EVALUATING NURSING KNOWLEDGE AND READINESS IN PROVIDING CARE FOR POST-9/11 VETERANS IN CIVILIAN HEALTHCARE SETTINGS: A QUALITY IMPROVEMENT PROJECT

A Major Paper Presented

By

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A Major Paper Submitted in Partial Fulfillment

Of the Requirements for the Degree of

Master of Science in Nursing

in

The School of Nursing

Rhode Island College

2022

Abstract

Over three-million military service members deployed overseas in support of the post-9/11 Global War on Terror since 2001. Of those, 7,057 have been killed in action, 30,177 have committed suicide, 279,652 died from ill-defined and unknown medical causes, and 520,966 have been diagnosed with cancer. Post-9/11 veterans are 192.75% more likely to be diagnosed with cancer when compared to their civilian counterparts and are more likely to utilize civilian providers (75%) than the Department of Veterans Affairs for health care concerns. The purpose of this quality improvement project is to investigate the level of nurse knowledge, beliefs, and perceptions related to providing health care to post-9/11 veterans in civilian care settings. A descriptive project design with a 15-question survey was implemented. The survey was sent to registered nurses practicing in civilian care settings. A sample of 537 registered nurses practicing in civilian care settings responded. Findings included that 93% incorrectly chose mental health conditions as the most likely occurring condition in post-9/11 veterans, while 7% correctly chose medical illnesses as most prevalent. Nurse respondents reported perceived prevalence of post-traumatic stress occurring more often than cancer and malignancies at a ratio of 19:1. These findings highlight the high potential for cognitive biases which may lead to misdiagnoses and delayed diagnoses in post-9/11 veterans presenting for care with medical symptoms, furthering the need for education. This quality improvement project revealed significant gaps in civilian nurses' clinical knowledge in screening, assessing, identifying, treating, and recommending resources for post-9/11 veterans and medical related conditions.

Keywords: nursing, veteran health, military, post-9/11, public health, cancer trends

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Evaluating Nursing Knowledge and Readiness in Providing Care for Post-9/11 Veterans in Civilian Healthcare Settings: A Quality Improvement Project

Background/Statement of the Problem

Since 2001, the United States (U.S.) has deployed over three-million uniformed service members to areas in the Middle East and Southwest Asia in support of the Global War on Terror (Connable et al., 2020). While research is limited and preliminary in nature, the data suggests that veterans who have deployed to Iraq and/or Afghanistan are more likely to experience chronic physical symptoms, increased shortness of breath, and a decreased level of physical fitness post-deployment as compared to pre-deployment (Poisson et al., 2020; Sedliak et al., 2021; Rose et al., 2022). Additionally, data extracted from medical records suggests that the same population is experiencing chronic, complex, terminal, and otherwise unexplainable medical issues and rare forms of cancer at an increased rate when compared to their non-veteran, civilian counterparts of similar demographics (Waszak & Holmes, 2017). Nevertheless, much of the literature surrounding post-9/11 service members focuses heavily on mental health, post-traumatic stress disorder, and suicidality. In a review of the literature, few studies address the relationship between civilian healthcare providers, specifically those in the nursing profession, and care provided to post-9/11 veterans. A 2015 Congressional appropriations committee report suggests that 26.1% of post-9/11 veterans are currently enrolled in and utilize the Department of Veterans Affairs Healthcare for most of their care, leading researchers as well as committee members to believe that the remaining are using civilian-based (non-Veteran Health Administration) medical facilities (Maiocco et al., 2020). The lack of information readily available highlights an increasing gap of concern.

According to Bonzanto et al. (2019), as many as 96% of registered nurses in civilian healthcare centers lack the education, knowledge, and practice preparedness to

provide care to post-9/11 veterans and their families. While post-9/11 veterans, defined as those who served in the armed forces between September 11, 2001, to present day (U.S. Department of Veterans Affairs, n.d.) account for approximately one percent of the American population, the Department of Veterans Affairs projects that this percent will increase, peaking 2039 at 4.3-million post-9/11 veterans (Crawford, 2018). As a result, the need and necessity for adequate, evidence-based healthcare tailored to the specific needs of this population will increase in proportion to this veteran population's numbers. Lastly, the current knowledge and competency of those within the nursing profession to care for this unique population have been left broadly unanswered. Addressing potential concerns, barriers to care, and misinformation is imperative as nurses are most often the first point of contact between the patient and healthcare team through initial encounters, assessments, and subsequent interactions. Therefore, providing our nursing professionals with the appropriate guidance and training is a crucial priority. However, identification of where that guidance is needed is required first.

The clinical problem investigated was the level of nursing knowledge, beliefs, and perceptions related to providing care to post-9/11 veterans in civilian healthcare settings.

Literature Review

A thorough review was conducted utilizing the CINHAL, PubMed, National Academies Press and Google Scholar to search for academic publications between 2011 and 2021 using the key words post-9/11 veteran, registered nurse, toxic exposures, acute care, and cultural competence. The yield of literature related to these topics was low. All articles retrieved were in English and pertained solely to the post-9/11 veteran, serving in combat on or after September 11, 2001, and findings pertaining to prior conflicts were excluded.

Post-9/11 Veteran Health

As a nation, the U.S. has upwards of eighteen million military veterans ranging from those who have served in World War II, Korean War, Vietnam War, Gulf War, and the Global War on Terror, more commonly known as post-9/11 wars. Military veterans comprise seven percent of the U.S. population while post-9/11 veterans consist of one percent (Crawford, 2018) and average 34.5 years in age (U.S. Department of Veterans Affairs, n.d.). Post-9/11 veterans encounter high-risk, diverse experiences and subsequently are faced with unusual medical differences when compared to their civilian counterparts because of military service (Waszak & Holmes, 2017). For this quality improvement project, post-9/11 veterans were defined as men and women who have served in the U.S. military (Army, Navy, Marine Corps, and Air Force) and deployed to Iraq, Afghanistan, Syria, or Kuwait on or after September 11, 2001, in support of the Global War on Terror (including Operation Enduring Freedom, Iraqi Freedom, Inherent Resolve, New Dawn and Resolute Support) (U.S. Department of Veterans Affairs, n.d.).

Unique Healthcare Needs of Post-9/11 Veterans

Mental Health and Suicidality. As most of the academic literature and conventional media have historically focused heavily on the mental health burden of

post-9/11 veterans, it was imperative that the topic was addressed and considered as a potential barrier to receiving health care. It is important to note, that the rate of post-9/11 combat-related deaths has decreased drastically when compared to previous American-involved military conflicts (i.e., Vietnam, Korea, World War II), and over the last decade of those deployed to the Middle East, approximately 11% have performed true combat operations (Gade & Huang, 2021). Despite decreased combat deaths and increased survival rates in post-9/11 veterans, the disability claims for mental health-related compensation have increased three-fold (Junger, 2016). Minimal involvement in combat engagements and increased survival rates lessen the likelihood of a combat-related injury, specifically those relating to improvised explosive devices (IED) and blasts. When considering physical injuries, data from the post-9/11 medical evacuations found that fewer than 2,000 major-limb amputations and 349 battle-incurred spinal cord injuries have occurred – which accounts for less than two percent of the entire post-9/11 veteran cohort (Gade & Huang, 2021).

In 2021, Suitt (2021) determined that 7,057 post-9/11 service members were killed in combat, while nearly five times that rate had committed suicide (n = 30,177) during that same period. Active-duty suicide rates between 2006 to 2011 ranged between 19.13 per 100,000 to 29.44 per 100,000 (Anglemyer et al., 2016).

Primary Cancer Diagnoses in post-9/11 Active-Duty Service Members. A twenty-year review of Department of Defense primary diagnosis of malignant tumor(s) and/or cancers in active-duty service members diagnosed between September 11, 2001, to June 11, 2021, found that those who served on active duty were more likely to be diagnosed with cancer than their civilian counterparts. This determination was made by comparing the National Cancer Institute Surveillance, Epidemiology, and End Results Program (SEER) statistical data provided by the Surveillance Research Program of

cancer diagnoses in the U.S. population by year (age-adjusted) to the diagnosis rates provided by the Department of Defense Military Health System Data Repository (2021).

Post-9/11 active-duty service members were found to be 192.75% more likely to be diagnosed with a primary malignancy with odds and relative risk ratios highest amongst Air Force personnel. In comparison to the reference range for active-duty suicide rates, the rates of active-duty cancer diagnoses between 2006 and 2011 ranged between 1761.25 per 100,000 to 2018.05 per 100,000. Additionally, it is of importance to note that during the observed twenty-year timeframe, 241,402 active-duty service members died because of (ICD-10: R99) "Ill-defined and unknown cause of mortality.".

Waszak & Holmes (2017) stated that it is evident that military hazards and potential exposures can vary depending on geographical location and the veteran's role and assigned duties within the organization. They noted that many individualized factors may affect the development of health problems after leaving military service. Military service holds a potential hazard for exposures depending on specific jobs performed such as exposure to military-grade fuel, airborne emissions from mechanical equipment, geographical air pollution, and high levels of particulate matter in host nations, specifically those of Afghanistan and Iraq (Waszak & Holmes, 2017). A considerable number of hazards specific to the post-9/11 veteran have been identified, including but not limited to, combat-related smoke, burn pits, improvised explosive devices, asbestos, and depleted uranium. The authors identified that of 486 Iraq and Afghanistan veterans clinically evaluated over 90% had post-deployment exposure-related health concerns. They also reported that half of the post-9/11 veterans seeking treatment at the Veterans Health Administration (VHA) since 2002 were seen for medical concerns including endocrine/nutritional/metabolic diseases, digestive diseases, respiratory diseases, and symptoms classified as an ill-defined conditions (Waszak & Holmes, 2017). These

unique healthcare needs stemming from military service continue to place post-9/11 veterans at an increased risk for health conditions when compared to their non-military, civilian counterparts.

A pilot study conducted by Poisson et al. (2020) on post-9/11 veterans and their potential exposure to toxins reported an increase in respiratory-related symptoms along with an overall decrease in physical fitness status validating the historical risk of airborne hazards far exceeding safe exposure guidelines aligned with study participants reported deployment periods (Poisson et al., 2020). Furthermore, unknown and previewed barriers to healthcare were highlighted in the study to address those participants averaging 37 years who did not fall into the demographic parameters of specific adverse health effects i.e. those chronic and terminal illnesses that are more commonly seen in the older population versus a previously healthy, fit military veteran. These findings highlight the importance of the nurse's role in interprofessional healthcare particularly in patient assessment, education, navigation, and advocacy (Poisson et al., 2020). Limitations of the study included small sample size, narrow medical data, and self-reported subjective data by participants with the potential risk of biases, attribution, and magnification. The correlating data of cancers being more prevalent in the military veteran population than the general population presents potential challenges as mental health concerns and other comorbidities create social challenges that can interfere with cancer identification and treatment (Thomas, 2020).

Post-9/11 Veteran Civilian Healthcare Utilization. Due to the rising influx of post-9/11 veterans, members of the U.S. Congress passed the Veterans Access, Choice, and Accountability Act (VACAA) in August 2014 in response to the VHA being unable to provide timely access to healthcare for veterans and their families. The passing of VACAA into law established the Veterans Choice Program (VCP) that would cover

veterans to seek treatments at non-VHA facilities (U.S. Department of Veterans Affairs, n.d.).

According to the National Center for Veterans Analysis and Statistics (NCVAS), the majority of post-9/11 veterans do not seek medical care or are followed by a provider at the Department of Veterans Health Administration (2015). As of 2013, the overall number of post-9/11 veterans enrolled in VHA care was 17.8%, the lowest utilization rate of all combat eras and conflicts. The 2015 NCVAS study determined that veterans utilizing civilian healthcare providers instead of the veteran-specific VHA placed additional importance on lessening the civilian-military disconnect and reinforced the importance of provider knowledge and readiness to serve this population effectively and holistically.

Nursing Knowledge and Understanding of Post-9/11 Veterans. While timely, cost-effective healthcare services are critical, an understanding of military culture by non-VHA community healthcare providers are essential to preventing poor health outcomes and prolonged diagnoses for post-9/11 veterans. Bonzanto et al. (2020) conducted a practice inquiry into how an individual's identity conveys nursing implications and expectations for assessment, planning, interventions, and evaluation of outcomes, specifically in the post-9/11 veteran cohort. Findings showed that while traditional cultural competencies train healthcare providers about specific groups, cultural norms, beliefs and values, the nurse caring for the post-9/11 veteran must go beyond the conventional approach and determine how veterans' individualized experiences influence their health. This broad view of culture provides nurses the perspective to assess a veterans' health and care in the context of military culture, a culture often overlooked and unaddressed by nurses in civilian healthcare settings (Bonzanto et al., 2020).

Overwhelmingly, the Bonzanto et al. (2020) study demonstrated the lack of knowledge and awareness of military culture by civilian nurses when knowingly and unknowingly caring for post-9/11 veterans. Eighty percent of nurses stated they were "completely unfamiliar" or "a little bit familiar" (p. 40) with veteran supports for transition, health, and support services, and 12% would collect patient military history or related health history. An important finding which was determined when nurses were asked about their behaviors relating to screening individuals to identify their military or veteran status was that 70% responded they never or seldomly ask about this when doing an assessment. In conclusion, from the 22-scored items, four percent of civilian registered nurses within the study were found to be of high cultural competence when caring for post-9/11 veterans, half of that four percent having served in the military themselves (Bonzanto et al., 2020).

Social Determinants of Health. Many Americans contend with significant social issues that can potentially have adverse effects and outcomes on their health and wellness. To determine the potential correlations that many Americans face, data pertaining to the five domains of social determinants of health (SDOH) were gathered on post-9/11 veterans. What was identified was that post-9/11 veterans were more likely to be white (non-Hispanic), more likely to be insured, less likely to live in poverty, and had a higher personal income than non-veterans. The percentage of post-9/11 veterans uninsured was 5.68% compared to civilian, non-veterans who were uninsured at 15.58%. In addition, following completion of military service, post-9/11 veterans are provided with five years of free medical care through the Department of Veterans Affairs with the potential to extend care benefits. Over the past decade, 81% of post-9/11 veterans were employed full-time, year-round compared to non-veterans who were 71% employed. Post-9/11 veterans were more likely to obtain a college education (47.5%) and/or be

enrolled in college (19.5%) and earn on average $10,000 more than non-veterans (Gumber & Vespa, 2020).

As post-9/11 veterans continue to return from combat overseas, their needs for healthcare services continue to increase as well. The reliance on care within the community is projected to increase over the next two decades. Therefore, clinical leadership and healthcare organizations need to assess the knowledge and readiness of their nursing staff to confirm that they are providing culturally competent care relevant to the unique healthcare needs of post-9/11 veterans in civilian healthcare settings that extend beyond mental health.

Theoretical Framework

This evidence-based quality improvement project utilized Madeleine Leininger's Transcultural Nursing Theory, also known as the Culture Care Theory and the Sunrise Model (Leininger, 2002).

Transcultural Nursing Theory

The theoretical framework used to guide this project is Madeleine Leininger's Transcultural Nursing Theory (Leininger, 2002). The framework focuses entirely on cultural differences and the potential unique needs in the healthcare settings by utilizing evolutionary and generalizable phases and modes to increase cultural competence. Leininger theorized that the single most important phenomenon in transcultural nursing is how professional nursing interacts with the concept of culture to enhance the quality and competence of care to demonstrate improved health outcomes. In addition, the theory addresses the importance of culture and care as two major transcultural domains that require in-depth knowledge to guide nurses' thinking, actions, or decisions.

Leininger addresses commonalities and differences among cultures that can inadvertently project a predisposed bias such as prejudiced assumptions: preconceived ideas, beliefs, or opinions about an individual patient that limits a full and accurate understanding of the individual's history, culture, event, and current situation. Also, stereotyping is often a "quick fix" to classify patients without understanding individual and group differences, so when a nurse unintentionally stereotypes patients, in this case post-9/11 veterans, they fail to recognize historical and cultural experiences and variations creating difficulty in providing individualized, patient-centric, and holistic care.

Additionally, the Sunrise Model created by Leininger, is a conceptual research enabler that can be used as a holistic research guide to extract multiple theoretical factors

influencing the care and the well-being of people. By utilizing the Sunrise Model to aid the decision-making process, all dimensions and components of the model can be used by the nurse with the domains of cultural values, beliefs, and lifeways being the most holistic and comprehensive choices (Leininger, 2002).

Leininger's Transcultural Nursing Theory (TCN) provided the model of nursing care decisions and actions for evaluating knowledge and readiness in providing medical care to post-9/11 veterans in civilian care settings through culture care repatterning/restructuring (Leininger, 2002). Culture care repatterning/restructuring in civilian nurses is needed to allow for the establishment of a functional practice knowledge basis and to improve readiness in caring for post-9/11 veterans in civilian healthcare settings.

Nurses are in a unique and critical position to interact with those seeking care in the clinical setting, through assessments, screening, and care coordination, and in most cases, spend the greatest amount of time with the individual. Cultural competency training in healthcare has focused on specific groups, cultural beliefs, values, and norms. With the influx of post-9/11 veterans, the cultural approach needs to be expanded to address an individual's experiences and relate how particular experiences can influence healthcare beliefs, attainment, and adherence as stated in Leininger's Sunrise Model. The use of this cultural model for this unique population provides a system to explore how historical and environmental context influences care patterns and practices for individuals (Leininger, 2020, p. 80).

Method

Purpose

The purpose of this quality improvement project was to evaluate nursing knowledge and readiness to provide health care to post-9/11 veterans in civilian healthcare settings using Leininger's Transcultural Nursing Theory as a theoretical framework to guide the project and the "Sunrise Model" to conceptualize, extract, and visualize barriers in care.

Project Design

A descriptive design was used for this quality improvement project with a Qualtrics web-based, fifteen-question, cross-sectional survey which focused on nurse participants' military knowledge, comfort in providing veteran-centric care, and self-reported proficiencies. This survey was an adaption of the RAND Corporation's Ready or Not web-based tool (Tanielian et al, 2018).

Sample and Setting. The sample participants targeted included actively licensed registered nurses who were employed either full or part-time in civilian emergent, urgent, and ambulatory care settings, including emergency departments, in-patient specialty departments, and ambulatory care facilities in the U.S. Agency, travel, and telehealth nurses were excluded from this project.

Project participants were recruited through various nursing-related organizations using quota sampling which was targeted through specific licensure. Participation requests were sent broadly with a target response rate of 500 individuals. Demographic information regarding age, gender, level of education, practice location (state), and military service history were collected for analytical grouping purposes. No potentially identifiable personal information was obtained, and all demographic information was aggregated with no link between the participant and the data. No participation incentive

was offered. An informational letter was provided to participants and continuing forward with the survey following the reading of the letter was used as implied consent to participate. A total of 564 nurses completed the survey.

Materials. Materials used in during this project included two versions of a computer-generated graphic flyer used during survey distribution. Both flyers are located in Appendix A. The survey used Qualtrics XM software where the study was hosted. The survey instrument utilized for this project is an approved adaptation of the RAND Corporation's Ready or Not web-based tool. In origin, the instrument used 22-individual questions to assess military knowledge, comfort items, self-reported proficiency, and prior training utilizing a built-in score range. Permission for survey instrument utilization and adaptation was granted. The letter of permission is seen in Appendix B. The adapted survey instrument utilized for this quality improvement project can be reviewed in Appendix C.

Prior to instrument utilization and distribution, measurements of validity were conducted. The adapted questions were reviewed by subject matter experts in the field including nursing professionals, military medical providers, and service members. Justification for each alteration was provided based on a thorough review of the literature and minimal modifications to wording was suggested to reduce confusion.

Ethical Considerations. Application to the Rhode Island College Institutional Review Board (IRB) for project approval was submitted on October 29, 2021. On October 30, 2021, the IRB determined that the project was exempt as a quality improvement project (Protocol Number 2122-2247) and allowed for immediate release.

Procedures and Data Collection. The survey was distributed and maintained open for one month for participation, from November 1, 2021, to December 1, 2021. Total responses collected (n = 564) were reviewed for completion and eligibility.

Respondent data were reviewed for eligibility and completeness, and those who were not actively licensed registered nurses (n = 11) stated they did not provide direct patient care (n = 9), or did not complete the survey in total (n = 7) were removed from the results finalizing 537 usable responses. Data were then converted into numerical identifiers and merged into IBM SPSS Statistics software for analysis.

Measurement. Following survey closure and completion of the data collection process, completed survey response data was exported to IBM SPSS Statistical Analysis Software, Version: 28.0.0.0 (190) to measure and identify potential relationships and probabilities based on categorical variables to determine statistical significance or correlations within the data. A one-time Cronbach's alpha test was conducted using reverse scoring to determine instrument reliability and consistency in subjective responses. The Cronbach's alpha for all respondents was 0.731, indicating an acceptable level of testing reliability.

Statistical analysis. Descriptive univariate analysis was performed on each of the fifteen questions to determine applicable central tendencies, dispersion (standard deviation, variances), and most frequently occurring demographic-based comparison to national trends. Similar to the RAND Corporations' survey instrument, categorical responses were ranked using a psychometric, five-level Likert-type scale for two sections of questioning. First, respondents were asked to rate their current level of familiarity regarding five specific topics in relation to providing care for post-9/11 veterans. The second question asked respondents to rate their comfort level based on their readiness to provide adequate and accurate care to post-9/11 veteran patients. Both scales utilized a range between a minimum of 1.00 (lowest ranking), labeled as "completely unfamiliar" and a maximum of 5.00 (highest ranking) as "extremely familiar". Additionally, participants were asked a series of twelve dichotomous questions (limited to two-

potential values, “true” and “false”) derived from findings in the literature review which were posed as statements requesting participants decide the accuracy of the predetermined response options. This was the preferred method to generate practical insights into respondent knowledge to provide a close approximation of inferred mastery using either informed reasoning based on statement attractiveness or informed reasoning with endorsement bias as evidenced by Brassil and Couch (2019).

Bivariate analyses included 1) comparing the scores of respondents’ geographical practice regions (Northeast, South, Midwest, West) across three elements of veteran-related illness-occurrence, familiarity of illness, and level of comfort in caring for post-9/11 veterans; and 2) comparing the mean scores of respondent self-reported levels of knowledge and competency across six categories including gender, level of education attained, age range, and military history of self and immediate family.

Results

This quality improvement project was aimed at evaluating the knowledge, perceptions, and readiness of nurses in providing medical care for post-9/11 veterans in civilian healthcare settings. A sample size of 537 (out of 564) eligible nurses participated in the project. Range, mean, and standard deviations were determined for all nominal - and ordinal categorical data. Percentages were determined for demographic data and cross-compared with national data to determine accuracy in sample representation. In addition, 95 percent confidence intervals were equated to determine the large-scale representation of nurses' responses to each question. This allowed for researchers to identify the most at-risk regions of practice in providing care for post-9/11 veterans as a target for education.

Demographics

The mean age of registered nurse participants at the time of this survey ranged between 20 to 29 years (35%) and 30 to 39 years (49%), with a majority (83%) of nurses practicing in a hospital setting (emergency department, inpatient care, intensive care/critical care). The remaining respondents are practicing in management, mental health, oncology, and surgical settings. Ninety percent reported working full-time hours (32 hours or more weekly). All of the participants reported being licensed and actively involved in direct patient care, with 69% having obtained a bachelor's degree and 20% have obtained an associate degree in nursing. The majority of participants identified as female (86%). Participants were asked if they had ever served in the Armed Forces. Sixty-four respondents (12%) reported having served in the military, averaging 7.7 years of service (ranging between 2-30 years, median = 6 years). Over half (62%) of participants stated they had an immediate family member who currently serves or had

served in the Armed Forces. Complete demographic data with national comparisons can be reviewed in Appendix D.

Participants most frequently reported their primary state of practice being California (14%), Texas (7%), Massachusetts (6%), Florida (6%), and New York (5%). Each state was represented in the survey with the exceptions of West Virginia and Vermont. For a broader review of geographic knowledge status, states were placed into categories based on their respective region (Northeast, South, Midwest, West). Once regional trends were identified, any potential gaps in self-reported knowledge were reviewed on a state-by-state level.

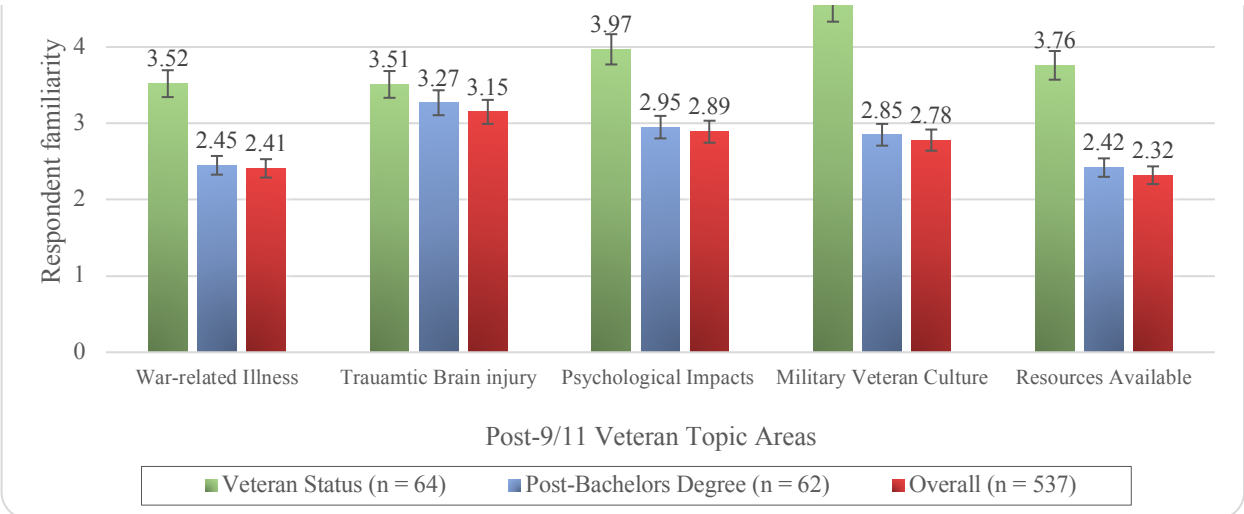
Additionally, state-specific participant data was used to identify if findings would represent the larger registered nursing cohort within that specific state. Secondly, current data (2021) was obtained based on the total number of registered nurses per state, their percentage of the total population, and distribution per capita. Third, information regarding post-9/11 veterans' state of residency was collected, the percentage in the overall population was determined, and the distribution of post-9/11 veterans in each state per square mile was identified. Project findings, including surveyed nursing knowledge, state size, civilian registered nurses, and post-9/11 veterans' demographic distribution, will assist in dictating where veteran-based education is most needed (Appendix E).

Lastly, ninety-three percent of registered nurse respondents reported that based on their opinion, the following health issues were seen in post-9/11 veterans: mental health concerns defined as post-traumatic stress, depression, anxiety, suicidal ideation, and addiction (93%); medical illness characterized as pulmonary diseases, cancerous tumors/malignancies, and autoimmune disorders (7%); and physical injury defined as amputations, musculoskeletal injuries, brain injuries (less than 1%).

Self-reported Knowledge and Competencies

Five areas of knowledge about caring for post-9/11 veterans were addressed using interval-scale questions. Areas of knowledge assessed included: war-related illnesses, traumatic brain injuries, psychological impacts of war, military/veteran culture, and military/veteran resources. Competences were scored on a 5-point scale, ranging from "*completely unfamiliar*" (1) to "*extremely familiar*" (5). Over half of respondents reported being "*very to extremely familiar*" with traumatic brain injuries (mean = 3.16; 55%) and military/veteran culture (mean = 2.79; 54%). Forty-seven percent reported being "*very familiar to extremely familiar*" with the psychological impacts of war (mean = 2.89). Concurrently, less than twenty percent of the respondents reported they were "*very familiar to extremely familiar*" with war-related illnesses (mean = 2.41; 13%) and

Figure 1.
Respondents' Self-Reported Familiarity with Post-9/11 Veteran Topics, comparing demographics and margin of error.



military/veteran resources available (mean = 2.32; 15%). Figure 1. (below) demonstrates the comparison between levels of familiarity across the five topics while determining if respondents being veterans, or if having an advanced degree (Graduate and Doctorate level) had made a difference in self-reported knowledge and familiarity.

Using a Fisher Exact test, it was determined that on average nurses with a veteran background self-reported being more knowledgeable in the five areas of knowledge when compared to nurses with no military background. The test value (<0.00001) and the result were statistically significant ($p < 0.05$) as displayed in Figure 1. Respondents' military service history correlated with a statistically significant advantage in knowledge pertaining to five topics, bypassing other nurses with no military experience in veteran culture, resources, and psychological impacts by +1.4 points and war-related illness by +1.1 points. A small difference was noted also in the respondents with a military service history having more knowledge regarding traumatic brain injuries. It was expected that military veterans would have a higher level of familiarity due to lived experiences. In contrast, there was a minimal increase in those who obtained a post-baccalaureate degree(s) in nursing averaging +0.078 points higher than those who did not have advanced nursing degrees.

Assumptions and Knowledge-Based Questions. Traditional true/false statements were presented, and participants were asked to judge whether the information was true or false to assess their surface-level knowledge of post-9/11 veterans. Seven statements compared post-9/11 veterans to previous combat eras' mental health concerns, combat exposures, healthcare utilization, demographics, and medical outcomes. The majority of nurse respondents correctly recognized that more post-9/11 service members/veterans have died because of suicide than combat (79%), that most service members/veterans who have deployed to a war zone have not been directly involved in combat (73%), and that the average age of post-9/11 service members/veterans is under 40 years old (80%). Respondents were presented with the statement "*A majority of post-9/11 veterans use the Veterans Affairs hospitals and clinics for most healthcare needs and services,*" and 46% believed this statement to be true. However, 78% of respondents

agreed that Vietnam veterans are more likely to be diagnosed with a primary malignancy (cancer) than post-9/11 service members/veterans. Lastly, 94% of respondents answered that currently, more post-9/11 service members/veterans had been diagnosed with post-traumatic stress than a primary malignancy (cancer).

The second set of true/false statements is related to the practice assumptions and self-awareness of respondents. Nurses were asked if "veteran status" changes how they provide that patient's care, and 84% stated status did not impact care processes. Secondly, nearly all of the respondents (94%) stated they did not feel concerned or worried for their safety when caring for veterans, while almost half (42%) believe most veterans have had thoughts of suicide or are actively suicidal. While respondents ranked mental health concerns as being the most frequently occurring in post-9/11 veterans, respondents were asked if they thought most veterans returned from combat physically fit and overall healthy, over half (62%) responded they do not. Contrary to this belief, when asked if they believe veterans experience psychosomatic symptoms related to mental health concerns, nearly three-quarters (72%) reported that as being true. The respondents' factual statement selections when compared to practice assumptions and self-awareness contradict each other in the sense that despite believing the majority of veterans do not return healthy and fit despite being under the age of 40 years, and most are not actively engaged in or involved with combat that mental health concerns overlap with psychosomatic symptoms, and suicide. Despite variations in response patterns, 62% reported feeling either "*somewhat comfortable to extremely comfortable*" in providing accurate, competent, holistic care to post-9/11 veterans through individualized screenings, assessments, and treatments.

Nurse respondents were asked for their professional opinion based on clinical experience regarding the average age range of the general non-veteran patient population

they observe diagnosed with cancer overall (unspecific). Ranges were set at intervals beginning under 20 years going up to 80 years. Respondent data determined a mean of 51.25 years ± 9.51 SD and 70% reporting diagnosis ranges between 50 to 69 years, findings slightly younger than the National Cancer Institutes (SEER) Program citing a median cancer diagnosis of 66 years (National Cancer Institute, 2021).

Demographic data were compared with assumptions and knowledge-based questions to determine potential statistical significance. First, a Fisher Exact Test was utilized to determine if nurses who served in the military were more likely to correctly choose that a cancer diagnosis was more probable than post-traumatic stress in post-9/11 veterans. Testing determined the association is not statistically significant (p-value = 0.1311, $x^2 = 1.628$). A secondary test was conducted to determine if the level of education/degree attainment impacted the selection of cancer over post-traumatic stress. No level of statistical significance was noted (p-value = 0.8176, $x^2 = 0.002$).

Odds ratios (OR) were completed to determine the likelihood of nursing practice in a civilian setting caring for a post-9/11 veteran patient. The odds of the nurse considering the risk of potential medical condition over mental health concerns or physical injury are 6.16% (OR = 0.0617). The odds of a nurse attributing mental health factors (psychosomatic effect) as the source of physical symptoms is 41.95% (OR = 0.4194).

Table 1

Summary of Region-Based Responses Competencies

% of Respondents by Region	Perception of Medical Illness Prevalence	Familiarity with War-Related Illness	Comfort Level in Caring for Veterans	Percent of Post-9/11 Veteran Population
Northeast (22%)	**9.2%**	17.5%	53.3%	7.7%
South (33%)	6.9%	8.1%	**66.8%**	21.3%
Midwest (16%)	4.7%	7.1%	63.5%	13.5%
West (30%)	6.2%	**19.2%**	60.2%	18.3%

Notes: Familiarity is those between "*very to extremely*" familiar, and the comfort level was between "*somewhat to very*" comfortable. Post-9/11 veteran percentages per region were added to data for determining necessity based on population.

Respondent data were separated by state and grouped into four national regions. Each of the respondents' answers regarding their level of familiarity with war-related illnesses, level of confidence in caring for veterans, and selection of "medical illness" as the most frequently occurring issue in post-9/11 veterans were separated numerically categorized by region (see Table 1). What was determined is that medical illness is perceived to be of the highest prevalence in the Northeast region. However, this region had the lowest percentage of post-9/11 veteran residents. In contrast, the South region has the highest percentage of post-9/11 veteran residents, and respondents from this region reported being the most comfortable in caring for post-9/11 veterans, but reported minimal familiarity with war-related illnesses. The Midwest region collectively ranked medical illness as the least frequently occurring issue in post-9/11 veterans and reported being the least familiar with war-related illnesses.

Discussion and Conclusion

This project targeted a variety of nurse participants nationwide, varying in practice state and setting, age range, military service history, and level of education. It was a low-stakes questionnaire and participation was voluntary. The data coincided with current national statistics on practicing nurses and state/region representation was adequate for discussion. The objective of this quality improvement project was to determine the self-reported knowledge and readiness of civilian nurses in providing care to post-9/11 veterans. The objective was achieved through the statistically relevant results and findings. The major findings from this study indicate that few nurses employed in the civilian practice setting have adequate knowledge or foundational understanding of post-9/11 military veteran-related risk factors and health care concerns. Results from respondents demonstrated perception of the highest prevalence of post-9/11 veterans' issues related to mental health, post-traumatic stress, and suicidality. Additionally, respondents were spilt between if post-9/11 veterans utilize the Veterans Administration for most of their medical care or if they seek external/civilian care. The majority indicated their limited knowledge of resources available to veteran patients in addition to risks of potential war-related illnesses and culture.

Results demonstrate that only 54.3% of respondents answered correctly to true-false questions pertaining to knowledge of post-9/11 veterans. The majority of question responses were one-sided and heavily weighed one way. The exceptions were "*post-9/11 veterans are more likely to experience mental health concerns than Vietnam veterans*" (true, 67.91% [1.32 ± 0.03]), and "*the majority of post-9/11 veterans utilize the Veterans Affairs health care centers for most of their care*" (false, 53.54% [1.54 ± 0.04]). A third exception, and potentially the most important to note, is that 94.2% of respondents

incorrectly reported that post-911 veterans are more likely to be diagnosed with post-traumatic stress than cancer.

The results obtained highlight a significant concern and perceptions of where post-9/11 veterans seek treatment. In addition, if mental health diagnosis or history of traumatic experiences in post-9/11 veterans leads providers to believe psychological conditions are the most frequently occurring and most expected conditions in practice, bias may impact outcomes. The incorrect response of participants choosing a higher frequency of post-traumatic stress as compared with malignancy in this population occurs at a ratio of 19:1. The concern is the potential for a misdiagnosed or unidentified medical illness or malignancy and diagnostic errors in relation to mental health conditions by way of systematic diagnostic tools in addition to provider-based cognitive biases in three ways. The potential for misdiagnosing medical illness or malignancy due to provider cognitive biases in which illnesses are mistakenly minimized for ignored because of preconceived notions of prevalent mental health diagnoses in this population are a significant consideration.

Provider "anchoring," also known as the anchoring effect, occurs when the providers' decision is influenced by a particular reference point or "anchor." In this case, civilian providers may tend to lead to a diagnosis based on an initial impression despite evidence pointing to the contrary which may ultimately lead to a delay in care (Saposnik et al., 2016). For example, a post-9/11 veteran who seeks care for constant shortness of breath and chest pain may be seen as an otherwise healthy, non-smoking individual under the age of forty leading to the bypass of physical severity and potential mental health etiology as many respondents are more likely to anchor to post-9/11 veteran status and a direct correlation to mental health. Second, implicit bias, also known as unconscious bias by providers, is the tendency to attribute certain qualities to an entire group or cohort that

an individual belongs to and is applied widely as a generalization across individuals within that group (Fitzgerald & Hurst, 2017). In this setting, the assumption is that post-9/11 veterans have related mental health conditions and assessments, diagnosis, and treatment is based on that attribution. As inquiring about military and / or veteran status is mandated in two states nationally (Connecticut, West Virginia), many post-9/11 veterans unknowingly enter civilian healthcare facilities regularly, and with the increasing volume of cancer diagnoses and service-related exposures, it is plausible to assume - based on this quality improvement study that a lack of preventive screening, accurate assessments, and individualized care is currently occurring and will continue to occur in the future without proper, evidence-based interventions.

Recommendations and Implications for Advanced Nursing Practice

Nurses have been considered the most trusted profession in the U.S. for the past 20 years for their honesty and ethical standards in practice, surpassing other providers by upwards of twenty percent (Jones & Sand, 2019). Nurses are at the front line of interactions in all care settings. They conduct health assessments, gather historical information, coordinate care, and in many settings have more interactions with patients than any other provider or member of the care team. As the Department of Veterans Affairs faces scrutiny and potential closures of locations nationally, wait times and driving distances will further push veterans to seek services within their community through the VA MISSION Act. As this unique population continues to grow it is imperative that nurses continue to uphold the standard of ethical, honest care.

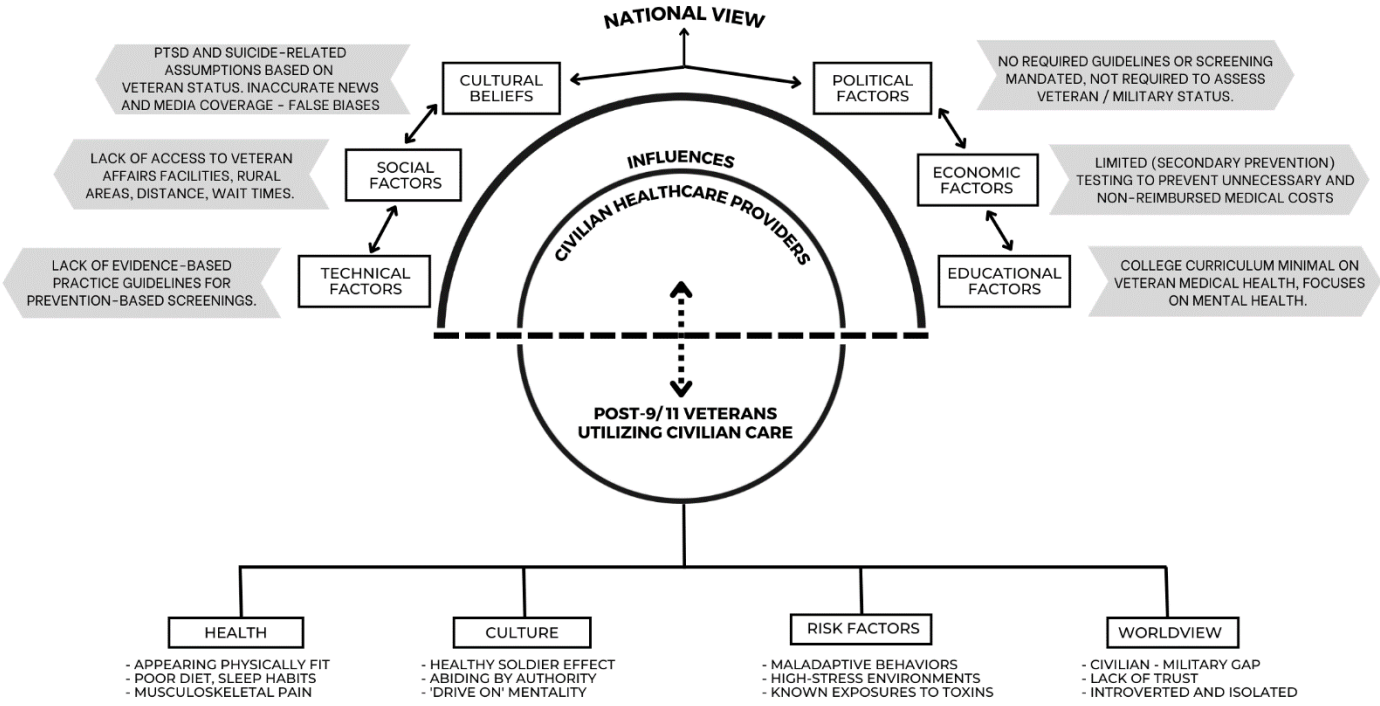
In 2013, Dr. Linda Schwartz, Ph.D., MSN, RN, FAAN, Director of the Connecticut Department of Veterans Affairs teamed up with the American Academy of Nursing and (at the time) Second Lady, Dr. Jill Biden, and created the Joining Forces Campaign (Collins, Wilmoth & Schwartz, 2013) to request civilian providers enact the question "*Have you ever served in the military*" to open lines of communication between patients and providers, in hopes of identifying potential risk factors that relate to veterans and to ensure holistically, individualized care was maintained. While most civilian nurses feel comfortable and safe providing care to veterans, the majority also feel inadequately prepared and ill-informed to provide holistic care. Nurses cannot be expected to provide assessments, treatments, and care based on information they do not know, which is why evidence-based research and interactive education specific to post-9/11 veterans are necessary on a multimodal approach.

As this quality improvement project utilized Leininger's Transcultural Nursing Theory for framework guidance, the Sunrise Model of the Theory of Cultural Care was

adapted to include results and discussion points as well as recommended interventions (Figure 2). This model is used to address factors systemically that have the potential to negatively impact, prevent, or mislead post-9/11 military veterans in receiving holistic, competent, individualized care in civilian settings.

Figure 2

Adaptation of Leininger's Sunrise Model.



Findings from this quality improvement project suggest that barriers to care exist in six structural dimensions: cultural beliefs, technical, social, political, economic, and educational factors. Questions from the survey instrument targeted the dimensions and provided insight for each. As noted in the findings, the level of education provided minimal value in nurse-reported competencies. Cultural beliefs related to ill-informed, inaccurate media coverage and fictional portrayals in films mold the expectation that post-9/11 veterans as a whole suffer from post-traumatic stress and suicidality despite statistical evidence supporting the contrary. Social factors were spilt in nurse respondents when asked where post-9/11 veterans receive most of their care. While some indicated

most use Veterans Administration services, others thought veterans accessed community care.

Actionable items and advanced practice population nursing recommendations include:

1) Enact an evidence-based educational curriculum for undergraduate and graduate nursing students and for healthcare providers focusing on post-9/11 veteran risk factors and health issues.
2) Advocate for development and access to cost free, continuing education credits (CEU) for specified veteran health-related topics and require nurses to participate for licensure and renewal.
3) Form academic partnerships with the Department of Veterans Affairs to educate students in veteran-centric clinical settings, which can be applied in civilian care settings as well.
4) Utilize gathered data on region size, amount of post-9/11 veteran residents, and average distances to Veterans Affairs Medical Centers and civilian community care centers, to identify the most at-risk states and enact educational guidelines by severity ranking.
5) Conduct nursing studies that identify provider-related factors associated with positive outcomes in the post-9/11 veteran population.

Advanced practice public health nurses are uniquely positioned to provide data regarding the specific needs of vulnerable populations including military veterans and to advocate for interventions to promote positive outcomes for this underserved group. Demographically, the number of veterans who receive care in civilian settings is expected to grow. It is imperative that nurses are prepared to provide evidence-based care and demonstrate high levels of knowledge and competency for this deserving aggregate. The

implications for practice, policy, education, and research are clear and require an investment in the health of those who have given so much for our nation.

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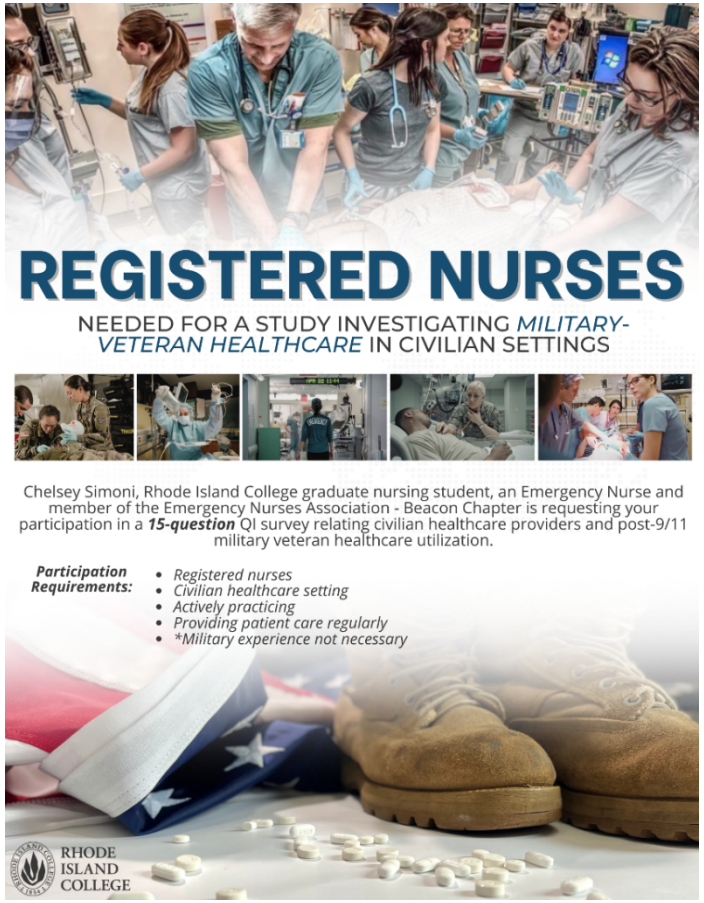
Appendix A

Recruitment Flyers



Appendix B

Letter of Permission – Dr. Carrie Farmer, Ph.D.

RAND CORPORATION

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September 01, 2021

Dear Chelsey:

You are free to adapt the Ready or Not tool for the project titled "Evaluating nursing knowledge and readiness in providing care for post-9/11 veterans in civilian healthcare settings: a quality improvement project". The Ready or Not survey instrument is publicly available and permission to use or adapt the instrument in any way is granted.

Sincerely,

Carrie Farmer

CARRIE M. FARMER, PH.D.
Senior Policy Researcher
RAND Corporation
Tel: (412) 683-2300 x4408
Email: cfarmer@rand.org

Appendix C

Adapted Survey Instrument

Question	***Choice Selection***
Q1. Are you trained and licensed as a registered nurse (RN, APRN, FNP, DNP, etc.)	Yes / No
Q1a. Do you work directly with, or provide care to patients as part of your regular professional activities?	Yes / No
Q1b. Which best describes your highest level of education?	Associates Degree Bachelor's Degree Master's Degree Doctoral Degree
Q2. Please tell us which best describes your practice setting.	Emergency Department Mental Health Acute Care (in-patient) Case Management Oncology Intensive Care Surgical Primary Care Leadership / Education
Q3. Are you employed:	Full time (<32+ hours) Part time (>20 hours) Per Diem
Q4. Gender at birth:	Male Female
Q5. Which state do you currently practice in?	[Free text]
Q6. Please select your age range:	>20 years 20-29 30-39 40-49 50-59 60-69 <70+ years
Q7. Have you ever served in the United States Armed Forces (this includes the Army, Navy, Air Force, Marine Corps, and National Guard / Reserves)	Yes / No
Q7a. If yes, please indicate how long (in years) you served in the military.	[Free text - numerical]
Q8. Do you have any close family members who currently or formerly served in the United States Armed Forces?	Yes / No
Q9. Based on your experience, what issue do you believe is occurring most frequently in the post-9/11 veteran population?	Mental Health Physical Injury Medical Illness
Q10. Using the [Likert scale], please rate your current level of knowledge and preparedness regarding the following topics pertaining to post-9/11 veterans: - War-related illness - Traumatic brain injury - Psychological impacts of war - Military and veteran culture - Military and veteran resources	Completely unfamiliar (1) A little bit familiar (2) Moderately familiar (3) Very familiar (4) Extremely familiar (5)

Q11. Please select 'true' or 'false' for each question pertaining to post-9/11 veteran knowledge. - More post-9/11 veterans have died in combat than by suicide. - Most service members who have deployed have been involved in combat. - A majority of post-9/11 veterans use the Veterans Affairs hospitals and clinics for most healthcare needs and services. - More post-9/11 veterans have been diagnosed with post-traumatic stress than cancer. - Post-9/11 veterans are more likely to experience mental health concerns than Vietnam Veterans. - Vietnam veterans are more likely to be diagnosed with cancer than post-9/11 veterans. - Most post-9/11 veterans are under the age of 40 years old.	True / False
Q12. Please select 'true' or 'false' for each question based on your beliefs about post-9/11 veterans. - When caring for veterans I worry about my physical safety. - The majority of veterans are suicidal and have had thoughts of suicide. - A patients veteran status changes how I provide overall care. - I believe veterans experience many psychosomatic symptoms related to mental health. - I believe veterans returning from combat are physically fit and overall healthy.	True / False
Q13. I feel competent and comfortable in providing thorough assessments, treatments, and care to post-9/11 veterans.	Extremely uncomfortable (1) Somewhat uncomfortable (2) Neither comfortable nor uncomfortable (3) Somewhat comfortable (4) Extremely comfortable (5)
Q14. In my opinion and based on my personal clinical experiences, the average age range of patients are diagnosed with cancer is:	<20 years 20-29 30-39 40-49 50-59 60-69 70-79 >80 years
Q15. Optional: Please share any thoughts, suggestions, concerns, or comments about veteran healthcare you may have.	[Free text]

Appendix D

Characteristics of the Respondent Sample (n = 537)

Variable	*Respondent Attributes*	*Numeric*	*Respondent Frequency*	*National Frequency**
Gender:	Male	77	14%	9.4%
	Female	460	86%	90.6%
Age Range:	20 - 29 years	186	35%	8.4%
	30 - 39 years	263	49%	19.5%
	40 - 49 years	70	13%	19.1%
	50 - 59 years	13	2%	21.8%
	60 - 69 years	4	<1%	21.2%
	70 + years	1	<1%	n/a
Education Level:	Associate	105	19%	28.1%
	Baccalaureate	370	70%	48.1%
	Masters	54	10%	14.9%
	Doctoral	8	1%	2.2%
Practice Setting:	Medical-Surgical	155	29%	12.1%
	Emergency	203	38%	5.6%
	Case Management	5	<1%	7.4%
	Intensive Care	119	22%	13.4%
	Mental Health	18	3%	3.7%
	Oncology	12	2%	4.6%
	Surgical (OR, PACU)	25	5%	7.9%
Employment Status:	Full-time	484	90%	64.9%
	Part-time	23	4%	11.7%
	Per Diem	30	6%	7.5%
Military Service *(self):*	Yes	64	12%	n/a
	No	473	88%	n/a
Military Service *(family):*	Yes	332	62%	n/a
	No	205	38%	n/a
Respondent Region:	Northeast	120	22%	14%
	South	175	33%	33%
	Midwest	85	16%	23%
	West	161	30%	30%

*Percentages obtained from Smiley et al. (2020) National Nursing Workforce Study

Appendix E

Regional and State-Specific Data of Respondents (n = 537) & National Statistics of Post-9/11 Veterans and Registered Nurses Across the US

Region (respondent total)	*State*	*Residents per State (2021)*	*Post-9/11 Veterans (2021)**	*Post-9/11 veterans (2021)**	*VA Medical Centers per state*	***RN Respondents per State***	*Total RNs per state (2021)***	*RN percent by state (2021)***
NORTHEAST	Maine	1,354,522	13,868	1.02%	1	0.558%	27,942	0.55%
(n = 120)	Vermont	623,251	6,341	1.02%	1	0.000%	1,309	0.03%
	New Hampshire	1,372,203	14,505	1.06%	1	0.186%	139,719	2.76%
	Massachusetts	6,912,239	47,258	0.68%	4	6.331%	153,862	3.04%
	Rhode Island	1,061,509	11,400	1.07%	1	3.165%	77,288	1.53%
	Connecticut	3,552,821	26,649	0.75%	1	1.862%	81,242	1.60%
	New York	19,299,981	117,916	0.61%	3	4.840%	149,005	2.94%
	New Jersey	8,874,520	54,950	0.62%	2	1.862%	30,160	0.60%
	Pennsylvania	12,804,123	115,591	0.90%	7	3.538%	27,272	0.54%
SOUTH	Arkansas	3,033,946	40,356	1.33%	3	3.538%	45,016	0.89%
(n = 175)	Alabama	4,934,193	65,017	1.32%	4	1.117%	94,029	1.86%
	Delaware	990,334	9,998	1.01%	1	0.744%	19,211	0.38%
	District of Columbia	714,153	6,653	0.93%	1	0.558%	30,222	0.60%
	Florida	21,944,577	233,680	1.06%	8	5.959%	347,136	6.85%
	Georgia	10,830,007	143,284	1.32%	3	2.607%	139,314	2.75%
	Kentucky	4,480,713	50,971	1.14%	1	1.117%	72,058	1.42%
	Louisiana	4,627,002	55,903	1.21%	4	0.372%	65,167	1.29%
	Maryland	6,065,436	70,569	1.16%	1	2.067%	86,804	1.71%
	Mississippi	2,966,407	38,018	1.28%	2	0.931%	116,230	2.29%
	North Carolina	10,701,022	135,968	1.27%	4	3.910%	16,777	0.33%
	Oklahoma	3,990,443	58,923	1.48%	2	0.744%	73,418	1.45%
	South Carolina	5,277,830	72,232	1.37%	1	1.489%	19,237	0.38%

	Tennessee	6,944,260	83,794	1.21%	4	2.048%	363,865	7.18%
	Texas	29,730,311	352,293	1.18%	7	6.703%	40,201	0.79%
	Virginia	8,603,985	162,276	1.89%	3	1.675%	112,482	2.22%
	West Virginia	1,767,859	20,464	1.16%	4	0.000%	33,047	0.65%
MIDWEST	Illinois	12,569,321	102,980	0.82%	5	2.793%	219,409	4.33%
(n = 85)	Indiana	6,805,663	71,524	1.05%	1	2.234%	118,822	2.35%
	Iowa	3,167,974	32,809	1.04%	2	0.558%	58,571	1.16%
	Kansas	2,917,224	43,292	1.48%	3	0.931%	53,662	1.06%
	Michigan	9,992,427	79,329	0.79%	5	2.979%	119,829	2.36%
	Minnesota	5,706,398	48,063	0.84%	2	1.117%	50,436	1.00%
	Missouri	6,169,038	71,856	1.16%	4	0.558%	20,261	0.40%
	Nebraska	1,951,996	23,902	1.22%	1	0.558%	51,606	1.02%
	North Dakota	770,026	12,287	1.60%	1	0.186%	220,800	4.36%
	Ohio	11,714,618	117,169	1.00%	5	2.048%	52,039	1.03%
	South Dakota	896,581	13,625	1.52%	3	0.372%	110,427	2.18%
	Wisconsin	5,852,490	57,019	0.97%	3	1.489%	111,192	2.19%
WEST	Alaska	724,357	22,122	3.05%	1	0.186%	18,102	0.36%
(n = 161)	Arizona	7,520,103	81,572	1.08%	3	0.744%	102,364	2.02%
	California	39,613,493	327,069	0.83%	9	14.338%	466,414	9.21%
	Colorado	5,893,634	80,804	1.37%	1	2.420%	80,946	1.60%
	Hawaii	1,406,430	29,057	2.07%	1	0.372%	26,785	0.53%
	Idaho	1,860,123	21,348	1.15%	1	0.372%	25,815	0.51%
	Montana	1,085,004	14,883	1.37%	1	0.186%	31,238	0.62%
	New Mexico	2,105,005	25,736	1.22%	1	0.558%	356,083	7.03%
	Nevada	3,185,786	42,858	1.35%	2	0.558%	25,656	0.51%
	Oregon	4,289,439	45,500	1.06%	1	1.303%	232,528	4.59%
	Utah	3,310,774	30,378	0.92%	1	1.303%	20,320	0.40%
	Wyoming	581,075	8,435	1.45%	2	0.558%	8,873	0.18%
	Washington	7,796,941	107,509	1.38%	3	2.739%	117,351	2.32%

*Raw numbers and percentages by population obtained from the Department of Veterans Affairs, National Center for Veterans Analysis and Statistics (2021), Pettey et al. (2021).

**Percentages obtained from Smiley et al. (2020) National Nursing Workforce Study