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Military Health Services Impact on Patient Understanding of the Zika Virus Within a Military Community

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Abstract

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MHA, Texas Woman's University 2008

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Dissertation Submitted in Partial Fulfillment

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Doctor of Philosophy

Health Care Administration

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Abstract

The Zika virus does not have a known treatment, despite ongoing efforts since 2016 to develop a vaccine. The Zika virus has been labeled by World Health Organization and the Department of Defense as a threat to the readiness, resiliency, and preparedness of military service members and dependents that currently travel or serve in areas where high concentrations of the virus are present. As such, it is important to understand how the military community understanding of the Zika virus is impacted by military health services and education. A phenomenological qualitative approach was utilized to conduct this study. Twenty active-duty military personnel and dependents ages 18 to 45 volunteered to participate to discuss their experiences. The health belief model and theory of planned behavior served as the theoretical framework to guide the phenomenological qualitative study approach to exploring participants experiences. Analysis of collected data included a comprehensive description of the phenomenon experienced by the study participants detailing their responses to the research questions, coding of phrases related to the phenomenon, identification of themes, justification of research findings, and providing a comprehensive analysis and description of the collected data. Findings revealed that participants had a limited understanding of the Zika virus, harmful health behaviors, preventative actions, associated risk, and access to education regarding the threat of the Zika virus. Participants responses revealed their willingness to communicate with a military health provider. These findings can be utilized to bring about social change by providing healthcare providers insight regarding how to construct a military community focused campaign to better meet Zika virus education needs in the future.

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Dedication

To my husband Zaid, who has encouraged me throughout this dissertation journey to finish strong and overcome hurdles, interruptions, and setbacks. It is with immense gratitude that I thank you for your love, prayers, and support throughout this amazing adventure.

To my loving children, Noah and Naiomi; I persevered throughout this dissertation process to assure you that you can and will achieve your dreams. With dedication, determination, and God directing your path there is no amount of success beyond your reach. Let the completion of this dissertation be a reminder to you of what you are more than capable of accomplishing.

Lastly, I dedicate this to the military families that have selflessly supported our military personnel in their pursuit to serve, protect, and defend at a moment's notice. It is this sacrifice that inspires me to dedicate my endeavors to creating social change through research and policy development to improve the healthcare policies and practices that impact health outcomes in military communities.

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First, I would like to acknowledge God for blessing me with the opportunity to pursue this study and giving me the strength and ability to persevere throughout this dissertation journey. I would like to thank my parents; Tim and Edwina Tellis for always encouraging me to excel and work hard to achieve my goals. I am so very thankful for your love and prayers every step of the way.

I want to acknowledge my dissertation chair, Dr. Cynthia Newell for being supportive through the highs and lows of this journey, providing extensive feedback, and her unwavering commitment to help me navigate the procedural impacts of a global health crisis during my research study. I would like to thank my committee member, Dr. Mary A. Garbowski for supporting my study and providing insightful guidance and encouragement to utilize my research to generate social change. I want to acknowledge university research reviewer, Dr. Nazarene E. Tubman and Jenny Martel for their feedback, advice, and guidance which has been instrumental in the development and the completion of this study.

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Chapter 1: Introduction to the Study

Introduction

The purpose of this phenomenological qualitative research study was to explore the experience of military personnel and their dependents accessibility to Zika virus (ZIKV) education and examine how the impact of the experience influenced their behavior and understanding of the ZIKV and associated risk of contracting the virus within a military community. The results of this study could potentially have a significant impact on the design and delivery strategies implemented to ensure that appropriate and readily accessible military health services are made available during identified health emergencies that may occur locally and abroad. Identifying potential gaps in health service delivery and health education can potentially reveal opportunities to evaluate the effects of ZIKV education on military personnel and their understanding of the virus and attitude toward preventative measures in the future.

According to Barouch et al. (2017), initial discovery of the ZIKV occurred in 1947 in a forest in Uganda from which the virus was named. The 20th century yielded a small number of identified human cases of the ZIKV, however this trend was overcome by an overwhelming number of cases reported in the Americas between 2015 and 2016, thus leading to World Health Organization's (WHO) declaration of an international health crisis that had gained intensive international attention (WHO-Special Program of Research, 2016). In 2020, the Centers for Disease Control and Prevention (CDC) noted that there were four ZIKV cases reported amongst travelers in the United States, while 57 cases of the ZIKV disease were reported in Puerto Rico (U.S. Territory), whereas the

disease was presumed to have been acquired through local mosquito transmission (2020, para. 2). The number of ZIKV cases have reduced significantly since the 2016 health crisis, however according to Burgess et al. (2021), infectious disease continues to be one of the greatest threats to military readiness and resiliency. The ZIKV, primarily distributed by mosquitoes of the Aedes Aegypti and Ae. Albopictus species can be transmitted through sexual contact by men and women, blood transfusions, and transferred from a mother to a fetus during pregnancy often resulting in miscarriage as well as potentially fatal birth defects such as microcephaly (WHO-Special Program of Research, 2016).

The threat of the ZIKV has the potential to compromise the preparedness, readiness, and resiliency of United States military personnel. In the review of the public health response to the ZIKV exposures of military personnel that were deployed in the Caribbean Island, Voss et al. (2020) noted that in 2017, the Armed Forces Health Surveillance Branch verified 175 cases of ZIKV infections among military personnel and dependents, 121 of these cases were purportedly active-duty service members. The military public health system was tasked with navigating the impact of ZIKV on the health and readiness of active-duty service members (Voss et al., 2020). While military public health officials concern about ZIKV had significantly diminished with the decrease in documented ZIKV infections, the potential threat of recurrence of similar viruses that are transmitted by mosquitoes necessitates further investigation of the MHS's approach to maintaining the health and readiness of military personnel (Voss et al., 2020).

According to WHO, the ZIKV is a disease that requires ongoing qualitative studies to explore the needs, behaviors, and practices of military personnel and continuity in the areas of education, prevention, comprehensiveness of care, and preparedness (WHO-Special Program of Research, 2016). According to Barouch et al. (2017), Walter Reed Army Institute of Research (WRAIR) was active in the race to conduct ZIKV research to produce a vaccine and conduct clinical trials, however there was a gap in research that was about the Department of the Army effort to equip military personnel and their dependents with appropriate preventative ZIKV education on military installations (Barouch et al., 2017). There is a critical need for accessibility to health education that specifically addresses prevention strategies and risk communication within military communities. Lanteri et al. (2019) examined the Department of Defense's (DoD) response to the ZIKV through their use of the Emerging Infections Diseases and Antimicrobial Resistance Research Area (EIDAR), which is a research team that was utilized by DoD to combat threats that present in the form of emerging infectious diseases through research findings and clinical outcomes. Health threats to military forces have been elevated due to deployments that occur throughout the world, thus increasing military personnel's exposure to infectious diseases. In response to the ZIKV, the EIDAR launched a study in response to the ZIKV in Puerto Rico that focused on surveillance of ZIKV health impact amongst active-duty military personnel and their dependents (Lanteri et al., 2019). While the U.S. military has a myriad of research venues, and the ability to conduct vaccine trials, as noted by Lanteri et al., there remained a gap in their ability to access military health facilities to conduct their research on emerging threats to health

readiness in the clinical setting. This further demonstrated the need for the DoD to develop clinical research programming that supported studies conducted in real time in the military health facility setting.

The ZIKV education that military personnel and dependents received from all health organizations must be enhanced to ensure there is a reduction of risky health behaviors, improvement of military personnel understanding of the virus, and adaption of effective preventative behaviors. According to Poss and Harris (2016), military health system (MHS) beneficiaries were increasingly susceptible to contracting the ZIKV due to the rapid spread of the ZIKV throughout the Western Hemisphere. Poss and Harris utilized data collected from the Defense Medical Surveillance System (DMSS) to include information provided by services and laboratories to determine that from January 2016 to November 2016 there were 156 confirmed cases of the ZIKV amongst military personnel and beneficiaries, of those, 110 cases were associated with active-duty military personnel. Burgess et al. (2021) noted that approximately 58% of these cases were the result of exposures in Puerto Rico, which was a major site for U.S. military training operations for the Caribbean region. Although the number of confirmed ZIKV cases had reduced since January 2016, continued support from military health planners to advance the health and wellness of military personnel and weaken the potential threat of interruptions to military tactical objectives is imperative to ensure military resiliency (Burgess et al., 2021). Implementing an aggressive awareness strategy that utilized the constructs of the health belief model (HBM) to specifically address the lack of ZIKV knowledge and understanding within military communities and developing a standard operating

procedure (SOP) for ZIKV education can potentially improve the knowledge, preparedness, readiness, and resiliency of military populations. In Chapter 1, the problem of the lack of ZIKV health education programming amongst military personnel was addressed. The purpose of the qualitative study and theoretical framework was discussed as well. The identified gap in knowledge and understanding of the ZIKV by military personnel was addressed. Furthermore, I explained the assumptions, scope, delimitations, limitations, and potential threats to the validity of the study, while ensuring that this information fully supported the significance of the study and implications for future research efforts and social change.

Background

The DOD (2016) provided a memorandum to all branches of the military medical leadership enforcing the need to develop health policies and procedures, and comprehensive health care initiatives in response to protecting military personnel concerning prevention, diagnoses, and treatment of the ZIKV. The DOD (2016) specified that implementing appropriate education and programming was critical to the protection of military personnel and dependents that may be currently located in, in route to, or returning from areas with a high concentration of active ZIKV transmissions. Without the designation of appropriate standard operating procedures as a baseline for military health providers to include a strategy that utilized health decision models such as the HBM to effectively address the gap in ZIKV knowledge and understanding amongst military personnel and dependents; the preparedness, readiness, and resiliency of the military community was at risk (Skinner et al., 2015). Khoramabadi et al. (2016) believed that the

use of educational interventions grounded in the HBM, is an effective approach to enhancing the awareness of the ZIKV, understanding of the risks of exposure, and reducing barriers that impede positive health behaviors. A qualitative research study observing the military health provider delivery methods of ZIKV education and health communication experience from military personnel and dependents perspective could give military health providers insight into constructing a strategic plan to better meet ZIKV education needs.

Problem Statement

The threat of the ZIKV had the potential to compromise the preparedness, readiness, and resiliency of United States military personnel. According to Guidry et al. (2019), the number of ZIKV cases in the United States had waned since being declared as a public health emergency in 2016, however there is an ongoing need for public health communications that can increase awareness of the potential ongoing travel related risk that could result in ZIKV exposures. According to WHO, the ZIKV is a disease that requires ongoing qualitative studies to explore the needs, behaviors, and practices of military personnel and health service providers in the areas of education, prevention, and preparedness (WHO-Special Program of Research, 2016). There is a critical need for health education that specifically addressed prevention strategies and risk communication within military communities. According to Lee (2021), understanding the culture of military communities may provide insight to the needs of military populations. Since the emergence of the ZIKV in 2016, the Department of the Army, Navy, and Air Force developed a brochure that provided basic information about the ZIKV according to CDC

guidelines, however DOD had not implemented a focused community education campaign that effectively educated military personnel and their dependents on how to be proactive in the protection and prevention of the ZIKV (DOD,2016) (Petersen et al., 2016). According to Canham-Chervak et al. (2016), and the Army Public Health Center (APHC), soldier health and readiness can be protected when systematic surveillance of data related to the deployed and deployable populations is effectively applied to include rapid response to disease outbreaks (i.e., Zika virus) in areas that are frequently visited by military personnel and their dependents. At that time, the Department of Army hospitals were only providing education to military personnel and dependents when they appeared to be symptomatic or met CDC standards for ZIKV testing (Petersen et al., 2016). The ZIKV education that military personnel and dependents received from health providers requires enhancement to ensure there is a reduction of risky health behaviors, improvement of military personnel understanding of the virus, and adaption of effective preventative behaviors. Likewise, Hewson (2021) found that ongoing efforts to develop a ZIKV vaccine are an important aspect of protecting the health and wellness of communities. Poss and Harris (2016) utilized data collected from the Defense Medical Surveillance System (DMSS) to include information provided by services and laboratories to determine that from January 2016 to November 2016 there were 156 confirmed cases of the Zika virus amongst military personnel and beneficiaries, of those, 110 cases were associated with active-duty military personnel. Implementing an aggressive ZIKV campaign that utilizes the constructs of the Health Belief Model to specifically address the health needs of military communities and implementing a

Standard Operating Procedure (SOP) for ZIKV education can potentially improve the knowledge, preparedness, readiness, and resiliency of military populations.

The DOD medical leadership officials are charged with the responsibility of creating and implementing health programming in response to protecting military personnel to include prevention, diagnoses, and treatment of the ZIKV. The DOD specified that implementing appropriate education and programming was critical to the protection of military personnel and dependents that may be currently located in, in route to, or returning from areas with a high concentration of active ZIKV transmissions (DOD, 2016).

According to Army Regulation 600-63, the Army health services were defined by leadership officials, as a series of health education methods and interventions developed by the Department of the Army to improve the health and well-being of military personnel and their dependents within the Army Community (U.S. Department of the Army, 2015). Army Health Promotion programming addressed army health education by focusing on the health needs of the community, communicating about potential health risk, planning/implementing health education programming that met the health needs of the community while promoting resiliency, and continuity of care (U.S. Department of the Army, 2015). Squiers et al. (2018) recognized that only a limited number of studies have attempted to examine individuals' knowledge, perceptions of risk, and planning behaviors regarding travel to areas that have had a substantial number of ZIKV transmissions locally. Additionally, Squiers et al. found that 4 in 10 Americans had little to no knowledge about ZIKV, while fewer than half of study participants knew that

ZIKV can be sexually transmitted (Squiers et al., 2018). According to Yarrington et al. (2019), the first identified case of sexual transmission of the ZIKV was recognized in 2008, however the concept of sexual transmission of the virus became the height of discussion in 2016 due to the overwhelming numbers of infants presenting with microcephaly (Yarrington et al., 2019). This discovery opened the door for more research and education regarding the sexual transmission of ZIKV and how to prevent it (Yarrington et al., 2019).

Without the designation of appropriate standard operating procedures for disseminating ZIKV education and an aggressive health education strategic plan that utilizes education models such as the HBM to effectively meet the health education needs of this military community; the preparedness, readiness, and resiliency of the military community is at risk. According to Tavassoli et al. (2017), utilizing the HBM constructs in the development of ZIKV education and programming could improve ZIKV knowledge amongst military personnel and their dependents.

All Army installations have an active Community Health Promotion Council (CHPC) that is chaired by the Department of Public Health commander as well as various members of the installation's health care teams (U.S. Department of the Army, 2015). The CHPC serves as an oversight team to ensure that resources were appropriately utilized in areas that are focused on the improvement of health and resiliency within the military community, as well as the Army overall (U.S. Department of the Army, 2015). Through the assessment of military health service needs and monitoring of local health resources, CHPC could have been instrumental in the facilitation of a ZIKV education

campaign and the distribution of future ZIKV resources (U.S. Department of the Army, 2015). CHPC was equipped to capture military community data as it relates to their knowledge and understanding of ZIKV and how to improve health outcomes (U.S. Department of the Army, 2015). A qualitative study which observes the ZIKV education process and health communication from the perspective of military personnel and dependents could give military health providers insight for successful construction of a readiness and resiliency focused education program.

Purpose

The purpose of this phenomenological qualitative research study was to explore the experience of military personnel and their dependents accessibility to ZIKV education and examine how the impact of the experience influenced their behavior and understanding of the ZIKV and associated risk of contracting the virus within a military community. The results of this study may have a significant impact on health service delivery regarding the implementation of comprehensive health assessments and accessibility to ZIKV education to vulnerable areas of care such as well woman examinations, immunization appointments for military travel, and deployment briefings regarding specific identified health risk. The results of this study can potentially advance the efforts of the Army Health Promotion programs by highlighting the need for planning and implementing ZIKV education initiatives, updating health policies/procedures, military focused health programming, and opportunities to improve the health, readiness, and resiliency of the military community. In alignment with the goals of Healthy People 2020 that sought to advance preparedness in the areas of Public Health and Educational

and Community Based Programs, military community planning can be enhanced by contributing to the development of Healthy People 2030 goals and objectives particularly correlated to military centered health care organizations. Well planned military health service programming efforts require appropriate community health planning with local health organizations to fully support the military community by providing resources for mitigating potential health risk thus strengthening community health partnerships in the future. Identified gaps in health service delivery and health education could have potentially revealed opportunities to evaluate the effects of ZIKV education on military personnel and their understanding and attitude toward preventative measures in the future. Ultimately, the implementation of health communication strategies and standard operating procedures could have had a positive impact on the healthy behaviors of military personnel and their dependents.

Research Questions

Four comprehensive qualitative research questions were generated based on the problem statement and purpose of this study relevant to the perspectives of military personnel and their dependents:

RQ1: Does ZIKV transmission education from Military Health Services impact health behaviors and health understanding amongst military personnel and dependents?

RQ2: Does incoming ZIKV Military Health Service deployment briefs impact health behaviors of military personnel?

RQ3: Does receipt of Military Health Service ZIKV prevention education impact military personnel and dependents willingness to abstain from unprotected sexual contact following travel to areas with high concentrations of ZIKV transmissions?

RQ4: Does the manner that military health providers communicate ZIKV risks to military personnel and dependents impact their understanding of the virus?

I further validated these research questions with additional references and supporting details delivered in Chapters 2 and 3 ensured that the interview questions utilized for this study were in alignment with goals of this research study.

Conceptual Framework

The conceptual frameworks that guided this research study is the HBM and the theory of planned behavior (TPB). According to Hochbaum et al. (2016), HBM is a psychological model that is aimed at explaining and predicting health behaviors. As noted by Skinner et al. (2015) the HBM focuses on the attitudes, perceptions, and beliefs of the individuals being observed. Since the HBM was developed as a response to the failure of a health screening program, it may potentially be adapted as a response to the improvement of ZIKV education campaigns to improve short-term health behaviors of military personnel that require education about significant indicators of the ZIKV and how to prevent sexual transmission as well as avoid mosquito transmission of the virus (Skinner et al., 2015). The HBM relies on the premise that a person is likely to take actions related to health if that person feels that a negative health condition (i.e., ZIKV) can be evaded, has an optimistic expectancy that recommendations from a health provider will help them avoid a negative health condition, and the individual believes that

they can successfully implement the recommendations (Skinner et al., 2015). The implementation of the HBM in a ZIKV prevention campaign that educates military personnel and their dependents about the importance of condom use in the prevention of sexual transmission of the ZIKV upon service members return from deployments and leisure travel to locations with a high rate of ZIKV transmission could potentially utilized to maintain their readiness and resiliency. A ZIKV prevention campaign that is developed using population data derived from a health needs assessment is necessary to determine which area of health programming (i.e., deployment briefings and pregnancy centering programs) that should be targeted. Once the population has been identified, implementing a ZIKV education campaign that clearly illustrates the potential outcomes of engaging in risky behaviors at an education and literacy level that is optimal for the targeted population may potentially be a key education component. In alignment with HBM principles military health providers incorporation of ZIKV education in readiness screenings and assessments to ensure effective communication of preventative steps that should be employed when traveling that focus on the benefits of implementing these steps in accordance with their travel plans could potentially ameliorate health outcomes amongst military personnel and their dependents. Military Health providers have the potential to enhance self-efficacy and successful changes in health behavior as it relates to prevention of ZIKV when health behavior development activities are incorporated with health education. For example, demonstrating the proper usage of condoms to reduce sexual transmission of the ZIKV could prove to be effective in enhancing constructive changes in health behaviors when utilized in conjunction with the constructs of the HBM.

According to Guo et al. (2019), the TPB was developed to observe how a person's exposure to health focused education along with their ability to reason can be utilized to determine how best to engage in health protective behaviors in response to the potential threat of exposure to the ZIKV. This study utilized the constructs of the TPB to examine the potential impact of ZIKV education within a military community on planning for travel to areas with a high concentration of confirmed ZIKV cases (Guo et al., 2019). The TPB was utilized to develop an understanding of the educational and motivational factors that contribute to adjustments in travel behavior amongst military personnel and their dependents. Utilizing the HBM and TPB as the conceptual frameworks for developing questions for focus groups, interviews, or questionnaires for participants helped to guide the study. The questions specifically focused on perceived susceptibility, severity of ZIKV, and perceived benefits of taking a ZIKV vaccine in the future. This study contributed to future research studies regarding patient willingness to get the ZIKV vaccine once it has been established and made available in the future.

Nature of the Study

The approach to studying members of the military community and their understanding of ZIKV Military Health Service education, is to conduct a qualitative phenomenological research study. This approach is the most appropriate way to examine military culture and observe the lived experiences and the impact of those experiences on the understanding of the ZIKV and associated risk within a military installation community (Creswell & Poth, 2016). A qualitative approach allowed the researcher to respond to the needs of participants in their own language in a way that aligned with the

culture of a military community. A phenomenological study was more effective in developing an understanding of the experience of military personnel and dependents accessibility to military health service education related to the ZIKV (Creswell & Poth, 2016). A phenomenological study best supported the understanding of health problems and showed the potential of assisting healthcare leaders in evaluating the feasibility of future health programs (Green & Thorogood, 2018). A qualitative approach will allow military health service providers to detect barriers to implementation of proactive health education programs (Green & Thorogood, 2018). Ultimately a qualitative method unveiled multiple approaches to understanding the underline problem regarding access to ZIKV education amongst military personnel and dependents while exposing potential solutions (Green & Thorogood, 2018). A qualitative method allowed the researcher to align the concept of saturation with the specific methodology utilized to conduct their study (Malterud et al., 2015). Malterud et al. (2015), proposed that information power should direct a qualitative study, therefore the more relevant the collected data becomes with each interview, the smaller the pool of participants will need to be (Malterud et al., 2015). Utilizing an information power approach, the number of military personnel and dependent participants was 20 participants in anticipation of there being enough data available to replicate the study (Fusch et al, 2015).

Definitions

Definitions create a shared understanding of words and concepts. This study is related to ZIKV military health service education and understanding in the backdrop of

military culture amongst military personnel and their dependents. The following definitions enhance the shared understanding of the study.

Army Health Promotion Program: As defined in AR-600-63, a collection of health education and methods composed by the Department of the Army to ensure health and wellness amongst military personnel and their dependents within the community (U.S. Department of the Army, 2015). This program is designed to specifically focus on health education by targeting the health needs that exist within each military community by developing and implementing education, conducting risk assessments, and designing services to meet those needs while continuing to enhance resiliency (U.S. Department of the Army, 2015).

Community Health Promotion Council (CHPC): Chaired by the senior public health commander who serves as a leader in ensuring that the resources necessary to ensure that Army Health Promotion Program is successful in assessing community needs, analyzing existing health programs, developing strategic programs to meet community health needs, and ultimately enable the implementation of existing health education programs within other military installations with similar populations and health needs (U.S. Department of the Army, 2015).

Cues to action: Internal or external cues that influence an individual to perform a health behavior or action (Skinner et al, 2015)

Health belief model (HBM): A theoretical model that can be utilized in the evaluation and implementation of health promotion programming as well as programs designed to prevent disease (Hochbaum et al., 2016). This model is often utilized in the

explanation and prediction of potential changes in an individual's health behavior (Hochbaum et al, 2016). This model most notably defines the primary factors that may impact health behaviors as an individual's perceived susceptibility, severity, benefits, and barriers to action, while exposing the individual's confidence in their own ability to be successful in preventing or avoiding exposure to disease (Hochbaum et al, 2016).

Individual medical readiness (IMR): Described by the Department of the Army as the capability of a soldier to attain established pre-deployment standards of health and wellness 72 hours before deployment.

Military community: Area surrounding a military base installation within the United States or United States Territories that has been tasked to with serving as a location for military forces that may be engaged in defense or defense support of civil agencies (Lee, 2021). Military personnel and their dependents on military installations depend on the local military community and community resources for sustainment, likewise military communities are impacted by military installations, personnel, and their dependents financially, socially, economically, and environmentally (Lee, 2021).

Military dependent: A spouse or any natural child, adopted child, stepchild, or parent of military personnel.

Military health services: Services that provide health instructions, resources, and health care providers that are responsible for the protection, sustainment, and restoration of health amongst military personnel and their dependents within a military community.

Military personnel: Active-duty members of an armed forces branch (U.S. Department of the Army, 2015).

Naval Infectious Diseases Diagnostic Laboratory (NIDDL): A laboratory instrumental in serving military treatment facilities all over the world by meeting their ZIKV testing needs (Sugiharto et al., 2019). Since the onset of the ZIKV hysteria of 2016, NIDDL has been responsible for the testing of over 1,420 military personnel and dependents from military installations worldwide (Sugiharto et al., 2019).

Perceived barriers: Any decision hurdles that can impede an individual from taking actions to avoid threats to their state of health (Skinner et al., 2015).

Perceived benefits: An individual's impression or belief about positive recommendations that have the potential to reduce threats (Skinner et al., 2015).

Perceived severity: An individual's understanding of the seriousness of physical consequences of contracting a disease or health related problem (Skinner et al., 2015).

Perceived susceptibility: An individual's personal belief regarding the potential risk of contracting a disease or health complication (Skinner et al., 2015).

Perceived threat: Equal to an individual's perceived susceptibility multiplied by perceived severity. The elimination of perceived severity or susceptibility would result in the elimination of the threat (Skinner et al., 2015).

Self-Efficacy: A person's belief in their ability to perform the health behavior that is recommended by a subject matter expert (Skinner et al., 2015).

Soldier Readiness Processing (SRP): An Army program that is designed to determine whether a soldier is qualified for deployment assignments (Merrill et al., 2018)

Theory of planned behavior/reasoned action (TPB): A theory developed by social psychologist Icek Ajzen in the 1980s in response to the need to predict and establish an

understanding of what motivates human behaviors (Guo et al., 2019). This theory is based on the belief that information and reasoning is utilized to guide human behaviors (Guo et al., 2019).

Zika: A virus spread by the Aedes Aegypti and Ae. Albopictus species of mosquitoes that manifested in Brazil in 2015 overwhelming the health service community, which led to the declaration of a national health emergency and later a declaration by WHO as a global health emergency (WHO-Special Program of Research, 2016). In 2015-2016 ZIKV began to spread throughout the Americas and the Pacific causing severe neurological abnormalities in fetuses, neonates, and adults such as microcephaly and Guillain-Barre syndrome (WHO-Special Program of Research, 2016). The Zika virus can be transmitted by an infected individual through sexual contact by both men and women, blood transfusions, and transferred from a mother to fetus during pregnancy (WHO-Special Program of Research, 2016).

Assumptions

There were multiple assumptions associated with this research study. The first assumption is that military personnel and their dependents would be able to effectively communicate their health service experiences related to ZIKV. The second assumption was that military personnel and military providers would be willing to answer questions regarding their military health education experience without hesitation or fear that their response would reflect negatively on their military service branch. The third assumption was that military personnel and their dependents would openly answer specific questions regarding their knowledge of ZIKV or the lack thereof. Lastly, I assumed that the data

collected from participants could be used to improve military health education programs and military health service delivery.

Scope and Delimitations

To best represent the population of military community personnel and dependents while adding to military health service research, the scope of this study focused on military personnel and dependents of military personnel in an active-duty status at the time of data collection. The scope of this study was established by interview questions and online survey, focusing primarily on the participants level of knowledge, and understanding regarding the ZIKV. This study focused on the experiences of military personnel regarding accessibility to ZIKV education from 2015 to present, however a potential delimitation could have been that I would be unable to observe their experience firsthand from the onset of their health concern to the resolution. This study excluded anyone who was not serving as an active-duty service member or dependent of an active-duty service member.

Limitations

While the research for this study was carefully planned to avoid limitations and potential setbacks, limitations exist regarding accessibility to potential research participants. According to Bergen and Labonté (2020), strategic guidelines can be implemented to limit bias by carefully asking research related questions. Gaining access to a military installation was challenging with the 2020 pandemic declaration by the WHO due to the novel Coronavirus (COVID-19) (WHO, 2020). WHO's declaration had a significant impact on the accessibility to military installations where the study

population exists due to the elevated risk of transmission during face-to-face interviews or focus group sessions (WHO, 2020). As a military dependent of an active duty servicemember I maintained full access to the military installation despite the development of containment policies and mandatory use of personal protective equipment (PPE) by military personnel and their dependents. The COVID-19 pandemic and potential health and safety risks impacted my decision to restrict face-to-face interviews; therefore, I implemented social measures such as video conferencing and telephone interviews to ensure potential study participants were following social distancing measures while maintaining the integrity of the interview process (WHO, 2020).

Significance of the Study

The 2016 onset of the ZIKV epidemic challenged the strength of military health care systems, while exposing the weaknesses in the delivery of ZIKV education and communication. This study was guided by the need for Military Health Systems improvement of ZIKV health promotion, provider communication, and health education methods for military personnel and dependents that operate under the looming threat of war and deployment (McCarthy et al., 2017). According to Pattnaik et al. (2020), advancements toward the development of a ZIKV vaccine are increasing. This study has the potential to advance the knowledge of military health organizations in their approach to ZIKV health risk communication strategies, increase the knowledge and understanding of how to improve ZIKV education amongst military personnel and their dependents, enhance the readiness and resiliency of military personnel, and improve access to ZIKV

education in military health facilities (Hernandez et al., 2017). This study has the potential to unveil participants willingness to receive a ZIKV vaccine once it has been made available to the public.

Summary

Chapter 1 provided a contextual view of the emergence of ZIKV and the potential impact of military health providers failure to provide ZIKV education and communicate important safety measures that could minimize the threat of ZIKV transmission to the readiness and resiliency of military personnel and their dependents. The research questions were designed to convey the aims of the research. Chapter 2 outlined the theoretical framework described.

Chapter 2: Literature Review

Introduction

While there was a wealth of literature on the impact of WHO's 2016 declaration of a ZIKV health emergency, there was a gap in research regarding the perspective of military personnel and their dependents perceptions, beliefs, access to ZIKV education, and exposure to military focused health service campaigns or strategic planning that could potentially improve their knowledge and understanding of ZIKV (WHO-Special Program of Research, 2016). Studies on the impact of patient understanding of the ZIKV focus on communication preferences, communication methods, knowledge, and attitudes towards ZIKV, and implementation of ZIKV education, however none of these studies specifically focused on the impact of patient understanding of the ZIKV amongst United States military personnel and their dependents. This lack of access to relevant information could promote negative health outcomes, diminish military readiness, weaken the resiliency of military families, and increase cost to the military health system. The purpose of this phenomenological qualitative research study was to explore the experience of military personnel and their dependents regarding their accessibility to Military Health Service provided ZIKV education and to examine how the impact of the experience influences their behavior and understanding of the ZIKV and associated risks of contracting the virus within a military community. Developing an understanding of military personnel and their dependents beliefs, insight, and knowledge about the ZIKV could potentially assist military health leaders in their implementation of military health service programming. The review of literature provided a broad overview of studies

about the ZIKV pertaining to the global impact, transmission, protective methods, awareness drives, military personnel education, and the role of military health care providers in improving health behaviors.

This chapter includes an explanation of the strategic search for literature, common themes unveiled in the research, and research methodology selection. This literature review focused on the origin and history of the ZIKV, the role of ZIKV education in military communities, military readiness and resiliency, military health provider communication methods, and the potential development of ZIKV vaccines within military communities in the future.

Literature Search Strategy

Peer-reviewed full text articles published between 2015 and 2021 were located utilizing the Walden University's online library. Research is narrowed using databases such as PubMed, CINAHL, ProQuest, MEDLINE, and Thoreau Multi-database. To maintain the quality of the literature obtained, I utilized database filters to ensure that all were scholarly, and peer reviewed. To maintain the validity of the literature I used date filters to ensure that I acquired only sources that were primarily published within the past five years, thus eliminating sources that have become outdated during the research process. Various search terms and arrangements were utilized to locate pertinent literature. The search terms included, but were not limited to, ZIKV education, Military Health System, military personnel readiness, military health education, ZIKV travel guidelines, and ZIKV military health campaigns.

Theoretical Framework

The focus of this study was military personnel and dependent accessibility to military health service provided education regarding the ZIKV, and the impact on their health behaviors and understanding of associated health risks. Researchers utilize the theoretical frameworks as the baseline for their research study (Hochbaum et al., 2016). With thorough analysis, qualitative research studies can shed light on whether there are negative health behaviors, provide a baseline for the development of effective education/communication tools, and highlight the experiences of the population being analyzed (Creswell & Creswell, 2017). I utilized two frameworks to develop an understanding of the impact that military health service education and communication methods have on the behavior and understanding of prevention and protection from the ZIKV: The HBM and the TPB.

This qualitative study utilized the HBM, to provide a theoretical framework. The HBM theory was developed by Hochbaum et al. (2019) in response to the need for a deeper explanation for the lack of success with U.S. Public Health Services' program for tuberculosis health screenings .This health behavior model was also examined by Glanz et al. (2015), whereas the HBM is described as an in depth look at individual susceptibility to a condition, consequences of the condition, behavioral options that could potentially reduce susceptibility or severity, the benefits of engaging in a specific action, and barriers that may deter individuals from engaging in preventative behaviors . In this qualitative study, the HBM was used as an instrument for observing participants' perceived susceptibility, severity, benefits, perceived barriers, cues to action, and self-

efficacy (Gabriel et al., 2018). The HBM can potentially provide insight regarding participants' beliefs, perceptions, and knowledge level concerning ZIKV protection and prevention and the extent to which behavioral change can occur (Gabriel et al, 2018).

The TPB was used to provide a theoretical framework. The TPB was developed in the 1980s to increase understanding in the relationship between human behavior and motivation to engage in specific behaviors (Guo et al., 2019). The TPB is rooted in the idea that people utilize information/education and reasoning to influence their behavior (Case et al., 2016). The TPB is based on three sets of criteria that is used to predict an individuals' actual behavior (Guo et al., 2019). While the weight of each criterion may vary based on the type of behavior and population being observed, positive attitudes, increased perceived control, and determination to perform a behavior have a positive impact on performing the behavior (Case et al., 2016). In the TPB, behavioral beliefs are subjective in nature in that a behavior will manifest the expected outcome (Guo et al., 2019). The TPB examines normative beliefs, which amount to the social pressure that is perceived by an individual to perform a specific behavior (Guo et al., 2019). The TPB states that control beliefs are any influencing factors that can create a barrier or motivate an individual performing a behavior (Guo et al., 2019). The perception of power over behaviors ultimately influences an individual's perceived behavioral control, which impacts the individual's belief that they can perform a behavior (Guo et al., 2019).

Zika virus

In December of 2016, the media coverage over the ZIKV was simply overwhelming. The declaration of a health emergency only heightened the anxiety of

expectant parents, frequent travelers, and individuals hoping to become pregnant in the future. So much was unknown about how to recognize symptoms, affects, and prevention. Ros (2018) noted that at that time most (80%) adults did not show any symptoms at all, while a small percentage (20%) of infected adults experienced mild symptoms of conjunctivitis, rash, and fever. The most threatening aspect of the ZIKV has been the potential progression of the virus leading to Guillain-Barre syndrome, which is a life-threatening disease. With the influx of ZIKV guidance, patients may develop a false sense of safety when they assume that if they do not travel to areas with a high concentration of the virus they are in a safe zone (Ros, 2018). According to Kuna and Gajewski (2016), ZIKV can remain in semen and vaginal secretions for as long as 14 days and potentially up to 188 days after inception of the virus. This immutable fact is why military hospital obstetricians should be educating their patients throughout every phase of their pregnancy to ensure that the patient takes the appropriate travel precautions (Kuna & Gajewski, 2016). According to the Military Health System, from January 2016 to December 2017 there was a focused effort by military treatment facilities to test fluid samples taken from 1,420 military personnel and dependents that appeared to have ZIKV symptoms from facilities around the world that were near areas recognized to have high concentrations of ZIKV exposures (Sugiharto et al, 2019). There were 412 samples categorized as having the ZIKV infection, 852 samples were found to be asymptomatic, while 179 had no exposure or symptoms related to ZIKV (Sugiharto et al., 2019). CDC continues to be the best resource for physicians to obtain the most up-to-date guidance for travel and screening for ZIKV (Kuna & Gajewski, 2016).

Military Readiness

Advances in military health services and health readiness are dependent upon the ongoing improvement of health service delivery and Army health promotion initiatives. The improvement of health awareness drives and health promotion initiatives assists military health officials and health administrators to contribute to the development of policies and programs that better align with relevant health concerns. Barr and Galvin (2016) explored the future of readiness amongst military personnel to include soldier wellness, expansion of comprehensive health care, and prevention of disease amongst military personnel and dependents. Poss and Harris (2016) conducted a surveillance of the ZIKV and the potential impact on MHS beneficiaries. While this surveillance was a preliminary account of the impact of ZIKV, it provides a basis for advancement in health service initiatives that seek to educate military personnel and their dependents within military communities. Meadows et al. (2016) described readiness as the ability to be in a position of preparedness to successfully circumnavigate the challenges experienced by military service members and their families. In preparation for realistic challenges, military service members and families are educated about the harsh realities of deployment and are equipped with tools to navigate challenges and how to utilize resources available to them (Meadows et al., 2016). Wilson et al. (2017) described illness behaviors of female military personnel while deployed and highlighted concern regarding diminished health education during deployment, particularly in women's health and wellness. Due to limited access to educational resources and diminished health services, there was a gap in education regarding transmission of sexually transmitted infections

(STIs) (Wilson et al., 2017). Aoun et al. (2019) maintained that the readiness of military personnel is the direct result of force health policies and protective health campaigns administered by providers and health educators. While there have been extensive efforts made in infection control and preventative measures, illnesses such as the ZIKV have been an ongoing challenge amongst deployed military personnel (Aoun et al., 2019). This gap in health service delivery revealed the need for increased accessibility to health services that prepare military personnel in the areas of protection and prevention during the assessment for soldier readiness prior to deployment.

According to Melton et al. (2018), the Fort Riley Department of Public Health (DPH), Fort Riley, KS became the first Military Treatment Facility to apply for national accreditation with the Public Health Accreditation Board (PHAB) in 2016. In addition to PHAB requirements, the U.S. Army Public Health Center (APHC) conducted a multi-year evaluation of the accreditation process and outcomes to provide a baseline for other Army Public Health Departments that may apply for public health accreditation in the future (Melton, Shirey, Barraza, & Bullock, 2018). On January 23, 2019, The Fort Riley DPH was formally recognized as the first military department of public health to earn the distinction of national accreditation (Melton et al., 2018). Fort Riley Army Community Hospital is leading the way in their efforts to advance public health and preventative medicine which is evident in their ongoing commitment to improve health care delivery for the military Community through their ongoing mosquito surveillance program and provision of ZIKV travel medicine education. Through the accreditation process, DPH has increased their visibility in the state and local community and formed strategic

partnerships that have the potential to improve access to care for the Fort Riley military community. Readiness is a critical aspect of the health care provided to the soldiers and families of military installations and requires ongoing focused health campaigns to maintain readiness and resiliency. The DPH can now utilize PHAB accreditation standards to further examine priority health issues. Chapman (2018) examines the impact of PHAB standards and measures on the improvement of the health of the population. This research study was based on the implementation of Domain 9 of the PHAB standards which highlights the importance of integrating quality improvement practices (Chapman, 2018). Chapman (2018) recognizes the need to set organizational objectives, regularly identify performance indicators, and maintain accountability for reporting and progression. Infusing quality improvement into military health programming and health services could potentially improve health service delivery and improve access to care.

ZIKV Education

The evolution of the ZIKV throughout the Americas presents travelers with an exceptional challenge in preparation for domestic and international travel. Preparing to travel to countries with high concentration of the ZIKV requires individuals to apply CDC preventative and procedural guidelines as well as extensive participation in travel and safety briefings. According to Summers, Acosta, and Acosta (2015), ZIKV can be spread from one individual to the next through sexual transmission, trans-placental/perinatal transmission, and blood transfusions (Summers, Acosta, & Acosta, 2015). Winneg, Stryker, Romer, and Jamieson, (2018), examine the constructs of HBM and how it may provide insight into an individual's approach to taking health actions

when they find themselves at risk for a negative health consequence (Winneg, Stryker, Romer, & Jamieson, 2018). These authors recognized the connection between the perception of increased health threats, the positive result of engaging in preventative behaviors that overcome perceived barriers, and the lasting impact of self-efficacy on a person's ability to perform protective health behaviors that result in positive health outcomes (Winneg et al., 2018). Winneg et al. (2018), examined the impact of exposure to the ZIKV within the Florida community and recognized that their increased susceptibility to the ZIKV could potentially be the result of an increase in knowledge of transmission, increased optimism toward prevention of ZIKV, and engaging in more effective preventative actions can improve health outcomes when individuals are exposed to ZIKV health campaigns. This study shows the necessity for further evaluation of the health education programming within the military community to take account of the pregnant or expecting women's perceptions and attitudes towards susceptibility and prevention of the ZIKV. Similarly, Weldon et al. (2018) explored the knowledge, attitudes, and preventative practices of women of age to bear children. Particularly Weldon et al. (2018), conducted a qualitative study where multiple focus group discussions unveiled that most of the participants were knowledgeable about how to recognize signs of microcephaly, however the study revealed that participants had little knowledge regarding modes of transmission and ways to protect themselves from exposure. Participants were noted as understanding the virus, while having little knowledge on how best to prevent potential transmission of the virus (Weldon et al., 2018). This study exposed gaps in education about the ZIKV that specifically targets

pregnant or expecting women and presents the need for a centering program that can focus on the risks and concerns of ZIKV amongst women who are in the same stage of pregnancy for increased understanding, support, and education. Likewise, Squiers et al. (2018) examined the level of health literacy that many Americans share regarding their susceptibility to the ZIKV and health safety planning when traveling to destinations with a high concentration of ZIKV transmissions (Squiers et al., 2018). While there are very few studies that have assessed the influence of ZIKV on the travel plans of persons living in the United States, Squiers et al. (2018) conducted a survey of American travelers to evaluate if they have the appropriate level of knowledge to effectively protect themselves from exposure to ZIKV and their understanding of the risk of contracting ZIKV, and their intention to utilize the preventative tools provided through focused ZIKV education (Squiers et al., 2018). Khoramabadi et al. (2016), examines the impact of the Health Belief Model on dietary behaviors of pregnant Iranian women. This study recognizes that women and children are the most vulnerable in every society and require intensely focused health and wellness programs that promote healthy behaviors (Khoramabadi et al., 2016). The results of this study unveil the necessity for military health care providers and public health officials to focus their health campaigns on ZIKV education that targets traveling military personnel and their dependents regarding the risk of ZIKV, preventative measures, to include protection such as the use of condoms and delaying plans for pregnancy for a significant block of time post travel to areas with high concentrations of the ZIKV. When providers encounter military personnel or dependents that plan to conceive, they should utilize the CDC's guidelines for traveling to areas

where there are high concentrations of ZIKV (Squiers et al., 2018). In a recent ZIKV health information readability study, Basch et al. (2019), takes an in depth look at the need for health providers developing ZIKV online education and literature to ensure that it is easily comprehensible (Basch et al, 2019). The primary focus of this study was to review and ascertain the readability of ZIKV articles found online. Basch et al. (2019) revealed that 40% of the websites that were reviewed in conjunction with their study were government sites that were found to have a readability score beyond a 10^{th} grade level (Basch et al, 2019). Use of the Flesch-Kincaid Reading Ease (FRE) tool revealed that 93 percent of information on sampled websites were classified as difficult to read (Basch et al, 2019). Likewise, the Department of the Army must ensure that military personnel and dependents are receiving ZIKV literature written at an easily comprehensible reading level. While ZIKV information can be located online through most search engines, it is imperative that military providers guide military personnel and dependents to trusted and approved sites to ward against misguided health literature that could hinder their acceptance of positive health behaviors.

ZIKV Vaccine

Since 2016, mass media has devoted much of their attention to the ZIKV public health crises due to the overwhelming number of cases and exposures around the world (WHO, 2017). In the past two years, ZIKV has evolved from being a public health crisis to ongoing subject of the rapid development of a vaccine. While there are several countries around the world that still have high concentrations of the ZIKV cases, the focus has silently shifted from fear of the unknown to considerable progress toward the

development of a ZIKV vaccine (Barrett, 2018). Now that much of the hysteria has settled, public health organizations are anticipating the positive outcome of ZIKV vaccine trials in hopes for a cure and a way forward in health care delivery and outcomes. The authors, Baruch, Thomas, and Michael (2017), have a vision for the development of a prospective ZIKV vaccine in the future. While there has been a race for the ZIKV vaccine since 2016, there are several obstacles that persist. According to Barouch et al. (2017), the future ZIKV vaccine must be able to attain sterilization immunity to ensure protection of pregnant mothers and their fetus from congenital disorders and develop a deeper understanding of the potential response of the vaccine in semen due to potential sexual transmission of the virus. Future ZIKV vaccine candidates must be able to validate that there have been minimal reactions when receiving vaccines in the past (i.e., flu vaccine) to achieve an acceptable local and systemic safety profile prior to receiving the vaccine (Barouch et al., 2017). This study creates the need for ongoing military health service campaigns that address the progression of ZIKV vaccine study trials as well as the development of military community surveys that will provide a baseline of potential concerns or reluctance of military personnel and their dependents to receiving the vaccine. A high rate of unwillingness to receive the vaccine can help focus the direction of future ZIKV education initiatives in the future. In an online study, Painter, Plaster, Tjersland, and Jacobsen (2017) explored the willingness of college students to receive a ZIKV vaccine in the future and found that of the 619 students surveyed, 52.8% responded that they would be likely to receive vaccination to prevent the ZIKV. Painter et al. (2017) highlights the need for communication and intervention methods to increase ZIKV

knowledge and understanding. The methodology that providers utilize to approach ZIKV education once a vaccine is made available will have an enormous impact on military personnel and dependent positive health outcomes. Brusich et al. (2015), conducted a mix methods study of several communities and their Knowledge, Attitudes, and Practices (KAP) regarding prevention methods for malaria and dengue fever (Brusich et al., 2015). The intention of the study findings was to assist the Thailand Ministry of Health in the design of their educational programming (Brusich et al., 2015). Army Health Service organizations conducting a similar study where military personnel and their dependents are surveyed regarding their KAP towards protection from and prevention of the ZIKV could potentially support military healthcare providers and educators to frame a ZIKV campaign that targets the gap in knowledge about ZIKV.

Military Health Provider Communication

Amidst the threat of war, military deployments, natural disasters, epidemics, pandemics, containment regulations, and mandatory health protection orders; military treatment facility appointment cancellations may become unavoidable. Despite the many challenges that threaten direct patient care, military health providers have a responsibility to continuously communicate health risks, create access to healthcare, and provide health education to military personnel and their dependents. Military Health providers are challenged with protecting pregnant military personnel and dependents that may become vulnerable to negative health outcomes such as ZIKV. The pregnant or expecting service members and their families need require access to prenatal and postnatal care. Health communication standard operating procedures must be established by Military Treatment

Facilities to maintain access to care for populations that are the most vulnerable and susceptible to ZIKV (Weldon et al., 2018). Marcoux and Vogenberg (2016), recognized that through the advancement of health communication, telehealth has emerged providing military personnel and their dependents evidence of military health providers commitment to providing time sensitive direct patient care virtually. Telehealth is defined by the U.S. Health Resources and Services Administration as the utilization of automated information and telecommunication components to facilitate clinical health communication and patient health education (Marcoux & Vogenberg, 2016). While there is literature that specifically addresses the need for improved health provider communication, there is a gap in strategies that specifically address military provider communication strategies. There is an ongoing need for military health providers to improve their health communication approaches to align with Healthy People 2020's goal of utilizing health communication strategies and health information technology in a manner that will increase healthy outcomes, quality of care, and achieve health impartiality (Parvanta, Nelson, & Harner, 2017). While Healthy People 2020 provides goals for the improvement of health communication, there is an ongoing need for Military Installations to develop health communication goals that specifically address the needs of military personnel and dependents and the short comings of current communication methods. Capanna et al. (2020), provide a two-part approach to ensuring health communication occurs when barriers to health care access exist. Capanna et al. (2020) stated that by implementing a Triage Call Center or a Mobile Screening Team with trained medical staff prepared to provide on demand health guidance, education, and

access to direct patient care; health communication challenges can be appropriately navigated. While Capanna et al. (2020) strategies for mitigating gaps in health communication strategies, it is imperative that these strategies be uniformly implemented at all MTF's. The Department of Defense is charged with safeguarding military readiness and resiliency (DOD, 2016). Military Health Facilities (MTF's) must be equipped to provide ZIKV health care services and referral options for civilian services or procedures that are not available through an MTF as needed. Implementation of a Triage Call Center staffed with military health providers that can input health service referrals could remove blocks in access to civilian health services on demand. Implementation of a Mobile Screening Team to assess military personnel and dependent for ZIKV, could provide an added layer of health communication and access to care (Capanna et al., 2020). A study conducted by Rehman et al. (2017), discusses the benefit of mobile health interventions such as web-based health education that can be viewed through mobile phone applications providing patients with specific health education that can be tailored to specific health concerns while offering an option for ongoing provider patient feedback (Rehman et al., 2017). Military health providers implementation of a text message element could create an added layer of health communication with military personnel and dependents, thus delivering uninterrupted access to relevant time sensitive information regarding ZIKV health risk and ZIKV health resources. Ellingson, Bonk, and Chamberlain (2017), emphasizes the need for improved provider communication methods regarding transmission of ZIKV through sexual contact, blood transfusion, or from a mother to fetus during pregnancy. Clear and direct health provider communication

are vitally essential to ensure military personnel and their dependents have the tools necessary to prevent transmission of the ZIKV (Ellingson, Bonk, & Chamberlain 2017). While there is not a confirmed commercially available vaccine for ZIKV, communication methods of military health providers could potentially have a profound impact on military personnel and dependents attitude towards receiving the vaccine once it has been made available to the public (Painter, Plaster, Tjersland, & Jacobsen, 2017). Ultimately, the goal of improving ZIKV related health communications will support healthy behaviors within military communities.

Summary

Developing a conclusive response to the research questions will help to eliminate the gap in literature that exists regarding the impact of ZIKV education on behavioral changes and health perceptions. Learning how improved access to ZIKV education can impact military personnel and their dependent's ability to make positive health decisions and reduce their susceptibility may prove to be a good baseline for the design of focused health service programming in the future. Unveiling perceived and actual barriers to receiving health education provided by the military hospitals, clinics, and health service organizations can potentially increase accessibility to comprehensive health programming that is specifically designed to meet the needs of military personnel and their dependents.

Chapter 3 defines the study design, strategy for sampling, analytical methods that were utilized to address the central research question of this study.

Chapter 3: Research Method

Introduction

The purpose of this phenomenological qualitative research study was to explore the experience of military personnel and their dependents accessibility to ZIKV education and examine how the impact of the experience influenced their behavior and understanding of the ZIKV and associated risk of contracting the virus within a military community. The results of this study could potentially have a significant impact the design and delivery methods of military and dependent education during identified public health emergencies within military communities. The results of this study could potentially advance the efforts of the Army Health Promotion Program, by highlighting the need for planning and implementing ZIKV education initiatives, health programming and opportunities to improve the health, readiness, and resiliency of the military community. In alignment with the goals of Healthy People 2020 to advance preparedness in the areas of Educational and Community Based Programs, while aiding in the development of Healthy People 2030 goals and objectives particularly related to military communities. Well-planned health education efforts require appropriate community health planning with local health organizations to fully support the military community by providing resources for mitigating potential health risk thus strengthening community health partnerships in the future. Identifying gaps in health service delivery and health education can potentially reveal opportunities to evaluate the effects of ZIKV education

on military personnel and their approach toward implementing preventative measures in the future.

Chapter 3 described the Research Design and Rationale, Role of the researcher, Methodology, and Issues of Trustworthiness.

Research Design and Rationale

I generated four comprehensive qualitative research questions created based on the problem statement and purpose of this study relevant to the perspectives of military personnel and their dependents:

RQ1: Does ZIKV transmission education from Military Health Services impact health behaviors and health understanding amongst military personnel and dependents?

RQ2: Does incoming ZIKV Military Health Service deployment briefs impact health behaviors of military personnel?

RQ3: Does receipt of Military Health Service ZIKV prevention education impact military personnel and dependents willingness to abstain from unprotected sexual contact following travel to areas with high concentrations of ZIKV transmissions?

RQ4: Does the manner that military health providers communicate ZIKV risks to military personnel and dependents impact their understanding of the virus?

Central Phenomenon

The central phenomenon of this proposed research was the declaration of the public health emergency by WHO In 2016, the CDC warned against sexual transmission of the ZIKV due to partners that may have traveled to areas with a high concentration of ZIKV transmissions (Oster et al., 2016). The emergency, primary care, and labor &

delivery departments on military installations were advised to refer to the CDC website when giving travel advice, conducting ZIKV screenings, and ordering diagnostic tests (DOD, 2016). The only ZIKV Standard Operating Procedure (SOP) that exists for educating military personnel and their dependents about ZIKV, directs health providers to refer to CDC guidance as well. When military personnel and their dependents presented with concerns about the ZIKV, they were referred to the Department of Public Health for further guidance.

Military personnel returning after deployment from areas with an elevated risk for ZIKV transmission (i.e., Honduras and Saudi Arabia), caused the Military Health System (MHS) to become concerned about the impact the virus can ultimately have on the health and resiliency of military personnel and their dependents (Poss & Harris, 2016). Military personnel and their dependents looking for answers about the ZIKV could search Installation Public Health Facebook pages to get up to date travel warnings (DOD, 2016). The information listed on the Facebook pages reminded readers to refer to the CDC website for additional information (DOD, 2016). There is a gap in research regarding the lived experiences of military personnel and their dependents to include their health behavior, understanding, and accessibility to ZIKV education from providers within the MHS (WHO-Special Program of Research, 2016). This is a qualitative research study. A qualitative study allows the researcher to listen and observe participants and build an understanding of their experience even when peer reviewed literature is limited (Creswell & Creswell, 2017). With limited ZIKV literature available, quantifying the experience of

study participants could diminish the authenticity of their experience as quantitative methods focus primarily on the notion of causality (Creswell & Creswell, 2017).

Role of the Researcher

The role of the researcher when conducting a qualitative study is to develop a plan for recruitment of participants, determine the type of interviews that will take place, organize the interviews, collect data relevant to the study, analyze and contribute to the literature on the topic (Creswell & Creswell, 2017). As a former Department of Defense, Health System Specialist at the Fort Riley Irwin Army Community Hospital (IACH), I do not have a personal relationship with any potential participants. I was employed by IACH from 2016-2019, serving within the environment where potential participants receive health services and education, I do not have personal influence over the participants or programs that serve the participants. My last role within this organization as a Health System Specialist in the Emergency Room was administrative and nonclinical. To reduce the potential for bias, I transferred from this facility prior to collection of participant data. Prior to collecting and analyzing data, I obtained Institutional Review Board (IRB) approval and informed consent from participants. Walden University's approval number for this study is 11-02-20-0596192.

Methodology

Study Population

This research study consisted of a qualitative phenomenological comprehensive review of the literature and thorough analysis of feedback from study participants that

provided insight into their health behaviors and understanding. Interviews were designed and organized by the researcher to incite responses from active-duty military personnel and their dependents. This research study specifically focused on responses from participants self-identifying as male or female ages 18-45 to include varying levels of knowledge and experience (Ventura & Hamilton, 2012). The participants for this study were military personnel or dependents and therefore may have found that they were sensitive to some of the questions or wording included in the survey. To protect the health and well-being of all participants I engaged with participants to ensure that the virtual environment was private and free of hazards (Sutton & Austin, 2015). If at any time a participant was in distress, upon their request I would have immediately ended the interview session to avoid any further discomfort (Sutton & Austin, 2015).

Written informed consent was attained from all study participants to ensure that all responses are voluntary, legally competent, informed and comprehending (Levine, 1991). This practice ensured that the participants, knowledge, beliefs, attitudes, perceptions, and experiences regarding ZIKV were appropriately captured and explored (Levine, 1991).

Participant Selection Logic

The participants for this study were selected from a military community within 50 miles of a military installation. This study consisted of a purposeful sampling strategy (Sargeant, 2012). In qualitative research subject selection, the primary goal was to select participants that are best able to enhance the understanding of the phenomenon being observed (Sargeant, 2012). The aim of this qualitative sampling strategy was to recruit

study participants from a local military installation based on their status as military personnel or dependents. I verified if the participant was active duty by asking if they were currently active duty. If the participant was a dependent, they were required to self-certify that they were the dependent of an active-duty military service member.

The sample size included self-identified men and women aged 18-45 years, without regard for race, ethnicity, gender, or military rank. The participant population for this study included men, women, and dependent children within the military community. To secure access to recruit participants, I planned to contact health care providers in the Public Health Department (DPH) & Labor & Delivery Department (L&D) and Military Units to request that they distributed flyers outlining this research study and participation criteria. I would have placed an advertisement on the bulletin board in the Pregnancy Centering Group Classroom to increase visibility if it were accessible without restrictions due to Covid-19. To ensure that the recruitment information reaches a wider audience range, I requested for the study information to be placed on the respective department social media (i.e., Facebook) page. When researchers are not successful in communicating risks and benefits of study participation, they run risk of engaging in unethical practices thus comprising the integrity of the data collection process (Nusbaum et al., 2017). Once the participant elected to participate in the study, they were provided with an informed consent form. Once the form was completed and returned, the participant was given interview options that aligned with their communication preference. All interviews were conducted in English, as I recorded the perceptions, attitudes, beliefs, and behaviors about the ZIKV. Virtual interviews were allotted 1 hour.

To improve the accuracy of the information being transcribed, an audio recorder was utilized. This study utilized a qualitative phenomenological strategy, and therefore included a sample size of 20 participants.

Instrumentation

Data collection is an essential process of qualitative analysis whereas the researcher takes raw data and separate it into smaller categories and themes through deductive reasoning (Houghton et al., 2017). The researcher planned to utilize focus group discussions, as a means of asking questions in a secure environment whereas participants can engage freely with other members of the group (Creswell & Poth, 2016). The researcher planned to allow up to 2 hours to conduct focus group discussions and 1 hour for individual interviews to ensure there was adequate time to record the participant responses. To ensure that transparency was maintained throughout the data collection process, all participants regardless of interview type were provided with written information that outlined the aim of the study and how the researcher intended to use the information that they provided (Creswell & Poth, 2016). To increase shared understanding the moderator of the interviews provided information about the aim of the study and how that information will be used verbally. To maintain the integrity of the data that was being collected, a digital recorder was utilized, and all transcription were quality checked to ensure that the transcription was verbatim (Houghton et al., 2017). All notes were made during the data collection sessions were included in the analysis of the data collected. To avoid the potential misuse of data, all raw data was deleted once the

transcription was quality checked for accuracy. All interview questions were based on the framework of the HBM and the TPB.

Procedures for Recruitment, Participation, and Data Collection

The participants of the study were men, women, and adult children that received health services and education from associated military health facility on or near a military installation. All participants were allowed to speak freely in their response during the data collection period (Killawi et al., 2014). To maintain accuracy of the data collection, participants were required to verify the validity of the transcription of the interview before their response was included in the data analysis (Gyure et al, 2014). All participant candidates were asked qualifying questions to ensure they met the criteria for services at a military health service facility and that they were current active-duty service members or dependents. Each participant was issued both written and oral confidentiality statement prior to the collection of data. According to Surmiak (2018), the researcher has a responsibility to ensure that both technical and organizational measures have been taken to prevent a potential data breach or unauthorized disclosure (Surmiak, 2018). By ensuring the anonymization of all study participants the researcher maintains control over the potential of incidental disclosures (Surmiak, 2018).

Prior to recruitment, participation, and data collection the researcher ensured that Institutional permission was granted by Walden University. Once an Institutional Review Board application was submitted and approved, evidence of the approval was provided to the participants in a verbal and written format. Braun et al. (2015) detailed the importance

of researchers of military populations to have a clear unambiguous understanding of the IRB process, and further urges researchers that wish to study military populations to ensure participants have a clear understanding of the IRB role in maintaining the integrity of the research being conducted (Braun Kennedy et al., 2015). Providing participants with prior knowledge of the data collection process and procedures along with relevant evidence of University and Military IRB approval contributes to the appropriate development of the research study timeline, improves the integrity of the data collection process, and ultimately supports successful research (Braun et al., 2015).

Participant candidates that responded to posted recruitment flyers were screened to ensure that they met the criteria for participation in the study. A sample size of 20 or more was the most appropriate for a qualitative study of this magnitude and style (Creswell & Poth, 2016). If there was a surplus of participant candidates, the sample size would have been maintained in alignment with the sample strategy. Prior to telephone, virtual interviews, and surveys each participant received an informed consent form prior to proceeding with data collection. Additionally, each participant received a statement that will discuss the purpose of the study, intended use of collected data, and the steps that were taken to maintain confidentiality of their statements and demographic information.

All data collected for this study was recorded with a digital recorder with play back features to ensure the information was transcribed accurately. To analyze the data collected, the data was recorded in a Microsoft Word document and reviewed for completeness. Once quality of the data was determined, the data was uploaded utilizing

the NVivo version 11 for Mac software. This data maintenance system allowed the researcher to identify themes and code data for further review (Houghton et al., 2017). As an added incentive for participation, participants were provided with a $20 Starbucks gift card or another gift card of equal value in return for their time and contribution to the study.

Data Analysis Plan

The collected interview data was recorded accurately and coded in a manner that created a shared understanding with future researchers that may wish to use major themes or key findings in this study to launch an inquiry that could potentially contribute to social change. Bengtsson (2016) stated that qualitative researchers should begin the data analysis process by transcribing feedback from study participants a breaking down common themes into units. Each unit should be identified and labeled with a code that is related to the subject matter (Bengtsson, 2016). Bengtsson urged qualitative researchers to use a coding list and coding explanations to secure reliability of the data collected.

NVivo version 11 software was utilized to ensure the proper coding of collected data (Houghton et al., 2017). This study was conducted to produce a knowledge base that focuses on the health beliefs, perceptions, and experiences of military personnel and their dependents to improve ZIKV education and promote healthy behaviors. Though there are few qualitative ZIKV studies that address the military experience in existence, this study will help to overcome this challenge and provide evidence for future qualitative ZIKV studies (Houghton et al., 2017).

Issues of Trustworthiness

Credibility

The authenticity of qualitative research is dependent upon the trustworthiness of the results of the study (Birt et al., 2016). As chief contributors to the validation and reliability of collected data, participants have a unique role in conducting a quality check of the recorded data that has been transcribed. This quality check is an added barrier of protection for the data collected. Feedback from participants regarding any information that was not appropriately transcribed will challenge the researcher to improve recording instruments and methods for transcription to ensure that the study maintains a high level of trustworthiness.

Transferability

To establish transferability of qualitative research, there must be processes in place that address the validity and reliability of study findings. Noble and Smith (2015) advised researchers to recognize bias in the sampling strategy, develop a record keeping system that maintains the transparency of collected data, and utilizing data triangulation as means of creating a better understanding of different methods and perspective that could potentially produce the most apposite set of findings. Utilizing various means of clarifying the mindset of the researcher will add to the integrity of the study findings (Noble & Smith, 2015).

Ethical Procedures

In the development of the research study, the potential for ethical concerns to arise, is almost inevitable, however it is how the researcher chooses to guard against these concerns that will maintain the integrity of the research. Creswell & Creswell (2017), advise researchers to engage in the development of an informed consent form is the baseline for addressing potential concerns such as inadvertent identification of the participants, human rights violations, and participant exposure to psychological/legal/ social/economic harm. Utilizing the Informed Consent form helped to alleviate ethical concern is this area. Ethical issues may arise in the development of the purpose of the study and interview questions; however, this issue can be avoided by ensuring that cover letters are designed to inform the participant about the aim of the study and how the collected will be used (Creswell & Creswell, 2017).

Summary

A qualitative research methodology was established to explore military personnel and their dependents knowledge, understanding and beliefs regarding the ZIKV. This research methodology could potentially lead to the unveiling of key findings related to the promotion of ZIKV health and readiness campaigns within a military community. Chapter four will focus on the results of the collected data, define the research setting and demographics, and unveil key findings in the data analysis.

Chapter 4: Results

Introduction

The purpose of this phenomenological qualitative research study was to explore the experience of military personnel and their dependents accessibility to ZIKV education and examine how the impact of the experience influenced their behavior and understanding of the ZIKV and associated risk of contracting the virus within a military community. To effectively address the gap in literature on the ZIKV knowledge and understanding amongst military personnel and dependents with regards to preparedness, readiness, and resiliency of the military community, I utilized a qualitative approach with a phenomenological design. Exploring the perceptions of military personnel and their dependents experience with understanding the ZIKV, may prove to be advantageous to researchers and military public health providers implementing appropriate education and programming that is critical to the protection of individuals that may be currently located in, in route to, or returning from areas with a high concentration of active ZIKV transmissions. I focused my research efforts on four research questions: (a) Does ZIKV transmission education from Military Health Services impact health behaviors and health understanding amongst military personnel and dependents?; (b) Does incoming ZIKV Military Health Service deployment briefs impact health behaviors of military personnel; (c) Does receipt of Military Health Service ZIKV prevention education impact military personnel and dependents willingness to abstain from unprotected sexual contact following travel to areas with high concentrations of ZIKV transmissions?; and (d) Does the manner that military health providers communicate ZIKV risks to military personnel

and dependents impact their understanding of the virus? In this chapter, I discuss the study setting, demographics, data collection/analysis procedures while presenting evidence of trustworthiness and the outcomes of the study. The research questions and analyzed data that substantiates each discovery are addressed in this chapter.

Setting

Due to Covid-19 health and safety concerns, I offered all participants the option of a telephone interviews or WebEx which allows participants to be interviewed utilizing video conferencing features. Twenty interviews were conducted by telephone. To ensure the privacy of participants, interviews were conducted in an isolated location where the dialog could not be viewed or heard. All interviews were conducted during evening hours to ensure participants were able to find a quiet private area to participate in the interview. An interview script was utilized to explore the participants knowledge and understanding of the ZIKV. A sum of 20 interviews were achieved. In addition to interviews a pre-interview survey was sent to each participant that included specific ZIKV questions that focused on their knowledge of the ZIKV. A sum of 25 responses were recorded utilizing a Qualtrics XM software, which is a survey tool that allows researchers to electronically distribute surveys and conduct analysis of the responses within the same application resulting in a data dashboard (Cushman et al., 2021). The Qualtrics XM application supports the safety and security of participant responses having earned the ISO 27001:2013 certification (Culot et al., 2021). The ISO certification is designed with guidelines to help organizations like Qualtrics XM manage information security requirements while ensuring the organization maintain the cyber security of their data

collection software that meets the highest level of information security standards in the information technology industry (Culot et al, 2021).

Participant Demographics

Demographic information presented in Table 1 represents the 20 participants that were interviewed for this study. Recruitment and screening efforts resulted in the obtention of 20 participants that self-identified as having been stationed at Fort Hood Military Installation located in Fort Hood, Texas within the past five years as an active-duty service member or dependent. All participants were aged 18 and older; seven were women, and thirteen were men. There were 18 married and two single participants. Participants ranged in ages 18-42 years. Two of the participants were in their early twenties, nine of the participants were in their mid-twenties to early thirties, and nine were in their late thirties or older. Thirteen of the participants had obtained college degrees, whereas five had completed an associate degree, and two had high school diplomas. The participants number of dependents range from zero to six. The military status of the study participants included sixteen active-duty service members and four dependents. All participants disclosed their age range, gender, education level, military status, marital status, number of dependents, and duty station within the past five years.

Table 1

Demographics of Participants

#	Age Range	Gender	Education	Military Status	Marital Status	Stationed at Fort Hood past five years	# Of Dependents
001	25-35	MALE	Bachelor's degree	ACTIVE DUTY	Married	YES	6
002	25-35	FEMALE	Bachelor's degree	ACTIVE DUTY	SINGLE	YES	0
003	18-24	MALE	Associates degree	ACTIVE DUTY	Married	YES	2
004	36+	MALE	Master's degree	ACTIVE DUTY	Married	YES	3
005	25-35	MALE	Master's degree	ACTIVE DUTY	Married	YES	1
006	25-35	FEMALE	Bachelor's degree	DEPENDENT	Married	YES	0
007	36+	MALE	Master's degree	ACTIVE DUTY	Married	YES	3
008	25-35	FEMALE	High School Diploma	DEPENDENT	SINGLE	YES	0
009	36+	MALE	Bachelor's degree	ACTIVE DUTY	Married	YES	1

#	Age Range	Gender	Education	Military Status	Marital Status	Stationed at Fort Hood past five years	# Of Dependents
010	25-35	MALE	Associates degree	ACTIVE DUTY	Married	YES	1
011	25-35	FEMALE	Master's degree	ACTIVE DUTY	Married	YES	2
012	25-35	FEMALE	Bachelor's degree	DEPENDENT	Married	YES	0
013	25-35	FEMALE	Bachelor's degree	ACTIVE DUTY	Married	YES	4
014	36+	MALE	Bachelor's degree	ACTIVE DUTY	Married	YES	2
015	36+	MALE	Master's degree	ACTIVE DUTY	Married	YES	3
016	36+	MALE	Associates degree	ACTIVE DUTY	Married	YES	0
017	36+	MALE	Associates degree	ACTIVE DUTY	Married	YES	3
018	18-24	MALE	High School Diploma	ACTIVE DUTY	Married	YES	2
019	36+	MALE	Associates degree	ACTIVE DUTY	Married	YES	4
020	36+	FEMALE	Master's degree	DEPENDENT	Married	YES	0

Data Collection

The screening and recruitment efforts for this study initially yielded 25 participants from Fort Hood, Texas, and surrounding area to include a 30-mile radius. There were 5 qualified interview participants that did not complete an interview due to their lack of availability to complete the interview portion of the research study. As a result, a total of 20 participants were interviewed for the study. Data Collection occurred in two phases. Phase I of data collection began with each participant completing a pre-interview survey that was distributed utilizing the Qualtrics XM Survey tool. The pre- interview survey yielded a total of 20 responses. Phase II of the data collection included phone interviews with each qualified participant. All Phase I participants were not interviewed due to non-response when contacted for the interview. The recruitment method for this study utilized the snowball method, whereas participants recruit colleagues and contacts who may potentially qualify for the study by distributing flyers with QR codes with a link to a participant pre-qualification survey (see Appendix A). Pre-Screening occurred with the review of data collected from the survey database. If the participant met the screening criteria, they received and email with an invitation to take part in the research study. The email included an introduction of the researcher, study background information, study procedures, sample questions, participant rights, risk/benefits of study participation, compensation for participation, confidentiality, and consent statement (see Appendix B). To obtain participant consent a link was placed in each email whereas they were directed to select the link if they consented to the study. The link then redirected them to the pre-

interview survey that asked questions specifically related to their knowledge and understanding of the ZIKV. Once the participants provided consent and completed the pre-interview survey, I contacted each participant by email with three interview dates and times and mode options by which to conduct the interview. Participants were given the option of a WebEx interview or a phone interview. All the participants responded by email with their preferred interview date, time, and mode by which to conduct the interview (see Appendix B). All the research participants opted to conduct a telephone interview. A copy of the consent form was provided to each participant when the interview email was sent for the participants personal records.

I collected data from March through May 2021. At the beginning of each interview, I read the consent form statement to reiterate that participation was fully voluntary and re-confirm the participants consent and permission to record the interview for transcription accuracy. Each interview was recorded with the consent of the participants. The Call Recorder- Automatic is a telephone voice recorder application that was utilized to record interviews and share/manage recordings. The Call Recorder-Automatic is the first of its kind without length of call recording restrictions, which allowed the interviews to flow without the risk of data being lost. The interviews lasted between 15-30 minutes based on the depth of the participants response. In preparation for the interview discussions, I developed interview questions to guide the discussion and allow participants an opportunity to discuss their ZIKV experience and perspectives. To enhance the quality of data collected, I asked participants with limited responses to

elaborate on their response when their answer lacked detail or substance (i.e., Yes or No responses). Within 24 hours of the interview the audio recordings were transcribed verbatim into a word document and sent as an email attachment to the participants for their review and approval. Participants were given the opportunity to request changes to the transcript if required. All 20 participants approved their transcripts without requesting any changes to their interview transcription, therefore they were provided with a final copy of the interview discussion transcription for their records. When the participants approved their interview transcripts, the transcriptions were uploaded into Dedoose, which is a qualitative and mixed methods data analysis software that allows researchers to link collected data files, interview transcriptions, and video/audio files to organize and develop an analysis of excerpts, descriptors, codes, and memos (Lieber, Salmona, & Kaczynski, 2021). Dedoose utilizes qualitative data, descriptor data, and researcher coding systems (Lieber et al., 2021). There were two deviations in data collection from the proposed plan in Chapter 3. Online Focus Group recruitment did not yield enough public interest to ensure quality data collection. Due to Covid-19 pandemic limitations of focus group recruitment, I focused my collection efforts on participant interviews and data collected from surveys. The second deviation from the Chapter 3 proposed plan was a result of utilizing Nvivo version 12 instead of Nvivo version 11 as previously described. This upgrade yielded additional features and analysis components that included improved methods of software utilization, visualizations, exportation of analysis data for presentation use, and streamlined options for improved management of

demographical and established cases (Looney, 2018). I contacted the Walden University Institutional Review Board (IRB) for approval to eliminate focus group data collection and to upgrade Nvivo software.

Data Analysis

I utilized Microsoft Word, Excel, PowerPoint, and Dedoose Software to organize collected data. I worked with Nvivo version 12 for Windows software to import audio records, media files, notes, and transcriptions to analyze aggregated data. I achieved a total of 20 phone interviews. Each interview was recorded and transcribed precisely to safeguard the accuracy and completeness of collected data. During the phone interviews the vocal tone, voice inflections, volume of speech, and patterns of speech (i.e., pauses in dialog or repetition) were documented. I achieved a total of 20 online surveys that were reviewed for user errors or incomplete responses to ensure that participants responses were properly recorded for each question. Analysis of collected data included reviewing notes made during interviews, highlighting trends in survey responses, pre-coding, developing coding methods, identifying major/minor themes, supporting findings, and ensuring a comprehensive assessment and inquiry of the collected data. All 9 interview questions addressed the research questions.

I analyzed the collected data by using the Nvivo query functions. I imported collected survey data that included open- and close-ended questions from the Qualtrics survey report generator. As themes emerged, I developed connections in the transcriptions and survey responses. The first round of analysis included review of

frequently used words and common phrases. Phrases specifically related to the phenomenon were classified and weighed equally to code the responses. The second round of analysis included the elimination of extraneous wording and interviewer statements not related to the interview questions or research study, which unveiled deeper coding that was associated with each of the research questions. Additional rounds of analysis were conducted for a more intense examination of transcripts that revealed a resistance to taking a ZIKV vaccine in the future. Statements that provided a rich connection to the research questions were selected and coded verbatim from the transcriptions.

Data Analysis was finalized with an in-depth summarization of assessment processes, coding methods, unveiled themes, and significant findings. Codes were established to characterize similar responses to research questions (see Table 2).

Themes

Five themes were emphasized in association with the findings: (a) limited health information, (b)desire for knowledge, (c) concern, (d) preventative actions, and (e) knowledge and understanding. Each theme is described in Table 2.

Table 2

Summary of Themes

Themes	Significant Codes
Limited Health Information	Information I have is on Google
	I would go see my primary care provider
	Google or Wikipedia
Desire For Knowledge	I do not know where to get more information
	I would like more information
	I do have some, but I do not have enough info
	I used to do a lot of research in high school
	I do not know anything about Fort Hood having information
	I just do not understand the origins of zika virus
Concern	I do not think it is a concern for me
	I just never thought I needed to take precautions
	I definitely would like to get to know more about this virus
	It is still a concern because there is no cure
	I am not thinking about vaccination
	I am not sure of what precautions to take
	I do not think they ever mention it at all
	It is definitely a threat
	The virus is a concern for my family

Themes	Significant Codes
Preventative Action	Personal awareness and personal protection Stay away from crowds Mosquito nets We do not do anything in preparation or prevention Mosquito spray I do not take actions when I am traveling Long sleeves and pants as well They really don't take drastic measures to prevent zika virus
Knowledge and understanding	I understand that there is no cure It was a pandemic for a couple years Transmitted through mosquito bites There is not a high prevalence of zika virus Almost like corona virus

Theme 1: Limited Health Information

The theme of "limited health information" is defined as inadequate access to health information to achieve healthy outcomes. This theme was identified through exploration of the research question findings. The evaluation of data from responses to interview questions about where they would go if they had concerns about the ZIKV revealed that all 20 participants expressed that there was not enough information about ZIKV, however they all indicated that they would use some sort of internet resource to get more information. In addition to the online resources, nine participants specifically

indicated that they would go to a hospital or make an appointment with their primary care physician. While all participants seemed confident that they would be able to find ZIKV information on the internet, P012 indicated explicit distrust of online CDC resources stating, “I would probably check with the Mayo Clinic, I never trusted the CDC even before Corona virus”. When asked if they would like more information P002 stated “Yes, if I get the chance to read more about the Zika virus, because it was a pandemic for a couple years back in Africa”. When asked if they had enough information about ZIKV, P020 responded in frustration, “No, the information I have on google basically, and I have discussed it with friends”. The pre-interview survey revealed a more specific response when respondents were asked where they received information about ZIKV. The five most selected health resources were Television, Internet Search Results, social media, Military Health Provider, and Civilian Health Provider. While all the study participants were military personnel or a dependent, none of the respondents selected Military Treatment Facility (MTF) as a resource for ZIKV information. This phenomenon depicts how military personnel view the role of the MTF’s in providing required health information and resources. Significantly only two of 20 respondents selected, Military Deployment Briefings as source for ZIKV information while sixteen of the participants interviewed were active-duty military personnel. Military Deployment Briefings are critical to the health, safety, and success of military missions. Pre-deployment briefings also play an integral role in informing military dependents about potential risks to health and safety that the active-duty service member may be exposed

to. In some instances, these briefings provide guidance for post-deployment reintegration, however briefings of this kind are primarily reserved for a combat related Military Occupational Specialty (MOS). When asked if the military installation has taken any action to protect you from ZIKV, P010 stated “No, I do not think they ever mentioned it at all”. When asked, have you taken any actions to prevent ZIKV during deployments or personal travel, P010 stated, “I don’t think the Army gave us any instructions about Zika virus”. In contrast, eighteen of 20 survey respondents agree that it is possible to get the ZIKV near a military installation or deployment location, thus acknowledging the necessity for increased access to ZIKV health information resources that support healthy outcomes.

Theme 2: Desire for Knowledge

The theme of “desire for knowledge” is described as the demand for education that will enhance understanding of personal health risks and options for preventative action. The most common codes related to this theme emerged from interview participants feeling as if they were left to search for their own ZIKV resources to gain a better understanding of their level of risk and potential exposure. P002 expressed a desire for ZIKV health information by stating, “there are definitely medical terms I may not understand” when asked are there things that you do not understand about the ZIKV. P009 declared, “I understand what the Zika virus is, but I do not have much information about the virus”. P0013 indicated that their desire for ZIKV education has been ongoing boasting, “I have actually googled it a few times in the last few months to see what it is”.

Exploration of participants perspectives regarding their desire for ZIKV information was made evident when participants began inquiring about specific ZIKV information. For example, P0013 asked “do all people that get bit by the mosquito get the virus, or is it like asymptomatic where people can naturally fight it off, almost like the corona virus?” Though the inquiry shows that the participant has a general knowledge of some ZIKV information, it further indicates that there is a desire for more detailed information. While the desire for ZIKV education has been seemingly minimized by the impact of the Covid-19 Pandemic, the desire for a deeper understanding of health risks and preventative measures by military personnel and their dependents persists. Evaluation of interview transcriptions showed that participants seem to grapple with detailing their ZIKV experience without comparing it to the Covid-19 pandemic or other health threats that have impacted their perceptions. In contrast, health threats such as the Covid-19 pandemic impacts every facet of life around the world, however each survey respondent affirmed that they do not know of anyone who has had ZIKV in or near the community where they live. Alternatively, a review of interview transcripts uncovered a deeper perception of the ZIKV by P003 stating, “I think if the virus is in your area, it can spread at any time, so it is definitely a threat”. Respondent P003 went on to say, “While it may not be a threat now, two or three years later it may become a threat”. The survey results and interview question responses also indicate the necessity for distribution of literature that specifically describes demographics of those impacted by ZIKV in or near the Fort

Hood community to improve military personnel and dependent awareness of the severity of health risks.

Theme 3: Concern

The theme of "concern" is described as an emotional response to the potential susceptibility to negative health outcomes associated with the ZIKV. The most occurring codes associated with this theme were personal narratives and comparisons of lived adverse health outcomes to the perceived impact of the ZIKV. Exploration of all participants experience indicated a deeper level of commitment from military personnel to monitor the potential impact of threat of ZIKV to them and their dependents. All interview participants indicated less concern for their own health regarding the threat of exposure to the ZIKV. P013 demonstrated their concern for dependents through a personal narrative. P013 stated, "one of my daughters is a little bit disabled, she has Cerebral Palsy, it is mild, but it has affected her learning capabilities", and "I think it is similar to Zika, but obviously it is different." This participant shared their concern for an existing negative health outcome to describe the level of concern for the vulnerability of their child to potential negative health outcomes related to ZIKV. In response to whether the participant believes ZIKV is still a concern for them and their dependents, P012 stated, "I have high antibody autoimmune disease so I get concerned overall about the effect of getting bit by mosquitos because it is not just Zika virus that they can spread". P012 was transparent about their current health challenges to support concerns for a better understanding of how their exposure to mosquitos carrying the virus might impact

their current state of health. P011 provided insight into their concern for their lack of understanding of the ZIKV by recalling their experience while responding to the pre-interview survey. P011 stated “I know in my survey it was asking who can get it, I guessed based on what I have heard.” This level of sincerity provided insight into the importance of ensuring military personnel and their dependents have access to ZIKV education resources and materials that provide a clear understanding of the virus that could potentially improve their perceived susceptibility to ZIKV exposure.

Theme 4: Preventative Action

The theme of “preventative action” is described as purposeful steps taken towards evading exposure to or contraction of the ZIKV. The most repetitive codes associated with the theme were a basic understanding of how ZIKV is contracted, account of where to obtain more information about the virus, and explanations of measures taken to avoid exposure to ZIKV. When asked to explain what you have done to prevent yourself or a family member from getting ZIKV, P020 provided a detailed account of actions taken stating, “use a mosquito net, insecticide, wash your hands, make sure blood is tested prior to a blood transfusion”. P020’s response indicated deliberate actions to prevent the ZIKV. Participants that provided detailed prevention steps were also able to clearly describe where they would go for more information if they had concerns about the ZIKV. For example, P020 stated, “the first place that I would go is to check Google to read about it, then go to the CDC website, check the WHO website, and discuss with my primary care doctor.” In response to the multiple answer survey question, participants were asked to

select who can get the ZIKV. The top three selected options included Pregnant Women. Adult Men, and Anyone can get the Zika virus. Participants demonstrated their understanding of what causes ZIKV by selecting from a list of potential causes of the virus. All survey respondents selected sexual intercourse with someone who has the virus, which has been described in the literature as a major concern for military personnel when deploying to areas where there is significant prevalence of ZIKV cases (Yarrington et al., 2019).

Theme 5: Knowledge and Understanding

The theme of "knowledge and understanding" are described as a basic level of experience with the concept of ZIKV. While participants response to interview questions and survey responses revealed inadequacies and misinformation regarding their knowledge of ZIKV and a limited understanding of preventative actions, the data demonstrated that all participants had at least a basic concept of the ZIKV that allowed them to clearly share their experiences.

Evidence of Trustworthiness

The dependability of qualitative data hinges on the trustworthiness of responses provided by study participants. Birt et al. (2016) suggested that participants are an integral part of the data collection process lending to the phenomenological approach to gaining an in-depth explanation of their experiences. Creating a research environment where trustworthiness and validation of participant statements was critical due to the data collection focus on interviews and survey responses. Interviews were conducted solely by

phone and recorded for enhanced accuracy. All interviews were transcribed verbatim and approved by participants as credible representations of the interview dialog prior to being utilized.

Transferability

The term transferability refers to the degree to which research methods and findings can be validated and applied to other settings (Williams et al., 2020). Regarding the aims of transferability, I focused on providing a vivid account of the participants experience. I took note of communication styles, voice inflections, and tone quality of research participants. I included verbatim quotes from research participants to capture the negative and positive sentiments of each participant. I utilized interview transcripts and survey results to provide deeper descriptions, and broader perspective regarding my study findings.

Dependability

Dependability is a term that refers to the strength of the study findings over time (Nassaji, 2020). The documentation of the participants' validation of transcripts and clarification of the survey results that included clear and concise recommendations that was well supported by the collected data. To ensure the reliability of data, I included notes related to collected data, audio transcripts, transcript notes, and significant accounts of the participants experience.

Confirmability

Confirmability is the extent to which study conclusions can be confirmed by researchers with knowledge and experience within the field of your study (Kyngäs et al, 2020). I engaged in reflexivity to conduct a substantive exploration of my connection to the phenomenon. I maintained descriptive data in the form of emails, written memos, and identified simplified definitions for each generated code. I focused on analysis of the data and creating notes supported by narratives and data that reveal emergent patterns, assertions and outcomes that could not be anticipated at the start of the study.

Results

The research questions were individually addressed through the development of codes based on the transcribed responses to the interview questions. The codes were further developed into themes to reveal connections to the research questions. In this section I will discuss the findings as they relate to each research question.

The four research questions were: Does ZIKV transmission education impact health behaviors and health understanding amongst military personnel and dependents, Does incoming ZIKV deployment briefs impact health behaviors of military personnel, Does receipt of ZIKV prevention education impact military personnel and dependents willingness to abstain from unprotected sexual contact following travel to areas with high concentrations of ZIKV transmissions, and Does the manner that military health providers communicate ZIKV risks to military personnel and dependents impact their understanding of the virus. I utilized interview questions 1-9 to produce themes related to

military personnel and dependents experience regarding whether they believe they have enough ZIKV information, whether they want more ZIKV information, where they would go to get more information if they had concerns, if there are things that they do not understand about ZIKV, what they have done to prevent themselves or family members from getting ZIKV, any actions taken to prevent ZIKV during deployments or personal travel, if ZIKV is an ongoing concern for military personnel and their dependents, if the military installation where they are assigned, taken any actions to protect them from ZIKV, and would they be willing to take a ZIKV vaccine in the future. For additional insight into participant knowledge and understanding of ZIKV, ability to conceptualize preventative actions I included a pre-interview survey to develop a baseline of the participants comprehension level regarding ZIKV information. The findings reported in this chapter revealed that all 20 participants live in or near the Fort Hood, Texas area and are eligible for health care at a military treatment facility. All 20 participants expressed that there was not enough information about ZIKV, however they all indicated that they would use some sort of internet resource to get more information. In addition to the online resources, nine participants specifically indicated that they would go to a hospital or make an appointment with their primary care physician. The survey results and interview question responses also indicate the necessity for distribution of literature that specifically describes demographics of those impacted by ZIKV in or near the Fort Hood community to improve military personnel and dependent awareness of the severity of health risks. All interview participants indicated less concern for their own health

regarding the threat of exposure to the ZIKV, while demonstrating an obvious concern for the health and safety of their families. All 20 interview participants described ways that they engage in preventative actions regarding ZIKV prevention. Either through response to the interview questions or the survey, all 20 respondents exhibited a basic understanding of how ZIKV is contracted, accounted for where to obtain more information about the virus, and provided an explanation with all 6 responses listing inaccurate and misinformed examples of measures taken to avoid exposure to ZIKV. All survey respondents selected sexual intercourse with someone who has the virus, which has been described in the literature as a major concern for military personnel when deploying to areas where there is significant prevalence of ZIKV cases. While participants response to interview questions and survey responses revealed inadequacies and misinformation regarding their knowledge of ZIKV and a limited understanding of preventative actions, the data demonstrated that all participants had at least a basic concept of the ZIKV. While all the participants indicated options for getting ZIKV education, none of the participants revealed a personal narrative or affirmative statement claiming they have gone to a military treatment facility to see a doctor with the intention of obtaining ZIKV education. Eighteen of 20 survey respondents agree that it is possible to get the ZIKV near a military installation or deployment location, thus acknowledging the demand for increased access to ZIKV health information resources that support healthy outcomes. Eight of 20 interview respondents indicated a desire to take the ZIKV vaccine if developed in the future, thus indicating considerable hesitancy to take the

vaccine. Overall, the participants transcripts and survey responses added to the assessment of military personnel and dependent experience regarding access to ZIKV education on the Fort Hood military installation.

Summary

This information was used to present the steps and methodology of data collection, theme development, and analysis of qualitative data. Interview response data provided insight into the experiences of military personnel and dependents regarding access to ZIKV education. Five themes emerged from the data analysis explanation and was thoroughly discussed. An explanation regarding evidence of trustworthiness and research question results examined.

The research findings showed that each participant identified barriers related to accessibility to ZIKV education. There was not enough information about ZIKV, however participants indicated that they would use some sort of internet resource to get more information. In addition to the online resources, nine participants specifically indicated that they would go to a hospital or make an appointment with their primary care physician. The survey results and interview question responses also indicate the necessity for distribution of literature that specifically describes demographics of those impacted by ZIKV in or near the Fort Hood community to improve military personnel and dependent awareness of the severity of health risks. All interview participants indicated less concern for their own health regarding the threat of exposure to the ZIKV, while demonstrating an obvious concern for the health and safety of their families. All 20

interview participants described ways that they engage in preventative actions, exhibited a basic understanding of how ZIKV is contracted, accounted for where to obtain more information about the virus, and selected sexual intercourse with someone who has the virus in their response to how ZIKV is transmitted. The data demonstrated that all participants had at least a basic concept of the ZIKV. Identified gaps in health service delivery and health education revealed opportunities to further evaluate the effects of ZIKV education on military personnel and their understanding of the virus and attitude toward preventative measures in the future. The information in Chapter 5 indicates recommendations for future research as well as interpretation of study findings. Included in this chapter are implications of social change, and an examination of theory framework and recommendations for practice.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this phenomenological qualitative research study was to explore the experiences of military personnel and their dependents in their accessibility to ZIKV education and examine how the impact of the experience influenced their behavior and understanding of the ZIKV and risk of contracting and transmitting the virus in a military community. The results of this study indicated that military health provider education and communication methods or the lack thereof has contributed to the low level of knowledge and marginal understanding of the ZIKV amongst military personnel and their dependents. Pre deployment and post deployment ZIKV briefings that provide a clear understanding of military health risks have not been taking place consistently throughout the Fort Hood military installation, therefore there is need for ZIKV education that is provided to all military personnel and their dependents that clearly explains the need to abstain from immediate unprotected sexual contact following travel areas with high concentrations of the ZIKV transmissions. The way military health providers communicate ZIKV health risks to military personnel and dependents can influence a better-informed military population with fewer disparities in their understanding of the virus. Study findings could potentially have a significant impact on the design and delivery strategies implemented to ensure that appropriate and readily accessible military health services are made available during identified health emergencies that may occur locally and abroad.

Interpretation of Findings

Despite the overwhelming impact of the Covid-19 pandemic on over stressed military health resources and education, the study findings yielded substantial insight about factors contributing to military personnel and dependent knowledge, understanding and accessibility to ZIKV education resources. While study participants have had continued access to online and virtual health education and resources, up to the minute developments regarding the pandemic have grossly impacted military public health team's ability to provide health education programming or any health threat outside of Covid-19. It is important to note that the current challenges of ZIKV education and other health information initiatives was a challenge as recently as 2019. A review of the literature revealed a gap in the delivery of ZIKV health services that exposed the need for increased accessibility to health services that prepare military personnel in the areas of protection and prevention during the assessment for soldier readiness prior to deployment (Aoun et al., 2019). To be effective, these services should be extended in the areas of protection and prevention of the ZIKV during the assessment for soldier readiness prior to deployment.

The findings revealed that all 20 participants live in or near the Fort Hood, Texas area and are eligible for health care at a military treatment facility. All 20 participants expressed that there was not enough information about ZIKV, however they all indicated that they would use some sort of internet resource to get more information. This finding provided support for the need to redesign ZIKV health programs to address the impact of

the pandemic on ZIKV health challenges worldwide in the wake of the pandemic. In addition to the online resources, nine participants specifically indicated that they would go to a hospital or make an appointment with their primary care physician. Military deficiencies regarding standard operating procedures that outline how to specifically obtain ZIKV education and guidance before travel to areas were exposed within narratives presented by interview participants. Implementation of military public health policies that specifically address how military health providers should respond to concerns about the ZIKV would assist providers in standardizing their approach to addressing the military personnel and dependent ZIKV health concerns and gap in accessibility to credible ZIKV literature. The survey results and interview question responses also indicate the necessity for distribution of literature that specifically describes demographics of those impacted by ZIKV in or near the Fort Hood community to improve military personnel and dependent awareness of the severity of health risks. Easily accessible information or newsletters that are specifically related to maintenance of health and safety of military personnel and dependents in the Fort Hood area would create an ongoing awareness in the community that would eliminate gaps in ZIKV health campaigns promotion during public health emergencies or pandemics. Wolcott et al. (2017) found the association between military health provider secure messaging and patient messaging behavior indicated that the intensity of provider use of secure messaging impacts the communication behaviors of their patients. Timely, accurate, and secure ZIKV information could be generated by military public health departments to be

sent automatically to Military Treatment Facility enrollees through Secure Messaging (SM) on their first introduction of health services upon arriving to Fort Hood or other military installations. Electronic health notifications could support the military's ability to provide relevant updates regarding ZIKV transmissions and preventative measures to mitigate exposure to the ZIKV and other serious viruses as needed. Interview participants indicated less concern for their own health regarding the threat of exposure to the ZIKV, while demonstrating an obvious concern for the health and safety of their families. All 20 interview participants described ways that they engage in preventative actions regarding ZIKV prevention. Either through response to the interview questions or the survey, all 20 respondents exhibited a basic understanding of how ZIKV is contracted, accounted for where to obtain more information about the virus, and provided an explanation with all 6 responses listing inaccurate and misinformed examples of measures taken to avoid exposure to ZIKV. All survey respondents acknowledged that sexual intercourse with someone who has the virus, which has been described in the literature as a major concern for military personnel when deploying to areas where there is significant prevalence of ZIKV cases as way to get the ZIKV. While participants response to interview questions and survey responses revealed inadequacies and misinformation regarding their knowledge of ZIKV and a limited understanding of preventative actions, the data demonstrated that all participants had at least a basic concept of the ZIKV. While all the participants indicated options for getting ZIKV education, none of the participants revealed a personal narrative or affirmative statement claiming they have gone military

treatment facility to see a doctor with the intention of obtaining ZIKV education. eighteen of 20 survey respondents agree that it is possible to get the ZIKV near a military installation or deployment location, thus acknowledging the demand for increased access to ZIKV health information resources that support healthy outcomes. Eight of 20 respondents indicated a desire to take the ZIKV vaccine if developed in the future, thus indicating considerable hesitancy to take the vaccine. This finding has the potential to open doors for much needed research regarding military servicemember as their dependents willingness to take vaccinations to avoid negative health outcomes. Overall, the participants transcripts and survey responses added to the assessment of military personnel and dependent experience regarding access to ZIKV education on the Fort Hood military installation.

Health Belief Model (HBM) /Theory of Planned Behavior

The conceptual frameworks that guide this research study is the HBM and the TPB. According to Skinner et al. (2015), HBM is a psychological model that is aimed at explaining and predicting health behaviors. HBM focuses on the attitudes, perceptions, and beliefs of the individuals being observed (Skinner et al., 2015). In response to the multiple answer survey question, participants were asked to select who can get the ZIKV. The top 3 selected options included Pregnant Women. Adult Men, and Anyone can get the Zika virus. Participants demonstrated their understanding of what causes ZIKV by selecting from a list of potential causes of the virus. All 20 survey respondents selected

sexual intercourse with someone who has the virus to transmit the virus (Yarrington et al., 2019).

Since the HBM was developed as a response to the failure of a health screening program, it could be easily adapted as a response to the improvement of ZIKV education campaigns to improve short-term health behaviors of military personnel that require education about significant indicators of the ZIKV and how to prevent sexual transmission as well as avoid mosquito transmission of the virus (Skinner et al, 2015). The HBM relies on the premise that a person is likely to take actions related to health if that person feels that a negative health condition (i.e., Zika Virus) can be evaded, has an optimistic expectancy that recommendations from a health provider will help them avoid a negative health condition, and the individual believes that they can successfully implement the recommendations (Skinner et al., 2015). Participants that provided detailed prevention steps were also able to clearly describe where they would go for more information if they had concerns about the ZIKV. For example, P020 stated, “the first place that I would go is to check Google to read about it, then go to the CDC website, check the WHO website, and discuss with my primary care doctor.”

The implementation of the HBM in a ZIKV prevention campaign that educates military personnel and their dependents about the importance of condom use in the prevention of sexual transmission of the ZIKV upon service members return from deployments and leisure travel to locations with a high rate of ZIKV transmission could be utilized to maintain their readiness and resiliency. A ZIKV prevention campaign that

is developed using population data derived from a health needs assessment is necessary to determine which area of health programming (i.e., deployment briefings and pregnancy centering programs) that should be targeted. Once the population has been identified, implementing a ZIKV education campaign that clearly illustrates the potential outcomes of engaging in risky behaviors at an education and literacy level that is optimal for the targeted population could potentially be a key education component. When asked to explain what you have done to prevent yourself or a family member from getting ZIKV, P020 provided a detailed account of actions taken stating, “use a mosquito net, insecticide, wash your hands, make sure blood is tested prior to a blood transfusion.” P020’s response indicated deliberate actions to prevent the ZIKV. In alignment with HBM principles military health providers incorporation of ZIKV education in readiness screenings and assessments to ensure effective communication of preventative steps that should be employed when traveling that focus on the benefits of implementing these steps in accordance with their travel plans could potentially ameliorate health outcomes amongst military personnel and their dependents. Military Health Providers have the potential to enhance self-efficacy and successful changes in health behavior as it relates to prevention of ZIKV when health behavior development activities are incorporated with health education. P011 provided insight into their concern for their lack of understanding of the ZIKV by recalling their experience while responding to the pre-interview survey. P011 stated “I know in my survey it was asking who can get it, I guessed based on what I have heard”. This level of sincerity provided insight into the importance of ensuring

military personnel and their dependents have access to ZIKV education resources and materials that provide a clear understanding of the virus that could potentially improve their perceived susceptibility to ZIKV exposure.

For example, demonstrating the proper usage of condoms to reduce sexual transmission of the ZIKV could prove to be effective in enhancing constructive changes in health behaviors when utilized in conjunction with the constructs of the Health Belief Model. P012 stated, “I have high antibody autoimmune disease so I get concerned overall about the effect of getting bit by mosquitos because it is not just Zika virus that they can spread”. P012 was transparent about their current health challenges to support concerns for a better understanding of how their exposure to mosquitos carrying the virus might impact their current state of health. According to Guo et al. (2019), the TPB was developed to observe how a person’s exposure to health focused education along with their ability to reason can be utilized to determine how best to engage in health protective behaviors in response to the potential threat of exposure to the ZIKV (Guo et al., 2019). This study utilized the constructs of the TPB to examine the potential impact of ZIKV education within a military community on planning for travel to areas with a high concentration of confirmed ZIKV cases (Guo et al., 2019). The TPB was utilized to develop an understanding of the educational and motivational factors that contribute to adjustments in travel behavior amongst military personnel and their dependents. Utilizing the HBM and TPB as the conceptual frameworks for developing questions for interviews or questionnaires for participants helped to guide the study. The questions specifically

focused on perceived susceptibility, severity of ZIKV, and perceived benefits of taking a ZIKV vaccine in the future. While participants response to interview questions and survey responses revealed inadequacies and misinformation regarding their knowledge of ZIKV and a limited understanding of preventative actions, the data demonstrated that all participants had at least a basic concept of the ZIKV that allowed them to clearly share their experiences. This study has contributed to future research studies regarding patient willingness to get the ZIKV vaccine once it has been established and made available in the future.

Limitations

While the research for this study was carefully planned to avoid limitations and potential setbacks, limitations occurred due to the lack of engagement in Focus Group data collection, military participants reluctancy to engage via WebEx, and diminished accessibility to recruit potential research participants. Gaining access to a military installation to recruit research participants was denied by the military research liaison due to concerns about the Covid-19 pandemic challenges. The WHO's declaration had a significant impact on the accessibility to military installations where the study population exists due to the substantial risk of transmission during face-to-face interviews or focus group sessions (WHO, 2020). As a military dependent of an active duty servicemember I maintained full access to the military installation despite the development of containment policies and mandatory use of Personal Protective Equipment (PPE) by military personnel and their dependents. The COVID-19 pandemic resulted in Walden University

restrictions to face-to-face interviews; therefore, I implemented social measures such as video conferencing and telephone interviews to ensure potential study participants were following social distancing measures while maintaining the integrity of the interview process (WHO, 2020).

Recommendations

Developing a conclusive response to improved access to ZIKV education can impact military personnel and their dependent's ability to make positive health decisions and reduce their susceptibility may prove to be a good baseline for the design of focused health service programming in the future. Perceived and actual barriers to receiving health education provided by the Military Hospitals, outpatient clinics, and health service organizations was revealed in this research study, therefore the Fort Hood military installation should focus on the development of a 90 day plan to improve military personnel accessibility to comprehensive ZIKV health programming that is specifically designed to meet military health education needs while being mindful of limitations that may arise due to global health challenges. Further research is required to examine the impact of secure messaging between military health providers on military personnel and dependent knowledge and understanding of the ZIKV. Examining how ZIKV targeted broadcast messaging and accessibility to peer reviewed ZIKV literature could potentially improve deficiencies in ZIKV communication and education amongst military personnel and their dependents. Development of a secure messaging program that specifically allows military personnel and their dependents to request specific ZIKV guidance

regarding travel and symptom concerns will improve the efficiency and effectiveness of communication while reducing incidents of misinformation that can occur when information sources lack scientific credibility. Implementation of these recommendations could ultimately improve the overall health literacy and combat readiness of military personnel and their dependents regarding ZIKV in the future.

Implications of Social Change

Conducting this study on a military base with face-to-face interviews could help to cultivate deeper coding and thematic insight into military personnel and dependents experience regarding ZIKV education and access to health providers with ZIKV knowledge. Amongst social change agents, there is a greater potential to survey a more diverse group of participants from various military disciplines that help to promote ongoing efforts to exchange ideas regarding how to best educate military communities about the Zika virus and similar outbreaks that may occur in the future. Social Change will occur when the results of this study can be utilized to engage clinicians, health facility directors, and health administrators in ongoing strategic efforts to improve health education standards and methodologies for military communities throughout the United States. Engagement of civilian health science professionals and Department of Defense health leaders can create new opportunities for improving health outcomes for military personnel and their dependents through the development of enriched health programs.

Conclusion

Though public concern about the ZIKV has diminished significantly since the WHO declaration of a public health emergency in 2016 and the global Corona virus pandemic of 2020, the demand for better access the ZIKV education for military personnel and their dependents is ongoing. The lack of access to credible resources for ZIKV information in military communities, has the potential to result in resistance military personnel and dependents willingness to take a ZIKV vaccine once it is developed in the future. The five themes that were developed in this study revealed that all the participants shared concerns regarding accessibility, knowledge, and understanding of the ZIKV.

The findings of this study should be utilized to develop a baseline for developing ZIKV education for military personnel deploying to areas where there has been a higher concentration of ZIKV cases, and further develop surveillance techniques through research studies that will improve the health and wellness of the military community. The future of military preparedness and resiliency depends on the ongoing efforts of military health leaders to continue to effectively communicate the health risks associated with contracting the ZIKV and provide guidance on protective measures that should be taken.

References

Aoun, O., Sanders, J. W., & Hickey, P. (2019). The Deployed Military: Medical Readiness and Travel-Related Health Issues. *Travel Medicine*, 341–346. https://doi.org/10.1016/B978-0-323-54696-6.00036-7

Barouch, D., Thomas, S. and Michael, N., 2017. Prospects for a Zika Virus Vaccine. *Immunity*, 46(2), pp.176-182.

Barr, A. M., & Galvin, T. P. (2016). *Future Readiness and the System for Health: A Way Forward*. US Army War College.

Barrett, A. D. (2018). Current status of Zika vaccine development: Zika vaccines advance into clinical evaluation. *npj Vaccines, 3*(1). 24.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, *2*, 8-14.

Bergen, N., & Labonté, R. (2020). "Everything is perfect, and we have no problems": detecting and limiting social desirability bias in qualitative research. *Qualitative health research*, *30*(5), 783-792.

Birt, L., Scott, S., Cavers, D., Campbell, C., & Walter, F. (2016). Member checking. *Qualitative Health Research*, *26*(13), 1802-1811.

Braun, L. A., Kennedy, H. P., Sadler, L. S., & Dixon, J. (2015). Research on U.S. Military Women: Recruitment and Retention Challenges and Strategies. *Military medicine*, *180*(12), 1247–1255. https://doi.org/10.7205/MILMED-D-14-0060

Brusich, M., Grieco, J., Penney, N., Tisgratog, R., Ritthison, W., Chareonviriyaphap, T.,

& Achee, N. (2015). Targeting educational campaigns for prevention of malaria and dengue fever: An assessment in Thailand. *Parasites & Vectors*, *8*(1).

Burgess, C., Nelis, L., & Huang, C. (2021). Modeling Zika Vaccination Combined With Vector Interventions in DoD Populations. *Military medicine*, *186*(Suppl 1), 82–90. https://doi.org/10.1093/milmed/usaa340

Canham-Chervak, M., Grier, T., Stephen, M., Pfau, E., Hauret, K., Dada, E. O., ... & Jones, B. H. (2016). Summary of Injury Prevention Activities Supporting the Army Soldier Medical Readiness Campaign, 2011-2014 (No. PHR NO. S. 0011225). Army Public Health Center Aberdeen Proving Ground United States.

Capanna, F., Haydar, A., McCarey, C., Bernini Carri, E., Bartha Rasero, J., Tsibizova, V., Helmer, H., Makatsarya, A., & Di Renzo, G. C. (2020). Preparing an obstetric unit in the heart of the epidemic strike of COVID-19: Quick reorganization tips. *The Journal of Maternal-Fetal & Neonatal Medicine*, 1-11. https://doi.org/10.1080/14767058.2020.1749258

Case, K., Crook, B., Lazard, A., & Mackert, M. (2016). Formative research to identify perceptions of e-cigarettes in college students: Implications for future health communication campaigns. *Journal of American College Health*, *64*(5), 380-389. https://doi-org.ezp.waldenulibrary.org/10.1080/07448481.2016.1158180

Chapman, R. W. (2018). Public health accreditation impact: The performance management system. *Journal of Public Health Management and Practice*, *24*(3), S19-S21. https://doi.org/10.1097/PHH.0000000000000712

Centers for Disease Control and Prevention. (2020). 2020 Case Counts. Retrieved from https:// https://www.cdc.gov/zika/reporting/2020-case-counts.html

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. sage publications.

Culot, G., Nassimbeni, G., Podrecca, M., & Sartor, M. (2021). The ISO/IEC 27001 information security management standard: Literature review and theory-based research agenda. *The TQM Journal*, *33*(7), 76-105. https://doi.org//TQM-09-2020-0202Cushman, J. E., Kelly, M. R., Fusco-Rollins, M., & Faulkner, R. (2021). Resource review—Using Qualtrics core XM for surveying youth. *Journal of Youth Development*, *16*(1), 161-167. https://doi.org//10.5195/jyd.2021.886

Department of Defense (2016). Zika Virus Information for Department of Defense Medical Personnel. ASD(HA) Memorandum 16-002

Ellingson, M. K., Bonk, C. M., & Chamberlain, A. T. (2017). A survey-based study of Zika virus communication preferences among pregnant women in Georgia, United States. *BMC Pregnancy and Childbirth, 17*(1).

Gabriel, E. H., Hoch, M. C., & Cramer, R. J. (2018). Health Belief Model Scale and Theory of Planned Behavior Scale to assess attitudes and perceptions of injury prevention program participation: An exploratory factor analysis. Journal of

science and medicine in sport. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jsams.2018.11.004

Glanz, K., Rimer, B. K., & Viswanath, K. (2015). *Health behavior: Theory, research, and practice*. John Wiley & Sons.

Green, J., & Thorogood, N. (2018). *Qualitative methods for health research*. SAGE Publications.

Guidry, J. P., Carlyle, K. E., LaRose, J. G., Perrin, P., Messner, M., & Ryan, M. (2019). Using the health belief model to analyze Instagram posts about Zika for public health communications. *Emerging Infectious Diseases*, *25*(1), 179-180. https://doi-org.ezp.waldenulibrary.org/10.3201/eid2501.180824

Guo, R., Berkshire, S. D., Fulton, L. V., & Hermanson, P. M. (2019). Predicting intention to use evidence-based management among U.S. healthcare administrators: Application of the theory of planned behavior and structural equation modeling. *International Journal of Healthcare Management*, *12*(1), 25-32. https://doi.org/10.1080/20479700.2017.1336856

Gyure, M. E., Quillin, J. M., Rodríguez, V. M., Markowitz, M. S., Corona, R. A., Borzelleca, J. F., ... & Bodurtha, J. N. (2014). Practical considerations for implementing research recruitment etiquette. *IRB, 36*(6),7–12.

Hernandez, S. H., Morgan, B. J., Hernandez, B. F., & Parshall, M. B. (2017). Building academic–military research collaborations to improve the health of

servimembers. *Nursing Outlook, 65*(6), 718-725.https://doi.org/10.1016/j.outlook.2017.05.001

Hewson, R. (2021). Vaccines for emerging viruses—A comprehensive update. *Human Viruses: Diseases, Treatments and Vaccines*, 605-628. Springer, Cham.

Hochbaum, G., Rosenstock, I., & Kegels, S. (2016). Health Belief Model. United States Public Health Service; 1952.

Hochbaum, G., Rosenstock, I., & Kegeles, S. (2019). Health belief model. 1952. *United States Public Health Service*.

Houghton, C., Murphy, K., Meehan, B., Thomas, J., Brooker, D., & Casey, D. (2017). From screening to synthesis: Using nvivo to enhance transparency in qualitative evidence synthesis. *Journal of Clinical Nursing*, *26*(5-6), 873-881. https://doi.org/10.1111/jocn.13443

Khoramabadi, M., Dolatian, M., Hajian, S., Zamanian, M., Taheripanah, R., Sheikhan, Z., ... & Seyedi-Moghadam, A. (2016). Effects of education based on health belief model on dietary behaviors of Iranian pregnant women. Global journal of health science, 8(2), 230. https://doi.org/10.5539/gjhs.v8n2p230

Killawi, A., Khidir, A., Elnashar, M., Abdelrahim, H., Hammoud, M., Elliott, H., Thurston, M., Asad, H., Al-Khal, A. L., & Fetters, M. D. (2014). Procedures of recruiting, obtaining informed consent, and compensating research participants in Qatar: findings from a qualitative investigation. *BMC medical ethics*, *15*, 9. https://doi.org/10.1186/1472-6939-15-9

Kuna, A., & Gajewski, M. (2016). Prevention of sexual transmission of Zika virus. *International Maritime Health, 67*(3), 179-180. https://doi.org/10.5603/IMH.2016.0033

Lee, L. (2021). *Military Communities and Natural Hazards in the United States* (Doctoral dissertation, University of South Carolina).

Levine, R. J. (1991). Informed consent: some challenges to the universal validity of the Western model. The Journal of Law, Medicine & Ethics, 19(3-4), 207-213. https://doi.org/10.1111/j.1748-720X.1991.tb01816.x

Lieber, E., Salmona, M., & Kaczynski, D. (2021). Introduction to Dedoose for mixed analysis. *The Routledge Reviewer's Guide to Mixed Methods Analysis*, 319-330.

Looney, T. L. (2018). *NViVO 12 in 7 Steps: with NVivo 12: Qualitative Data Analysis and Coding for Researchers*. CreateSpace.

Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: guided by information power. *Qualitative health research, 26*(13), 1753-1760.

Marcoux, R. M., & Vogenberg, F. R. (2016). Telehealth: applications from a legal and regulatory perspective. *Pharmacy and therapeutics, 41*(9), 567.

Meadows, S. O., Beckett, M. K., Bowling, K., Golinelli, D., Fisher, M. P., Martin, L. T., Meredith, L. S., & Osilla, K. C. (2016). *Family resilience in the military: Definitions, models, and policies*. Rand Corporation.

McCarthy, M. S., Elshaw, E. B., Szekely, B. M., & Pflugeisen, B. (2017). Health promotion research in active duty army soldiers: The road to a fit and ready force. *Nursing Outlook*, *65*(5), S6-S16. https://doi.org/10.1016/j.outlook.2017.06.009

Melton, J. J., Shirey, L. A., Barraza, E. M., & Bullock, S. H. (2018). Public Health Accreditation of Army Preventive Medicine Departments: Improving Military Medical Treatment Facility Practice to Impact Force Readiness. Military medicine.

Merrill, E. P., Federici, J., Craig, C., Davis, F. C., & Augustyn, J. (2018). *Soldier Readiness: Insights from Qualitative Interviews* (No. NATICK/SP-18/001). ARMY NATICK SOLDIER RESEARCH DEVELOPMENT AND ENGINEERING CENTER MA NATICK United States.

Nassaji, H. (2020). Good qualitative research.

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. Evidence-based nursing, 18(2), 34-35.

Nusbaum, L., Douglas, B., Damus, K., Paasche-Orlow, M., & Estrella-Luna, N. (2017). Communicating risks and benefits in informed consent for research: A qualitative study. *Global Qualitative Nursing Research*, *4*, 2333393617732017.Evidence-Based Nursing, ebnurs-2015.

Oster, A. M., Brooks, J. T., Stryker, J. E., Kachur, R. E., Mead, P., Pesik, N. T., & Petersen, L. R. (2016). Interim guidelines for prevention of sexual transmission of

Zika virus — United States, 2016. *MMWR. Morbidity and Mortality Weekly Report*, *65*(5), 120-121.

Painter, J. E., Plaster, A. N., Tjersland, D. H., & Jacobsen, K. H. (2017). Zika virus knowledge, attitudes, and vaccine interest among university students. *Vaccine*, *35*(6), 960-965.

Parvanta, C., Nelson, D. E., & Harner, R. N. (2017). *Public health communication: Critical tools and strategies*. Jones & Bartlett Learning.

Petersen, E. E., Meaney-Delman, D., Neblett-Fanfair, R., Havers, F., Oduyebo, T., Hills, S. L., Rabe, I. B., Lambert, A., Abercrombie, J., Martin, S. W., Gould, C. V., Oussayef, N., Polen, K. N., Kuehnert, M. J., Pillai, S. K., Petersen, L. R., Honein, M. A., Jamieson, D. J., & Brooks, J. T. (2016). Update: Interim guidance for preconception counseling and prevention of sexual transmission of Zika virus for persons with possible Zika virus exposure — United States, September 2016. *MMWR. Morbidity and Mortality Weekly Report*, *65*(39), 1077-1081.

Poss, D. E., & Harris, S. (2016). Zika virus infections in Military Health System beneficiaries since the introduction of the virus in the Western Hemisphere, 1 January 2016 through 30 November 2016. *MSMR*, *23*(12), 7. Retrieved from https://searchebscohostcom.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=28055221&site=eds-live&scope=site

Rehman, H., Kamal, A. K., Morris, P. B., Sayani, S., Merchant, A. T., & Virani, S. S. (2017). Mobile health (mHealth) technology for the management of hypertension and hyperlipidemia: slow start but loads of potential. *Current atherosclerosis reports*, *19*(3), 12.

Ros, S. T. (2018). Zika news, cautions and precautions for 2018: Media attention to Zika may have dwindled but ob/gyns need to remain vigilant in counseling patients. Contemporary OB/GYN, (5), 12. Retrieved from https://ezp.waldenulibrary.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edsgea&AN=edsgcl.544780206&site=eds-live&scope=site

Sargeant, J. (2012). Qualitative research part II: Participants, analysis, and quality assurance.

Skinner, C. S., Tiro, J., & Champion, V. L. (2015). The health belief model. Health behavior: theory, research, and practice. John Wiley & Sons, San Francisco, CA, 75-94

Special Program of Research, Development and Research Training in Human Reproduction (webpage). Geneva: World Health Organization. Available at http://www.who.int/reproductivehealth/aboutus/hrp/en/.

Squiers, L., Herrington, J., Kelly, B., Bann, C., Becker-Dreps, S., Stamm, L., Johnson, M., & McCormack, L. (2018). Zika virus prevention: U.S. travelers' knowledge, risk perceptions, and behavioral intentions—A national survey. *The*

American Journal of Tropical Medicine and Hygiene, *98*(6), 1837-1847. https://doi-org.ezp.waldenulibrary.org/10.4269/ajtmh.17-0898

Sugiharto, V. A., Widjaja, S., Hartman, L. J., Williams, M., Myers, T. E., & Simons, M. P. (2019). Zika virus surveillance in active-duty US military and dependents through the Naval Infectious Diseases Diagnostic Laboratory. MSMR, 26(7), 18-23.

Summers, D. J., Acosta, R. W., & Acosta, A. M. (2015). Zika virus in an American recreational traveler. Journal of travel medicine, 22(5), 338-340. https://doi.org/10.1111/jtm.12208

Surmiak, A. D. (2018, September). Confidentiality in qualitative research involving vulnerable participants: Researchers' perspectives. In *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* (Vol. 19, No. 3). https://doi.org/10.17169/fqs-19.3.3099

Sutton, J., & Austin, Z. (2015). Qualitative research: Data collection, analysis, and management. *The Canadian journal of hospital pharmacy*, *68*(3), 226. https://doi.org/10.4212/cjhp.v68i3.1456

Tavassoli, E., Reisi, M., Javadzade, H., Mazaheri, M., Ghasemi, S., & Shakoori, S. (2017). The effect of the health belief model-based education & improvement of consumption of fruits and vegetables: An interventional study. Journal of Health in the Field, 1(2).

U.S. Department of the Army. (2015). Army Health Promotion: Army regulation 600-63. Retrieved from https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/r600_63.pdf

Ventura, S. J., & Hamilton, B. E. (2012). Birth rates among women aged 15-44 years, by maternal age group—National Vital Statistics System, United States, 1961, 2007, and 2011. MMWR Morb Mortal Wkly Rep, 61, 978.

Voss, J., Dacey, D., Ruiz, S., Burkhardt, A., Pujolar, A., Swope, C., Lehman, M., Shaw, T., Leon, J., Erich, R., Cowan, J., West, C., Walters, C., Macias, E., & Lucas, P. (2020). Public health response to Zika virus exposure of Air Force members deployed to Caribbean islands, 2016. *Military Medicine, 185*(9-10), e1453-e1460. https://doi-org.ezp.waldenulibrary.org/10.1093/milmed/usaa188

Weldon, C. T., Riley-Powell, A. R., Aguerre, I. M., Celis Nacimento, R. A., Morrison, A. C., Oberhelman, R. A., & Paz-Soldan, V. A. (2018). "Zika is everywhere": A qualitative exploration of knowledge, attitudes, and practices towards Zika virus among women of reproductive age in Iquitos, Peru. *PLOS Neglected Tropical Diseases, 12*(8), e0006708.

Williams, V., Boylan, A. M., & Nunan, D. (2020). Critical appraisal of qualitative research: necessity, partialities, and the issue of bias. *BMJ Evidence-Based Medicine, 25*(1), 9-11. https://doi.org/10.1136/bmjebm-2018-111132

Wilson, C., Corrigan, R., & Braun, L. (2017). Deployed women's illness behaviors while managing genitourinary symptoms: An exploratory theoretical synthesis of two

qualitative studies. *Nursing Outlook*, *65*(5), S17-S25.https://doi-org.ezp.waldenulibrary.org/10.1016/j.outlook.2017.07.009

Winneg, K. M., Stryker, J. E., Romer, D., & Jamieson, K. H. (2018). Differences between Florida and the rest of the United States in response to local transmission of the Zika virus: Implications for future communication campaigns. *Risk Analysis*, *38*(12), 2546-2560.

Wolcott, V., Agarwal, R., & Nelson, D. A. (2017). Is provider secure messaging associated with patient messaging behavior? Evidence from the US army. *Journal of Medical Internet Research*, *19*(4), e103. https://doi.org/10.2196/jmir.6804

World Health Organization. (2016). *Knowledge, attitudes, and practice surveys: Zika virus disease and potential complications: resource pack* (No. WHO/ZIKV/RCCE/16.2). World Health Organization.

World Health Organization. (2017). Zika virus country classification scheme: interim guidance

World Health Organization. (2020). Coronavirus disease 2019 (COVID-19): situation report, 72.

Yarrington, C. D., Hamer, D. H., Kuohung, W., & Lee-Parritz, A. (2019). Congenital Zika syndrome arising from sexual transmission of Zika virus, a case report. *Fertility Research and Practice*, *5*(1). https://doi.org/10.1186/s40738-018-0053-5

Appendix A: Military Participant Pre-Interview Questions

By agreeing to participate in this phone interview, face-to-face interview, or online survey I understand that I have the right to share as much about my military experience as I feel comfortable with.

Participation is entirely voluntary. If you choose to participate, you may stop at any time.

I. Participant Demographics

a) What gender do you identify as?
- MALE
- FEMALE
- _____ (Short answer)
- PREFER NOT TO ANSWER

b) What is your age range?
- 18-24
- 25-35
- 36 or older

c) Are you currently active-duty military personnel? If yes, how long have you served in the military?

d) Are your currently serving in the Army Branch of the United States Military?
- Yes
- NO

e) If NO, what branch of the United States Military are your currently serving?
_____

f) What is your Military Occupational Specialty (MOS)?
_____

g) Highest level of education attained?
- High School/GED
- Bachelor's Degree
- Master's Degree
- Doctoral Degree
- Other

If other, please explain.
_____

h) How many military dependents live in your household? _____

i) How many women of child-bearing age live in your household (age 15-49 years old)?

j) How many pregnant women live in your household? _____

a) Have you traveled to any of the following states or countries in the last 5 years for any reason?
- FLORIDA
- TEXAS
- CALIFORNIA
- DOMINICAN REPUBLIC
- PUERTO RICO
- BRAZIL
- HONDURAS
- SAUDI ARABIA
- COLUMBIA
- PERU
- CHILE
- ARGENTINA

II. Knowledge of Zika Virus (ZIKV)

a) Have you ever heard of the ZIKA virus?
- YES
- NO
- Maybe

b) If YES or Maybe, where did you first receive information about the ZIKV?
- Military Health Provider
- Civilian Health Provider
- Television
- Internet Search Results

- Social Media
- Radio
- Family Readiness Group (FRG) Meeting
- Military Travel Immunization Clinic
- Military Treatment Facility (MTF)
- Book or Magazine
- Military Briefing
- Deployment Briefing
- Other

If other, please explain.

_____

c) When did you first hear about ZIKV?

- 3-5 years ago
- Last year
- 1 month ago
- Today
- Other

If other, please explain.

_____

d) Do you think it is possible to get ZIKV near a military installation or deployment location?

- YES
- NO
- Maybe

e) Do you know of anyone who has had ZIKV in or near the community where you live?

- YES
- NO

f) Who can get ZIKV? Check all that apply

- Pregnant Women
- Adult Women (age 18 and up)
- Adult Men (age 18 and up)
- Children

- Military Health Providers
- Civilian Health Providers
- Anyone can get ZIKV
- Deployed Military Personnel
- Other

If other, please explain.

_____

III. Knowledge of ZIKV symptoms

a) What causes ZIKV? Check all that apply

- Mosquitoes
- Sexual Intercourse with someone who has ZIKV
- Genetically Modified Mosquitoes
- Warm climates
- Standing water
- Other

If other, please explain**.**

_____

b) What are symptoms of ZIKV?

- Bleeding
- Rash
- Headache
- Fever
- Diarrhea
- Other

If other, please explain.

_____

c) Can you prevent ZIKV?

- YES
- NO
- Maybe

If Yes or Maybe, how can you prevent ZIKV?

- Use Mosquito Repellant
- Use a condom during sexual intercourse
- Use Protective Clothing

- Abstain from sexual intercourse
- Remove standing Water
- Other
  If other, please explain. _____

d) Is there a treatment for ZIKV?

- YES
- NO
- Maybe
  If Yes or Maybe, what treatment exist for ZIKV?
- Over the Counter Medication
- ZIKV vaccine
- Drinking plenty of water
- Other
  If other, please explain. _____

IV. Risk of Contracting ZIKV

a) What individuals are most at risk of harm from ZIKV?

- People age 65 years or older
- Active-Duty Military
- Deployed Military Personnel
- Pregnant Women
- Children
- Women (18-49 years old)
- Men (18-49 years old)
- Other
  If other, please explain. _____

b) If a pregnant woman contracts the ZIKV, what may she be at risk of?

- Ongoing Illness
- Miscarriage
- Difficulty during labor and delivery
- Other
  If other, please explain. _____

c) If a woman is pregnant, what risks exist for her baby?

- □ Risk of abnormal development
- □ Premature Birth
- □ Risk of being born with a disability
- □ Risk of being born with Microcephaly
- □ Risk of developing Guillain Barre Syndrome
- □ Other

  If other, please explain.

  _____

d) A woman should avoid getting pregnant if she has deployed or traveled to an area where there have been confirmed cases of ZIKV?

- □ Strongly Agree
- □ Agree
- □ Disagree
- □ Strongly Disagree

  If Strongly Agree or Agree, what methods should be used to avoid getting pregnant?

- □ Use condoms during sexual intercourse
- □ Emergency Contraception
- □ Birth Control Pills
- □ Abstain from Sexual Intercourse
- □ Other

  If other, please explain.

  _____

e) If you chose Disagree or Strongly Disagree, why should women move forward with getting pregnant?

- □ Women are unable to get ZIKV
- □ Women who are pregnant are unable to get ZIKV
- □ Women do not have access to contraceptives when deployed or traveling
- □ Other

  If other, please explain.

  _____

V. Access to ZIKV information

a) Do you believe you have enough information about ZIKV?

- YES
- NO
- Maybe

If No, do you want more information about ZIKV?

- YES
- NO

If Yes, what kind of information would you like to know more about?

- What causes ZIKV
- Symptoms
- Prevention
- How ZIKV affects pregnant women
- ZIKV vaccines
- Other

If other, please explain. _____

b) If you had concerns about ZIKV, where would you go for more information?

- Military Primary Care Provider
- Sick Call
- Military Hospital Emergency Room (ER)
- Military Public Health Clinic
- Soldier Readiness Processing Clinic
- Wait for a travel or deployment briefing to ask questions

c) Are there things that you do NOT understand about ZIKV?

- YES
- NO

If Yes, what most concerns you about ZIKV?

- Illness related to ZIKV
- Contracting ZIKV through sexual intercourse
- Disability from ZIKV
- ZIKV affecting pregnancy

VI. Preventative Action

a) Since the first time you heard about ZIKV, what have you done to prevent yourself or a family member from getting ZIKV?

- Removed standing water
- Used a condom with partner during sexual intercourse
- Abstained from sexual intercourse
- Used Mosquito Repellant
- Other

If other, please explain.

_____

b) Have you taken any actions to prevent ZIKV during deployments or personal travel?

- YES
- NO

c) If Yes, what challenges did you face during deployment or personal travel?

- Time Consuming
- No access to Mosquito Repellant
- People around me did not think prevention was necessary
- I did not face any challenges
- Other

If other, please explain.

_____

d) Do you think ZIKV is still a concern for you and your dependents?

- YES
- NO
- Maybe

e) Has the military installation where you are currently stationed taken any action to protect you from ZIKV?

- YES
- NO
- I do not know

If Yes, what actions have they taken?

_____

f) If there was a vaccine available to prevent ZIKV, would you consider receiving the vaccine?

- YES
- NO
- Maybe

If No, why not? _____

Appendix B: Participant Interviews Word Cloud

Appendix C: Horizontal Dendrogram Cluster Analysis