

The Effectiveness of SBIRT Training for Online RN to BSN Nursing Students

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Abstract: Background: Substance abuse is a significant problem in the United States. More than half of Americans ages 12 and older are current drinkers of alcohol; Over a quarter report current use of a tobacco product and 10.2% report use of illicit drugs. Substance abuse is a significant threat to the health of our American citizens as statistics reveal it as a major cause of preventable deaths. Addressing the substance abuse crisis merits attention and skills training for our healthcare professionals. Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based simple screening tool that nurses can use to identify those at risk for substance abuse and provide brief intervention and referral to treatment. **Purpose:** This study was designed to examine the effectiveness of an online SBIRT training in RN to BSN nursing students by assessing the change in knowledge, readiness to perform, attitudes, and confidence related to the use of SBIRT in practice. **Method:** An interventional comparative method was used. The participants were asked to complete a pre and post intervention survey following a SBIRT training. The survey research design was used for gathering information from RN to BSN nursing students (n = 162) from a large private online university in the U.S. Participants were ages 18 and above, and mainly ages 45-54 (35%). **Findings:** The majority of the RN-BSN student nurse participants were between 45-54 years old (34.6%); 74.4%, worked in acute settings, 11 % identified as African American and 75% identified as White. A t-test was conducted, and results showed a statistically significant improvement in knowledge, attitudes, confidence, and readiness to perform SBIRT. **Conclusion:** This study supports the growing evidence that online SBIRT delivery is a viable tool for increasing student nurses' knowledge, confidence in performing SBIRT, and changing students' attitudes toward patients with substance use disorder (SUD). Nursing students who understand substance use disorder's etiology, treatment, and rehabilitation, may treat patients with SUD, just like they treat patients with chronic diseases. Their positive attitudes toward these patients may influence their degrees of encouragement and support, which are essential to treatment and recovery. Nursing students who are confident in performing SBIRT will most likely use this tool in their routine patient care if their practice environment supports it. This study shows the utility of online SBIRT education as a tool to empower nurses to help decrease substance use disorder in the population(s) they serve.

Keywords: SBIRT, Addiction, Substance use, substance abuse training, alcohol, brief intervention, referral, screening

I. INTRODUCTION

Substance abuse has been declared a national epidemic by the Centers for Disease Control (CDC, 2018a). According to the World Health Organization [WHO] (2020), substance abuse is defined as the overuse of psychoactive substances

that can cause harm and may also lead to dependence, such as alcohol and drugs (prescription and illicit). The overuse and abuse of opioids alone causes approximately one-hundred thirty (130) American deaths every day (CDC, 2018a; Rudd, 2016). More than 700,000 Americans have died from 1999 to 2017 due to drug overdose, and 68% of those were related to opioids (Hedegaard et al., 2017). Nicotine addiction, including smoking and tobacco use, claims more than 5 million deaths per year worldwide, and 480,000 within the United States (STAND, 2020). Smoking is the leading cause of preventable death. Alcohol abuse costs approximately \$200 billion each year in loss of productivity and 1 in 10 deaths is alcohol-related (Wells et al., 2018). According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2018) more than half (52%) of Americans, ages 12 and older are current drinkers of alcohol; 25.2% report current use of a tobacco product and 10.2% report use of illicit drugs. In 2017, 19.7 million American adults (aged 12 and older) battled a substance use disorder (SAMHSA, 2018). Substance abuse is a significant threat to the health of our American citizens and addressing the substance abuse crisis merits attention and training of skills for our healthcare professionals.

Substance abuse costs the United States over \$600 billion dollars a year (National Institute on Drug Abuse [NIDA], 2017). Indicators for leading causes of death in the United States identify unintentional injury as the third major cause of death, with liver disease and cirrhosis among the top ten causes of death for males, which are also related to substance abuse (Curtin & Heron, 2019). The Center for Disease Control and Prevention (CDC, 2018) found that in 2010 the cost of excessive alcohol consumption was estimated to be \$250 billion. In addition to the economic cost of substance abuse, the destruction to individuals and families is immeasurable and often devastating.

Screening, Brief Intervention, and Referral to Treatment (SBIRT) is an evidence-based practice that was created in 2003 by the Center for Substance Abuse Treatment, based on a recommendation of the Institute of Medicine to address the national epidemic of substance abuse. It is a simple process utilized by healthcare professionals to identify, reduce, and prevent the use and abuse of alcohol, nicotine, and illicit drugs (SAMHSA, n.d.). It consists of three components with the first being screening questions that can be used in any healthcare setting to assess for risky substance use behaviors. The second component is the brief intervention by a trained healthcare professional to engage the patient in a

short conversation about substance abuse, feedback on their risky behavior, and advice for treatment and resources. The third component is a referral to treatment for those who qualify for needed services. The overall goal of the SBIRT process is to identify and refer those with substance abuse and to engage those with risky behavior for intervention before the need for more extensive treatment. It is an appropriate screening tool for the general population and is most often performed by nurses and physicians.

II. LITERATURE REVIEW

The SBIRT approach has been used successfully among more than 1 million healthcare providers to identify those at risk for substance use and abuse of alcohol and illicit drugs. It is a simple process that can be integrated into care with improvements in treatment, efficiency, and has little to no cost (Babor et al., 2017). When SBIRT was used in general medicine settings it showed significant reductions in substance abuse. It is an efficient system to screen any patient in any setting including doctor's offices and high-volume settings such as emergency departments. Studies recommend training nurses and including follow-through with resources and treatment after the initial screening for the best results.

SBIRT should be regularly taught to nurses who represent the most numerous healthcare professional group that interacts with the general public. According to the American Association of Colleges of Nursing (AACN, 2019) nurses comprise the largest workforce in the United States who interact with the general public. Bachelor prepared nurses make significant improvements in the mortality and morbidity of patients (Aiken et al., 2009). In 2010, the Institute of Medicine (2011) recommended 80% of registered nurses be Bachelor of Science in Nursing (BSN) prepared by 2020. Due to this mandate and subsequent research findings, employers, such as Magnet hospitals prefer BSN prepared nurses and the result has been an increase in BSN nurses from 49% in 2010, to 56% as of February 2019 (American Association of Colleges of Nursing, 2019).

As nursing represents the largest discipline of healthcare professionals, ensuring all nurses have the education, skills, and training to assist patients is needed. It is vital that nursing curricula focus on the needs of populations at risk and teaches nurses the valuable skills to assess and address national health issues, such as substance abuse. Murphy-Parker (2013) states "an urgent need exists to disseminate the most recent knowledge and skills in nursing school curricula throughout the United States and internationally"(p.489).If nurses who directly care for patients are trained in the SBIRT skills of assessing, intervening, and referring those who may potentially have a substance abuse problem, a measurable difference in patient outcomes may be realized (Stuart, 2014).

According to Gotham, Knopf-Amelunget al. (2015) "most health-care professional training programs lack educational curricula on substance use disorders and strategies

for early intervention or referral to treatment" (p. 1). Most nursing curricula have not included specific training on SBIRT and there is a gap between this knowledge and skills for new nursing graduates. Mollica et al. (2011) surveyed 117 BSN level nursing programs in the northeast U.S. and found only 23% of nursing programs included some clinical and didactic experience in addressing SBIRT for alcohol or drug use disorder.

Sufficient evidence in nursing literature exists to indicate that substance abuse education is a "key predictor of knowledge and therapeutic attitudes" towards patients with substance abuse (Rassool, 2007, p. 63). When there is a negative attitude towards substance users by nurses, there is a decline in SBIRT use. Attitudes, knowledge, and readiness of healthcare providers can be influenced by past negative or positive experiences, educational preparation, contextual circumstances, as well as, cultural and religious beliefs. SBIRT is an evidence-based model that teaches nursing students a skill to identify a substance use disorder and assist them in referring patients to community resources. To enhance the use of SBIRT implementation among practicing nurses, Cook et al. (2018) provided training to advance practice and undergraduate nursing students in a medical center environment and found that more than half of participants implemented SBIRT following graduation. SBIRT training is appropriate for nurses practicing at various educational levels and in multiple practice settings.

Belfiore et al. (2018) conducted a qualitative study using a survey of university faculty to determine how to successfully integrate SBIRT into an already established master's curriculum for nursing and social work. Two main themes resulted suggesting faculty buy-in is important to the integration of SBIRT into an already established curriculum and the study also recommended the use of a gradual stepped approach to integrate the content into multiple learning opportunities. Kelly et al. (2018) compared SBIRT training outcomes of undergraduate students online as compared to on-site training. The SBIRT training changed previous negative attitudes of nurses and reduced the negative stigma associated with substance use and abuse in both the online and on-site students. The onsite students had high satisfaction with the training, while the distance learner's skills in assessing patients were significantly improved.

Knopf-Amelung et al. (2018) claimed that substance use and SBIRT are not common in the BSN nursing curriculum. To determine effective teaching strategies, the authors used three strategies including face to face, narrated slides, and an interactive online module to educate 256 BSN students over three years. The study found no difference between the various teaching strategies for SBIRT when they measured nursing attitudes and knowledge in the pre- and post-training surveys. Results suggested all three groups experienced increased knowledge and attitudes. The best improvement in the study however was due to using the face to face training and interactive online approaches. Such

outcomes may suggest an online interactive approach has the potential to be as effective as an in-person approach to instruction.

Similarly, Rittle et al. (2019) found that adding SBIRT education into their nursing curriculum was of great value and improved self-perceived competence in performing SBIRT. Their seven-week online training for 119 occupational health nurses working toward their BSN, resulted in a statistically significant improvement in nurse confidence and knowledge to perform SBIRT. Mahmoud, et al. (2019) using a single sample pre-post-test format, found improvement in nursing student attitudes towards patients with substance use disorder, following an interventional SBIRT training.

Practicing nurses who have returned to complete a BSN degree have the opportunity to integrate evidence-based practice into their current practice. Practicing evidence-based skills in any clinical setting results in improved patient outcomes and overall population health (Melnyk et al., 2016). Additionally, patient satisfaction and lower healthcare costs may also be realized through consistent skill use in something such as the SBIRT model.

III. METHOD

This interventional comparative study examined the effectiveness of online SBIRT training on post-licensure nursing students. The study population was registered nurses (RN) to Bachelor of Science in Nursing (BSN) students in an online degree program at a national university. The RN to BSN program is for registered nurses who received their initial nursing licensure from an associate or diploma degree program and are seeking a baccalaureate degree in nursing. As a response to the need to have nurses educated on substance use and abuse, the community health nursing course in the RN to BSN program implemented an SBIRT assignment. The purpose of the SBIRT assignment was for students to learn about the SBIRT approach, understand its uses, and then integrate the SBIRT process into nursing practice. The initial purpose of the project was to provide a baseline of student attitudes and utilization of SBIRT that would guide future course development.

Before starting the assignment, students were asked to voluntarily complete a qualified survey tested for reliability and validity with prior use by its developers (McPherson et al., 2018). The survey questioned the student's attitudes, knowledge, confidence, and readiness to perform SBIRT. The main headings in the survey were 1.) attitudes about substance use and alcohol use, 2.) how confident do you feel? 3.) how ready do you feel? 4.) knowledge, and 5.) demographics. Each heading included related subsequent questions. All questions from the pre and post surveys were included in the data collection.

Research Question

Screening, brief intervention, and referral to treatment (SBIRT) is a clinical intervention model empirically linked to reductions in substance use. However, little information is published on how to effectively train and educate nursing students to improve their confidence. The research question for this study is: Is there a (statistically) significant difference between the student's knowledge, confidence, attitude, and readiness to perform SBIRT pre- and post- training?

Intervention

The SBIRT assignment took place during the community health nursing course and data was collected over three semesters. The survey research design was used for gathering information from RN to BSN nursing students (n = 162) from a large private online university in the U.S. Participants were ages 18 and above, and mainly ages 45-54 (35%). This interventional study focused on enhancing baccalaureate nursing education to prepare nurses for any practice setting. Being the largest healthcare professionals in the U.S., nurses have a pivotal role in all areas that contribute to good health (Robert Wood Johnson Foundation [RWJF], 2018). By measuring and assessing the student pre- and post-survey data from the community health nursing SBIRT assignment, we can determine the impact of this educational intervention.

Before starting the assignment, students were voluntarily asked to complete the pre-survey to assess their knowledge, attitudes, confidence, and readiness to perform SBIRT. The assignment consisted of nursing students completing readings about the SBIRT process as well as an online training module. Students were instructed to research on substance abuse in their own community related to alcohol, or drug (prescription or illicit). Students then created a poster or PowerPoint presentation that consisted of an introduction to the problem, the significance of the problem in their community, a description of the SBIRT process, a video demonstrating the use of SBIRT, resources specific to their community that could assist those in need, and concluded with nursing implications. After completion of the assignment, nursing students voluntarily took a post-survey to assess their knowledge, attitudes confidence, and readiness to perform SBIRT.

This study enabled the university and faculty to assess curriculum effectiveness in terms of student knowledge, attitudes, confidence, and rates of performing SBIRT before student's completion of the SBIRT assignment. This data provided a baseline of student performance and SBIRT utilization to guide future course enhancements. The web-based survey was designed to select participants based on inclusion and exclusion criteria. Inclusion criteria were nurses in the online RN to BSN community nursing course of any gender and age. Students with previous training in SBIRT were excluded from the study to avoid skewing of data. The

survey hosting website, Qualtrics.com, also prevented participants from taking the same survey more than once.

Design

This interventional study aimed to study the effects of SBIRT training on the use of SBIRT in practice among post-licensure nursing students. A cross-sectional descriptive, quantitative method was used. The research protocol was approved by the Institutional Review Board of the university. The study met the ethical guidelines, including adherence to the legal requirements and informed consent from the study population. Participants formally agreed to the study disclosure. Surveys were anonymous and researchers were blinded to the names of participants. Study surveys were accompanied by a letter including information about the aim of the study, which was disseminated to students through the online course announcements. Confidentiality was maintained by making participation anonymous.

Data Analysis

A paired t-test was used to analyze differences between 2 groups, which included a pretest group that completed the online community nursing course as usual, and the intervention group of students that completed the intervention of the SBIRT training assignment. The data was collected from 162 students. To calculate the sample size, a power analysis calculation based on the following variables: age, ethnicity, level of education, years of professional nursing experience, level of confidence, knowledge, attitudes, and readiness level resulted in a sample size of 278 or more participants to reach a 95% confidence level. The equation for calculating sample size is shown below (Calculator.net). Figure 1 demonstrates the power analysis calculation.

Figure 1

Sample Calculation

Unlimited population:
$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2}$$

Finite population:
$$n' = \frac{n}{1 + \frac{z^2 \times \hat{p}(1-\hat{p})}{\epsilon^2 N}}$$

Where

z is the *z* score

ε is the margin of error

N is population size

p̂ is the population proportion

For this study, the level of significance was set as $\alpha = .05$, and the power was set as $(1 - \beta)$, which equaled $.80$. To achieve the sample size, the survey was distributed to 1000 participants, aiming for a 30% response rate to avoid the

probability of committing type I and type II errors. Committing a type I error would lead to overestimation of the effect of education on knowledge, attitudes, confidence, and increased rates of performing brief interventions with clients at risk for substance abuse prior to completion of the SBIRT assignment. Committing a type II error, on the other hand, would lead to the underestimation of the effect of education on knowledge, attitudes, confidence and increased rates of performing brief interventions with clients at risk for substance abuse before completion of the SBIRT assignment (Benda & Engels, 2011).

Data from the surveys were analyzed using the Statistical Package for the Social Sciences (SPSS25) for Windows. Descriptive analysis was completed and confirmed to determine the characteristics of the sample. Frequency tests and analysis were conducted to indicate that the data were sampled from a population with normal distribution. The correlation between SBIRT training and demographic characteristics was examined using the Pearson correlation coefficient. A paired t-test was used to compare SBIRT scores according to pre- and post-survey scores. The significance level was set to $P < 0.05$. Descriptive statistics, including frequency and percentages for categorical variables and mean for continuous variables, were computed, and reported. Change in knowledge, attitude, confidence, and readiness scores were measured by comparing pre- and post-survey scores using paired t-tests.

IV. RESULTS

The overall study sample was evenly distributed across age, profession, and clinical experience. The self-administered online survey consisted of 2 segments. The first segment included the demographic data of age, educational status, and years of nursing experience. The second segment surveyed knowledge, attitudes, readiness, and confidence related to performing SBIRT. Table 1 illustrates the data that was surveyed.

Table 1

Demographic data of study sample (Demographics Survey)

	Sample Description
Race	
<i>N</i>	162
% African American	11.20 %
% Asian	6.9 %
% White	75.00 %
% Hispanic or Latino	1.2 %
% Other	5.7 %
Total	100%
Working Place	
<i>N</i>	162
Hospital	73.5%

Office/clinic	6.2%
Long Term Care	6.8%
Community	6.8%
Other	6.8%
Total	100%
Age	
N	162
18-24	.6%
25-34	1.2%
35-44	13.6%
45-54	34.6%
% 55-64	32.7%
% 64-74	16.0%
% over 75	1.2%
Total	100%

Characteristics of Study Sample

The majority of the RN-BSN student nurse participants were between 45-54 years old (34.6%); 74.4% worked in acute settings, 11 % identified as African American

and 75% identified as White. Most students reported never having used tobacco regularly (63.9%), 27.3% were former tobacco users and 8.8% were current users. Table 1 reviews the reported demographic data.

Intervention Effects

To examine differences in knowledge between the results before and after SBIRT training, a paired t-test was conducted, resulting in statistically significant variance in knowledge, attitudes, confidence, and readiness to perform between the pre- and post-surveys.

Table 2 presents the differences in students’ responses before and after the SBIRT online training intervention. These results suggest that SBIRT training really does influence attitude (M=21.75, SD=3.16) and pre-survey (M=20.52, SD= 3.62; t= (3.17), P=.001. The training also had the same significant effect on knowledge (M=7.47, SD=2.11) and pre-survey (M=3.61, SD=1.03); t= (21.39), P=.01. The results also demonstrated a higher level of confidence among participants (M= 30.46, SD=7.04) than pre-survey groups (M= 27.75, SD=8.0). Moreover, the results show a statistically significant difference in mean readiness to use SBIRT in routine patient care (M=30.80, SD=7.51) and pre-survey (M=28.27, SD=8.80); t=(2.75), P=.05 as illustrated in Table 2.

Table 2 Descriptive statistics and paired-samples t test results for students’ knowledge, readiness, confidence, and attitudes

	Pre-training		Post-training		Paired-Samples tTest	
	M (SD)	N	M (SD)	N	t	df
Attitude	20.52(3.62)	162	21.75 (3.16)	162	3.17***	161
SBIRT Knowledge	3.61 (1.03)	162	7.47 (2.11)	162	21.39**	161
Confidence	27.75 (8.0)	162	30.46 (7.04)	162	3.212**	161
Ready	28.27 (8.80)	162	30.80 (7.51)	162	2.75**	161
* p< .05, ** p< .01, *** p< .001.						

V. DISCUSSION

The interventional study supports the growing evidence that online SBIRT delivery is a viable tool for increasing student nurses’ knowledge, and confidence in performing SBIRT, as well as changing students’ attitudes toward patients with substance use disorder. This study also demonstrates that online SBIRT assignments have the potential to reach larger groups of students. By having SBIRT training modules prepared by faculty and subject matter experts that are available for use, nurse educators can readily integrate SBIRT into their courses throughout programs in the university.

This interventional study found a significant change in the attitudes of RN-BSN students towards patients with substance use disorder. This outcome is significant because, according to Brenner et al. (2010), attitudes have been shown to affect the quality of care. This finding also aligns with the

results of several previous research studies (Rassool, 2007; Kelly et al., 2018; Knopf-Amelung et al., 2018 & Mahmoud et al., 2019). Another significant finding is the increase in student confidence to use Screening, Brief Intervention, and Referral to Treatment (SBIRT). This outcome is consistent with the results of several studies (Cook et al., 2018; & Rittle et al., 2019). Also, Agle et al. (2016) reported that students who report self-confidence in delivering SBIRT were more likely to use SBIRT in their practice.

An expected finding of this study is the increase in knowledge among students which supports the results of several studies (Knopf-Amelung et al., 2019; Rossool, 2007). The authors believe that this result may have also been helped by the increase in substance use disorder awareness in all forms of media. Networks, publications, and social media have increased their coverage of substance use disorders’ health, social, and economic impact.

To help nurse educators include SBIRT in their programs, the study authors created materials and assignments that will be shared with educators in the university. Also, technical assistance will be provided to interested faculty to explore different ways of integrating SBIRT in their courses. Additional topics related to SBIRT include identifying barriers to the adoption of an SBIRT education module by both undergraduate and graduate faculty as well as describing factors that facilitate and hinder adoption.

VI. LIMITATIONS AND RECOMMENDATIONS

Nurses play a key role in health and findings suggest that most nursing curriculums lack adequate education on preparing nurses to screen, intervene, and refer patients who are at risk for substance abuse and misuse (Knopf-Amelung et al., 2018). Understanding that SBIRT education in nursing school is essential to use and implementation, baccalaureate universities have an opportunity and responsibility to provide students with education not only on substance use and abuse, but also how to screen, intervene, and refer to treatment. The authors were able to design and implement a successful online SBIRT education and training program based on evidence from an exhaustive literature review. However, this study has several limitations. The investigators did not include a training control group, which could rule out changes contributable to other learning education experiences. Another limitation was the use was related to sample size and data collection. The authors used one single institution study and small sample, which might reduce generalizability.

Faculty experts in online content delivery, outcome evaluation, and substance use disorder developed this online SBIRT module. As the results demonstrate, education on SBIRT and substance use is effective in the online environment. The authors recommend that education on substance use be woven throughout the curriculum. This module is available to all university faculty who want to integrate SBIRT in their courses. The ease of integration may increase the utilization of this module in all programs. As part of their university service, the faculty developers can provide technical assistance for other faculty members. Moreover, the authors suggest further study to validate the findings, that facilitate future changes in curriculum.

Implications

Integrating SBIRT education in an online RN-BSN curriculum that reaches thousands of nurses per year can increase nurses' impact in reducing substance use disorder in patients they serve. This integration in the RN-BSN curricula may compensate for the continuing lack of SBIRT and other substance use disorder (SUD) content in most nursing curriculum.

Practical SBIRT education modules empower RN-BSN students to use SBIRT as part of their routine patient care in real time. The RN-BSN students may acquire new knowledge and skills that may improve their routine holistic

patient care by assessing substance use disorder. The SBIRT tools may also give them the confidence to address the fear of approaching topics like illegal drug use. The attitude change resulting from the SBIRT education may also increase the nurses' encouragement and support for patients, generally extended to patients with chronic diseases by nurses. These confidence-enhancing nursing interventions are essential in SUD treatment and recovery.

VII. CONCLUSION

This interventional study supports the growing evidence that online SBIRT delivery is a viable tool for increasing student nurses' knowledge and confidence in performing SBIRT and may change students' attitudes toward patients with substance use disorder. Nursing students who understand substance use disorder's etiology, treatment, and rehabilitation, may treat patients with SUD, just like they treat patients with chronic diseases. Their positive attitudes toward these patients may influence their degree of encouragement and support, which are essential to treatment and recovery. Nurses who are confident in performing SBIRT will most likely use this tool in their routine patient care if their practice environment supports it. This study shows the utility of online SBIRT education as a tool to empower nurses to help decrease substance use disorder in the populations they serve. This interventional study indicates that online SBIRT assignments have the potential to reach larger groups of students. By having SBIRT training modules prepared by faculty and subject matter experts available for use, nurse educators can readily integrate SBIRT into their courses throughout university programs.

This study also demonstrates the value of nurse educators being champions for the inclusion of SBIRT in their courses. Due to the impact of substance use disorder on personal and population health, students trained on SBIRT during their education can promote a culture of health in their communities. For these reasons, the authors of this study will advocate for the continuous inclusion of SBIRT in the university's undergraduate and graduate programs.

This study exemplified the value of nurse educators being champions for the inclusion of SBIRT in their courses. Due to the impact of substance use disorder in personal and population health, students trained on SBIRT during their education can promote a culture of health in their communities. For these reasons, the authors of this study will advocate for the continuous inclusion of SBIRT in undergraduate and graduate programs of the university.

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