-hygiene is important to prevent spreading of infections” (P11). P11 also shared “In some small way, it is our belief that we stop or minimize, the spread of infection.” “Culture always gives importance to be clean…tidy always,” “washing hands before and after food, emphasis on using right hand to eat and shaking hands and left hand to wash after toilet use,” “If hand-hygiene is not performed, one is considered unclean, nasty” (17). One study participant stated, “Once it is included in your lifestyle, it is very easy to perform hand-hygiene, prior to providing patient care treatment, or

services" (P18). Another participant stated, "It's my cultural belief that doctor washes his or her hands before touching a patient… great way prevent, disease transmission" (P21). One participant shared "The first aspect to eating in my culture is hand-hygiene, Nigerian women in my culture are trained to provide warm water to their family and spouses for hand-hygiene before ever presenting the food." (P22). P22 also shared "Hand-hygiene is a very important part of my culture." Additionally, P22 shared "my cultural background on the importance of hand-hygiene influences my nursing practice in every aspect. Finally, P22 stated "I apply my cultural believe stating that your life span depends on the cleanliness of your hands."

Theme 5: Cultural guidance

Participants expressed that they looked up to older relatives and their ancestors for cultural guidance related to their hand-hygiene practices. One participant shared when asked about cultural native influences and hand-hygiene "Older relatives, teachers" (P1). Other participants expressed "my parents…elders" (P2). "My Caribbean and african ancestors" (P10). Another participant stated "african and Caribbean ancestors." (P11). "My family…that's the place I start my practice" (P12). P12 also shared "my mother and … my teachers." While one participant stated "ancestors" (P13). Another participant shared "My family as a whole, parents, partners, …." (P22).

Research Question 3- How does the environment of foreign-born HCWs' influence their hand-hygiene practices?

Theme 6: Barriers

Several participants expressed that hand washing requires time and may cause skin to become irritated. One participant stated, “The soap should be less abrasive” (P2). Another participant shared “Unavailability of soap or hand sanitizer is the barrier” (P8). One participant shared “Hand cracked, skin irritation” (P10). Others shared “Dry hands must always have hand lotion” (P11). “lack of soap and water” (P13). One participant stated “Possibly individuals with cultures where it is normal to touch others during interaction (P14). Another participant expressed “It can be time consuming” (P18). One participant shared “It takes time to wash hands, there must be water, soap, or hand sanitizer available to practice hand-hygiene” (P21).

Theme 7: Facilitators

Participants described having access to hand washing equipment and supplies as influencing their intent to perform hand-hygiene. One participant shared “I always have access to a sink and hand sanitizer,” “We have easy access to all that is needed to perform good hand washing” (P1). While one participant stated, “Easy access to soap and water, sink and faucet in every patient’s room,” “… equipped with everything to perform hand-hygiene” (P2). Another participant shared “Hand-hygiene is important, at the same time clean surfaces is equally important, as there is no point in washing hands and touching a dirty doorknob” (P3). Other participants expressed “Remind them for good hand wash and good in-service” (P6). “If my environment is clean and in order, with all the necessary supplies, it is easier to perform hand-hygiene” (P7). “Sink, soap right there by the nurses’ station” (P9). “Available soap, water, hand sanitizer, and a clean sink in almost every area of the hospital” (P10). “The availability of hand products in every patient room” (P11). “Easily,

approachable, wash areas" (P12). One participant shared "Providing, soap, running water, hand sanitizers, and sani wipes" (P13). Another participant shared "Functional sinks with full soap dispensers, paper towels…, alcohol-based hand sanitizer, would be absolutely necessary to perform hand-hygiene routinely" (P14). One participant shared "Frequent hand wash … keep environment as clean as possible" (P15). P15 also shared "Careless hand-hygiene…make worse." Other participants shared "There is a sink and soap in every room" (P16). "Good working faucet, paper towel, soap, hand sanitizer in the same working room" (P17). "Everything needed to perform hand-hygiene in the work area is available, and accessible" (P18). "Hand washing areas in every patients room…available hand sanitizers outside patient room areas" (P19). One participant shared "There are wall sanitizers on the hallways, in front of the elevators, all entrances and exits, and inside every patient's room…easier to practice good hand-hygiene techniques" (P20). Another participant shared "Hand sanitizer is okay, but every patient area should have freely accessible soap and water, also I have seen patient care areas where accessibility to water was limited" (P21). P21 also shared "Availability of alcohol-based sanitizer in my immediate work area, would definitely…easier for me." One participant shared "There are sufficient running water, soap, and paper towels" (P22).

Discrepant Cases

Many of the study participants consistently believed that cultural influences shared a direct link with their intent to perform hand-hygiene practices. For instance, P22 when asked the online survey question: Please tell me advantages of your cultural beliefs that you observe pertaining to performing hand-hygiene prior to providing

patient care, treatment, or services? Stated “I apply my cultural belief stating that your life span depends on the cleanliness of your hands.” P22 shared as additional information “my cultural background on the importance of hand-hygiene influences my nursing practice in every aspect.” P11 when asked the online survey question: Please tell me advantages of your cultural beliefs that you observe pertaining to performing hand-hygiene prior to providing patient care, treatment, or services? Stated “in some small way, it is our belief that we minimize, or stop the spread of infection.” However, when P14 was asked the online survey question: Please tell me advantages of your cultural beliefs that you observe pertaining to performing hand-hygiene prior to providing patient care, treatment, or services? P14 stated “I do not identify with the Ukrainian cultural beliefs in its entirety…not totally aware of full Ukrainian cultural beliefs, I follow hand-hygiene prior to providing patient care, treatment, or services, because it is the right thing to do and what my parents and employer expects of me regardless of any cultural beliefs.”

Summary

This qualitative study was designed to explore the influences of cultural beliefs on the hand washing behaviors of foreign-born HCWs. This qualitative study was also designed to gain a deeper understanding into the influence of cultural beliefs on HCWs’ intention to adhere to hand-hygiene practices. This study showed that the majority of foreign-born HCWs who completed the online anonymous survey believed that culture plays a significant role in influencing their hand-hygiene beliefs and intent to perform hand-hygiene in their personal lives and in the workplace. The data analysis reflecting the study participants responses to the online anonymous

survey provided the themes that helped to answer the overarching question of whether cultural beliefs influence the hand-hygiene beliefs of foreign-born HCWs. An analysis of the collected participant data also helped to provide codes and themes to answer the three research questions in this study.

Chapter 5 summarizes the key findings of the study and provides a detailed analysis of the study participants responses to the online survey. I will discuss in chapter 5 the interpretations of the findings. I will also present in Chapter 5 the limitations of the study, recommendations for future research, implications for social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this qualitative study was to explore the influences of cultural beliefs on the hand washing behaviors of foreign-born HCWs. This includes understanding the influence of cultural beliefs on HCWs' intention to adhere to hand-hygiene practices. Little research has been explored or conducted pertaining to the understanding of how foreign-born workers' cultural beliefs influence their hand-hygiene behaviors, despite HCWs' global subpar hand-hygiene practices. Another purpose of this study was to gain a better understanding of the implications associated with improving HCWs' nonadherent hand-hygiene behaviors. In addition, the purpose of this study was to provide healthcare leaders with a framework aimed at improving HCWs' adaptability to adherent hand-hygiene practices. Understanding the behavioral intent of HCWs to perform hand-hygiene is crucial to gaining better insights into the HCWs' readiness to perform hand-hygiene practices (Ajzen, Icek & Fishbein, 2010).

Previous studies have addressed nurses' nonadherent behaviors to perform hand washing practices through education, feedback, equipment management, and seeking to gain better insight into HCWs' hand washing knowledge and understanding of hand washing education (Piras et al., 2018). This qualitative study used the grounded theory approach to conceptualize the similarities and differences in the experiences of foreign-born HCWs' beliefs pertaining to how their hand-hygiene practices are influenced by their own culture and the culture of the setting. The grounded theory approach was also used to help better understand how the study participants contextualize hand-hygiene practices pertaining to their own cultural

beliefs and to develop a new theory through emerging themes. The central research question that this study sought to answer was: Whether cultural beliefs influence the hand-hygiene beliefs of foreign-born HCWs. Whereas, the aim of this study was founded on three research questions, which were designed to help better understand the attitudes of foreign-born HCWs, the cultural beliefs of foreign-born HCWs, and how the environment of foreign-born HCWs influence their hand-hygiene practices. In support of Ramira, Peraza-Smith, McLeod, and Clark (2018) findings that cultural challenges exist within the migrating HCW population despite medicine and nursing jobs providing opportunities for globalization.

This study highlights the need for healthcare leaders to take into consideration the difficulties HCWs may encounter in adapting to the culture of their adopted country. The theory of planned behavior was used as a framework to help gain better insights into the phenomenon of this study. The theory of planned behavior was also used to help address the previous identified gap in literature pertaining to understanding how foreign-born HCWs' cultural beliefs influence their intent to perform hand-hygiene practices. This theory provides greater insights not only into the HCWs' intent to perform hand-hygiene but also provides specific insights into the HCWs' practice behaviors. (Rolland, 2020). This qualitative study adhered to Walden University's IRB requirements. In support of Stewardson et al. (2016) suggestion that a novel approach to increasing hand-hygiene rates among HCWs is needed, open ended anonymous online survey questions using the grounded theory approach was conducted to help better understand how the study participants contextualize hand-hygiene practices pertaining to their own cultural beliefs. The grounded theory

approach helped to identify themes, patterns, and trends which emerged, during the analysis process of the collected data. The nature of the study using the grounded theory approach helped to conceptualize the similarities and differences in the experiences of foreign-born HCWs' beliefs pertaining to how their hand-hygiene practices are influenced by their own culture and the culture of the setting. The research methodology of this study included purposeful sampling and the analysis of open-ended anonymous Survey Monkey questions with 22 foreign-born HCWs. The Survey Monkey participant responses were uploaded to the MAXQDA software program for analysis.

Key Findings

Seven themes were derived from the data pertaining to the overarching question of whether cultural beliefs influence the hand-hygiene beliefs of foreign-born HCWs. The first theme 1, "positive outlook," depicted how participants associated their positive attitudes with being influential to their hand-hygiene beliefs and intent to perform hand-hygiene practices. Some of the participants expressed that their positive cultural attitudes formed early on in childhood, had helped to form their hand-hygiene attitudes, as well as helped to influence their intent to perform hand-hygiene. Many of the participants also expressed that their cultural attitudes had enhanced their hand-hygiene practices. Theme 2, "religion" highlighted how some of the participants associated their cultural attitudes relating to religion as an integral aspect to their overall cleanliness, and linkage to their cultural belief that cleanliness is next to godliness. Theme 3, "cultural personal experience" highlighted the point that participants perceived their native cultural experiences had influenced their hand-

hygiene beliefs. Some of the participants had described their childhood cultural experiences with hand-hygiene as an alignment with their native cultural beliefs and values, while paving the way to a greater understanding of the importance of performing hand-hygiene. Theme 4, "foreign-born hand washing culture" helped to gain greater insights into how native cultural beliefs of foreign-born HCWs, which are founded on bonded cultural beliefs, customs, and family values can create a shared cultural direction and purpose solely geared to the promotion of hand washing. Many of the participants shared how their cultural values not only depicts that hand washing starts prior to entering the house, but also determines the cleanliness of an individual. Theme 5, "cultural guidance related to how participants perceived their cultural ancestors and elders as native cultural influencers and helping to solidify their adherent hand-hygiene beliefs and intent to perform hand-hygiene practices. Some of the participants expressed that they had perceived the experienced folks in their culture as someone that guided their hand-hygiene practices. Theme six, "barriers" indicated that a lack of basic supplies and inadequate facilities in their environment acted as barriers to their intent to perform and adhere to hand-hygiene practices. Many of the participants described that inadequate supplies such as not having lotion could cause their hands and skin to become cracked. Therefore, decreasing their intent to perform hand-hygiene. Theme, seven "facilitators" some of the participants perceived access to water and a functioning sink as facilitating their hand-hygiene practices and decreasing the risk of nonadherent hand-hygiene behaviors. The findings of this study revealed that the desire and understanding of the need to perform hand-hygiene within the foreign-born HCWs' culture is deeply ingrained into their personal lives and

entrenched into their everyday work environment. These key findings help to highlight that foreign-born HCWs intent to perform hand-hygiene is pronounced, despite inadequate facilities and hand washing supplies within local or global communities. Finally, these key findings of the study help to support Stewardson et al. (2016) suggestion that a novel approach to increasing hand-hygiene rates among HCWs is needed to help improve HCWs' hand-hygiene adherence.

Interpretation of the Findings

Discussion Section:

The research questions were answered through the data analysis process, as well as codes and themes were developed from the detailed analysis derived from study participant responses. This study revealed that foreign-born HCWs believe that their cultural attitudes influence their hand-hygiene beliefs and their intent to perform hand-hygiene. This qualitative study findings also revealed that many of the study participants expressed that their positive cultural outlook played a significant role in their intent to perform and adhere to hand-hygiene practices. This helps to confirm what was found in the literature whereas, Lee and Brann (2015) pointed out that various cultures pass on their values, beliefs, attitudes, and practices from generation to generation. In support of the significance of how understanding behaviors that motivate HCWs' hand-hygiene-adherent practices are an important aspect of improving hand-hygiene behaviors (Al-Tawfiq & Pittet, 2013). Study findings revealed that foreign-born HCWs believe that their positive cultural attitude plays a significant role in their intent to perform hand-hygiene, while encouraging them to wash their hands.

For RQ 2, Religion, Cultural Personal Experiences, Foreign-born Hand Washing Culture, and Cultural Guidance Emerged.

Religion: Findings revealed that many of the study participants when asked about the role that religion plays with hand-hygiene, shared referents to cleanliness as being close to Godliness and God helping those who help themselves. In support of Stavrova (2014) who found through an analysis of data from 70 countries that links religion to social pressures, indicated that individuals are more likely to be committed to their values if they believe that their values are not socially imposed and of their own choice. One of the participants expressed "I am convinced as a Christian…have to do all well" "hand washing in healthcare delivery is doing one's job well" (P21). This is a significant finding because this reveals how the sole physician who participated in the study interconnected his native cultural beliefs to his religious beliefs, indicating that there is a strong link between his cultural attitudes, cultural beliefs, religion, and his everyday clinical practice.

Cultural Personal Experience: Findings revealed that many of the participants shared that their native culture influences their hand-hygiene practices. In support of Zhao et al. (2018) findings that nurses were more likely to comply with hand-hygiene guidelines, if the intervention was associated with their own personal hygiene habits, such as with past experiences, peer observation, convenience of resources, and a need to perform hand-hygiene. Similar, to the findings of Curtis, Danquah, and Aunger (2009) that hand-hygiene behaviors and patterns are generally determined early in childhood, Participants believed that their native culture had influenced their hand-hygiene practices by instilling in them early on as a child, that

hand-hygiene was the right thing to do. One of the participants shared “I was taught the importance to wash my hands since I was a little kid,” “most people from my culture are sharing the same values, like me so most of us are performing hand-hygiene prior and after providing care” (P20).

Foreign-born Hand Washing Culture: Literature reviews depicting that factors such as socioeconomic conditions and cultural differences are rarely taken into consideration by healthcare leaders, when developing programs designed to improve HCWs’ nonadherent hand-hygiene behaviors (Grayson, 2015). The findings indicated that gaining insights into how the Foreign-born HCWs’ native culture influences their hand-hygiene behaviors may help to minimize the gap in literature of how culture influences Foreign-born HCWs’ hand-hygiene practices. For instance, Stewardson et al. (2016) suggests that a novel approach to increasing hand-hygiene rates among HCWs is needed to help improve HCWs’ hand-hygiene adherence. In support of Yang et al. (2017) suggestion that cultural background, health literacy, and socio-economic status should be taken into consideration when developing polices and guidelines to improve HCWs’ hand-hygiene behaviors. The findings also indicated that Foreign-born HCWs cultural beliefs, customs, traditions, and family values influenced their intent to perform hand-hygiene. Moreover, one of the participants expressed “As per our culture hand washing prior to entering the house is a must, as it is believed that no germs are carried from outside into the house, hand-hygiene can be performed by using turmeric or neem leaves in water to remove toxins/germs.” (P3). The findings indicated that culture plays a significant role in influencing the Foreign-born HCW hand-hygiene behaviors. One participant shared “Our culture determines

that hand-hygiene is performed before and after meals, we believe that hand-hygiene is important to prevent spreading of infections" (P11). One participant expressed "Culture always gives importance to be clean…tidy always," "washing hands before and after food, emphasis on using right hand to eat and shaking hands and left hand to wash after toilet use," "If hand-hygiene is not performed, one is considered unclean, nasty" (17). The findings also revealed that if cultural customs and traditions related to hand washing are taken into consideration, preventing the spread of infection may be less difficult to achieve. One participant expressed "Following my cultural beliefs makes it easier for me to stick to hand washing policies." Another participant expressed "It's my cultural belief that doctor washes his or her hands before touching a patient… great way prevent, disease transmission" (P21). P21 also expressed "I've been raised to believe that proper hand-hygiene is a good way to promote healthy living and to prevent disease." Findings also revealed that hand-hygiene is highly emphasized throughout Foreign-born HCWs' varying cultures. One participant shared "Hand-hygiene is a very important part of my culture" (P22). P22 also expressed "The first aspect to eating in my culture is hand-hygiene, Nigerian women in my culture are trained to provide warm water to their family and spouses for hand-hygiene before ever presenting the food." Moreover, P22 stated "I apply my cultural believe stating that your life span depends on the cleanliness of your hands." Finally, (P22) stated "my cultural background on the importance of hand-hygiene influences my nursing practice in every aspect (P22). Nonetheless, the findings revealed that participants believed that because good hand-hygiene practices and cleanliness was stressed as important by family and elders in their culture, it was easier to embed hand-hygiene

into their lifestyle and surrounding. For instance, findings revealed that participants believed that the elders in their native culture influenced their hand-hygiene efforts by instilling in them as children, that if their hands are not clean, then they are considered dirty, and at risk for contracting and spreading germs. The findings in this study also revealed that 68% of the study participants expressed that they believed that their family, elders, ancestors, colleagues, and superiors would approve of their intent to perform hand-hygiene. This helps to support Dahl, Dahlen, Larsen, and Lohne (2017) findings that although nurses who migrate to other countries may adopt practices and education of the country that they migrated to, migrating nurses continue to value the cultural beliefs of their own country. This also helps to confirm and support Ng et al. findings found in a study designed to better understand hand-hygiene knowledge and beliefs of health care professionals that participants highlighted their personal beliefs in alignment with the TPB framework as indicating that hand-hygiene was performed at home to protect families and for ritual reasons. Finally, this helps to confirm that although the nursing profession may provide a host of opportunities for migration, the challenge for healthcare leaders is in helping the migrating nurse to adapt to the cultural influences of the healthcare system within the adopted country (Moyce, Lash, &Siantz, 2016).

Cultural Guidance: Findings indicated that many of the participants believed that the individuals or groups that they were more likely to look up to for cultural guidance and who would perform hand-hygiene were experienced individuals, family and those who shared their same values, and attitudes toward hand-hygiene. For instance, while one participant shared when asked about cultural native influences and

hand-hygiene “Older relatives, teachers” (P1). Another participant expressed “my parents…elders” (P2). Many of the participants also expressed that they looked up to their Caribbean and African ancestors for cultural guidance pertaining to hand-hygiene. These findings help to support the need that more studies are needed to help better understand how family structure and social influences effect hand-hygiene behaviors (Piras, Lauderdale, & Minnick, 2017).

For RQ3 barriers and facilitators emerged.

Barriers: In support of White et al. (2015) findings that skin irritation as barriers of adequately performing hand-hygiene. Findings revealed that 27% of the study participants believed that barriers exist to performing hand-hygiene such as skin irritation, lack of or abrasive soap, inaccessibility to water and supplies, hand washing requires lotion, and time. Nonetheless, one participant stated “Possibly individuals with cultures where it is normal to touch others during interaction (P14). This helps to confirm Diwan et al. (2016) finding that hand-hygiene behaviors depend on country and setting.

Facilitators: Findings of this study indicated that Foreign-born HCWs’ associated accessibility to water and supplies as boosting their intent to wash their hands. Similar, and in alignment with Diwan et al. (2016) findings indicated that available resources are an essential aspect to HCWs’ ability to perform hand-hygiene practices. Additionally, in support of Piras, Lauderdale, and Minnick (2017) findings that hand-hygiene equipment and products, such as sinks, and hand sanitizers should be easily accessible. The findings revealed that access to functional hand-hygiene equipment and supplies such as sinks, water, soap, hand sanitizer, paper towels, and

location of supplies would make it easier for Foreign-born HCWs to perform hand-hygiene. Subsequently, findings also indicated that having the supplies needed to produce clean hands was a luxury and linked with high standards. One participant expressed that "if a child washes his or her hands properly the child is permitted to eat with kings" (P22). The findings of the study also revealed that the doctor who participated in the study expressed that he had practiced medicine in other countries where soap and water were a luxury (P21). Moreover, the findings revealed that in every aspect, culture is important to the foreign-born HCWs total wellbeing and everyday work environment. (see figure 1)

Figure 1. Cultural influential hand hygiene belief actional model for HCWs

The theory of planned behavior a widely used theory in healthcare was used as the theoretical framework to help guide and explain how culture influences the foreign-born HCWs' intent to perform hand-hygiene (Gaube et al., 2018). The study findings were in alignment with the premise that the intent to perform a behavior is

driven by the following three factors: (a) attitude, which is formed by knowledge and beliefs about hand-hygiene and its outcome, (b) subjective norms that are shaped by a person's perception of how others think about hand-hygiene, and (c) perceived behavior control, which reflects beliefs about the ease or difficulty of performing hand-hygiene. The data revealed a connection of how culture influences the foreign-born HCWs' hand-hygiene beliefs and practices within the everyday work environment, as well as in the HCWs personal life (Figure1). The results of the data analysis showed that many of the foreign-born HCWs who participated in this study as in alignment with TPB believed that their positive cultural attitudes played a significant role in influencing their hand-hygiene beliefs and intent to perform hand-hygiene practices. Moreover, as with TPB which depicts that subjective norms are shaped by a person's perception of how others think about hand-hygiene, the findings showed that personal cultural experiences, the foreign-born hand washing culture, such as elders within families, and ancestors are strong influencers, and advocates that enhance the foreign-born HCWs' intent to practice hand-hygiene. This helps to support the World Health Organization (WHO) findings that adherent hand-hygiene practices can vary from country to country, local setting, culture, and habit (Baccolini etal., 2019). The findings of this study also revealed that foreign-born HCWs are not only concerned with self-protection against infection, but also with helping to protect family, patients, and others from potentially harmful infections**.** In alignment with TPB perceived behavior control, whereas beliefs about the ease or difficulty of performing hand-hygiene is a main focal point, the data highlighted that the foreign-born HCW perceived salient factors such as skin irritation, lack of supplies, and

nonfunctioning equipment as barriers to performing hand-hygiene. On the other hand, the data revealed that the external and internal environment that facilitates easy access to functional equipment and readily available supplies as facilitating their intent to perform hand-hygiene. Furthermore, this helps to support Pfafflin, et al. (2017) report that low adherence to hand-hygiene at baseline rates is caused by the low availability of hand-hygiene resources such as basic soap and water.

Limitations of the Study

A limitation of this study was that TPB could shape, limit, and bias the findings because TPB requires the researcher to take into consideration the behavioral, normative, and control beliefs of the population of interest. Therefore, TPB implies that the researcher will consider the perspectives of culture (Ajzen & Fishbein, 2010). For example, it is expected that the salient beliefs identified with respect to a given behavior vary from culture to culture. However, the consequences for certain behaviors such as performing hand-hygiene may also vary from culture to culture (Ajzen & Fishbein, 2010). This theory also assumes that the researcher can reasonably apply TPB to certain contexts and under certain circumstances (Ajzen & Fishbein, 2010). For instance, TPB may no longer act as a theoretical foundational guide in certain circumstances that are related to strong influences linked with emotions, such as fear, and addiction (Ajzen & Fishbein, 2010). Nonetheless TPB also implies that when used correctly, the researcher should be able to elicit a predictive behavioral response irrespective of a western or nonwestern society (Ajzen & Fishbein, 2010). In addition, questions guided by TPB may shape the participants response because of the questions designed around the researcher's topic of interest.

For instance, the participants may be asked likely consequences that pertaining to hand-hygiene that would not be important to the participant, prior to participating in the study. Thereby, encouraging a response bias related to assessing participant beliefs, attitudes, and power influences linked to perceived behavioral control (Ajzen & Fishbein, 2010). Another limitation of this study is that participants may not share their personal experiences regarding influences of their cultural beliefs on hand-hygiene behaviors because of not wanting to be viewed as being nonadherent to hand-hygiene practices. Moreover, this study was limited to foreign-born Registered Nurses and Physicians who worked in the United States, in an in-patient 24-hour healthcare setting, at least 35 hours a week, and who performed patient assessments. Another limitation of this study is that the study occurred during the heighted stage of the global Covid-19 pandemic. Though, many of the nurses throughout various healthcare settings in the United States and varying countries were challenged and overwhelmed during Covid-19, physicians were also challenged with an influx of admitted Covid-19 patients and soaring mortality rates. Stress related to fear and unclear treatment regimens of Covid19 patients are creating an atmosphere through healthcare settings of instability (Shah, Dhwani, Hema, Birinder, Desai, & Patel, 2020). Moreover, Urooj, Ansari, Siraj and Khan, (2020) found that physicians were unsure of the scientific guidelines outlining the best route to treat Covid 19 patients. Therefore, healthcare providers working on the frontline were challenged with protecting themselves, patients, and family members from contracting Covid 19 (Urooj, Ansari, Siraj, Khan, 2020). Thereby, resulting in the recruitment of 21 Registered Nurses and one Physician. An additional limitation of this study was the lack of male participants

in the study. The study was comprised of 21 female registered nurse participants and one male physician who participated in the study. I ensured trustworthiness and credibility of this study by remaining vigilante of my own personal biases and ensuring that my own biases were not included in the study results. Furthermore, I also kept an audit trail of the details of the data collection process, codes and theme development, and included memos as a part of the analysis process.

Recommendations for Future Research

The purpose of this qualitative study was to explore the influences of cultural beliefs on the hand washing behaviors of foreign-born HCWs. This includes understanding the influence of cultural beliefs on HCWs' intention to adhere to hand-hygiene practices. A review of literature indicated that there is a need to better understand the role that culture plays in foreign-born HCWs' intent to perform adherent hand-hygiene practices. The movement of HCWs into the United States is inevitable and although mostly seen as an advantage to its healthcare system challenges exist (Scott, 2016). I would recommend that future researchers expand the recruitment process to include foreign-born HCWs who work in countries other than the United States. This may help to capture the experiences of foreign-born HCWs who only worked in their native country and therefore, never migrated to the United States. I would also recommend for future researchers to expand the study to an outpatient setting to increase gender diversity participation. Pujari and Pal (2018) pointed out that most registered nurses in the work force are comprised of the female gender. Moreover, I would also recommend that future researchers include additional clinical HCWs such as physician assistants and nurse practitioners to increase a more

diverse participant study population. Furthermore, to avoid implementing bias associated with TPB such as with consequences for certain behaviors pertaining to performing hand-hygiene may vary from culture to culture (Ajzen & Fishbein, 2010). I would recommend that future researchers in addition to TPB explore other behavior change theories to guide their study.

Implications of Positive Social Change

An integral implication for positive social change of this study is that it helps to add knowledge to an existing gap in literature pertaining to how culture influences HCWs' intent to perform hand-hygiene. This study is significant because of a lack of information pertaining to how foreign-born HCWs' culture and beliefs influence their intent to perform hand-hygiene practices. The knowledge gained from the findings of this study can help global healthcare administrators foster, improve, and strengthen hand-hygiene-adherent practices among HCWs. The research findings support that foreign-born HCWs' cultural beliefs influence their hand-hygiene behaviors and their intent to perform hand-hygiene practices. Data presented in this study supports how culture plays an astounding role in influencing and supporting HCWs' behaviors and intent to perform hand-hygiene practices. The results of this study also help to raise awareness of how the HCWs', cultural influences pertaining to hand-hygiene drive their intent to perform hand-hygiene practices. The theoretical framework TPB helped to guide and illicit data that could not only raise awareness, but also help to predict the clinician's cultural hand-hygiene beliefs and intent to perform hand-hygiene prior to providing care, treatment, and services to patients (Kim & Oh, 2015). Moreover, the emerging Cultural Influential Hand-hygiene Belief Actional Model for HCWs,

can help healthcare leaders gain greater insights into how cultural influences foreign-born HCWs intent to perform hand-hygiene. In addition, this study can enhance healthcare leaders' efforts to reduce HAIs related to HCWs' unclean hands by incorporating the Cultural Influential Hand-hygiene Belief Actional Model, for HCWs into their new and existing hand-hygiene training programs. For instance, to help ensure that HCWs' cultural influences are embedded into the hospital-wide culture, including new, and existing training programs, recommendations for practice are that healthcare administrators, infection control preventionists and healthcare educators develop and support curriculum founded on the Cultural Influential Hand-hygiene Belief Actional Model. Equally important, additional recommendation are that nurse and physician leaders, incorporate the model into their patient safety activities, unit-based training, and patient rounding. The results of this study indicate that the Cultural Influential Hand-hygiene Belief Actional Model can be used as a strategy and essential model to better understand how culture influences the foreign-born culture hand-hygiene beliefs and intent to perform hand-hygiene practices. Primarily contributing factors of the actional model that can help to better understand how culture influences the foreign-born HCWs' intent to perform hand-hygiene and produce a strategical outcome. These contributing salient factors highlight the foreign-born HCWs' cultural attitudes toward hand-hygiene, positive outlook, native cultural religious beliefs pertaining to hand-hygiene, cultural personal experiences, foreign-born hand-washing culture, cultural guidance, including barriers and facilitators. These contributing factors of the actional model are also fundamentally important in developing, building, implementing, and sustaining the actional model

training curriculum. Furthermore, this study can provide a foundation for leadership within healthcare organizations and health care systems to decrease the expenditure associated with potentially preventable HAIs linked to HCWs' unclean hands.

Conclusion

This study was unique and that it focused on how foreign-born HCWs' culture and beliefs influence their intent to perform hand-hygiene practices. This study is essential to improving HCWs' hand-hygiene practices and reducing the spread of cross-contamination and spread of infection associated with HCWs' unclean hands. The findings of this study produced seven significant themes associated with the research questions. The seven themes identified were Positive Outlook, Religion, Personal Cultural Experience, Foreign-born Hand-washing Culture, Cultural Guidance, Barriers, and Facilitators. Moreover, the findings of the study produced the Cultural Influential Hand-hygiene Belief Actional Model for HCWs. The findings of this study acknowledged and support that culture influences foreign-born HCWs' hand-hygiene beliefs and intent to practice hand-hygiene. This model and the results of the study are integral to helping healthcare leaders and administrators, better understand how cultural influences are linked to the HCWs' hand-hygiene cultural beliefs, and intent to perform hand-hygiene practices. Thereby, helping to improve worldwide HCWs' subpar hand-hygiene adherence and reduce the cost of potential HAIs linked to HCWs' unclean hands.

References

Abay, S., Addissie, A., Davey, G., Farsides, B., & Addissie, T. (2016). Rapid ethical assessment on informed consent content and procedure in hintalo-wajirat, northern ethiopia: A qualitative study. *PLoS One*, *11*(6), 1-18. doi: 10.1016/j.ajic.2008.01.01410

Abdella, N. M., Tefera, M. A., Eredie, A. E., Landers, T. F., Malefia, Y. D., & Alene, K. A. (2014). Hand-hygiene compliance and associated factors among health care providers in gondar university hospital, gondar, north west ethiopia. *BMC Public Health*, *14*, (96) 1-14. doi: 10.1186/1471-2458-14-96

Abeasi, D., & Emelife, B. (2020). What mothers go through when the unexpected happens: A look at challenges of mothers with preterm babies during hospitalization in a tertiary institution in Nigeria. *Journal of Nursing and Midwifery Sciences*, 7(1), 22-29. doi: 10.4103/JNMS.JNMS_39_19

Adams, E., (2010). The joys and challenges of semi-structured interviewing: *The Journal of the Health Visitors' Association. Community Practitioner*, *83*(7), 18-21.

Ahmed, Q. A., Memish, Z. A., Allegranzi, B., & Pittet, D. (2006). Muslim health-care workers and alcohol-based handrubs. *The Lancet, 367*(9515), 1025–7. doi: 10.1016/S0140-6736(06)68431-6

Ajzen, Icek (2005). *Attitudes personality and behavior* (2nd ed.). New York, NY: Open University Press.

Ajzen, Icek (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52*, 27–58. doi: 10.1146/annurev.psych.52.1.27

Ajzen, Icek (2011). The theory of planned behaviour: Reactions and reflections. *Psychology & Health*, *26* (9), 1113–1127. doi: 10.1080/08870446.2011.613995

Ajzen, Ieck., & Fishbein, M. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press/Taylor & Francis.

Akkuş, B., Postmes, T., & Stroebe, K. (2017). Community collectivism: A social dynamic approach to conceptualizing culture. *PLoS One*, *12*(9). doi: 10.1371/journal.pone.0185725

Alase, A. (2017). The interpretative phenomenological analysis (IPA): A guide to a good qualitative research approach. *International Journal of Education & Literacy Studies, 5*(2), 9-19. doi.org/10.7575/aiac.ijels.v.5n.2p.9

Aldiabat, K. M., & Le Navenec, C. (2018). Data Saturation: The mysterious step in grounded theory method. *The Qualitative Report*, *23*(1), 245-261

Alemagno, S. A., Guten, S. M., Warthman, S., Young, E., & Mackay, D. S. (2010). Online learning to improve hand-hygiene knowledge and compliance among health care workers. *The Journal of Continuing Education in Nursing*, *41*(10), 463–71. doi: 10.3928/00220124-20100610-06

Allegranzi, B., Memish, Z.A., Donaldson, L., & Pittet., D. (2009). Religion and culture: Potential undercurrents influencing hand-hygiene promotion in health care. *American Journal of Infection Control*, *37*(1), 28–34. doi: 10.1016/j.ajic.2008.01.014

Al-Tawfiq, J., & Pittet, D. (2013). Improving hand-hygiene compliance in health care

settings using behavior change theories: Reflections. *Teaching and Learning in Medicine*, *25*(4), 374–382. doi: 10.1080/10401334.2013.827575

Andrade, C. (2018). Internal, external, and ecological validity in research design, conduct, and evaluation. *Indian Journal of Psychological Medicine*, *40*(5), 498–499. doi: 10.4103/ijpsym.jpsym_334_18

Arefian, H., Vogel, M., Kwetkat, A., & Hartmann, M. (2016). Economic evaluation of interventions for prevention of hospital acquired infections: A systematic review. *PLoS One, 11*(1). doi: 10.1371/journal.pone.0146381

Arntz, P. R. H., Hopman, J., Nillesen, M., Yalcin, E., Bleeker-Rovers, C. P., Voss, A., . . . Wei, A. (2016). Effectiveness of a multimodal hand-hygiene improvement strategy in the emergency department. *Teaching and Learning in Medicine, 44*(11):1203–1207. doi: 10.1016/j.ajic.2016.03.017

Asadollahi, M., Bostanabad, M. A., Jebraili, M., Mahallei, M., Rasooli, A. S., & Abdolalipour, M. (2015). Nurses' knowledge regarding hand-hygiene and its individual and organizational predictors. *Journal of Caring Sciences*, *4*(1), 45–53. doi: 10.5681/jcs.2015.005

Astroth, K. S., & Chung, S. Y. (2018). Focusing on the fundamentals: Reading qualitative research with a critical eye. *Nephrology Nursing Journal*, 45(4), 381-385.

Avula, H. (2013). Periodontal research: Basics and beyond - part II (ethical issues, sampling, outcome measures and bias). *Journal of Indian Society of Periodontology*, *17*(5), 571-576. doi:10.4103/0972-124X.119282

Awoke, N., Geda, B., Arba, A., Tekalign, T., & Paulos, K. (2018). Nurses practice of

hand-hygiene in hiwot fana specialized university hospital, harari regional state, eastern ethiopia: Observational study. *Nursing Research and Practice*, 2018, 1–6. doi: 10.1155/2018/2654947

Aziz, A. (2013). How better availability of materials improved hand-hygiene compliance. *British Journal of Nursing*, *22*(8), 458–463. doi: doi.org/10.12968/bjon.2013.22.8.458

Baccolini, V., Valeria D'Egidio, de Soccio, P., Migliara, G., Massimi, A., Alessandri, F., . . . Villari, P. (2019). Effectiveness over time of a multimodal intervention to improve compliance with standard hygiene precautions in an intensive care unit of a large teaching hospital. *Antimicrobial Resistance and Infection Control, 8 (1),* 1-10. doi: 10.1186/s13756-019-0544-0

Baillie, L. (2015). Promoting and evaluating scientific rigor in qualitative research. *Nursing Standard* (2014+), *29*(46), 36. doi:10.7748/ns.29.46.36.e8830

Belela-anacleto, A., Kusahara, D., Peterlini, M., & Pedreira, M. (2015). Behavioral determinants of hand-hygiene compliance in a pediatric intensive care unit from brazil. *Intensive Care Medicine Experimental*, *3*, 1–2. doi: doi.org/10.1186/2197-425X-3-S1-A721

Blevins, J. B., Jalloh, M. F., & Robinson, D. A. (2019). Faith and global health practice in ebola and HIV emergencies. *American Journal of Public Health, 109*(3), 379-384. doi:10.2105/AJPH.2018.30487

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking: A tool to enhance trustworthiness or merely a nod to validation? *SAGE, 26*(13), 1802–11. doi: 10.1177/1049732316654870

Borchgrevink, C. P., Cha, J., & Kim, S. (2013). Hand washing practices in a college town environment. *Journal of Environmental Health, 75*(8), 18–24.

Brown, S. C., Steven, R. A. Jr, Troiano, P. F., & Schneider, M. K. (2002). Exploring complex phenomena: Grounded theory in student affairs research. *Journal of College Student Development, 43*(2), 173

Buchanan, E. A., & Hvizdak, E. E. (2009). Online survey tools: Ethical and methodological concerns of human research ethics committees. *Journal of Empirical Research on Human Research Ethics*, *4*(2), 37-48. doi:10.1525/jer.2009.4.2.37

Cavnar, K., Van, D. L., & Hobby-Burns, L. (2017). Promoting patient safety through interprofessional education simulation. *Clinical Laboratory Science, 30*(4), 228–232.

Centers for Disease Control and Prevention. (2016). Healthcare providers Retrieved from https://www.cdc.gov/hand - hygiene/providers/guidelines/surveillance.html

Centers for Disease Control and Prevention. (2017). About antibiotic resistance. Retrieved from https://www.cdc.gov/drugresistance/about.html

Centers for Disease Control and Prevention. (2018). Clean hands count for healthcare providers. Retrieved from https://www.cdc.gov/handhygiene/providers/

Centers for Disease Control and Prevention. (2019a). Show me the science. Retrieved from https://www.cdc.gov/handhygiene/science/index.html

Centers for Disease Control and Prevention. (2019b). Infection control in healthcare personnel. Retrieved from

https://www.cdc.gov/infectioncontrol/guidelines/healthcare-personnel/appendix/terminology.htmlCenters for Disease Control and Prevention.

Centers for Disease Control and Prevention. (2019c). Clean hands count for healthcare providers. Retrieved from https://www.cdc.gov/handhygiene/providers

Centers for Disease Control and Prevention. (2020). Coronavirus. Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/hcp/hand-hygiene

Chang, N. N., Reisinger, H. S., Jesson, A. R., Schweizer, M. L., Morgan, D. J., Forrest, G. N., & Perencevich, E. N. (2016). Feasibility of monitoring compliance to my 5 moments and Entry/Exit hand-hygiene methods in US hospitals. *American Journal of Infection Control, 44*(8), 938–40. doi.org/10.1016/j.ajic.2016.02.007

Charmaz, K. (2014). *Constructing grounded theory*. Thousand Oaks CA: Sage Publication.

Chassin, M. R., & Loeb, J. M. (2013). High-reliability health care: Getting there from here. *The Milbank Quarterly*, (3), 459. doi: 10.1111/1468-0009.12023

Chen, P. G., Auerbach, D. I., Muench, U., Curry, L. A., & Bradley, E. H. (2013). Policy solutions to address the foreign-educated and foreign-born health care workforce in the united states. *Health Affairs, 32*(11), 1906–13. doi: 10.1377/hlthaff.2013.0576

Cole, M. (2016). Hand-hygiene: going for gold. *British Journal of Nursing*, *25*(1), 6. doi:10.12968/bjon.2016.25.1.6

Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research, 12*(3), 229-38. doi:10.1023/A:1023254226592

Colorafi, K. J., & Evans, B. (2016). Qualitative descriptive methods in health science research. *HERD: Health Environments Research & Design Journal, 9*(4), 16–25. doi: 10.1177/1937586715614171

Connelly, L. M. (2016). Understanding research. trustworthiness in qualitative research. *Medsurg Nursing*, *25*(6), 435–436.

Conroy, T. (2017). A beginner's guide to ethnographic observation in nursing research. *Nurse Researcher (2014+), 24*(4), 10. doi: 10.7748/nr. 2017.e1472

Cooper, S., Endacott, R., & Chapman, Y. (2009). Qualitative research: Specific designs for qualitative research in emergency care? *Emergency Medicine Journal: EMJ, 26*(11), 773. doi:10.1136/emj.2008.071159

Cope, D. G. (2014). Methods and Meanings: Credibility and Trustworthiness of Qualitative Research. *Oncology Nursing Forum*, *41*(1), 89–91. doi: 10.1188/14.ONF.89-91

Corbin J., & Strauss. *(2015). Basics of qualitative research* (3rd ed.). Thousand Oaks, CA: SAGE

Coughlan, R.F.M., & Cronin, P. (2009). Interviewing in qualitative research: the one-to-one interview. *International Journal of Therapy & Rehabilitation*, *16*(6), 309–314. doi.10.12968/ijtr.2009.16.6.42433

Cravener, Patricia, (1992). Establishing therapeutic alliance across cultural barriers. *Journal of Psychosocial Nursing & Mental Health Services, 30*(12), 10–14. doi: org/10.3928/0279-3695-19921201-05

Creswell, J.W. *(2009). Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: SAGE Publications

Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications

Creswell, P., & Monrouxe, L. V. (2018). 'And you'll suddenly realise 'I've not washed my hands': Medical students', junior doctors' and medical educators' narratives of hygiene behaviours. *BMJ Open*, *8*(3). doi: 10.1136/bmjopen-2017-018156

Curtis, V. A., Danquah, L. O., & Aunger, R. V. (2009). Planned, motivated and habitual hygiene behaviour: An eleven-country review. *Health Education Research*, *24*(4), 655–73.

Dahl, K., Dahlen, K. J., Larsen, K., & Lohne, V. (2017). Conscientious and proud but challenged as a stranger: Immigrant nurses' perceptions and descriptions of the norwegian healthcare system. *Nordic Journal of Nursing Research, 37*(3), 143–150. doi: 10.1177/2057158517690952

Dawson, C., Wells, F., Mackrill, J., & Prevc, K. (2017). Using inherent and elective behavior to improve hand-hygiene monitoring in health care. *American Journal of Infection Control*, *45*(10), 1168-1170 doi: 10.1016/j.ajic.2017.03.032

Decker, A. S., Cipriano, G. C., Tsouri, G., & Lavigne, J. E., P. (2016). Monitoring pharmacy student adherence to world health organization hand-hygiene indications using radio frequency identification. *American Journal of Pharmaceutical Education*, *80*(3), 1-7. doi:10.5688/ajpe80351

De Wandel, D., Maes, L., Labeau, S., Vereecken, C., Blot, S., 2010. Behavioral determinants of hand-hygiene compliance in intensive care units. *American Journal of Critical Care, 19*(3), 230–9. doi: 10.4037/ajcc2010892

De Wandel, D. (2017). Key factors for hand-hygiene promotion in intensive care units. *Intensive & Critical Care Nursing*, *42*, 3-4. doi: 10.1016/j.iccn.2017.06.007

Diegel-Vacek, L., & Ryan, C. (2016). Promoting hand-hygiene with a lighting prompt. *HERD: Health Environments Research & Design Journal; London*, *10*(1), 65–75. doi: 10.1177/1937586716651967

Diwan, V., Gustafsson, C., Klintz, S. R., Joshi, S. C., Joshi, R., Sharma, M., . . . Lundborg, C. S. (2016). Understanding healthcare workers self-reported practices, knowledge and attitude about hand-hygiene in a medical setting in rural India. *PLoS One*, *11*(10). doi: 10.1371/journal.pone.0163347

Dixit, D., Hagtvedt, R., Reay, T., Ballermann, M., & Forgie, S. (2012). Attitudes and beliefs about hand-hygiene among paediatric residents: A qualitative study. *BMJ Open, 2*(6) doi:10.1136/bmjopen-2012-002188

Doody, O., & Bailey, M. E. (2016). Setting a research question, aim and objective. *Nurse Researcher* (2014+), *23*(4), 19. doi: 10.7748/nr.23.4.19.s5

Duan, N., Bhaumik, D. K., Palinkas, L. A., & Hoagwood, K. (2015). Optimal design and purposeful sampling: Complementary methodologies for implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 524–32. doi: /10.1007/s10488-014-0596-7

Edwards, D., Monk-Turner, E., Poorman, S., Rushing, M., Warren, S., & Willie, J.

(2002). Predictors of hand-washing behavior. *Social Behavior and Personality, 30*(8), 751. doi: doi.org/10.2224/sbp.2002.30.8.751

Ehsan, A., Javad, H., Bahrami, E. H., & Kormi-Nouri Reza. (2018). Word comments analyzer: A windows software tool for qualitative research. F1000Research, 7 doi: 10.12688/f1000research.14819.2

Erasmus, V., Brouwer, W., Van Beeck, E. F., Oenema, A., Daha, T. J., Richardus, J. H., ... & Brug, J. (2009). A qualitative exploration of reasons for poor hand-hygiene among hospital workers lack of positive role models and of convincing evidence that hand-hygiene prevents cross-infection. *Infection Control & Hospital Epidemiology*, *30*(05), 415–19. doi:10.1086/596773

Erasmus, V., Otto, S., De Roos, E., Rianne, v. E., Vos, M. C., Burdorf, A., & Ed, v. B. (2020). Assessment of correlates of hand-hygiene compliance among final year medical students: A cross-sectional study in the netherlands. *BMJ Open, 10*(2). doi: 10.1136/bmjopen-2019-029484

Ergin, E., & Belgin, A. (2017). Globalization and its reflections for health and nursing. *International Journal of Caring Sciences, 10*(1), 607–13.

Erickson, F. (2011). Chapter 3: A history of qualitative inquiry in social and qualitative research. In N.K. Denzin, & Y.S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4th ed., pp. 43–58). Thousand Oaks, CA: SAGE Publication.

Fishbein, M. & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach* (1st ed., pp. 29-73). City, State: Taylor and Francis.

Flannery, M. (2016). Common perspectives in qualitative research. *Oncology Nursing*

Forum, 43(4), 517-518. doi: 10.1188/16.ONF.517-518

Flynn, R., & Hartfield, D. (2016). An evaluation of a frontline led quality improvement initiative. *Leadership in Health Services, 29*(4), 402–14. doi: 10.1108/LHS-11-2015-0039

Foley, G., & Timonen, V. (2015). Using grounded theory method to capture and analyze health care experiences. *Health Services Research*, *50*(4), 1195–1210. doi:10.1111/1475-6773.12275

Ford, E. W., Boyer, B. T., Menachemi, N., & Huerta, T. R. (2014). Increasing hand washing compliance with a simple visual cue. *American Journal of Public Health*, *104*(10), 1851–6. doi: 10.2105/AJPH.2013.301477

Fouad, H., Halim, M. M. A., Algebaly, H. F., & Maher, N. A. (2018). Influence of handprint culture training on compliance of healthcare workers with hand-hygiene. *Interdisciplinary Perspectives on Infectious Diseases,* 1–6. doi: 10.1155/2018/3727521

Fouad, M., & Eltaher, S. (2020). Hand-hygiene initiative: Comparative study of pre- and postintervention outcomes. *Eastern Mediterranean Health Journal, 26*(2), 198-205. doi:10.26719/2020.26.2.198

Freeman, J. T., Dawson, L., Jowitt, D. M., White, M., Callard, H., Sieczkowski, C., . . . Roberts, S. A. (2016). The impact of the hand-hygiene New Zealand programme on hand-hygiene practices in new Zealand's public hospitals. *The New Zealand Medical Journal* (online), *129*(1443), 67–76, 5.

Gaube, S., Tsivrikos, D., Dollinger, D., & Lermer, E. (2018). How a smiley protects health: A pilot intervention to improve hand-hygiene in hospitals by activating

injunctive norms through emoticons. *PLoS One*, *13*(5). doi: 10.1371/journal.pone.0197465

Gauche, C., de Beer, L.,T., & Brink, L. (2017). Exploring demands from the perspective of employees identified as being at risk of burnout. International *Journal of Qualitative Studies on Health and Well-being*, *12*(1), 1-13. doi:10.1080/17482631.2017.1361783

Gearhart, C. (2010). The role of IRBs in research. Applied Clinical Trials, *19*(7), 2-4A,5A.

Glaser, B.G., Strauss, A.L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Saw Mill River Road Hawthorne, New York: A Division of Walter de Gruyter, Inc.

Glozah, F. N. (2015). Exploring ghanaian adolescents' meaning of health and wellbeing: A psychosocial perspective. *International Journal of Qualitative Studies on Health and Well-being, 10.* doi: 10.3402/qhw.v10.26370

Golinski, M. (2018). Identifying patterns and meanings across the AANA foundation closed claim dataset using thematic analysis methods. *AANA Journal*, *86*(1), 27-31.

Grayson, M. L., Macesic, N., Huang, G. K., Bond, K., Fletcher, J., Gilbert, G. L., . . . Cruickshank, M. (2015). Use of an innovative personality-mindset profiling tool to guide culture-change strategies among different healthcare worker groups. *PLoS One*, *10*(10). doi: 10.1371/journal.pone.0140509

Green, H. E. (2014). Use of theoretical and conceptual frameworks in qualitative research. *Nurse Researcher*, *21*(6), 34-38. doi:10.7748/nr.21.6.34.e1252

Kross, J., & Giust, A. (2019). Elements of research questions in relation to qualitative inquiry. *The Qualitative Report, 24*(1), 24-30.

Hadi, M. A., & José Closs, S. (2016). Ensuring rigour and trustworthiness of qualitative research in clinical pharmacy. *International Journal of Clinical Pharmacy*, *38*(3), 641-646. doi:10.1007/s11096-015-0237-6

Harris, T. (2015). Grounded theory. *Nursing Standard (2014+)*, 29(35), 32. doi: 10.7748/ns.29.35.32. e9568

Hays, D. G., & Wood, C. (2011). Infusing qualitative traditions in counseling research designs. *Journal of Counseling and Development*: JCD, 89(3), 288-295. doi: 10.1002/j.1556-6678. 2011.tb00091.x

Heale, R., & Forbes, D. (2013). Understanding triangulation in research. *Evidence - Based Nursing*, *16*(4), 98. doi:10.1136/eb-2013-101494

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code saturation versus meaning saturation: How many interviews are enough? *Qual Health Research*, *27*(4), 591-608. doi:10.1177/1049732316665344

Hernandez, M. (2017). Migrant nurses don't affect domestic nurses' wages. Kai Tiaki : *Nursing New Zealand*, *23*(4), 32-33

Hong, T. S., Bush, E. C., Hauenstein, M. F., Lafontant, A., Li, C., Wanderer, J. P., & Ehrenfeld, J. M. (2015). A hand-hygiene compliance check system: Brief communication on a system to improve hand-hygiene compliance in hospitals and reduce infection. *Journal of Medical Systems, 39*(6), 1–4. doi: 10.1007/s10916-015-0253-z

Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-

study research. *Nurse Researcher* (through 2013), *20*(4), 12-7.

Hunter, K. (2020). Cultural safety or cultural appropriation? Kai Tiaki : *Nursing New Zealand*, *26*(1), 24-25.

Ikart, E. M. (2018). Questionnaire pretesting methods: A comparison of cognitive interviewing and respondent debriefing vis-à-vis the study of the adoption of decision support systems by knowledge workers. *International Journal of Business and Information, 13*(2), 119-154. doi: 10.6702/ijbi.201806_13(2).0001

Jenner, E., Watson, P., Miller, L., Jones, F., & Scott, G. (2002). Explaining hand-hygiene practice: an extended application of the Theory of Planned Behaviour. *Psychology, Health & Medicine, 7*(3), 311–26. doi; 10.1080/13548500220139412

Jeong, H., Pham, J. C., Kim, M., Engineer, C., & Pronovost, P. J. (2012). Major cultural-compatibility complex: Considerations on cross-cultural dissemination of patient safety programmes. *BMJ Quality & Safety, 21*(7), 612. doi:10.1136/bmjqs-2011-000283

Johnson, J. L., Adkins, D., & Chauvin, S. (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education, 84*(1), 138-146.

Jose, M. M. (2011). Lived experiences of internationally educated nurses in hospitals in the United States of America. *International Nursing Review, 58*(1), 123–129, oi.org/10.1111/j.1466-7657.2010. 00838.x

Judkins-Cohn, T., Kielwasser-Withrow, K., Owen, M., & Ward, J. (2014). Ethical

principles of informed consent: Exploring nurses' dual role of care provider and researcher. *The Journal of Continuing Education in Nursing, 45*(1), 35–42. doi:10.3928/00220124-20131223-03

Kaur, H., & Kaur, J. (2015). Hand-hygiene practices among staff nurses during drug administration at selected tertiary health care centre of ludhiana, punjab. Asian *Journal of Nursing Education and Research*, *5*(2), 199–201. doi.org/10.5958/2349-2996.2015.00040.3

Kawi, J., & Xu, Y. (2009). Facilitators and barriers to adjustment of international nurses: an integrative review. *International nursing review, 56*(2), 174–183. doi.org/10.1111/j.1466-7657.2008. 00705.x

Kim, Y. (2011). The pilot study in qualitative inquiry: Identifying issues and learning lessons for culturally competent research. *Qualitative Social Work, 10*(2), 190-206. doi:10.1177/1473325010362001

Kim, K. M., & Oh, H. (2015). Clinical experiences as related to standard precautions compliance among nursing students: A focus group interview based on the theory of planned behavior. *Asian Nursing Research, 9*(2), 109–114. doi: 10.1016/j.anr.2015.01.002

Kongsuwan, W., Khaw, T., Chaiweeradet, M., & Locsin, R. (2019). Lived experience of grieving of thai buddhist husbands who had lost their wives from critical illness. *Journal of Nursing Scholarship, 51*(4), 390-398. doi: 10.1111/jnu.12477

Lee, A., & Brann, L. (2015). Influence of cultural beliefs on infant feeding, postpartum and childcare practices among chinese-american mothers in new

york city. *Journal of Community Health, 40*(3), 476–83. doi:10.1007/s10900-014-9959-y

Lee, S., Mcclain, C., Webster, N., & Han, S. (2016). Question order sensitivity of subjective well-being measures: Focus on life satisfaction, self-rated health, and subjective life expectancy in survey instruments. *Quality of Life Research, 25*(10), 2497-2510. doi: 10.1007/s11136-016-1304-8

Lewis-Pierre, L., Kovacich, J., & Amankwaa, L. (2017). The application of grounded theory: An example from nursing workforce research. *The Qualitative Report, 22*(5), 1269–83.

Liani, S., Martire, F., & Pitrone, M. C. (2015). Cognitive interviewing to pretest attitude questions. *Italian Sociological Review*, 5(2), 237-250.

Ligita, T., Wicking K., Francais K., Harvey N., & Nurjannah, I. (2019). How people living with diabetes in Indonesia learn about their disease: *A grounded theory study. PLoS One, 14*(2). doi: 10.1371/journal.pone.0212019

Lin L. (2009). Data management and security in qualitative research. *Dimensions of Critical Care Nursing*, 28(3), 132–137. doi- 10.1097/DCC.0b013e31819aeff6

Long, T., & Johnson, M. (2000). Rigor, reliability and validity in qualitative research. *Clinical effectiveness in nursing*, *6* (1). 30–37. doi:10.1054/cein.2000.0106

Longtin, Y., Sax, H., llegranzi, B., Schneider, F., & Pittet, D. (2011). Hand-hygiene. *The New England Journal of Medicine, 364*(13). e24. doi: 10.1056/NEJMvcm0903599

Malagon-Maldonado, G. (2014). Qualitative research in health design. *HERD: Health Environments Research & Design Journal, 7*(4), 120–34. doi:

10.1177/193758671400700411

Mao, A., Bottorff, J. L., Oliffe, J. L., Sarbit, G., & Kelly, M. T. (2015). A qualitative study of Chinese Canadian fathers' smoking behaviors: Intersecting cultures and masculinities. *BMC Public Health*, *15*(1), 286. doi:10.1186/s12889-015-1646-0

Markey, K., Tilki, M., & Taylor, G. (2014). Reflecting on the challenges of choosing and using a grounded theory approach. *Nurse Researcher (2014+), 22*(2), 16. doi: 10.7748/nr.22.2.16.e1272

Mascherek, A. C., Gehring, K., Bezzola, P., & Schwappach, D. L. B. (2015). Using the theory of planned behaviour to model antecedents of surgical checklist use: A cross-sectional study. *BMC Health Services Research*, *15* (462), 1–10. doi; 10.1186/s12913-015-1122-7

Maz, J. (2013). Employing a grounded theory approach: core characteristics. *British Journal of Cardiac Nursing*, *8*(9), 453–58. doi: 10.1054/cein.2000.0106

McCay, L. (2015). Emotional motivators might improve hand-hygiene among healthcare workers. *BMJ: British Medical Journal (Online), 351, 1-2.* doi:10.1136/bmj.h3968

McDonnall, M. C., & Crudden, A. (2015). Building relationships with businesses: Recommendations from employers concerning persons who are Blind/Visually impaired. *Journal of Rehabilitation*, 81(3), 43-50

McGuckin, M., Govednik, J., & Leal, J. E., (2015). A review of electronic hand-hygiene monitoring: Considerations for hospital management in data collection, health care worker supervision, and patient Perception/Practitioner

application. *Journal of Healthcare Management*, *60*(5), 348–62. doi: 10.1097/00115514-201509000-00009

McInnes, E., Phillips, R., Middleton, S., & Gould, D. (2014). A qualitative study of senior hospital managers' views on current and innovative strategies to improve hand-hygiene. *BMC Infectious Diseases*, *14*, 611. Doi: 10.1186/s12879-014-0611-3

McRobert, C. J., × Jonathan, C. H., Smale, T., Hay, E. M., & Danielle A van, d. W. (2018). A multi-modal recruitment strategy using social media and internet-mediated methods to recruit a multidisciplinary, international sample of clinicians to an online research study. *PLoS One, 13*(7). doi: 10.1371/journal.pone.0200184

Mearkle, R., Houghton, R., Bwonya, D., & Lindfield, R. (2016). Barriers to hand-hygiene in ophthalmic outpatients in Uganda: a mixed methods approach. *Journal of Ophthalmic Inflammation and Infection; Heidelberg*, *6*(1), 1–6. doi; 10.1186/s12348-016-0077-0

Megeus, V., Nilsson, K., Karlsson, J., Eriksson, B. I., & Andersson, A. E. (2015). Hand contamination, cross-transmission, and risk-associated behaviors: An observational study of team members in ORs. Association of Operating Room Nurses. *AORN Journal*, *102*(6), 645.e1-645.e12. doi: 10.1016/j.aorn.2015.06.018

Mete, K. K., & Akin, S. (2018). Effectiveness of hygienic hand washing training on hand washing practices and knowledge: A nonrandomized quasi-experimental design. *The Journal of Continuing Education in Nursing*, *49*(8), 360–371. doi:

10.3928/00220124-20180718-07

Mitchell, G. (2015). Use of interviews in nursing research. *Nursing Standard (2014+), 29*(43), 44. doi: 10.7748/ns.29.43.44. e8905

Mohammadinia, L., Khorasani-Zavareh, D., Ebadi, A., Malekafzali, H., Ardalan, A., & Fazel, M. (2018). Characteristics and components of children's and adolescents' resilience in disasters in Iran: A qualitative study. *International Journal of Qualitative Studies on Health and Well-being*, *13*, 1-10. doi: 10.1080/17482631.2018.1479584

Moore, D., M. (2019) Triangulation: A method to increase validity, reliability, and legitimation in clinical research: *Journal of Emergency Nursing*, 45(1), 103. Doi: 10.1016/j.jen.2018.11.004

Morgan, A. J., Jorm, A. F., & Mackinnon, A. J. (2013). Internet-based recruitment to a depression prevention intervention: Lessons from the mood memos study. *Journal of Medical Internet Research*, *15*(2). https://doi: 10.2196/jmir.2262

Morse, J. M. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Quality Health Research*, *25*(9), 1212-1222. doi:10.1177/1049732315588501

Moyce, S., Lash, R., & de Leon Siantz, M. L. (2016). Migration experiences of foreign educated nurses: A systematic review of the literature. *Journal of Transcultural Nursing*, *27*(2), 181–8.

Munthe-Kaas, H., Heid Nøkleby, & Nguyen, L. (2019). Systematic mapping of checklists for assessing transferability. *Systematic Reviews*, *8*(22), 2-16. doi:10.1186/s13643-018-0893-4

Ng, W. K., Ramon Z. S., and Thea V. D. M., (2017). Healthcare Professionals' Hand-hygiene Knowledge and Beliefs in the United Arab Emirates. *Journal of Infection Prevention*, *18* (3), 134–142. doi:10.1177/1757177416677851.

Nicol, P. W., Watkins, R. E., Donovan, R. J., Wynaden, D., & Cadwallader, H. (2009). The power of vivid experience in hand-hygiene compliance. *Journal of Hospital Infection, 72*(1), 36–42. doi; 10.1016/j.jhin.2009.01.021

NYC Hospitals + Hospital/Queens. *Language Services*. (2019) Retrieved from https://www.nychealthandhospitals.org/queens/language-services/

Oates, J. (2015). Use of skype in interviews: The impact of the medium in a study of mental health nurses. *Nurse Researcher (2014+), 22*(4), 13. doi: 10.7748/nr.22.4.13.e1318

O'Boyle, C. A., Henly, S. J., & Larson, E. (2001). Understanding adherence to hand-hygiene recommendations: The theory of planned behavior. *American Journal of Infection Control*, 29(6), 352-360. doi: 10.1067/mic.2001.18405

O'Donoghue, M., Suk-Hing Ng, Suen, L. K. P., & Boost, M. (2016). A quasi-experimental study to determine the effects of a multifaceted educational intervention on hand-hygiene compliance in a radiography unit. *Antimicrobial Resistance and Infection Control, 5(1), 1-10.* doi: 10.1186/s13756-016-0133-4

Office of Disease Prevention and Health Promotion (2020). Healthcare Associated Infections. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/healthcare-associated-infections

O'Reilly, K., Ruokis, S., Russell, K., Teves, T., DiLibero, J., Yassa, D., . . . Howell, M. D. (2016). Standard work for room entry: Linking lean, hand-hygiene, and

patient-centeredness. *Healthcare*, *4*(11), 45-51. doi: 10.1016/j.hjdsi.2015.12.008

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533-544. Doi:10.1007/s10488-013-0528-y

Pandey, S., & Chawla, D. (2016). Using qualitative research for establishing content validity of e-lifestyle and website quality constructs. *Qualitative Market Research, 19*(3), 339-356.

Parker, M. J., de Laat, S., & Schwartz, L. (2016). Exploring the experiences of substitute decision-makers with an exception to consent in a pediatric resuscitation randomized controlled trial: Study protocol for a qualitative research study. *BMJ Open, 6*(9). doi: 10.1136/bmjopen-2016-012931

Pegram, A., & Bloomfield, J. (2015). Infection prevention and control. *Nursing Standard* (2014+), *29*(29), 37-42. doi: 10.7748/ns.29.29.37.e7257

Person, B., Schilling, K., Owuor, M., Ogange, L., & Quick, R. (2013). A Qualitative evaluation of hand drying practices among kenyans. *Plos One, 8*(9), 1–6. doi: 10.1371/journal.pone.0074370

Peter, E. (2015). The ethics in qualitative health research: Special considerations. *Ciência & Saúde Coletiva, 20*(9), 2625-2630. doi: 10.1590/1413-81232015209.06762015

Pfafflin, F., Tafese, B. T., Getachew, M., Nigussie, T., Schonfeld, A., Haussinger, D.,

. . . Schmidt, N. (2017). Implementation of the WHO multimodal hand-hygiene improvement strategy in a university hospital in central Ethiopia. *Antimicrobial Resistance and Infection Control, 6*(1), 1-10. doi: 10.1186/s13756-016-0165-9

Phillips, A. (2015). OH research: How to conduct surveys. *Occupational Health*, *67*(1), 27-29.

Piras, S. E., Lauderdale, J., &Minnick, A. (2017). An elicitation study of critical care nurses' salient hand-hygiene beliefs. *Intensive and Critical Care Nursing*, *42*, 10–16. doi: 10.1016/j.iccn.2017.03.012

Piras, S.E., Minnick, A., Lauderdale, J., Dietrich, M.S., & Vogus T.J. (2018). The effects of social influence on nurses' hand-hygiene behaviors. *JONA, 48*(4), 216–21. doi: 10.1097/NNA.0000000000000602

Pittet, D., Simon, A., Hugonnet, S., Pessoa-Silva, L. C., Sauvan, V., & Perneger, T.V. (2004). Hand-hygiene among physicians: Performance, beliefs, and perceptions. *Annals of Internal Medicine; Philadelphia*, *141*(1), 1–8.

Prapavessis H, Maddison R, Ruygrok PN, Bassett S, Harper T, & Gillanders L. (2005). Using theory of planned behavior to understand exercise motivation in patients with congenital heart disease. *Psychology, Health & Medicine, 10*(4), 335–343.

Principles of the ethical practice of public health. (2002). *Public Health Leadership Society.* Retrieved from https://www.apha.org/~/media/files/pdf/membergroups/ethics_brochure.ashx

Pujari, V., & Pal, S. (2018). An overview of challenges and migration among nursing

professionals. Teorija in Praksa, *55*(3), 572-590,690.

Ramira, M. L., Peraza-Smith, G. B., McLeod, R., & Clark, M. J. (2018). Challenges, barriers, and satisfiers of foreign educated physicians with the family nurse practitioner role in the united states. *Journal of Cultural Diversity*, *25*(1), 12–22.

Ravitch, S.M., & Carl, N.M. (2016). Qualitative research: Bridging the conceptual, theoretical, and methodological. Thousand Oaks, CA: Sage Publications.

Reimer-Kirkham, S. (2009). Lived religion: Implications for nursing ethics. *Nursing Ethics*, *16*(4), 406–17. doi: 10.1177/0969733009104605

Renolen, Å., & Hjälmhult, E. (2015). Nurses experience of using scientific knowledge in clinical practice: a grounded theory study. *Scandinavian Journal of Caring Sciences*, *29*(4), 633–641. doi: 10.1111/scs.12191

Rhodes, S. D., Bowie, D. A., & Hergenrather, K. C. (2003). Collecting behavioural data using the world wide web: Considerations for researchers. *Journal of Epidemiology and Community Health, 57*(1), 68. doi:10.1136/jech.57.1.68

Rolfe, D. E., Ramsden, V. R., Banner, D., & Graham, I. D. (2018). Using qualitative health research methods to improve patient and public involvement and engagement in research. *Research Involvement and Engagement*, *4*, 1-8. doi:10.1186/s40900-018-0129-8

Rollon, Ronald. (2020). Using the theory of planned behavior to improve perioperative practice: The official voice of perioperative nursing the official voice of perioperative nursing. *AORN Journal*, *111*(3), 327-331. doi:10.1002/aorn.12959

Sadule-Rios, N., & Aguilera, G. (2017). Nurses' perceptions of reasons for persistent low rates in hand-hygiene compliance. *Intensive & Critical Care Nursing, 42*, 17–21. doi: 10.1016/j.iccn.2017.02.005

Sahai, V., Eden, K., Glustein, S., & Nesdole, R. (2016). Hand-hygiene knowledge, attitudes and self-reported behaviour in family medicine residents. *Canadian Journal of Infection Control, 31*(1), 11–17.

Santosaningsih, D., Erikawati, D., Santoso, S., Noorhamdani, N., Ratridewi, I., Candradikusuma, D., … Severin, J.A. (2017). Intervening with healthcare workers' hand-hygiene compliance, knowledge, and perception in a limited-resource hospital in Indonesia: a randomized controlled trial study. *Antimicrobial Resistance and Infection Control*, *Vol 6*(1), 1-10. doi: 10.1186/s13756-017-0179-y

Scheithauer, S., Batzer, B., Dangel, M., Passweg, J., & Widmer, A. (2017). Workload even affects hand-hygiene in a highly trained and well-staffed setting: A prospective 365/7/24 observational study. *Journal of Hospital Infection*, 97(1), 11-16. doi: 10.1016/j.jhin.2017.02.013

Schönfelder, W. (2011). CAQDAS and qualitative syllogism logic-NVivo 8 and MAXQDA 10 compared. Forum: *Qualitative Social Research*, *12*(1)

Scott, K. (2016). Cross culture management: Global healthcare workers. *Journal of Continuing Education Topics & Issues, 18*(3), 68-75.

Seeleman, C., Suurmond, J., & Stronks, K. (2009). Cultural competence: a conceptual framework for teaching and learning. *Medical Education, 43*(3), 229–237. doi: 10.1111/j.1365-2923.2008. 03269.x

Sendlhofer, G., Krause, R., Kober, B., Vander, K., Zierler, R., Brunner, G., . . . Kamolz, L. P. (2015). Hand-hygiene behavior in a tertiary university hospital: Differences between surgical and nonsurgical departments. *Safety in Health*, 1-10. doi: 1772419253?accountid=14872

Shah, N., Castro-Sánchez, E., Charani, E., Drumright, L. N., & Holmes, A. H. (2015). Towards changing healthcare workers' behaviour: A qualitative study exploring non-compliance through appraisals of infection prevention and control practices. *Journal of Hospital Infection*, *90*(2), 26-134. doi: 10.1016/j.jhin.2015.01.023

Shah, K., Dhwani, K., Hema, M., Birinder, M., Desai, K., & Patel, R. S. (2020). Focus on mental health during the coronavirus (COVID-19) pandemic: Applying learnings from the past outbreaks. *Cureus, 12*(3). doi: http://dx.doi: 10.7759/cureus.7405

Shah, R., Patel, D. V., Shah, K., Phatak, A., & Nimbalkar, S. (2015). Video surveillance audit of hand-washing practices in a neonatal intensive care unit. *Indian Pediatrics*, *52*(5), 409–11.

Shento, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63–75.

Sherwood, G. D., & Shaffer, F. A. (2014). The role of internationally educated nurses in a quality, safe workforce. *Nursing Outlook, 62*(1), 46–52

Sicilia, A., Saenz-Alvarez, P., Ferriz, R., & Gonzalez-Cutre, D. (2015). Analysing the influence of autonomous and controlling social factors within the theory of planned behaviour. *Australian Psychologist*, *50*(1), 70–9.

Sickbert-Bennett, E. E., DiBiase, L. M., Willis, T. M. S., Wolak, E. S., Weber, D. J., & Rutala, W. A. (2016). Reduction of healthcare-associated infections by exceeding high compliance with hand-hygiene practices. *Emerging Infectious Diseases*, (9), 1628. doi.org/10.3201/eid2209.151440

Sin, M., Ha, A., & Taylor, V. (2016). Sociocultural barriers to lung cancer screening among korean immigrant men. *Journal of Community Health, 41*(4), 790–7. doi:10.1007/s10900-016-0154-1

Smiddy, M. P., O'Connell, R., & Creedon, S. A. (2015). Systematic qualitative literature review of health care workers' compliance with hand-hygiene guidelines. *American Journal of Infection Control*, *43*(3), 269–274. doi: 10.1016/j.ajic.2014.11.007

Soklaridis, S. (2009). The process of conducting qualitative grounded theory research for a doctoral thesis: Experiences and reflections. *The Qualitative Report*, *14*(4), 719-734.

Solimun, & Adji Achmad, R. F. (2017). Investigation of instrument validity. *International Journal of Law and Management, 59*(6), 1203-1210. doi:10.1108/IJLMA-09-2016-0076

Sorsa, M. A., Kiikkala, I., & Åstedt-Kurki, P. (2015). Bracketing as a skill in conducting unstructured qualitative interviews. *Nurse Researcher* (2014+), *22*(4), 8. doi: 10.7748/nr.22.4.8.e1317

Spruce, L. (2013). Back to basics: Hand-hygiene and surgical hand antisepsis. *Association of Operating Room Nurses AORN Journal*, *98*(5), 449–57, quiz 458-60. doi: 10.1016/j.aorn.2013.08.017

Squires, J. E., Suh, K. N., Linklater, S., Bruce, N., Gartke, K., Graham, I. D., . . . Grimshaw, J. M. (2013). Improving physician hand-hygiene compliance using behavioural theories: A study protocol. *Implementation Science, 8*, 16. doi: 10.1186/1748-5908-8-16

Srigley, J. A., Corace, K., Hargadon, D. P., Yu, D., MacDonald, T., Fabrigar, L., & Garber, G. (2015). Applying psychological frameworks of behaviour change to improve healthcare worker hand-hygiene: A systematic review. *Journal of Hospital Infection*, *91* 202-210. doi: 1016/j.jhin.2015.06.019

Stavrova, O. (2014). Religious prosociality and morality across cultures: how social enforcement of religion shapes the effects of personal religiosity on prosocial and moral attitudes and behaviors. *Personality & Social Psychology Bulletin*, *40*(3), 315-333.

Stedman-Smith, M., DuBois, C. L. Z., & Grey, S. F. (2015). Hand-hygiene performance and beliefs among public university employees. *Journal of Health Psychology, 20*(10), 1263-1274. doi:10.1177/1359105313510338

Stedman-Smith, M., DuBois, C. L. Z., PhD., & Grey, S., M.S. (2012). Workplace hand-hygiene and wellness: A survey of knowledge, beliefs, and practices. *Workplace Health & Safety, 60*(11), 477-485. doi:10.3928/21650799-20121016-67

Steffen, P., & Merrill, R. (2011). The association between religion and acculturation in Utah Mexican immigrants. *Mental Health, Religion & Culture, 14*(6), 561–73. doi:10.1080/13674676.2010.495747

Stewardson, A., Allegranzi, B., Sax, H., Kilpatrick, C., & Pittet, D. (2011). Back to

the future: Rising to the semmelweis challenge in hand-hygiene. *Future Microbiology, 6*(8), 855-76. doi:10.2217/fmb.11.66

Stewardson, A. J., Sax, H., Gayet-Ageron, A., Touveneau, S., Longtin, Y., Zingg, W., & Pittet, D. (2016). Enhanced performance feedback and patient participation to improve hand-hygiene compliance of health-care workers in the setting of established multimodal promotion: A single-centre, cluster randomised controlled trial. *The Lancet Infectious Diseases, 16*(12), 1345–55. doi: 10.1016/S1473-3099(16)30256-0

Storr, J., Twyman, A., Zingg, W., Damani, N., Kilpatrick, C., Reilly, J., . . . Allegranzi, B. (2017). Core components for effective infection prevention and control programmes: New WHO evidence-based recommendations. *Antimicrobial Resistance and Infection Control, 6*. doi: 10.1186/s13756-016-0149-9

Tam, V., Edge, J. S., & Hoffman, S. J. (2016). Empirically evaluating the WHO global code of practice on the international recruitment of health personnel's impact on four high-income countries four years after adoption. *Globalization & Health,* 121–12. doi:10.1186/s12992-016-0198-0

Tan, J., A. K., & Olivo, J. (2015). Assessing Healthcare Associated Infections and Hand-hygiene Perceptions amongst Healthcare Professionals. *International Journal of Caring Sciences*, *8*(1), 108–114.

Tsan, M., & Tsan, L. W. (2015). Assessing the quality of human research protection programs to improve protection of human subjects participating in clinical trials. *Clinical Trials*, *12*(3), 224-231. doi: 10.1177/1740774514568688

Tartari, E., Pires, D., Bellissimo-Rodrigues, F., De Kraker, M., Borzykowski, T., Allegranzi, B., & Pittet, D. (2017). The global hand-sanitizing relay: Promoting hand-hygiene through innovation. *Journal of Hospital Infection*, 95(2), 189-193. doi: 10.1016/j.jhin.2016.11.003

The Joint Commission (2009). Measuring Hand Hygiene Adherence. Retrieved from https://www.jointcommission.org/-/media/tjc/documents/resources/hai/hh_monograph.pdf

Thomas, J. (2004). Skills for the ethical practice of public health. Public Health Leadership Society. *Journal of Public Health Management and Practice*, *11*(3), 260-261

The World Health Organization. (2016a). Prevention of Hospital Acquired Infections. Retrieved from http://www.who.int/csr/resources/publications/drugresist/en/whocdscsreph200212.pdf?ua=1

The World Health Organization. (2016b). Global Hand Washing Day. Retrieved from http://www.cute-calendar.com/event/global-handwashing

The World Health Organization. (2017c). Occupational Health. Retrieved from http://www.who.int/occupational_health/topics/hcworkers/en/

Tong, S. F., Ng, C. J., Lee, V. M., Lee, P. Y., Ismail, I. Z., Khoo, E. M., & ... Abdullah, A. (2018). Decision making process and factors contributing to research participation among general practitioners: A grounded theory study. *Plos ONE*, *13*(4), 1–17. doi: 10.1371/journal.pone.0196379

Tregunno, D., Peters, S., Campbell, H., & Gordon, S. (2009). International nurse

migration: U-turn for safe workplace transition. *Nursing inquiry, 16*(3), 182–190.

United States Census Bureau. (2016). Foreign Born. Retrieved from https://www.census.gov/topics/population/foreign-born.html

Urooj, U., Ansari, A., Siraj, A., Khan, S., & Tariq, H. (2020). Expectations, fears and perceptions of doctors during covid-19 pandemic. *Pakistan Journal of Medical Sciences, 36*, S-1-S-6. doi. 10.12669/pjms.36.COVID19-S4.2643

Vasileiou, K., Barnett, J., Thorpe, S., & Young, T. (2018). Characterizing and justifying sample size sufficiency in interview-based studies: Systematic analysis of qualitative health research over a 15-year period. *BMC Medical Research Methodology*, *18* (148), 1-18. doi: 10.1186/s12874-018-0594-7

Walker, J. L., Sistrunk, W. W., Higginbotham, M. A., Burks, K., Halford, L., Goddard, L., . . . Finley, P. J. (2014). Hospital hand-hygiene compliance improves with increased monitoring and immediate feedback. *Journal of Infection Control*, *42*(10), 1074-1078. doi: 10.1016/j.ajic.2014.06.018

Waltman, P. A., Schenk, L. K., Martin, T. M., & Walker, J. (2011). Effects of student participation in hand-hygiene monitoring on knowledge and perception of infection control practices. *Journal of Nursing Education, 50*(4), 216–21. doi: 10.3928/01484834-20110228-06

Watson, F. A. (2016). Lessons learned on approaches to data collection and analysis from a pilot study. *Nurse Researcher* (2014+), *24*(1), 32. doi:10.7748/nr. 2016.e1444

White, K. M., Jimmieson, N. L., Obst, P. L., Graves, N., Barnett, A., Cockshaw, W.,

Gee, P., Haneman, L., Page, K., Campbell, M., Martin, E., & Paterson, D. (2015). Using a theory of planned behaviour framework to explore hand hygiene beliefs at the “5 critical moments” among Australian hospital-based nurses. *BMC Health Services Research, 15*(1), 1–9. doi- /10.1186/s12913-015-0718-2

Whiting, M., & Sines, D. (2012). Mind maps: establishing 'trustworthiness' in qualitative research. *Nurse Researcher*, *20*(1), 21–27.

Wiles, L. L., Roberts, C., & Schmidt, K. (2015). Keep it clean: A visual approach to reinforce hand-hygiene compliance in the emergency department. *Journal of Emergency Nursing*, *41*(2), 119–124. doi: 10.1016/j.jen.2014.11.012

Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review, 15*(1), 45-55,71-72.

Wilson, S., Jacob, C. J., & Powell, D. (2011). Behavior-change interventions to improve hand-hygiene practice: A review of alternatives to education. *Critical Public Health*, *21*(1), 119–127. doi:10.1080/09581591003786122

Wolf, L. A. (2017). What qualitative research can do for you: Deriving solutions and interventions from qualitative findings. *Journal of Emergency Nursing, 43*(5), 484-485. doi: 1016/j.jen.2016.06.001

Woods, P., Gapp, R., & King, M. A. (2016). Generating or developing grounded theory: Methods to understand health and illness. *International Journal of Clinical Pharmacy*, *38*(3), 663-670. doi:10.1007/s11096-016-0260-2

World Health Organization. (2018a). Save Lives Clean Your Hands. Retrieved from http://www.who.int/gpsc/5may/background/5moments/en/

World Health Organization (2019). Globalization. Retrieved from https://www.who.int/topics/globalization/en

World Health Organization (2020). Clean Care is Safer Care. Retrieved from https://www.who.int/gpsc/country_work/burden_hcai/en/

Wu, K., Chen, Y., Lin, H., Hsieh, E., Chen, J., Tsai, H., . . . Lee, S. S. (2017). A nationwide covert observation study using a novel method for hand-hygiene compliance in health care. *American Journal of Infection Control, 45*(3), 240-244. doi: /10.1016/j.ajic.2016.10.010

Yang, C., Hu, J., Tao, M., Li, Y., Chai, Y., Ning, Y., . . . Xiao, Q. (2017). Effectiveness of a multifaceted intervention on improving the hand-washing skills and behaviors of migrant workers in beijing. *Global Health Promotion, 24*(3), 32-39. doi:1177/1757975915601833

Yehouenou, C. L., Angèle, M. D., Fiogbe, A. D., Esse, M., Degbey, C., Simon, A., & Dalleur, O. (2020). Hand-hygiene in surgery in benin: Opportunities and challenges. *Antimicrobial Resistance and Infection Control, 9*, 1-8. doi: 10.1186/s13756-020-00748-z

Zhao, Q., Yang, M. M., Yu-Ying, H., & Wenlin Chen. (2018). How to make hand-hygiene interventions more attractive to nurses: A discrete choice experiment. *PLoS One, 13*(8) doi: http://dx.doi.org.ezp.waldenulibrary.org/10.1371/journal.pone.0202014

Appendix A: Recruitment Pilot Study Flyer

Attention: Foreign-Born Healthcare Workers

Please take this opportunity to have your voice heard!

Calling on Physicians and Registered Nurses

Volunteers are needed to participate in a **Pilot Study** designed to explore cultural influences and beliefs associated with foreign-born healthcare workers hand-hygiene practices.

You are invited to participate in the study if you meet the following Criterion:

1: The foreign-born healthcare worker must work at least 35 hours weekly with patients, in a 24-hour in-patient healthcare setting in the United States as a Physician or Registered Nurse.

2: All Physicians and Registered Nurses who are invited to participate in the study must also provide direct patient care activities, consisting of in-patient care, treatment, and services, as well as perform patient care assessments.

Hand-hygiene means cleaning your hands by either using handwashing (washing with soap and water), antiseptic hand wash, antiseptic hand rub (i.e. alcohol-based hand sanitizer including foam or gel), or surgical antisepsis (CDC, 2019).

Study is available online

Takes 20-30 minutes to complete

If interested in participating in this Pilot Study, please visit:

https://www.surveymonkey.com/r/BGRZT2B

This is an Anonymous Survey

Sheila Davis, RN, MSN, MHA, BSN, CPPS
Doctoral Candidate
Walden University
Email: sheila.davis5@waldenu.edu

Appendix B: Recruitment Flyer

Attention: Foreign-Born Healthcare Workers

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Study is available online

Takes 20-30 minutes to complete

If interested in participating in this Study, please visit:

https://www.surveymonkey.com/r/NYR5GT9

This is an anonymous Survey

Sheila Davis, RN, MSN, MHA, BSN, CPPS
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Appendix C: Participant Screening **Tool for the Pilot Study: Exploring the Influences of Culture on Hand-hygiene Beliefs of Foreign-born Healthcare Workers**

The aim of this study is to explore the influences of culture on hand-hygiene beliefs of foreign-born HCWs. The respondents will be screened to determine if they qualify for the Pilot study. If selected, the participant will have access to participate in an online electronic survey. The following question is an actual research question that will be asked during the Survey Monkey process:

1. **What are some of your cultural beliefs towards hand-hygiene?**

   All data will be stored in a password protected electronic format.

   Email any questions regarding the completion of this form to:

   sheila.davis5@waldenu.edu

Participant Screening Tool for the Pilot Study: Exploring the Influences of Culture on Hand-hygiene Beliefs of Foreign-born Healthcare Workers

Directions:

Please complete the screening tool below:

Age _____ Ethnicity _____ Gender_____ M_____ F_____

Are you Foreign-born? _____ Y _____ N

Country of Origin_____

Physician _____ Y _____ N

Registered Nurse _____ Y _____ N

Are you a foreign-born Physician or Registered nurse working at least 35 hours weekly in a 24-hour in-patient healthcare setting in the United States.? _____ Y _____ N

Do you provide direct patient care activities, such as in-patient care treatment and services? _____ Y _____ N

Do you perform patient care assessments? ____ Y _____ N

Appendix D: **Participant Screening Tool for the Research Study: Exploring the Influences of Culture on Hand-hygiene Beliefs of Foreign-born Healthcare Workers**

The aim of this study is to explore the influences of culture on hand-hygiene beliefs of foreign-born HCWs. The respondents will be screened to determine if they qualify for the study. If selected, the participant will have access to participate in an online electronic survey. The following question is an actual research question that will be asked during the Survey Monkey process:

1. **What are some of your cultural beliefs towards hand-hygiene?**

All data will be stored in a password protected electronic format.

Email any questions regarding the completion of this form to:

sheila.davis5@waldenu.edu

Participant Screening Tool for the Study: Exploring the Influences of Culture on Hand-hygiene Beliefs of Foreign-born Healthcare Workers

Directions:

Please complete the screening tool below:

Age _____ Ethnicity _____ Gender_____ M_____ F_____

Are you Foreign-born? _____ Y _____ N

Country of Origin_____

Physician _____ Y _____ N

Registered Nurse _____ Y _____ N

Are you a foreign-born Physician or Registered nurse working at least 35 hours weekly in a 24-hour in-patient healthcare setting in the United States.? _____ Y _____ N

Do you provide direct patient care activities, such as in-patient care treatment and services? _____ Y _____ N

Do you perform patient care assessments? ____ Y _____ N

Appendix E: Qualitative Study Online Data Collection Survey Tool

Study on Hand-hygiene

The aim of the study is to understand the cultural influences pertaining to foreign-born health care workers' hand-hygiene beliefs. Culture is referred to as shared values and beliefs among people who most often speak the same language and usually live in proximity to each other.

(Please do not consider organizational culture when completing this survey).

This study will also address the following survey questions:

Survey Questions

1. Please tell me which country you were born in.

Response:

2. What role does religion play in your hand-hygiene beliefs?

Response:

3. What role does cultural traditions and customs play in your hand-hygiene beliefs?

Response:

4. What are some of your cultural beliefs toward hand-hygiene?

Response:

5. Please tell me advantages of your cultural beliefs that you observe pertaining to performing hand-hygiene prior to providing patient care, treatment, or services?

Response:

6. What are some of the disadvantages of your cultural beliefs that you observe while providing hand-hygiene during patient care, treatment, or services?

Response:

7. Please tell me how your cultural attitudes influence your hand-hygiene beliefs?

Response:

8. What role do your cultural attitudes play when you think about performing hand-hygiene in your work area?

Response:

9. Please tell me about those people or groups who are important to you that would approve or think you should perform hand-hygiene when providing patient care, treatment, or services.

Response:

10. Sometimes when we are not sure of what to do, we look around to see what others are doing. Please tell me about the individuals or groups that you look up to in your culture and are most likely to perform hand-hygiene prior to performing patient care, treatment, or services.

Response:

11. Please tell me about any individuals or groups in your culture who would disapprove of you performing hand-hygiene when providing patient care, treatment, or services.

Response:

12. Please tell me about your own cultural beliefs that would make it easier or serve as a barrier to enable you to perform hand-hygiene prior to providing the patient care, treatment, or services.

Response:

13. Please tell me how your environment makes it easier to perform hand-hygiene in your work area.

Response:

14. Is there any additional information that you would like to share with me at the point of this survey? a) Is there anything else that you want to tell me?

Response:

Thank you very much for taking the time to participate in this Online survey.