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The Effect of a Web-based Training on Suicide Knowledge, Attitudes, and Health Access Behaviors of Behavioral Health Nurses Regarding Suicide Prevention

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The Effect of a Web-based Training on Suicide Knowledge, Attitudes, and Health Access
Behaviors of Behavioral Health Nurses Regarding Suicide Prevention

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing
Practice at the University of Kentucky

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Lexington, KY
2022

Abstract

Background: Nurses, critical to the health care delivery system, experience a variety of psychological stressors that predispose them to suicide risk. Recent studies have verified elevated suicide risks in nurses when compared to the general population. There is limited understanding regarding the effectiveness of various strategies to reduce risk factors and increase protective factors for suicide among nurses.

Purpose: The purpose of this study was to evaluate if a web-based education module can improve the knowledge, attitudes, and ratings of willingness to access help related to suicide prevention in behavioral health nurses.

Conceptual Framework: Ajzen's theory of planned behavior was used to guide this project. The theory of planned behavior suggests that attitudes, subjective norms, and perceived behavioral control predicts the intention to engage in a behavior, influencing the actual performance of the behavior.

Methodology: This study employed a quasi-experimental one-group pretest-posttest design. One hundred and one registered nurses from an academic medical center inpatient psychiatric unit, a state psychiatric hospital, and a personal care home were invited to participate. Baseline knowledge of suicide risk and prevention, attitudes towards seeking help, subjective norms towards seeking help, perceived behavioral control towards seeking help, and intent to seek help upon experiencing suicidal ideations were obtained prior to and after administering a 25-minute web-based training.

Results: A total of 29 participants completed the pre-survey, web-based education module, and post-survey. There was a statistically significant increase in knowledge, attitude, subjective

norms, and intention related to help-seeking behaviors for nurse suicide prevention. Perceived behavioral control median scores increased, but not at a statistically significant level.

Discussion: A web-based educational intervention can be effective in increasing knowledge and intention to seek behavioral health services. Further exploration is needed to determine if other non-web-based strategies, focused on the reduction of nurse suicide, could offer benefits.

Conclusion: Understanding the effectiveness of strategies to reduce nurse suicide can provide insights into building better nurse suicide prevention programs.

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Dedication

I would like to dedicate this project and my DNP degree to my wife and children, Angela, Maggie, and Sam. Angela, you have served as editor, counselor, coach, and therapist throughout this journey. Your words and support have never wavered, and your encouragement has never faltered. You, too, have sacrificed along with me to make this happen. To my daughter, Maggie, and son, Sam, thank you for understanding and supporting the sacrifices that we've made as a family to make this happen. This includes writing papers on vacations, conducting zoom calls and recordings that required silence in the house, and other school functions that impacted family events. I know you appreciate the importance of education and will make that a priority for both of your families.

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The Effect of a Web-based Training on Suicide Knowledge, Attitudes, and Health Access
Behaviors of Behavioral Health Nurses Regarding Suicide Prevention

Background & Significance

Introduction to Problem

In addition to being its largest profession, nurses are the backbone of the U.S. healthcare industry. In various clinical settings, nurses are expected to manage expanding workloads and growing expectations with fewer resources. Because home and work-life stressors often overlap, nurses, central to our healthcare systems, are predisposed to high risks of suicide (Feskanich et al., 2002). Given that nurse suicide rates are relatively high and poorly reported, nurses are particularly at risk with few strategies to address the problem. Especially with the current COVID-19 pandemic, nurse suicide, globally, has become an issue receiving more prominence in the literature (Choflet et al., 2022; Jahan et al., 2021; Rahman & Plummer, 2020). Failure to acknowledge and address the prevalence of nurse suicide will further increase suicide risk factors and delay increasing protective factors.

The National Institute of Mental Health (U.S. Department of Health and Human Services, n.d.) defines suicide as death caused by self-directed injurious behavior with intent to die because of the behavior. In 2018, suicide was the tenth leading cause of death overall in the U.S. at a rate of 13/100,000 (CDC, 2018). Davidson et al. (2020a) revealed nurse suicide rates that were considerably higher than the gender and age-matched general population. Female nurse rates of suicide were reported at 11.97 versus 7.58 in the female population, and male nurse rates at 39.8 contrasted to 28.2 in the male population (Davidson et al., 2020a).

Context, Scope, and Consequences

Nurses experience high levels of workplace violence that often develop into psychological distress, depression, and anxiety (Pariona-Cabrera et al., 2020). Additionally, lateral violence, job stressors, and nurse isolation are shared experiences that are contributory to suicidal thoughts or intentions (Bambi et al., 2018; Davidson et al., 2020a; Leigh-Hunt et al., 2017). Alderson et al. (2015) outlined several risk factors leading to nurse suicide that included availability of life-ending means, undertreated depression, knowledge of life-ending pharmaceuticals and substances, work-life stressors, tobacco use, and substance use. Nurse colleagues as survivors of suicide loss are at further risk for isolation that often leads to significant mental health issues, including major depression, post-traumatic stress disorder, suicide, and grief disorders (Davidson et al., 2020b). Failure to identify effective strategies to address the high risk for nurse suicide will likely lead to further loss of nurse lives to suicide, threatening the foundation of our healthcare delivery system.

Current Evidence-Based Interventions

There are limited recent evidence-based interventions and strategies recommended to address suicide in nurses. Education regarding burnout, depression, and suicide has been used along with proactive screening by institutions with subsequent connections to services and resources (Davidson et al., 2018; Davidson et al., 2020a; Rizzo, 2018). Of these strategies, educational interventions may be preferable because they can be easily adopted in a short period of time and have been proven to be highly effective (Davidson et al., 2018; Rizzo, 2018). Web-based education programs may have greater reach than in-class educational programs. In addition, web-based education has been shown to be effective mode to increase suicide

prevention knowledge (Bektas & Yardimci, 2018; Crowe et al., 2018; Kullberg et al., 2020; O'Brien et al., 2019). Thus, such interventions should be encouraged among nurses.

Purpose and Objectives

Given the increasing frequency of suicide among nurses and other healthcare professionals, the purpose of this study was to evaluate if a web-based education module can improve the knowledge, attitudes, and ratings of willingness to access help related to suicide prevention in behavioral health nurses. The specific aims of this study were to examine:

1. Changes in knowledge regarding suicide prevention,
2. Changes in attitudes, subjective norms, and perceived behavioral control related to suicide prevention, and
3. Ratings of willingness to engage in suicide preventive behavior following a suicide prevention education intervention.

Theoretical/Conceptual Framework

The theory of planned behavior (TPB) was used as a conceptual framework to guide the implementation of the suicide prevention web-based training (Ajzen, 1991). As a guiding model, the TPB contends that behavior is a result of beliefs that translate into particular behaviors. The theory suggests that attitudes towards a behavior (i.e., belief of whether it is good or bad), subjective norms towards the behavior (i.e., if the behavior is seen as normative), and perceived behavioral control (i.e., a person's perception of their ability to carry out the behavior) each predict the intention to carry out the behavior and this intention forecasts the actual performance of the behavior (Ajzen, 1991). For this study, the web-based training was focused on evaluating attitudes, subjective norms, and perceived behavioral control towards suicide prevention among behavioral health nurses. Specifically, the measurement of attitudes, subjective norms, and

perceived behavioral control was based on the constructs outlined by the developers of the theory of planned behavior (Ajzen, 1991; Ajzen, 2011).

Review of Literature

Synthesis of Evidence

Addressing high suicide rates among nurses requires an efficient and innovative approach. Educational interventions have been utilized in a variety of suicide prevention programs (Davidson et al., 2018; Davidson et al., 2020a; Rizzo, 2018). A review of the literature to support the use of web-based education was conducted. Specifically, using the PICO format, the question guiding the review was: Among behavioral health nurses, how has the use of web-based education affected the knowledge, attitudes, and health access behaviors regarding suicide prevention in healthcare settings? The literature review was conducted using MEDLINE (EBSCO host), Ovid, PubMed, and CINAHL with articles excluded prior to 2010. The search used key terms related to web-based/computer training or education, and suicide prevention. The reference lists from chosen articles were used to identify other relevant articles.

The final review included 12 studies originating from the United States (7), Australia (2), Netherlands (1), Japan (1), and Turkey (1). The locations of the studies included community settings (3), academic settings (6), and the clinical settings (4). Participants of the studies included community consumers and gatekeepers, psychology students, nursing students, medical interns from the academic setting, Certified Registered Nurse Anesthetists (CRNAs) and nurses from the clinical setting. Study designs included randomized controlled trials (5), pre-test post-test (5), and pilot (2). Two distinct sets of participants stood out when evaluating the studies: gatekeeper and consumers. Studies that focused on the participant as a ‘gatekeeper’ addressed the needs or qualities of those serving suicidal individuals. Studies that identified the participant

or clinician as a ‘consumer’ focused on managing or identifying the experiences of those identified. There were nine studies that focused on the needs of the clinician as a gatekeeper to aid those at risk for suicide in the community (Bektas et al., 2018; Blair et al., 2018; Goldstein et al., 2017; Kerr et al., 2020; Kishi et al., 2014; Kullberg et al., 2020; Lancaster et al., 2014; Peterson et al., 2020; Rogers et al., 2018). The interventions used with this set of studies included both in-person education and web-based education approaches. The remaining three reviewed studies had a consumer-based focus and included in-person education and web-based education (Davidson et al., 2018; Guille et al., 2015; Van Spijker et al., 2018). Two of the consumer-based studies provided unique web-based interventions to address suicidal thoughts by utilizing cognitive behavior therapy and self-help videos. In-person trainings included creating and delivering educational modules (Blair et al., 2018), didactic presentations during grand rounds (Davidson et al., 2018), and a seven-hour one-day workshop (Kishi et al., 2014). Several of the web-based intervention studies posited reduced time commitment and low to no cost as the advantage over the in-person training intervention (Goldstein et al., 2017; Guille et al., 2015; Lancaster et al., 2014; Rogers et al., 2018).

Web-based interventions produce positive outcomes and can be time-flexible and cost effective. The most common outcomes for web-based trainings included increased knowledge (Goldstein et al., 2017; Kullberg et al., 2020; Lancaster et al., 2014; Peterson et al., 2020), increased confidence (Bektas et al., 2018; Kerr et al., 2020; Kullberg et al., 2020), decreased suicidal thoughts, and decreased anxiety (Bektas et al., 2018; Guille et al., 2015; Van Spijker et al., 2018). Overall, the studies included for evaluation had large robust sample sizes that were adequate to produce statistically significant results. The studies were also varied in their settings, participants, and interventions.

Identification of Gap

Currently, many nurse suicide prevention programs include an education component (Davidson et al., 2018). Much is known about the benefits of training the nurse as a gatekeeper, but there is a gap in the literature regarding the benefits of providing web-based training for the nurse as a consumer to compliment a referral program. The literature review highlighted the benefits of a web-based approach to improve knowledge, confidence, and suicidal thoughts. This review supported the need to evaluate the benefits of web-based training for suicide prevention programs to reduce nurse suicide rates for the nurse as a consumer.

Proposed Strategy to Address the Gap

This study provided an evidence-based, web-based education module with the goal of improving nurse's knowledge base, attitudes, and health access behaviors regarding suicide from a consumer perspective. A pre-post survey evaluated change in knowledge, attitudes, and health access behaviors. Consideration for mental health stigma among healthcare providers was an important component of the module development. The web-based education addressed the need for a more time flexible and cost-efficient approach to educate nurses about suicide prevention from a consumer perspective.

Methods

Design

This study used a quasi-experimental one group pretest-posttest design. The knowledge, attitudes, subjective norms, perceived behavioral control, and intentions to address suicide measures were assessed before and immediately after nurses engaged in a 25-minute web-based suicide prevention education module.

Setting

Agency Description

The setting for this study included specific units/departments at the University of Kentucky HealthCare (UKHC), Eastern State Hospital, and the Central Kentucky Recovery Center. UKHC is a 945-bed academic medical center (AMC) that houses a 19-bed adult psychiatric unit and a 10-bed adolescent unit at Good Samaritan Hospital. Collectively both units provided care for an estimated 2000 admissions annually, and for a wide range of psychiatric conditions of varied severity levels. The workforce consisted of 70 staff including direct care and clinical support, 32 of whom are registered nurses.

Eastern State hospital is a 239-bed state psychiatric facility managed by UKHC. Annually the hospital provides care for an estimated 3000 admissions of which 90% are involuntary hospitalizations. Seventy percent of the patients receiving care are individuals with severe mental illnesses. The workforce consists of 500 staff including direct care and clinical support, 65 of whom are registered nurses.

Central Kentucky Recovery Center is a 17-bed personal care home managed by UKHC. Annually the center provides transitional housing and behavioral health programming for an estimated 120 admissions. The workforce consists of 40 staff including direct care and clinical support, of whom 4 are registered nurses. All settings espouse the DIRECT (Diversity, Innovation, Respect, Compassion, and Teamwork) values in providing psychiatric services to a highly vulnerable patient population and align with recent safety strategies within the enterprise and nursing department strategic plans.

Sample

A convenience sample of 101 registered nurses from the behavioral health units at Good Samaritan Hospital, Eastern State Hospital, and Central Kentucky Recovery Center were invited to participate in this study. Inclusion criteria for this study were: 1) registered nurses 2) at least 3 months in the setting, and 3) full-time employees. Exclusion criteria were: 1) non-nurses, 2) provisional or part-time nurses, 3) nurses outside of behavioral health setting, and 4) nursing students.

Procedure

IRB Approval

Prior to the study, Institutional Review Board (IRB) approval was obtained from the UK Medical IRB. All data were obtained through anonymous survey responses without the possibility of determining individual respondents' identities. Data were stored on firewall protected and encrypted computers linked to the UK server and will remain stored on these sites until 6 years following the end of the study when it will be destroyed using institution guidelines for data security.

Evidence-based Intervention

This study used a web-based education module that presented content and topics identified in the Healer Education and Assessment and Referral (HEAR) program. The module was developed based on an integrative review of the literature to find education strategies to prevent suicide among nurses (Alderson et al., 2015; Davidson et al., 2018; 2019; 2020a; O'Brien et al., 2019; Rizzo, 2018). This study included three components comprising: 1) a 10-minute pre-test survey that evaluates knowledge of suicide risk and prevention, attitudes towards seeking help, subjective norms towards seeking help, perceived behavioral control towards

seeking help, and intentions to seek help if needed; 2) 25-minute web-based suicide risk and prevention training and 3) a 10-minute post-survey evaluating the change in knowledge of suicide risk and prevention, attitudes towards seeking help, subjective norms towards seeking help, perceived behavioral control towards seeking help, and intentions to seek help for suicidal ideations if needed.

Measures and Instruments

Data collection for this study occurred through electronic surveys using Qualtrics, a data collection software. The survey obtained demographic data consisting of age, sex, marital status, ethnicity/race, and education level of participants. Knowledge about suicide risk factors and prevention was assessed through five true/false questions that covered specific content in the web-based intervention (Table 1). A summary score was calculated with higher scores indicating greater knowledge attainment. The same questions were asked before and after the intervention. Similar knowledge strategies and questions have been used in prior studies (Crowe et al., 2018; Kullberg et al., 2020; Chan et al., 2009). Attitudes, subjective norms, perceived behavioral control and intentions to access suicide prevention resources if needed were assessed by the 15-item theory of planned behavior scale. This scale was developed using the guidelines provided by the developers of the theory of planned behavior and included four sub-scales (Ajzen, 1991; Ajzen, 2011). Each subscale included three to four questions based on a Likert-scale from 1 to 7, with higher scores indicating greater agreement (Table 2). The reliability and validity of the theory of planned behavior items and scales have been supported in the literature (Okoli et al., 2017; 2018). Pre-and post-test data was transferred to a data analysis software for further evaluation of outcomes.

Data Analysis

Missing data was addressed by using means or modal substitutions for continuous or categorical variables. Descriptive statistics were used to summarize demographic and personal characteristics, including means and standard deviations or frequency distributions (Table 3, Table 4). Specific analyses for the main outcomes were as follows:

- Aim 1: Assessed differences in knowledge before and after the web-based training: Differences in knowledge scores before and after the web-based training were analyzed using paired sample t-tests (Table 5).
- Aim 2: Assessed differences in intentions, attitudes, social norms, and perceived behavioral control after the web-based training: Differences in scores on intentions, attitudes, social norms, and perceived behavioral control scores before and after the web-based training were analyzed using paired sample t-tests (Table 5).

All analysis was conducted using IBM SPSS, version 28, with an alpha level of 0.5 used to indicate statistical significance.

Results

Of 101 nurses invited to participate in the survey, 34 nurses completed the web-based education module and pre-test. Five participants did not provide responses to the post-test. Thus, only responses from 29 participants were included in the analysis. The sample was predominantly female (75.9%), white, non-Hispanic (89.7%), and had a mean age of 43 (SD = 11.4) years. Most participants held a Bachelor of Science in nursing degree (89.7%) and were married or in a cohabitating relationship (62.1%). The primary practice setting for participants was Eastern State Hospital (62.1%) with participants at Good Samaritan Hospital accounting for the remaining participation (37.9%). There were no participants that identified the Central

Kentucky Recovery Center as their primary practice setting. As part of the survey, nurses were asked two questions, “Have you ever experienced suicidal thoughts?”, and “Have you accessed behavioral health support services because of suicidal thoughts?” Out of the 29 nurses surveyed, 12 (41.4%) reported they experienced suicidal thoughts and 3 (10.3%) reported having accessed behavioral health support services in the past. Refer to Table 3 and Table 4 for more information.

Participants’ knowledge related to nurse suicide and accessing available resources improved after completing the web-based education module. Knowledge scores were based on a potential range of 0-5. Participant knowledge scores increased from a pre-intervention mean score of 2.8 (SD = 0.7) to a post-intervention mean score of 3.4 (SD = 0.9), which was significant at a $p = .005$ level. Similar patterns were revealed in the pre- and post-intervention for the theory of planned behavior components (intention, attitudes, subjective norms, and perceived behavioral control). The scores of the theory of planned behavior components were based on a range from 1-7. Participant intention scores increased significantly ($p = .003$) from a pre-intervention moderate mean score of 5.1 (SD = 1.8) to a post-intervention high mean score of 6.1 (SD = 1.1). Attitude scores rose from a pre-intervention moderate mean score of 5.0 (SD = 1.6) to a post-intervention moderate to high mean score of 5.9 (SD = 1.2), which was a significant increase ($p = .002$). Subjective norms scores increased from a moderate pre-intervention mean score of 5.3 (SD = 1.5) to a post-intervention high mean score of 6.3 (SD = 0.8), which was also significant at $p = .002$ level. Perceived behavioral control scores increased slightly from an already high pre-intervention mean score of 6.1 (SD = 0.9) to a post-intervention mean score of 6.3 (1.0), but this increase was not statistically significant ($p = .205$). See Table 5 for more detail about the change in knowledge, attitudes, subjective norms, perceived behavioral

control, and intention scores. There were no significant gender differences or relationship status differences in demographic, knowledge, intention, attitudes, subjective norms, or perceived behavioral control. In addition, there were no significant differences in demographic variables by primary work setting.

Discussion

This study aimed to evaluate the ability of a web-based education module to improve the knowledge and intention to access behavioral health resources related to suicide prevention among psychiatric nurses. All components of the theory of planned behavior, attitudes, subjective norms, perceived behavioral control, and intentions showed improvement post intervention. The improvement in knowledge scores was statistically significant, moving scores from moderate pre-intervention to good post-intervention. This is consistent with several other studies that utilized web-based trainings to increase knowledge, specifically suicide prevention related knowledge (Bektas et al., 2018; Blair et al., 2018; Chan et al., 2009; Crowe et al., 2018; Goldstein, 2017; Kerr et al., 2020; Kishi et al., 2014; Kullberg et al., 2020; O'Brien et al., 2019).

The population focus for this study may represent the first to concentrate on nurse suicide within the psychiatric nurses subspecialty. Of note, over 40% of the participants from this study reported having experienced suicidal thoughts. This rate is significantly higher than a recently published study that revealed nurses experienced suicidal ideations at 5.5%, which was more than 1% higher than other workers (Kelsey et al., 2021). The aforementioned study outlined by Kelsey et al. was produced prior to the COVID pandemic which has amplified behavioral health concerns as noted in several studies (Choflet et al., 2022). What is unknown about the suicidal ideation demographic questions in this study is the recency of the nurse suicidal thoughts? Due to the design of the question, it is unclear if these suicidal thoughts were over the participants

lifetime, or within a more recent timeframe. Are psychiatric nurses more vulnerable to having suicidal ideations, or is this related to the mental health culture whereby help seeking behaviors among clinicians is more acceptable? Further qualitative analysis is needed to provide resolution to these findings and guide any efforts needed to address nurse suicide for groups at elevated risk.

Implications for Practice, Education, Policy, and Research

Nurses continue to experience high rates of depression, burnout, and suicidal ideation (Bambi et al., 2018; Davidson et al., 2018; Kelsey et al., 2021; Pariona-Cabrera et al., 2020; Peterson, 2020). Organizations and nurses are positioned to advocate for and develop bundled strategies to reduce suicide among nurses. The results of this study provided evidence of a cost-effective, highly adaptable, and accessible method of providing nurse suicide education that increases the intention and probability of “help seeking” by nurses. Organizations should adapt the construct of the intervention to meet the needs of their organization and nurses.

Late 2021, Kelsey et. al concluded in a study that nurses experience suicidal ideation at a higher rate than most workers and at exhibit exceptionally low rates of help seeking. Rates of help seeking for other mental health needs were higher than help seeking rates for those experiencing suicidal ideations. This was a dynamic that was also revealed in this study when participants responded to the question “Have you ever accessed behavioral health support services because of suicidal thoughts?”. The study questions evaluating the interventions effectiveness utilizing the theory of planned behavior directly addressed help seeking behaviors and the nurse’s intent to do so. Organizations creating programs should focus their efforts on not only knowledge building but improving the nurses access to pro-active services and help seeking behaviors (Choflet et al., 2022).

Finally, the nursing profession must begin to address the nurse across their professional continuum, specifically when they are in nursing school preparing to be a nurse. In 2016, Bartlett et al. conducted a study that revealed nursing students experienced significantly more stress, anxiety, migraines, sleep disturbances, and stress-related illnesses than non-nursing students. Web-based educational interventions could be developed to normalize mental health help seeking, particularly with an emphasis on suicidal ideations. Web-based interventions could be a part of a larger program that also periodically assesses students for high levels of stress and depression, often the precursor for suicidal ideations (Stubin, 2020).

Limitations

Some important limitations should be recognized with consideration to the findings of this study. The overall survey response (n=29) and small sample size may affect the generalizability of the results. Nurses have received multiple requests to complete surveys for varied research studies and state organization assessments (KNA, KBN, etc.) during the pandemic and may have survey burnout/overload/fatigue. In addition, this survey coincided with institutional employee engagement surveys at each site which may have contributed to “survey fatigue” and reduced participation. Future consideration should be given to the timing of the studies and the number of study requests given to nursing staff at a single site.

Another limitation of this survey included the possible influence of the PI’s position as a chief nursing officer within the organization, holding oversight for nursing at the sites surveyed. To minimize influence and bias responses from the survey, the links were not directly sent by the PI. Instead, the unit managers utilized their distributions lists to forward the cover letter and links for the survey to the RNs.

Finally, it was discovered after the survey had been distributed that it was possible for the participant to bypass the web-based educational intervention and complete only the pre- and post-survey alone. While possible, it is unlikely that this occurred. Future consideration should be given to creating a seamless pre-survey, intervention, and post-survey that allows the participant to cease participation but registers this event in the data.

Conclusion

Developing innovative and cost-effective programs that address the behavioral health needs of the nurse, particularly nurse suicide, is an important aspect of evidence-based care and clinical settings. By understanding the effectiveness of various modes of interventions, we can begin to create effective programs aimed to reduce suicide among nurses, and therefore healthier environments for nurses to thrive. The findings suggested that in the sample for this study, web-based education intervention improved the knowledge, attitudes, subjective norms, perceived behavioral control, and intentions related to nurse suicide and access to behavioral health resources among nurses. Data and insights learned from this study will be used to guide strategies to reduce nurse suicide at the facilities engaged in this study. Future studies may use the theory of planned behavior to examine other types of suicide prevention modalities to evaluate nurse intentions to utilize prevention services. In addition, this study should be replicated to include all nurses from a variety of settings to evaluate the intervention on a broader scale and to learn of any differences that may exist in nurse subspecialties. Such research could provide valuable insights into the effectiveness of interventions to develop evidence-based nurse suicide prevention strategies.

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Tables

Table 1.

Questions to Determine Knowledge of Nurse Suicide and Accessing of Available Services

Pre/Post Survey Knowledge	Question/Statement	
Knowledge survey related to nurse suicide and accessing available resources	1. The rate of firearm use by female nurses who die by suicide increased between 2014 to 2017.	True
	2. Factors that place nurses at higher risk for suicide include\; depression, knowledge of how to use a lethal dose of medication, personal/work stress, smoking/substance abuse, and undertreated depression and bullying.	True
	3. 1 in 10 nurses report being depressed.	False
	4. Nurse suicide rates are lower than that of the general population.	False
	5. University of Kentucky HealthCare employees can access two free behavioral health counseling services sessions.	False
(Responses are based on true/false answers)		

Table 2.

Questions on Intentions, Attitudes, Subjective Norms, and Perceived Behavioral Control Using TPB Framework

TPB constructs	Question/statement
Intention to access suicide prevention services	<ol style="list-style-type: none"> 1. If I were experiencing suicidal thoughts, I would expect to access suicide prevention resources in the next six months. 2. If I were experiencing suicidal thoughts, I would want to access suicide prevention resources in the next six months. 3. If I begin to experience suicidal thoughts, I plan to access suicide prevention resources in the next six months. <p>(Responses are based on a 7-point Likert-type scale with 1 being strongly disagree and 7 being strongly agree)</p>
Attitudes towards accessing suicide prevention services	<ol style="list-style-type: none"> 1. On a scale of 1 being 'harmful' and 7 being 'beneficial' how would you rate accessing suicide prevention resources if needed. 2. On a scale of 1 being 'bad' and 7 being 'good' how would you rate accessing suicide prevention resources if needed. 3. On a scale of 1 being 'unpleasant for you' and 7 being 'pleasant for you' how would you rate accessing suicide prevention resources if needed. 4. On a scale of 1 being 'worthless' and 7 being 'useful' how would you rate accessing suicide prevention resources if needed.
Subjective norms toward accessing suicide prevention services	<ol style="list-style-type: none"> 1. People who are important to me would want me to access suicide prevention resources, if needed. 2. It is my job duty as a nurse to access suicide prevention resources. 3. I feel responsible as a behavioral health nurse to access suicide prevention resources, if needed. 4. Most of my peers think it is important to access suicide prevention resources, if needed. <p>(Responses are based on a 7-point Likert-type scale with 1 being strongly disagree and 7 being strongly agree)</p>

<p>Perceived behavioral control in accessing suicide prevention services</p>	<ol style="list-style-type: none"> 1. I am confident that I could access suicide prevention resources if needed. 2. For me to access suicide prevention resources if needed, is easy 3. I am able to access suicide prevention resources if needed 4. Whether I access suicide prevention resources if needed, is entirely up to me. <p>(Responses are based on a 7-point Likert-type scale with 1 being strongly disagree and 7 being strongly agree)</p>
<p>TPB= theory of planned behavior</p>	

Table 3.*Demographic Characteristics of the Sample (N = 29)*

Demographic Variable	Mean (SD) or n (%)
Age	43.0 (11.4)
Gender	
Male	7 (24.1)
Female	22 (75.9)
Ethnicity	
White, Non-Hispanic	26 (89.7)
Black, Non-Hispanic	1 (3.4)
Hispanic	1 (3.4)
Asian/Pacific Islander	1 (3.4)
Education	
ADN/ASN	2 (6.9)
BSN	26 (89.7)
MSN	1 (3.4)
Relationship Status	
Single	10 (34.5)
Married or in a cohabitating relationship	18 (62.1)
Widowed	1 (3.4%)
Primary Practice Setting	
Eastern State Hospital	18 (62.1)
UK-Good Samaritan	11 (37.9)

Table 4.*Suicidal Ideation and History of Services for Suicidal Ideation (N=29)*

Questions	n (%)	n (%)
	Yes	No
Have you ever experienced suicidal thoughts?	12 (41.4)	17 (58.6)
Have you ever accessed behavioral health support services because of suicidal thoughts?	3 (10.3)	26 (89.7)

Table 5.

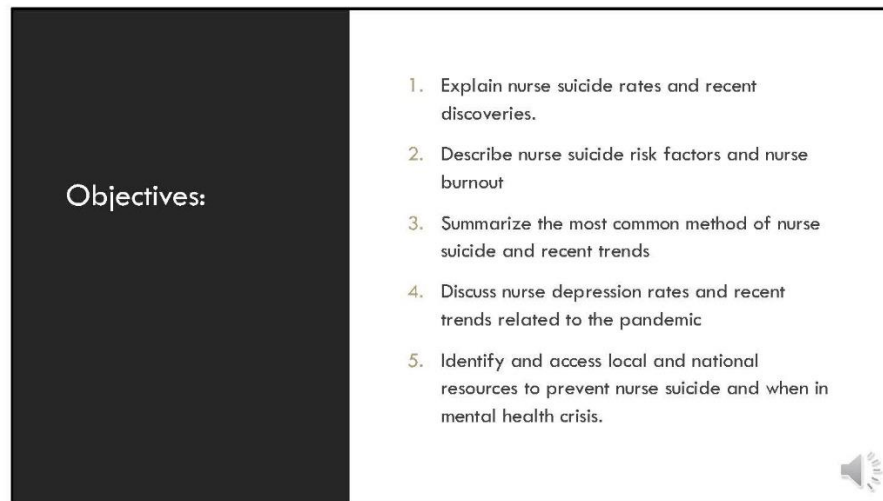
Changes in Knowledge, Intention, Attitudes, Subjective Norms, and Perceived Behavioral Control Related to Nurse Suicide and Accessing Services

	Potential range	Pre <i>Mean (SD)</i> N=29	Post <i>Mean (SD)</i> N=29	<i>p</i>
Knowledge	0-5	2.8 (0.7)	3.4 (0.9)	.005
Intention	1-7	5.1 (1.8)	6.1 (1.1)	.003
Attitudes	1-7	5.0 (1.6)	5.9 (1.2)	.002
Subjective Norms	1-7	5.3 (1.5)	6.3 (0.8)	.002
Perceived Behavioral Control	1-7	6.1 (0.9)	6.3 (1.0)	.205

Appendices

Appendix A:

Outline for Web-based Intervention for Nurse Suicide Prevention



Objectives:

1. Explain nurse suicide rates and recent discoveries.
2. Describe nurse suicide risk factors and nurse burnout
3. Summarize the most common method of nurse suicide and recent trends
4. Discuss nurse depression rates and recent trends related to the pandemic
5. Identify and access local and national resources to prevent nurse suicide and when in mental health crisis.

