IMPLEMENTATION OF SCREENING, BRIEF INTERVENTIONS, AND REFERRAL TO TREATMENT (SBIRT) IN THE EMERGENCY DEPARTMENT

A DOCTORAL PROJECT
Submitted in Partial Fulfillment of the Requirements
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By

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ABSTRACT

Drug and alcohol use is an epidemic health problem that is affecting Americans at an unprecedented scale. The federal government, states governments, and local authorities across the United States are working together to fight this epidemic. The Screening, Brief Intervention, and Referral to Treatment (SBIRT) initiative was introduced in 2003 by the Substance Abuse and Mental Health Services Administration (SAMHSA). The program goal was to leverage any interaction time between patients and healthcare providers for any health complaint to screen for drug and alcohol use, provide brief interventions, and to appropriately refer individuals to substance rehabilitation treatment. The program was intended to be used in different healthcare facilities including primary care, counseling centers, inpatient units, behavioral health units, and emergency departments.

In this scholarly project, Screening, Brief Intervention, and Referral to Treatment SBIRT was implemented in the Emergency Care Center (ECC) of St. Joseph Hospital-Orange. The goal was to integrate screening of all ECC eligible patients (18-65 years of age) for drug or alcohol use in the care process. The project involved implementing SBIRT as a standard of practice in the ECC and required training ECC nurses to provide SBIRT interventions. Evaluation occurred after six weeks of launching the program. Of
the patients visiting the ECC, 3.5% received a SBIRT intervention. The validated evaluation tool Confidence Scale (C-scale) by Susan Grundy (1993) was utilized to evaluate training efficacy. Nurse knowledge of SBIRT increased with training. A paired sample t-test revealed a statistically significant difference between the total scores of the C-scale pre-test \((M = 7.82, SD = 4.13)\) and immediate post-test \((M = 16.81, SD = 3.7)\), \(t(86) = 17.6, p < .001\) and a statistically significant difference across the five items of the C-scale between pre-training and post-training of the 87 participants who completed the tool.

The number of patients receiving SBIRT interventions is expected to increase in context with the planned change of the current EMR system at St. Joseph Hospital to a more adaptive system. Future clinicians and hospital administrators who anticipate implementing SBIRT may wish to consider customizing the EMR to include a user-friendly screening and documentation templates of SBIRT interventions. Challenges that emerged during the implementation process included the lack of technical capabilities of the ECC current EMR to include SBIRT intervention and the difficulty of achieving optimal face-to-face interaction between the project leader and all 125 nurses in the ECC.
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BACKGROUND

In 2016, the United States Surgeon General declared alcohol and drug addiction a public health crisis and issued a call to end this epidemic (Office of the Surgeon General, 2016). In 2015, a drug use and health survey of 265 million people around the United States (US) estimated that 65% of people used alcohol in the past year, 26.9% engaged in binge drinking in the past month, 7% reported engaging in binge drinking more than 5 days in the past 30 days, and 17.8% of people used illicit drugs (Substance Abuse and Mental Health Services Administration (SAMHSA), 2016). In 2010, the overall economic burden of drug and alcohol use in the US was estimated to be 400 billion dollars annually (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015).

The American Psychiatric Association (APA) classified substance-related disorders under ten major drug classes; alcohol, caffeine, cannabis, stimulants, inhalants, opioids, hallucinogens, tobacco, and sedatives (American Psychiatric Association, 2013, p. 481). Alcohol use disorder (AUD) has the highest prevalence among the other substance use disorders, with a prevalence of 6.2% among adults and 2.5% among youths between the ages 12 to 17 (Substance Abuse and Mental Health Services Administration, 2016). Alcohol use can lead to serious short and long-term health consequences. Short-term consequences include alcohol-related injuries, suicide, homicide, miscarriages, and fetal alcohol syndrome. Long-term health consequences include liver disease, hypertension, stroke, and cancers (World Health Organization, 2014). In 2015, driving under the influence of alcohol accounted for 29% of all driving fatalities in the US (National Highway Traffic Safety Administration, 2016). The Centers for Disease
Control and Prevention (2013) estimated there were 88,000 alcohol-related deaths between the years 2006 to 2010.

**Significance of the Problem**

In 2012, approximately 62% of individuals surveyed in Orange County, California reported using alcohol, 8% reported using illicit drugs, and 2% reported misusing prescribed drugs in the past year. In the years 2011 and 2012, the number of drug and alcohol-related hospitalizations in Orange County was 10,782 with a total cost of more than 269 million dollars. There were 1,156 alcohol and drug-related deaths recorded in Orange County between 2011 and 2012 (Orange County Health Care Agency, 2014). The financial and human costs of drug and alcohol use are high and early detection and prevention measures are needed to manage the crisis at the local and national level. The screening, brief intervention, and referral to treatment intervention set (SBIRT) is an evidence-based preventive bundle of interventions that can be implemented in Emergency Departments (ED) to improve the health of those struggling with alcohol and drug misuse (Vaca & Winn, 2007; Woodruff, Eisenberg, McCabe, Clapp, & Hohman, 2013).

**Problem Statement**

The death rate from drug and alcohol overdose in Orange County increased by 51% between the years 2000 and 2012 (Orange County Health Care Agency, 2014). Saint Joseph Hospital-Orange (SJO) is one of the busiest hospitals in Orange County and in California with 79,845 cases seen in its Emergency Care Center (ECC) in 2016. Previously, SJO ECC screening consisted of a single question “Do you have any history of substance use?” and lacked standardized interventions for those who responded ‘yes’.
Patients at risk of substance use, but cared for in the ECC for other complaints, did not typically receive interventions to target substance use behaviors.

The purpose of this evidence-based practice Doctor of Nursing Practice (DNP) project was to implement and evaluate the use of SBIRT in an ECC to provide screening, interventions, and referral for treatment of patients at risk of having alcohol and drug-related problems. A secondary purpose was to evaluate SBIRT training efficacy by evaluating nurses’ level of knowledge and confidence.

**Theoretical Framework**

Translational research experts recommend the use of a theoretical framework to guide and facilitate the implementation and utilization of evidence into practice in both the academic and clinical settings (Mitchell, Fisher, Hastings, Silverman, & Wallen, 2010; Van Achterberg, Schoonhoven, & Grol, 2008). In 1998, Logan and Graham presented the Ottawa Model for Research Use (OMRU) as an interactive framework to implement research outcomes into practice.

OMRU is based on assessment, monitoring, and evaluation (AME) (Graham & Logan, 2004; Logan & Graham, 1998). Under the AME of the OMRU, there are six interrelated steps: 1) identification of stakeholders and policymakers, 2) clarification of the innovation, 3) assessment of potential adopters, innovations, barriers, and practice environment, 4) selection of strategies for implementation and monitoring, 5) monitoring of adoption and 6) evaluation of outcomes (Graham & Logan, 2004). Figure 1 below shows a depiction of the OMRU model.
**Assessment Stage**

**Assess practice environment.** The first step is to identify stakeholders, jurisdictions, available resources, and people who may facilitate the implementation of the innovation. This step identifies the needed organizational authority to implement the proposed innovation (Graham & Logan, 2004). This step assesses, describes, and identifies the influential factors in the environments including structural factors, social factors, patient factors, and other situational factors (Logan & Graham, 1998).

The project was implemented at the ECC of SJO. There was consensus among stakeholders at SJO about the need for a systematic process to screen and intervene when substance use behaviors were manifested among the ECC patients. The site was assessed
to identify the available resources that would facilitate the implementation of SBIRT and to determine additional external resources needed. The author collaborated with Orange County Community Health (OCCH) SBIRT program at California State University, Fullerton to secure training for the nurses who became SBIRT trainers at SJO.

**Evidence-based innovation clarification.** The second step was to provide a clear detailed description of SBIRT, its components, and the processes required for its implementation. This provides potential adopters and decision makers with an opportunity to learn about the proposed innovation (Graham & Logan, 2004; Logan & Graham, 1998). The author provided a clear description of SBIRT, the evidence supporting SBIRT, and the need for SBIRT in the ECC to the decision makers. During the presentation, the author addressed all related questions and concerns of the stakeholders.

**Assess potential adopters.** In this step, the author assessed potential adopters and the practice environment, proposed the innovation and identified the potential barriers and available support. All potential adopters should be identified including policy makers, administrators, and other stakeholders. The change agent should assess the adopter’s perception, attitude toward change, knowledge, and skills required for the change. The change agent must also conduct an assessment of the potential barriers and available support for the practice change, which include politics, work culture, available resources, and economics (Graham & Logan, 2004).

In this project, the potential adopters of SBIRT were nursing staff, social workers, and other healthcare providers in the ECC. The knowledge of potential adopters was examined related to the following topics: substance use disorders, screening tools,
motivational interventions, and experience with SBIRT. The adopters’ motivation and readiness to adopt SBIRT were examined. Potential barriers and resources to implement SBIRT were assessed and discussed with potential adopters.

**Monitoring Stage**

**Implementation and monitoring strategies.** In this step, the author transitioned from the assessment stage to the monitoring stage. He took into consideration the assessment findings including the adopters’ characteristics, barriers to change, and the practice environment in which to implement and monitor strategies. The author then modified the interventions and strategies as needed to fit the practice environment and overcome barriers (Graham & Logan, 2004).

The main objective of this project was to incorporate SBIRT interventions in the ECC care process. To achieve this goal, a staff education curriculum was developed and covered the following topics: substance use disorders, screening tools, substance use treatment options, and available external referrals to treatment. In addition, activities were designed to train staff on motivational interviewing. The screening tools and motivational interviewing questions were incorporated in the assessment and documentation forms of the ECC.

**Monitoring adoption.** The author created a framework to monitor the implementation and the adoption of the innovation. The adopters’ intention, perception, and knowledge were assessed to determine whether the adoption of SBIRT was achieved (Graham & Logan, 2004).

The implementation of SBIRT in the ECC was monitored by tracking the number of actual applications and comparing them with the percentage of patients who received
interventions in the ECC and by staff feedback on SBIRT training efficacy. The work environment was monitored to overcome barriers that had not emerged in the prior assessment stage.

**Evaluation Stage**

**Outcome evaluation.** According to OMRU, outcome evaluations are conducted to determine the impact of practice change on patient and care provider outcomes as well as other specific outcomes related to the innovation (Graham & Logan, 2004).

The scope of the evaluation for this project was limited to nursing staff provider outcomes and to the rate of SBIRT interventions. Nurses’ knowledge was assessed through questionnaires that were administered before training, immediately after the class, and weeks after training. The percentage of patients who received SBIRT interventions was examined. Further evaluation of patient outcomes is planned to take place retrospectively after this DNP project is completed. The focus of this latter outcome analysis will be on evaluating the effect of SBIRT interventions on substance use behaviors among patients who received SBIRT interventions at the ECC.
Figure 2. The Implementation of Screening, Brief Intervention, and Referral to Treatment Utilizing the Ottawa Model of Research Use.
REVIEW OF LITERATURE

A review of literature was conducted using the following databases: CINHAL, PubMed, Cochrane, ScienceDirect, and PsycINFO. The literature review consisted of a search of peer-reviewed articles related to the following topics: substance use disorders, SBIRT, and brief motivational intervention. The following search terms were used: screening, brief interventions, and referral to treatment or SBIRT, substance use disorder, and motivational interviewing. The search terms were used in different combinations. The medical subject headings were identified and used in the search process. In addition, the reference lists of resources were checked to identify studies that were not identified otherwise. Textbooks were used to provide information about the topic of substance use disorders. In the following sections, an overview and synthesis of the following topics is presented: substance use disorder, definitions of terms, etiology, pathophysiology of substance use, SBIRT, brief motivational intervention, and research studies related to SBIRT interventions.

Substance Use Disorder

The Diagnostic and Statistical Manual of Mental Disorder (DSM V) classified substance-related disorders under 10 major drug classes; alcohol, caffeine, cannabis, stimulants, inhalants, opioids, hallucinogens, tobacco, and sedatives (American Psychiatric Association, 2013, p. 481). In 2016, the United States Surgeon General declared alcohol and drug addiction a public health crisis and issued a call to end the epidemic (Office of the Surgeon General, 2016). The Surgeon General’s report was based on the 2015 national survey, which represented 265 million people around the United States. The results of the national survey showed that 65% of people used alcohol and
17.8% used illicit drugs in the past year (Substance Abuse and Mental Health Services Administration (SAMHSA), 2016).

**Etiology**

Substance use disorder can be related to multiple etiologic factors including psychodynamic factors, genetic factors, and neurochemical factors (Sadock, Sadock, & Ruiz, 2015). The psychodynamic factors of substance use behaviors can be related to dysfunctional psychodynamic formulation including disturbed ego function, self-medication, or they can be acquired by learning and conditioning (Sadock et al., 2015). Recent research finding suggested an association between substance use behaviors and genes that affect dopamine production in the brain (Sadock et al., 2015). The malfunctioning of specific neurotransmitters and their receptors’ activities was found to cause specific substance use behaviors (Sadock et al., 2015).

**Pathophysiology of Substance Use Disorders**

Substance abuse is associated with pleasurable sensations, which cause an overflow of neurotransmitters in the brain. Substance abuse causes abnormally elevated levels of neurotransmitters, which in turn cause disruption and/or alteration of the brain neurons and pathways (Higgins & George, 2013). The effects of substance abuse on the mesolimbic system are directly related to an increase in the release of dopamine or indirectly through suppressing the inhibition process of dopamine (Higgins & George, 2013). Stimulants and nicotine are associated with a direct increase in dopamine, while opioids, sedatives, and alcohol are associated with an indirect increase of dopamine (Higgins & George, 2013). Substance use addiction can cause brain changes that are manifested by two main symptoms; tolerance and withdrawal. Other symptoms include
anhedonia and depression (Higgins & George, 2013). Long-term consequences of substance abuse of drugs and alcohol may result in the reduction of the size of the brain, leading to a decline in cognitive abilities (Higgins & George, 2013).

**Psychopathology of Substance Use Disorders**

Learning theories consider human behaviors as learned behaviors that are driven by their consequences (Mcleod, 2014; Skinner, 1963). The substance induced effects of euphoria and mood changes are perceived by the brain as a reward (positive reinforcement), while withdrawal symptoms and mood changes associated with the absence of the substance are perceived as a punishment (negative reinforcement) (Sadock et al., 2015). Substance use behaviors are driven by the bodily response to substances and their withdrawal. People who are suffering substance use disorder may lack the self-control to overcome the substance use behaviors. Using a psychotherapeutic intervention will assist in enabling the self-control to avoid unwanted behaviors (Skinner, 1953).

**Screening, Brief Intervention, and Referral to Treatment (SBIRT)**

The development of SBIRT started back in 1989, after the World Health Organization (WHO) developed the Alcohol Use Disorder Identification Test (AUDIT) (Babor & Robaina, 2016). The WHO conducted 10 studies that supported brief intervention (BI) as being effective in the reduction of risky drinking behaviors (World Health Organization, 1996). In 2003, the Substance Abuse and Mental Health Administration (SAMHSA) initiated the SBIRT program and provided funding for six states to promote the adoption of this program in the United States (Babor, Del Boca, & Bray, 2017). The U.S. Protective Task Force recommended screening and brief
interventions as an evidence-based practice to screen and reduce risky alcohol consumption among adults 18 years and older (U.S. Preventive Services Task Force, 2013).

**Elements of SBIRT**

The SBIRT approach consists of the following steps: screening, brief interventions, and referral to treatment. Each of these steps is further clarified in the following sections.

**Screening.** Screening is defined as using a validated universal screening tool for the purpose of identifying risky behaviors related to substance and alcohol abuse and the categorization of the risky behaviors into different risk levels to enable healthcare professionals identify the appropriate treatment option (Substance Abuse and Mental Health Services Administration (SAMHSA), 2011). The screening process takes between 5 to 10 minutes using the following validated tools: Alcohol Use Disorders Identification Test (AUDIT), Alcohol Use Disorders Identification Test-Consumption (AUDIT-C), Drug Abuse Screening Test (DAST), Alcohol, Smoking, Substance Involvement, Screening Test (ASSIST), and the Cut Down, Annoyed, Guilty, Eye-opener (CAGE) (SAMHSA, 2013). Clinicians can use one or more of these tools to screen for alcohol and/or drug use.

**Brief intervention.** A brief intervention is a single motivational intervention session or multiple ones that last between five to ten minutes. The goal of brief interventions is to increase the insight and awareness of the patient regarding substance use and risky behaviors (SAMHSA, 2013). Patients who score in the low to moderate risk level in the screening process are candidates to receive brief interventions (SAMHSA,
2013). A score of zero on the DAST screening tool and/or a score of seven on AUDIT-10 screening tool is considered a low-risk level for substance use. However, a score of 2-3 on DAST-10 and/or a score of 8-19 on AUDT is considered moderate risk level.

*Motivational interviewing.* It is an evidence-based approach that aims to enhance the internal motivation to change and allows people to explore and rectify ambivalence regarding a certain behavior. Motivational interviewing was developed as a strategy to target substance use behaviors. Its use was expanded to different disciplines as a strategy for behavioral change (Martins & McNeil, 2009). Motivational interviewing is based on five essential skills that include using open-ended questions, reflective listening, affirmation, summarizing, and eliciting change talk (Arkowitz, Miller, & Rollnick, 2015). Motivational interviewing basics were utilized to guide the brief intervention provisions used in this project.

*Referral to treatment.* Identifying and referring for appropriate treatment are required when patients are identified to be at hazardous risk and need more intensive treatments than what brief interventions offer (SAMHSA, 2013). Hazardous risk level is considered when a patient’s DAST score is more than 3 and/or their AUDIT score is more than 20.

**Efficacy of SBIRT**

Several studies supported the use of SBIRT in different healthcare settings and its effectiveness in reducing risky behaviors in relation to alcohol and drugs (Aldridge, Linford, & Bray, 2017; Cherpitel, Moskalewicz, Swiatkiewicz, Ye, & Bond, 2009; Kazemi, Levine, Qi, & Dmochowski, 2015; Sommers et al., 2013; Woodruff, Eisenberg, McCabe, Clapp, & Hohman, 2013; Woolard et al., 2013). The following section gives a
brief appraisal of these studies based on the hierarchy of Melnyk’s pyramid of evidence (Fineout-Overholt, Melnyk, & Schultz, 2005). These studies are summarized in the Table of Evidence (see Appendix B).

Aldridge et al. (2017) used a pre-and post-design study to analyze the data of 17,575 patients who received SBIRT interventions through the SAMHSA’s SBIRT grant. The study examined alcohol and illicit drug use among SBIRT service recipients. The study participants received SBIRT interventions in different healthcare settings including emergency departments, trauma centers, primary care clinics, and other healthcare facilities in four states. After 6 months of receiving interventions, results showed that participants had decreased number of days of alcohol use (reduced by 35.6%), days of alcohol intoxication (reduced by 43.4%), and days of illicit drug use, which was reduced by 75.8%. Although the study reported a significant decrease in the substance use behaviors, it failed to examine other factors that may have influenced the results such as whether participants received other interventions. The authors recommended further and more rigorous studies. This study provided level-IV evidence in supporting the efficacy of SBIRT (Aldridge et al., 2017).

Kazemi et al. (2015) conducted a pre- and-post-intervention study to examine the effectiveness of brief motivational interventions in reducing alcohol consumption and decreasing alcohol-related consequences among freshman at a southeastern university. The study recruited 900 students who belonged to two different groups. The first group consisted of 710 participants who participated voluntarily in the program and the study. The second group included 190 participants who were mandated to participate in the brief motivational intervention program but voluntarily participated in the study. The study
examined alcohol consumption and the number of alcohol-related consequences, such as fainting, not being able to finish homework, or having passed out.

Results of the Kazemi et al. study showed a significant reduction in alcohol consumption and alcohol-related sequences in both groups after 12 months of receiving interventions. In the mandated group, there was a reduction in the average number of drinks in 30 days from 8.4 to 1.22. The average number of alcohol-related consequences was reduced from 5.79 to 0.58. In the voluntary group, the average number of drinks in 30 days was reduced from 12.4 to 3.96 and the average number of alcohol-related consequences was reduced from 6.24 to 1.62 (Kazemi et al., 2015). Overall, the results suggested that SBIRT interventions were effective. This study provided level-IV evidence supporting the effectiveness of brief motivational interventions in the reduction of alcohol consumption and alcohol-related consequences.

Sommers et al. (2013) conducted a randomized control trial of 476 participants to examine the effectiveness of brief motivational interventions in the emergency department to reduce alcohol and risky driving behaviors. The age of participants ranged from 18 to 44. The sample was randomized into two groups: one group received usual care and the second group received brief motivational interventions targeting risky alcohol use and driving under influence behaviors. The interventions were provided in the form of one face-to-face intervention session and one over-the-phone intervention session. After six months, the intervention group showed a reduction in the number of maximum drinks by two drinks, while the number of maximum drinks in the control group was reduced by one drink. The study also showed a reduction in the rate of driving under the influence behaviors in the intervention group. This study provided level II
evidence supporting the efficacy of brief motivational interventions in reducing alcohol consumption among young adults.

Woodruff et al. (2013) used a pre-and-post single group design to examine the effectiveness of SBIRT in emergency departments to reduce alcohol and illicit drug use. The study was conducted at 12 emergency departments in San Diego, California and involved 629 patients who received SBIRT interventions. After 6 months of receiving SBIRT interventions, the results showed a reduction in the prevalence of binge drinking from 29% to 17.9%, a reduction in the prevalence of illicit drug use from 38.5% to 14.8%, and a reduction in the prevalence of marijuana use from 28.4% to 11.8%. The study results showed a modest influence of SBIRT on decreasing substance abuse behaviors (Woodruff et al., 2013). This study provided level IV evidence supporting the efficacy of SBIRT in the emergency department.

Woolard et al. (2013) conducted a randomized control trial to examine the effect of SBIRT interventions on alcohol and marijuana use behaviors. The study was conducted in an emergency department in a hospital in Rhode Island. A sample of 554 participants who screened positive for risky alcohol and marijuana behaviors were randomized into a control and an intervention group. The control group received usual care and the intervention group received brief motivational interventions targeting substance use behaviors. After 12 months, the results showed an annual reduction in days with binge drinking by 29 days in the intervention group and 20 days in the control group. The results also showed an annual reduction in the number of days using both marijuana and alcohol of 60 days in the intervention group and 15 days in the control group (Woolard et al., 2013). The study demonstrated significant results and provided
level II evidence supporting the use of SBIRT interventions to target alcohol and marijuana use in the emergency department.

Cherpitel, Moskalewicz, Swiatkiewicz, Ye, & Bond (2009) conducted a randomized controlled trial that examined the efficacy of brief motivational interventions in the emergency department. The study randomized 446 participants into three groups, one group received screening only, one group received a comprehensive assessment of alcohol use, and the third group received brief motivational interventions. The study compared drinking patterns among all groups after 3 months of receiving interventions. The study reported the findings for both groups that received assessment and brief intervention only. The results showed a statistically significant reduction in drinking patterns in both groups with no significant difference between the assessment and brief intervention group. This study supported the use of brief intervention and comprehensive assessment of alcohol use (Cherpitel et al., 2009).

Although multiple studies have supported the efficacy of SBIRT interventions in reducing substance use behaviors, other studies did not support the efficacy of SBIRT or brief intervention over a period of 12 months or resulted in non-statistically significant results (Landy, Davey, Quintero, Pecora, & McShane, 2016; Young et al., 2014). Landy et al. (2016) conducted a systematic review of studies in English investigating the efficacy of using brief interventions with adults in the emergency department (ED) to reduce the alcohol consumption. The review involved 34 studies that were appraised by two independent researchers. The sample sizes in those studies ranged between 26 and 737. According to Landy et al., 17 of the 34 studies were considered to have strong designs, 13 studies were moderate, and three studies were weak.
Landy et al. evaluated each of the 34 studies for the impact of brief intervention at different points in time; some of the studies assessed the impact at 3 and/or 6 months, while others evaluated it at 12 months. The efficacy of brief interventions in reducing alcohol consumption after three months and after six months was supported by 12 studies, with a statistically significant difference between control and intervention groups. Although five studies supported the efficacy of brief interventions on alcohol consumption after 12 months, seven studies did not find statistically significance differences between control and intervention groups. In this review, five studies were presented that examined the efficacy of brief interventions in reducing emergency department visits after 12 months. Landy and colleagues reported that four out of five well-designed studies with large samples did not support the efficacy of brief interventions over control interventions in reducing emergency department visits 12 months after the intervention. Of note, most of the research studies examined in this systematic review reported less alcohol-related injuries among those who received brief interventions.

There is strong evidence supporting the efficacy of brief interventions to decrease alcohol consumption three and six months post intervention. Of note, Landy et al. (2016) found that the evidence was inconsistent and not statistically significant for decreased alcohol consumption after 12 months. Thus, they concluded that the use of SBIRT yielded inconsistent outcomes when studies 12 months after the intervention despite prior positive findings at earlier timeframes.

Young et al. (2014) conducted a systematic review of the effectiveness of brief interventions in the SBIRT tools in reducing substance use behaviors. The review
included five randomized controlled trials published in English or French and involved participants who were 12 years and older with a positive screening for substance use. Inclusion criteria required that participants recruited after the screening, and did not seek other treatments. The inclusion criteria also required studies in which participants received four or less sessions of brief interventions and compared brief interventions to no interventions or those received written information as interventions. One of the five studies provided low-quality evidence according to the authors’ appraisal that supported brief intervention in the reduction of illicit drug use while four studies reported no statistically significant results. Of note, the authors did not describe the appraisal methods they followed, and it appears that most of the results they reported were largely driven by one study. In addition, the implications of this systematic review are limited by the fact that participants in the studies who were reviewed were not classified based on their risk for substance use level. Rather, in most of the studies, participants were using substances at hazardous levels, which typically requires higher levels of intervention than brief motivational treatment (Young et al., 2014).

**Cost-Effectiveness**

Using SBIRT interventions in healthcare facilities is associated with a reduction in the use of healthcare services and overall cost (Barbosa, Cowell, Bray, & Aldridge, 2015; Paltzer et al., 2016). Barbosa et al. (2015) conducted a cost-effectiveness analysis using the data from 9,835 participants who received alcohol SBIRT intervention in the emergency department and outpatient medical settings. They measured their health state by a tool that assesses the reduction of disease burden, called quality of adjusted-life years. The social cost was based on the costs associated with medical or behavioral
hospitalization, emergency department visits, cost of incarceration, and cost of motor
vehicle accidents that were associated with alcohol use. The study results showed a
reduction of social costs by $531.74 and 0.013 years of quality-adjusted life gained. The
findings demonstrated or supported that using SBIRT to target alcohol use behaviors in
the emergency department was effective in the reduction of social costs and improving
health state (Barbosa et al., 2015).

Paltzer et al. (2016) conducted a pre-and-post and comparison group design study
to examine the effect of receiving SBIRT interventions on healthcare utilization and its
cost. The study compared a group of 7,367 patients who received SBIRT interventions
through the SAMHSA SBIRT program with a group of 6,571 patients who received usual
care. The results showed a significant association between receiving SBIRT interventions
and reduction in healthcare utilization with an average cost reduction of $439 per patient
(Paltzer et al., 2016).

**Summary**

Although the authors of the two systematic reviews included in the literature
review considered the evidence to be inconsistent in supporting the efficacy of brief
interventions; most of the studies supported the efficacy of brief intervention in the
reduction of alcohol use at three and six months after the interventions. Three randomized
controlled trials supported the efficacy of brief motivational interventions and SBIRT in
the emergency department to reduce alcohol consumption among adults (Cherpitel et al.,
2009; Sommers et al., 2013; Woolard et al., 2013). In addition, three studies with pre-
and post- designs supported the efficacy of SBIRT or brief intervention in reducing
alcohol and/or illicit drug use; one of them was conducted in emergency department
settings, one was conducted in different healthcare settings and one was conducted in school settings (Aldridge et al., 2017; Kazemi et al., 2015; Woodruff et al., 2013). Lastly, two studies that examined the cost-effectiveness and reduction in health care utilization among patients who received SBIRT (Barbosa et al., 2015; Paltzer et al., 2016) documented potential savings. Barbosa, et al. (2015) study showed savings of approximately $532 per patient, and Paltzer et al. (2016) reported a reduction of $439 per patient who received SBIRT interventions.

**Conclusion**

Overall, the use of SBIRT in healthcare settings appears to be strongly associated with favorable results in the main outcomes of reduction in alcohol and other substance consumption and reduction in healthcare cost. Additionally, secondary outcomes of the reduction of alcohol risky behaviors and other alcohol consequences seem to be impacted positively although not significantly at times. Therefore, the quality, quantity, and consistency of evidence clearly supports the implementation of SBIRT in the emergency department.
METHODS

The purpose of this DNP project was to develop, implement, and evaluate the implementation of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) program in the ECC at St. Joseph Hospital of Orange (SJO). The implementation of SBIRT aimed to create a systematic process for screening, interventions, and referrals by nurses to target substance use behaviors among ECC patients. The nursing staff received standardized training to enable the provision of SBIRT interventions; the components of SBIRT were incorporated into the nursing process at the ECC. The project was evaluated based on two major outcomes: nursing staff knowledge and performance.

Setting

This project took place at the ECC of SJO, a Magnet nursing facility. The hospital has a 463-bed capacity including 53 emergency beds. The ECC is designated as a cardiovascular and stroke-neurology receiving center. The hospital is also a Lanterman–Petris–Short Act (LPS) designated facility to receive and provide care for patients placed on psychiatric involuntary holds. The ECC is one of the busiest in Orange County and receives more than 80,000 emergency department visits annually (SJO, 2017). There are more than 125 registered nurses and 21 emergency physicians in addition to other licensed staff who work at the ECC. On any given shift, the ECC is staffed with 11-21 registered nurses.

Participants

All staff nurses in the ECC (n = 125) participated in this project when SBIRT was adopted as a standard practice in the emergency department. Nurses of the ECC received SBIRT training as a part of their mandatory annual training program. Some members of
the nursing staff were asked to become trainers and super-users of the SBIRT intervention to assist in maintaining the process once the initial education was completed. No direct contact with patients or the gathering of their protected information was planned nor occurred for this project.

**Ethical Considerations**

Prior to the implementation of this project, the project proposal was presented to both the Institutional Review Boards (IRB) at SJO and at California State University, Long Beach. Copies of the IRB determination letters are included in Appendix C.

**Project Design**

This was a translation of evidence into practice project that aimed to integrate the evidence-based practice of SBIRT interventions into the ECC of SJO. The Ottawa Model of Research Use (OMRU) guided the implementation of the project. According to OMRU, three stages were followed to guide an implementation project including assessment, monitoring, and evaluation.

**Assessment**

In this first stage, three components were assessed including the practice environment, proposed innovation, and potential adopters.

**Environment.** The environment was assessed in relation to readiness for adoption. At SJO, there was a consensus among decision-makers about the need for a systematic approach to target substance use behaviors. Previously, no specific evidence-based tools or interventions were utilized to screen and intervene with patients who suffered from substance use disorders. The previous screening process utilizes a single general question of whether the patient has a history of substance use or not and it does
not ask for any other specifications. There were no interventions or referrals provided to address patients who exhibited symptoms or reported substance use if it was not their chief complaint.

Nurses received education annually regarding a variety of subjects including substance use. As part of this project, an hour and a half of the annual nursing education time was dedicated to providing face-to-face SBIRT training. The DNP author collaborated with the Orange County Community Health (OCCH) SBIRT program team at California State University, Fullerton, who provided training to nurses who became certified trainers. The educational material for both of the trainers’ training and the nursing staff’s training are included in appendix D and appendix E.

**Innovation.** The ECC decision makers were provided with a clear description of the project, along with supporting evidence, and a clear implementation plan with a definite timeline, which allowed them to determine the need for this project and allowed for its implementation. A PowerPoint presentation about the innovation was presented to the nursing research council. A face to face meeting and project materials were provided to the emergency department director who gave permission to launch this project. The presentation is included in appendix F.

**Potential adopters.** Nursing staff knowledge was assessed using a questionnaire that was completed prior to and after receiving the SBIRT training.

**Monitoring**

The second stage of this project involved rolling in SBIRT in the ECC and monitoring the adoption of the new practice.
**Implementation.** The implementation process of SBIRT in the ECC involved two main steps; the first one was staff training and the second was incorporating SBIRT into practice and integrating it in the workflow. The implementation process is discussed in detail in a separate section of this paper.

**Monitoring Adoption.** This step was combined with the outcome evaluation. The data were aggregated and the percentage of patients who received the SBIRT interventions was determined 6 weeks after launching the SBIRT practice.

**Evaluation**

This is the last stage according to OMRU in which outcomes of a project are evaluated. The outcomes that were evaluated in this project were the nurses’ knowledge and their actual application of SBIRT by assessing the aggregate percentage of eligible patients who received SBIRT. The ultimate goal was to screen all eligible patients who were seen in the ECC of SJO hospital.

**Implementation of SBIRT**

This DNP project aimed to implement a SBIRT intervention protocol in the ECC at SJO. The interventions of SBIRT were incorporated into the nursing care provided by ECC nursing staff to all the patients visiting the ECC at SJO. The implementation process involved training a team of nurses to become trainers, providing training for all nurses in the ECC, and incorporating SBIRT interventions into the regular nursing workflow in the emergency department.

**Train-The-Trainees (TTT)**

The DNP candidate collaborated with the OCCH SBIRT program at California State University, Fullerton to prepare SBIRT super-users. The TTT training aimed to
prepare SBIRT trainers who would assist in providing SBIRT training to the ECC nurses. The trainers were also prepared to be SBIRT super-users and to support the nursing staff in providing high-quality SBIRT interventions. Nine nurses and two social workers also participated in a train-the-trainer SBIRT class to become trainers and provide support as needed to the nurses when conducting SBIRT interventions. The TTT session was a 4-hour class in which printed handouts about the content material were given to the participants. The class also utilized audiovisual material and allowed time for participants to practice and demonstrate motivational interviewing skills. Nurses who received TTT training received SBIRT certification and four continuing education units (CEU) as a part of the training through the OCCH SBIRT program. The educational material used to train the trainers’ is included in appendix D.

**Nursing Staff Training**

Nurses in the ECC received SBIRT training by the DNP author. The training covered the following topics: substance use disorders, screening tools, motivational interventions, and available referrals for substance use treatment. The training was provided through two online modules and 90-minute face-to-face training sessions. The educational material used in the nursing staff’s training is included in appendix E.

**Online modules.** The online modules covered the topics of substance use disorders and the evidence-based screening tools used to screen for alcohol and drug use. The online modules were assigned to all bedside nursing staff in ECC. The online modules were posted via the online training system “HealthStreem” on 09/12/2017. Approximately 51% of the nurses assigned to the training (n = 58) completed the training
before the due date 10/01/2017 and about 82% of nurses (n = 92) completed the online modules four weeks after the due date.

**Face-to-face training.** The face to face training session was 90 minutes in length and focused on training the nurses about interpreting screening tools results, identifying the level of risk, and conducting motivational intervention. Nurses were given the opportunity to practice and demonstrate the motivational interviewing skills using role-playing in the last 20 minutes of the session. All 125 nurses in the ECC were invited to attend SBIRT training sessions. The training was a part of the annual mandatory nursing training. Six training sessions were held and 94% of the ECC nurses (n = 117) attended the training sessions. Nurses received CEUs for participating in the training.

**Incorporating SBIRT into the Workflow**

The evidence-based pre-screening tool and screening tools (both clarified further below), motivational interventions, and referral to treatment were incorporated into the nursing workflow and documentation in the ECC. Nurses documented all the screening results, motivational interventions administered, and the referrals to treatment as part of their care planning for all patients presenting at ECC. Incorporating SBIRT assessment and interventions documentation into electronic health records (EHR) was done in collaboration with the hospital’s IT department. The SBIRT algorithm is summarized in a diagram in appendix G.

**Pre-screening tools.** Alcohol Use Disorders Identification Test (AUDIT-C) is a three-question tool that was used to pre-screen for alcohol use. A single-question tool was utilized to pre-screen for illicit drug use. Both tools were incorporated in the initial nursing assessment in EHR. The AUDIT-C tool is derived from the AUDIT tool which
was developed by the WHO and is currently in the public domain. The single question drug screening was validated in previous studies and resulted in 100% sensitivity and 73% specificity (Smith, Schmidt, Allensworth-Davies, & Saitz, 2010). The single question tool was modified to include marijuana, as it was legalized in California in 2017. Both tools initially were planned to be completed in the triage area to pre-screen for alcohol and drug use. Because of the fast pace of triage, the plan was changed to conduct both pre-screening and screening tools at the bedside by the bedside nurse.

**Screening tools.** Alcohol Use Disorders Identification Test (AUDIT) and Drug Abuse Screening Test (DAST-10) were used to determine the risk level for alcohol and drug use; each tool has ten items. Nurses administered AUDIT and DAST-10 if a patient’s AUDIT-C or single item drug screen showed that they were positive for alcohol and/or drugs in pre-screening. The AUDIT screening tool is in the public domain and does not need permission to be used. The DAST 10 tool is free to be used in clinical and in research settings as long as the author is credited (H. A. Skinner, 1982). The tools were not incorporated into the EHR system, and the IT department was not able to incorporate them into the system because of a planned change to a new EHR. The screening tools were copied and kept in special folders that were placed in the two major nursing stations. The nurses were asked to complete the screening and keep the tools with no patient identifier in a specific folder in the unit. The nurses were asked to document the results in a separate nursing note and include the interventions provided.

**Brief motivational intervention.** Brief motivational interventions were incorporated into the nursing interventions in the ECC if a patient screened positive for AUDIT-C, single question tool and had a risk level on the AUDIT-10 and/or the DAST-
10 that warranted a brief intervention. Brief interventions were guided by motivational interviewing essentials. Open-ended questions, reflective listening, affirmation, summarizing, and eliciting change talk were the essentials used in the brief motivational intervention provision. The patients were asked the following questions to facilitate the conversation: (1) What do you like about alcohol/drugs? And (2) what do you dislike about alcohol/drugs? The SBIRT provider was to reflectively listen to the patient’s answers, then affirms and summarizes the patient’s response. Then the SBIRT provider elicited the change talk by assessing the readiness and confidence in the ability to change. A patient was asked to rate their readiness to cut down or stop on a scale between zero to 10. On the scale, a zero indicated not likely at all to cut down and a ten indicated that a patient was very likely to cut down. A patient was asked why they chose a given number not a lower number and what needed to happen so that they would select a higher number. Motivational intervention was to be utilized if a patient was rated at risk because of his or her alcohol/drug level based on results from alcohol/drug screening tools.

**Referral to treatment.** Referral to treatment was incorporated into the nursing assessment and discharge instructions. This applied to patients who were determined to be using alcohol/drug at a hazardous level. Referral to treatment and available resources were included in the discharge instructions. The IT department was not able to incorporate the list of referrals into the EHR. The list of resources and referrals was copied and kept in specific folders in the two nursing stations.
Outcome Evaluation

For this project, the outcomes evaluation was conducted using two outcomes: nursing staff knowledge and confidence in administering SBIRT interventions and the nurses’ actual performance as evidenced by their documentation.

Nursing Staff Knowledge of SBIRT

The nursing staff knowledge was examined using a paper and pencil questionnaire. The confidence scale (C-Scale) questionnaire was utilized for knowledge evaluation (Grundy, 1993). The C-Scale is a validated tool that assesses the confidence in the ability to perform a certain task. Permission was granted from the publisher to use the C-Scale in this project. The questionnaire required nurses to reflect on their level of confidence in the use and interpretation of the screening tools, providing motivational intervention to patients, and their ability to refer patients to appropriate treatments. The C-scale questionnaire was conducted at three-time points: before receiving face-to-face SBIRT training, after receiving the training sessions-same day, and 6-weeks after the training. Nurses varied in their educational preparation and length of experience; therefore, a short questionnaire was used to solicit the following demographic variables: length of experience in nursing and in ED, nursing educational preparation, gender and, age.

Nursing Staff Performance of SBIRT

Nursing performance in providing SBIRT interventions was examined through the measurement of the number and the percentage of patients who received SBIRT in the ECC. The performance was examined 6-weeks after the launching of the SBIRT program. The assessment of the SBIRT effect on patients was not part of this DNP
project; however, realizing its importance, the candidate will evaluate the efficacy of SBIRT interventions on substance use behaviors retrospectively after completion of the program under an amended IRB approval.

**Data Collection**

A paper form of the C-scale was completed by participants prior to the face-to-face training session and immediately thereafter. An individualized non-identified code was utilized to track the pre-and post C-scale results of participants which allowed the author to conduct a paired t-test to examine differences in mean scores. Each participant was assigned a 6 digit code that included mother’s birthday (month and day) and the last two digits of one’s phone number. The demographic questionnaire was collected in the same session. The C-scale was conducted 6-weeks after the face-to-face training using the same code. Approximately, 74% of the staff who attended the face-to-face training (n = 87) completed the C-scale pre-and-post training and 84% (n = 98) completed the demographic questionnaire. About 20% of those who attended the face-to-face training (n = 23) completed the C-scale 6 weeks post training using the same code. The data collection questionnaire is included in appendix H.

**Statistical Analyses**

The variables, levels of measurement, and statistical analysis that were used in describing the sample and analyzed outcomes are shown in Figure 3. Data analysis was conducted using IBM Statistical Package for Social Sciences (SPSS) Version 24.0 software.
Table 1.

*Variables, Levels of Measurement, and Statistical Analyses*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level of measurement</th>
<th>Statistical analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Ratio</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Gender</td>
<td>Nominal</td>
<td>Frequency and Percentage.</td>
</tr>
<tr>
<td>Level of education</td>
<td>Ordinal</td>
<td>Frequency and Percentage.</td>
</tr>
<tr>
<td>Percentage of nurses who received training</td>
<td>Ratio</td>
<td>Frequency and Percentage.</td>
</tr>
<tr>
<td>Nursing knowledge and Confidence</td>
<td>Ratio</td>
<td>Mean (SD). Pre-test &amp; post-test paired t-test.</td>
</tr>
<tr>
<td>Performance</td>
<td>Ratio</td>
<td>Number of patients receiving SBIRT/total number of patients seen in the ECC of patients receiving SBIRT/total number of patients seen in the ECC)</td>
</tr>
</tbody>
</table>

**Participants**

This project involved two groups of participants: ECC nurses who received the training, and the trainers (superusers), nurses who received extensive training, became certified trainers in SBIRT. They were expected to help train and assist nurses during the SBIRT implementation. The number of nurses who worked in the ECC and were targeted for the training was 125 nurses. The demographic characteristics of participants are shown in the Tables 1 & 2.
RESULTS

The purpose of this DNP project was to develop, implement, and evaluate the implementation of the Screening, Brief Intervention, and Referral to Treatment (SBIRT) program in the ECC at SJO. Two outcomes were evaluated in this project: nursing staff knowledge/confidence in administering SBIRT interventions, and nurses’ actual application/performance as evidenced by their documentation of SBIRT intervention provision. The Confidence Scale (C-scale) tool was used to evaluate the level of knowledge and confidence in providing SBIRT interventions. The electronic medical record reports were used to examine the number and percentage of patients who received SBIRT.

Participants Characteristics

Of the 125 registered nurses working in the ECC who were invited to receive the SBIRT training, 98 completed the demographics’ questionnaire. Table 1 summarizes the demographics and other relevant baseline characteristics of participants. Participants were largely female (74.5%, n = 73) with a mean age of 36.1 years (SD = 9.9). The majority held a Bachelor of Science or higher degree in Nursing and had an average of 7.8 years of experience in the ED. The trainers’ group included two social workers, two nurse practitioners, and seven registered nurses. Table 2 summarizes their characteristics.
Table 1

*Demographic Characteristics of the Nursing Staff Sample N = 98*

<table>
<thead>
<tr>
<th>Variables</th>
<th>M (SD)</th>
<th>Frequency (Valid %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>36.06 (9.86)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>25 (26%)</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>73 (74%)</td>
</tr>
<tr>
<td>Nursing experience (years)</td>
<td>9.13 (9.45)</td>
<td></td>
</tr>
<tr>
<td>ED Experience (years)</td>
<td>7.83 (6.94)</td>
<td></td>
</tr>
<tr>
<td>SBIRT Experience (years)</td>
<td>3.87 (4.83)</td>
<td></td>
</tr>
<tr>
<td>Experience with motivational interviewing (years)</td>
<td>3.32 (4.82)</td>
<td></td>
</tr>
<tr>
<td>Experience with substance use treatment (years)</td>
<td>5.43 (7.14)</td>
<td></td>
</tr>
<tr>
<td>Highest level of nursing education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>11 (11.3%)</td>
<td></td>
</tr>
<tr>
<td>BSN</td>
<td>69 (71.1%)</td>
<td></td>
</tr>
<tr>
<td>MSN</td>
<td>17 (17.5%)</td>
<td></td>
</tr>
<tr>
<td>Experience with SBIRT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18 (18.4%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>80 (81.6%)</td>
<td></td>
</tr>
<tr>
<td>Familiarity with Motivational Interviewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23 (23.5%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>75 (76.5%)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

**Demographic Characteristics of the Trainers Sample N = 11**

<table>
<thead>
<tr>
<th>Variables</th>
<th>M (SD)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>41.64 (11.33)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3 (27%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8 (73%)</td>
<td></td>
</tr>
<tr>
<td>Nursing experience (years)</td>
<td>13.13 (11.72)</td>
<td></td>
</tr>
<tr>
<td>ED Experience (years)</td>
<td>8.67 (10.36)</td>
<td></td>
</tr>
<tr>
<td>SBIRT Experience (years)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Experience with motivational interviewing (years)</td>
<td>5.43 (7.48)</td>
<td></td>
</tr>
<tr>
<td>Experience with substance use treatment (years)</td>
<td>11.98 (10.59)</td>
<td></td>
</tr>
<tr>
<td>Highest level of nursing education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>3 (27.3%)</td>
<td></td>
</tr>
<tr>
<td>BSN</td>
<td>3 (27.3%)</td>
<td></td>
</tr>
<tr>
<td>MSN</td>
<td>3 (27.3%)</td>
<td></td>
</tr>
<tr>
<td>Non-Nursing Education (MSW)</td>
<td>2 (18.2%)</td>
<td></td>
</tr>
<tr>
<td>Experience with SBIRT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1 (9.1%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>10 (90.9%)</td>
<td></td>
</tr>
<tr>
<td>Familiarity with motivational Interviewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (54.5%)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>5 (45.5%)</td>
<td></td>
</tr>
</tbody>
</table>
Nursing Staff Participation

Approximately 51% of the nurses assigned to the training (n = 58) completed the training before the due date and about 82% of nurses (n = 92) completed the online modules four weeks after the due date. Approximately 94% of ECC nurses (n = 117) attended these sessions. Two social workers, two nurse practitioners, and seven registered nurses received the train-the-trainer SBIRT course and certification to assist in implementing the SBIRT protocol in the ECC.

Nursing Staff Knowledge of SBIRT

The level of knowledge/confidence was measured using the C-scale and was conducted before the face-to-face training, right after training, and after six weeks of training. A six-digit code was used to track a participant’s pre and post training results. The mean, standard deviation and a paired t-test were used to compare the pre and immediate post training results and to compare them six weeks after training. The t-test was conducted to compare the difference in the mean score for the five elements of the C-scale and total score of the C-scale. The t test was also used to compare the mean scores at pre-training to post-training, pre-training to 6-weeks-post-training, and post-training to 6-weeks-post-training.

Pre-and-Post Training

A paired sample t-test revealed a statistically significant difference between the total score of the C-scale pre-test ($M = 7.82, SD = 4.13$) and post-test $(M = 16.81, SD = 3.7)$, $t (86) = 17.6, p < .001$ and a statistically significant difference across the five items of the C-scale between pre-training and post-training of the 87 participants. Table 3 summarizes these results.
Table 3

*Pre-and-post Training Paired Samples t-Test for the C-Scale Items (n = 87)*

<table>
<thead>
<tr>
<th>Pair</th>
<th>Item Description</th>
<th>Mean</th>
<th>SD</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>I am certain that my performance of SBIRT is correct (pre-training)</td>
<td>1.55</td>
<td>.873</td>
<td>1.731</td>
<td>2.177</td>
<td>17.5</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (post-training)</td>
<td>3.51</td>
<td>.729</td>
<td>1.478</td>
<td>1.947</td>
<td>14.5</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 2</td>
<td>I feel that I perform SBIRT without hesitation (pre-training)</td>
<td>1.60</td>
<td>.908</td>
<td>1.536</td>
<td>1.981</td>
<td>15.7</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (post-training)</td>
<td>3.31</td>
<td>.826</td>
<td>1.555</td>
<td>1.985</td>
<td>16.4</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 3</td>
<td>My performance of SBIRT would convince an observer that I'm competent at this</td>
<td>1.55</td>
<td>.859</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>task (pre-training)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this</td>
<td>3.37</td>
<td>.878</td>
<td>1.602</td>
<td>2.031</td>
<td>16.8</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>task (post-training)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 4</td>
<td>I feel sure of myself as I perform SBIRT (pre-training)</td>
<td>1.57</td>
<td>.844</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (post-training)</td>
<td>3.33</td>
<td>.831</td>
<td>1.536</td>
<td>1.981</td>
<td>15.7</td>
<td>.000</td>
</tr>
<tr>
<td>Pair 5</td>
<td>I feel satisfied with my performance of SBIRT (pre-training)</td>
<td>1.53</td>
<td>.847</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (post-training)</td>
<td>3.30</td>
<td>.837</td>
<td>1.555</td>
<td>1.985</td>
<td>16.4</td>
<td>.000</td>
</tr>
</tbody>
</table>
Pre-training and Six Weeks Post-training

Twenty-three participants completed C-scale at both pre-training and six week post training. A paired sample t-test revealed a statistically significant difference between the total score of the C-scale pre-test \( (M = 8.65, SD = 4.59) \) and six week post-test \( (M = 15.34, SD = 4.15) \), \( t(22) = 5.4, p < .001 \). The mean total C-scale score for all participants completed pre-training was 7.9 \( (SD = 4.3) \) \( n = 106 \). There was a statistically significant difference across the five elements of the C-scale between pre-training and six week post-training in the sample. Table 4 shows the detailed item statistical results.

Post-training and 6 Week Post-training

A paired sample t-test revealed no statistically significant difference between the total score of the C-scale post-test \( (M = 15.86, SD = 3.46) \) and 6-week post-test \( (M = 15.22, SD = 4.20) \), \( t(21) = -0.86, p = 0.398 \). The mean total C-scale for all participants who completed post-training was 16.8 \( (SD = 3.7) \) \( n = 87 \). There was no statistically significant difference across the five elements of the C-scale between pre-training and six week post-training in the sample. However, the mean response across the five elements was slightly less at 6 week post-training than immediately post-training. The detailed results are shown in Table 5.
**Table 4**  

*Pre-training and 6 Week Post Paired Samples t-Tests for the C-Scale Items (n = 23)*  

<table>
<thead>
<tr>
<th>Pair</th>
<th>Description</th>
<th>Mean</th>
<th>SD</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pair 1</strong></td>
<td>I am certain that my performance of SBIRT is correct (pre-training)</td>
<td>1.74</td>
<td>1.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (6 week post)</td>
<td>3.22</td>
<td>.795</td>
<td>.975</td>
<td>1.981</td>
<td>6.1</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Pair 2</strong></td>
<td>I feel that I perform SBIRT without hesitation (pre-training)</td>
<td>1.78</td>
<td>1.126</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (6 week post)</td>
<td>2.74</td>
<td>.915</td>
<td>.352</td>
<td>1.561</td>
<td>3.3</td>
<td>.003</td>
</tr>
<tr>
<td><strong>Pair 3</strong></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (pre-training)</td>
<td>1.70</td>
<td>.876</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (6 week post)</td>
<td>3.22</td>
<td>.902</td>
<td>.986</td>
<td>2.057</td>
<td>5.9</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Pair 4</strong></td>
<td>I feel sure of myself as I perform SBIRT (pre-training)</td>
<td>1.74</td>
<td>.915</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (6 week post)</td>
<td>3.13</td>
<td>.968</td>
<td>.798</td>
<td>1.985</td>
<td>4.9</td>
<td>.000</td>
</tr>
<tr>
<td><strong>Pair 5</strong></td>
<td>I feel satisfied with my performance of SBIRT (pre-training)</td>
<td>1.74</td>
<td>1.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (6 week post)</td>
<td>3.04</td>
<td>1.022</td>
<td>.715</td>
<td>1.849</td>
<td>4.6</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 5

*Post-training and 6-Week Post Training Paired Samples t-Tests for the C-Scale Items (n = 22)*

<table>
<thead>
<tr>
<th>Pair</th>
<th>Item</th>
<th>Mean</th>
<th>SD</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>I am certain that my performance of SBIRT is correct (post-training)</td>
<td>3.27</td>
<td>.703</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (6 week post)</td>
<td>3.18</td>
<td>.795</td>
<td>-0.424</td>
<td>0.242</td>
<td>-0.57</td>
<td>0.576</td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (post-training)</td>
<td>3.09</td>
<td>.811</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (6 week post)</td>
<td>2.73</td>
<td>.935</td>
<td>-0.764</td>
<td>0.036</td>
<td>-1.9</td>
<td>0.073</td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (post-training)</td>
<td>3.18</td>
<td>.853</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pair 3</td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (6 week post)</td>
<td>3.23</td>
<td>.922</td>
<td>-0.376</td>
<td>0.467</td>
<td>0.22</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (post-training)</td>
<td>3.14</td>
<td>.774</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (6 week post)</td>
<td>3.09</td>
<td>.971</td>
<td>-0.467</td>
<td>0.376</td>
<td>-0.22</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (post-training)</td>
<td>3.18</td>
<td>.733</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (6 week post)</td>
<td>3.00</td>
<td>1.024</td>
<td>-0.607</td>
<td>0.243</td>
<td>-0.89</td>
<td>0.383</td>
</tr>
</tbody>
</table>
Trainers Knowledge of SBIRT

The trainers’ level of knowledge and confidence was assessed using the C-scale and was conducted before receiving the Train The Trainer (TTT) session, immediately after the TTT training, and again 12 weeks after their training.

Pre-and-post Training

A paired sample t-test revealed a statistically significant difference between the total score of the C-scale pre-test ($M = 6.0, SD = 1.56$) and immediate post-test ($M = 17.4, SD = 4.0$), $t(9) = 7.5, p < .001$) and a statistically significant difference across the five elements of the C-scale between pre- TTT SBIRT training and post- training. The detailed results are shown in Table 6.

Pre-training and 12 Week Post-training

Four participants completed the C-scale at both pre-training and after 12 weeks. No statistical significance can be drawn from this small sample ($n = 4$). The mean of the total C-scale score at pre-test for the four participants was 6.5, ($SD = 2.3$) and their mean score at 12 weeks was 16.5 ($SD = 6.8$). The mean total C-scale for all participants completed pre-training was 6.0 ($SD = 1.56; n = 10$). Across the five elements of the C-scale, the mean score was higher at 12 weeks post-test than pre-test. The detailed results are shown in Table 7.

Post-training and 12 Week Post-training

Five participants completed the C-scale at both immediate post-training and after 12 weeks. No statistical significance can be drawn from a small sample ($n = 5$). The mean of the total C-scale score at post-test for the five participants was 19.6 ($SD = 3.6$) and their mean score at 12 weeks was 16.4 ($SD = 5.4$). The mean total of the C-scale for all
participants completed immediate post training was 17.4 ($SD = 4.0; n = 10$). Across the five elements of C-scale, the mean score was lower at 12 week than at immediate post-test. The detailed results are shown in Table 8.
Table 6

*Pre-post Paired Samples t-Tests for the C-Scale Items for Trainers’ Sample*

<table>
<thead>
<tr>
<th>Pair</th>
<th>Item Description</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am certain that my performance of SBIRT is correct (pre-training)</td>
<td>1.09</td>
<td>11</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (post-training)</td>
<td>3.55</td>
<td>11</td>
<td>0.5</td>
<td>1.993</td>
<td>2.916</td>
<td>11.8</td>
<td>.000</td>
</tr>
<tr>
<td>2</td>
<td>I feel that I perform SBIRT without hesitation (pre-training)</td>
<td>1.20</td>
<td>10</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (post-training)</td>
<td>3.70</td>
<td>10</td>
<td>1.0</td>
<td>1.592</td>
<td>2.308</td>
<td>6.2</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (pre-training)</td>
<td>1.50</td>
<td>10</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>3</td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (post-training)</td>
<td>3.40</td>
<td>10</td>
<td>1.0</td>
<td>1.044</td>
<td>2.756</td>
<td>5.0</td>
<td>.001</td>
</tr>
<tr>
<td>4</td>
<td>I feel sure of myself as I perform SBIRT (pre-training)</td>
<td>1.10</td>
<td>10</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (post-training)</td>
<td>3.50</td>
<td>10</td>
<td>0.0</td>
<td>1.709</td>
<td>3.091</td>
<td>7.9</td>
<td>.000</td>
</tr>
<tr>
<td>5</td>
<td>I feel satisfied with my performance of SBIRT (pre-training)</td>
<td>1.10</td>
<td>10</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (post-training)</td>
<td>3.30</td>
<td>10</td>
<td>1.0</td>
<td>1.388</td>
<td>3.012</td>
<td>6.1</td>
<td>.000</td>
</tr>
</tbody>
</table>
Table 7

*Pre-training and 12 Week Post-training Mean of the C-Scale Items’ Results for Trainers’ Sample (n = 5)*

<table>
<thead>
<tr>
<th>Pair</th>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I am certain that my performance of SBIRT is correct (pre-training)</td>
<td>1.20</td>
<td>.302</td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (12 week post-training)</td>
<td>3.20</td>
<td>.522</td>
</tr>
<tr>
<td>2</td>
<td>I feel that I perform SBIRT without hesitation (pre-training)</td>
<td>1.25</td>
<td>.422</td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (12 week post-training)</td>
<td>3.25</td>
<td>1.059</td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I’m competent at this task (pre-training)</td>
<td>1.50</td>
<td>.527</td>
</tr>
<tr>
<td>3</td>
<td>My performance of SBIRT would convince an observer that I’m competent at this task (12 week post-training)</td>
<td>3.50</td>
<td>.966</td>
</tr>
<tr>
<td>4</td>
<td>I feel sure of myself as I perform SBIRT (pre-training)</td>
<td>1.25</td>
<td>.316</td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (12 week post-training)</td>
<td>3.25</td>
<td>.850</td>
</tr>
<tr>
<td>5</td>
<td>I feel satisfied with my performance of SBIRT (pre-training)</td>
<td>1.25</td>
<td>.316</td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (12 week post-training)</td>
<td>3.25</td>
<td>1.059</td>
</tr>
</tbody>
</table>
Table 8

*Post-training and 12 Week Post-training Mean of the C-Scale Items’ Results for Trainers’ Sample (n = 5)*

<table>
<thead>
<tr>
<th>Pair</th>
<th>Description</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair 1</td>
<td>I am certain that my performance of SBIRT is correct (post-training)</td>
<td>3.80</td>
<td>.447</td>
</tr>
<tr>
<td></td>
<td>I am certain that my performance of SBIRT is correct (12 week post-training)</td>
<td>3.20</td>
<td>1.095</td>
</tr>
<tr>
<td>Pair 2</td>
<td>I feel that I perform SBIRT without hesitation (post-training)</td>
<td>4.20</td>
<td>.837</td>
</tr>
<tr>
<td></td>
<td>I feel that I perform SBIRT without hesitation (12 week post-training)</td>
<td>3.00</td>
<td>1.225</td>
</tr>
<tr>
<td>Pair 3</td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (post-training)</td>
<td>3.80</td>
<td>1.095</td>
</tr>
<tr>
<td></td>
<td>My performance of SBIRT would convince an observer that I'm competent at this task (12 week post-training)</td>
<td>3.40</td>
<td>1.140</td>
</tr>
<tr>
<td>Pair 4</td>
<td>I feel sure of myself as I perform SBIRT (post-training)</td>
<td>4.00</td>
<td>.707</td>
</tr>
<tr>
<td></td>
<td>I feel sure of myself as I perform SBIRT (12 week post-training)</td>
<td>3.40</td>
<td>1.140</td>
</tr>
<tr>
<td>Pair 5</td>
<td>I feel satisfied with my performance of SBIRT (post-training)</td>
<td>3.80</td>
<td>.837</td>
</tr>
<tr>
<td></td>
<td>I feel satisfied with my performance of SBIRT (12 week post-training)</td>
<td>3.40</td>
<td>1.140</td>
</tr>
</tbody>
</table>
**Staff Performance of SBIRT**

The goal of this project was to provide SBIRT interventions to all the patients visiting the ECC. Nursing staff performance was examined by measuring the number and percentage of patients who received SBIRT interventions in the first six weeks after launching the project. Using the EMR system, the DNP author ran a report of the number of patients who visited the ECC and those who received pre-screening intervention for alcohol and drug use. The author also collected the paper form of screening tools (AUDIT-10 & DAST-10) that were kept in a specific folder in the unit.

Between 11/01/2017 and 12/13/17, about 6,510 of the 9,291 patients who visited the ECC were eligible (i.e. 18 to 65 years of age) for screening. Of those, only 3.5% (n = 228) received the pre-screening for drugs and alcohol use. Furthermore, it was not feasible to generate a report from the EHR focusing on those who had positive pre-screening for drug and/or alcohol use and would have required further screening with the AUDIT-10 & the DAST-10. Based on the collected hard copies of the DAST-10 and the AUDIT-10, there were six patients who were screened for drug use using the DAST-10 tool and 11 patients who were screened for alcohol use with the AUDIT-10 tool.
DISCUSSION

The goal of this evidence-based practice project was to implement and evaluate the implementation of the SBIRT approach in an ECC in order to provide comprehensive screening, interventions, and referral for treatment of patients at risk of alcohol and drug-related problems. An evidence-based process, tools and interventions were used to implement SBIRT and to screen ECC patients. Online and face to face training were utilized to prepare superusers and nurses to provide the SBIRT interventions. The training was evaluated using a validated tool that assessed staff confidence in applying the SBIRT interventions. The training efficacy and staff performance were used to evaluate the implementations of this project. A discussion of the implementation process and project outcomes follows.

Project Implementation Process

The project was implemented in the ECC to incorporate the provision of SBIRT intervention to all patients who were between 18 and 65 years of age. The implementation process included training superusers, training all the ECC nursing staff, and integrating SBIRT in the ECC nursing workflow and interventions.

Train-the-Trainers (Superusers)

Nine nurses and two social workers participated in the train-the-trainer course and received SBIRT trainer certifications. The training was provided in collaboration with OCCH SBIRT program at California State University, Fullerton. The nursing superusers included five bedside ECC nurses, two nurses from administration, two nurse practitioners, and two social workers. It was noted that five bedside ECC nurses were very active in assisting other nurses to provide the SBIRT and providing the direct
SBIRT interventions to the ECC patients. Although willing, the nature of the roles of the nurse practitioner and nurses from administration and the two social workers interfered with their ability to train the ECC nurses more actively. The project leader provided onsite supervision and was in contact with the nursing staff to answer any questions about SBIRT interventions. The superusers in this project were needed because a large number of nurses (i.e., 125) in the ECC needed the training. In other published SBIRT implementation studies, superusers were not utilized and all those involved received the same standard training (Carlson et al., 2017; Marshall et al., 2012; Mitchell, 2017). Although it was not assessed in this project, exploring the effects of this more intensive training strategy for nurses as compared to the general training given to the bedside nurses would be interesting to examine in relation to nurses’ application of the SBIRT interventions in their own workflow.

**Nursing Staff Training**

The project leader, who is a certified SBIRT provider, created the online training modules and provided the face-to-face training which involved brief instructions and practice sessions. While some SBIRT implementation studies utilized four online training modules but no face-to-face training (Osborne & Benner, 2012), other studies utilized a combination of online modules, lecture, and a practice session (Carlson et al., 2017; Marshall et al., 2012). In this project, the training was provided as a component of the annual training mandated for nurses; therefore, the rate of participation was high with approximately 94% of nursing staff receiving the face-to-face training. Although most nurses were trained and reported improved knowledge and confidence immediately after the training, it is known that the effects of training decreases as time passes. Therefore,
intermittent trainings will be needed until ECC nurses fully embrace SBIRT and it becomes fully integrated in the EHR system (Kang, 2016).

**Project Outcomes**

**Training Efficacy**

The tool that was used to assess staff knowledge and confidence was short and included five Likert scale items. Other SBIRT implementation studies used longer tools to evaluate training. Carlson et al. (2017) used a survey with 37 items pre-training, 51 items post-training, and 57 items 30 days after training. Shorter tools are easier to use with clinicians who typically are very busy. The C-scale assessed the staff confidence level in their ability to provide SBIRT interventions, which is similar to its use in other SBIRT implementation studies. Marshall et al. (2012) used a 10-item Likert scale to evaluate overall confidence in executing SBIRT intervention. Other studies have expanded the evaluation to include attitude, self-perception of knowledge, and knowledge of SBIRT (Osborne & Benner, 2012). Assessing additional dimensions of learning would have allowed for better understanding of factors influencing the nurses’ adoption of SBIRT. The evaluation showed that the training was effective in improving the nursing staff’s confidence immediately after-training and 6 weeks after training. Assessing their confidence beyond 6 weeks would have demonstrated whether they sustained their confidence in performing the SBIRT, which unfortunately, was not possible in this project.

**Nursing Staff Performance**

The goal was to screen all patients aged between 18 and 65 years who visited the ECC. Documentation of SBIRT by nurses on the EHR was used as an indicator of nurses’
actual performance of the first step of SBIRT (i.e. screening) and if indicated, initiated and delivered the SBIRT intervention. However, the documentation report on the EHR in the first six weeks of implementation of SBIRT in the ECC showed that actual screening of eligible patients was low. Only about 3.5% (n = 228) of eligible patients who visited the ECC received SBIRT interventions as documented by nurses on the AUDIT-C assessment. While it is possible that nurses performed SBIRT and failed to document it given the fast-paced environment in the ED; it is unlikely that lack of documentation explains this low rate. The percentage of patients receiving screening and SBIRT interventions is expected to increase because of the planned change of the EMR system in the facility. In a study that evaluated the incorporation of a 3-question alcohol/drug screening tool in the triage EMR at an emergency department, the drug and alcohol screening rate went up to 96% of eligible patients (Johnson, Woychek, Vaughan, & Seale, 2013). A user-friendly incorporation of SBIRT-related assessments and interventions in the EHR will mostly contribute to increasing the SBIRT’s provision rate.

Multiple factors may have contributed to the low staff performance; these factors are discussed later in his section and are viewed as lessons learned from this project.

**Change in Practice and Culture**

The ECC of SJO is one of the busiest emergency departments in Orange County and became the first hospital in this county to provide SBIRT interventions in an emergency department. This change in practice is expected to contribute to the efforts to control the local epidemic of drug and alcohol use. The practice change at SJO may encourage other hospitals in the St. Joseph Health System to adapt SBIRT in their emergency departments helping to provide more SBIRT services to the community.
Lessons Learned

Although 3.5% is a low percentage, screening 228 patients in six weeks is favorable relative to the previous status quo. Prior to implementing SBIRT, screening and providing the SBIRT intervention was not formalized or part of the nursing workflow in the ECC. Though low, this percentage indicates progress and a step in the right direction. It also indicates that more is needed to ensure optimal integration of SBIRT in busy settings. Creating change in complex clinical settings and with busy clinicians is a challenging and a slow process. Several challenges were encountered that affected the implementation and evaluation of the project. Some of these challenges were related to the process, and others were technical in nature.

Process-Related Challenges

The pre-screening process with the AUDIT-C and the single question were planned to take place in the triage area. However, due to the fast pace in triage and because of the large number of patients who were received there first, the pre-screening was moved to bedside. This change created staff confusion and may have inadvertently influenced their performance. Although all staff were trained and informed about the project purpose of screening all eligible ECC patients, nurses were screening patients with substance use-related complaints only. Another factor may have further complicated the process, that is, the reliance on hospital email as the main communication channel between the DNP project leader and the nursing staff. Email correspondence, especially restricted email which clinicians can only accessed while at work, is not the best method to communicate and provide clarifications and updates. Nurses are typically unable to check their hospital email frequently or regularly enough while providing patient care.
Technical-Related Challenges

There were technical obstacles that challenged optimal implementation and integration of SBIRT and possibly influenced its outcomes. For a start, although the AUDIT-C and the single question (prescreening) were available in the EMR, there was no technical capability to add these prescreening questions as part of the standard assessment for all eligible patients. Instead, nurses had to pull these questions individually into the standard nursing assessment. Having to pull an item into the nursing assessment added a step to the normal routine of a nurse. A nurse may or may not remember to include these items, which may have contributed to the low rates of prescreening. Secondly, it was not technically feasible in the EHR that was in use at the time to add all the screening tools associated with SBIRT. Therefore, paper forms were used to administer and document the use of the screening tools. Adding paper forms to the workload of the nurses, made completing the tools problematic and tracking them difficult. Finally, there was no technically feasible way to generate a report that tracked the nursing documentation of the provisions of the brief interventions and referral to treatment which obstructed optimal evaluation of the outcomes.

Other Challenges

The low rate of C-scale completion after six weeks by staff and 12 weeks by trainers limits the ability to interpret the results beyond these time ranges. The evaluation of staff performance examined the percentage of patients who received SBIRT interventions in the first six weeks, which was early in the practice change process and may have affected the results.
Recommendations

The performance of nursing staff in the first six weeks was below expectations. This may be attributed to the challenges and limitations mentioned above. Several measures could have been done to improve nursing staff performance in screening all ECC patients, providing interventions, and referring to the appropriate treatment.

First, a clearer process for following and announcing the change during shift changes and nursing huddles is recommended to improve performance. Second, daily debriefing with the superusers and nurses on the process during the first two weeks could have curbed some of the challenges. Third, extending the period for post evaluation beyond six weeks and reevaluating staff knowledge and performance at later time intervals would help to determine whether progress is happening and whether the change have been sustained. Additional education and process improvements can be instituted based on results. Fourth, it is essential to ensure that EHRs are sufficiently adaptable and would allow for adding the required pre-screenings (including the AUDIT-C and the single question tools) to the regular assessment templates that pop-up when an eligible patient is admitted to the ECC. Similarly, it is important to discern capabilities to add the screening tools (the AUDIT-10 and the DAST-10) to the EHR. This difficulty was further complicated by the initiation of a plan to switch the EHR that was in use to another EHR system during the project implementation. It is recommended that a thorough and detailed assessment of an EHR capabilities be done and for that to be factored in the planned timeline and steps before a clinical change is introduced.
Conclusion

The application of SBIRT is supported by evidence to change drug and alcohol use behaviors using validated screening tools, motivational interventions, and referral to treatment. Training the ECC nursing staff and incorporation the SBIRT interventions in the ECC workflow was feasible, acceptable and potentially effective. The project succeeded in training the nursing staff and incorporating the SBIRT approach in the nursing interventions provided in the ECC. However, the rate and frequency of SBIRT interventions provision were below expectations due to several limitations. Incorporating SBIRT assessment tools and interventions into EHR may increase the rate of SBIRT intervention. Clinicians and researcher can evaluate the effect of SBIRT interventions on patients with substance abuse behaviors in all settings where these patients seek medical help for conditions other than substance abuse. Additionally, they should consider the obstacles in those settings that may affect optimal implementation of measures (such as SBIRT) in the busy clinical settings where they practice.
REFERENCES


Substance Abuse and Mental Health Services Administration (SAMHSA). (2016). Results From The 2015 National Survey On Drug Use And Health: Detailed Tables.


APPENDIX A

PERMISSIONS

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May 11, 2017

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## APPENDIX B

### TABLE OF EVIDENCE

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<td>To evaluate the efficacy of SBIRT in reducing drug and alcohol use. (Aldridge et al., 2017)</td>
<td>Pre and post intervention design. Compared alcohol/drug use at baseline and after 6 months of receiving interventions.</td>
<td>N = 17,575 participants who received SBIRT intervention. Settings: different health care settings including ED, trauma centers, and outpatient units.</td>
<td>Days with alcohol use, days with heavy drinking, days with illicit drug use, and days with alcohol and drug use in the same day.</td>
<td>Statistically significant findings: Days with alcohol use was reduced by 35.6%. Days with alcohol intoxication was reduced by 43.4%. Days with illicit drug use was reduced by 75.8%.</td>
<td>SBIRT interventions were effective in reducing alcohol/drug use behaviors.</td>
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<td>To analyze the cost effectiveness of the implementation of SBIRT program in the emergency department. (Barbosa et al., 2015)</td>
<td>Cost effectiveness analysis was based on a probability decision tree.</td>
<td>N = 9835 participants with positive SBIRT screen for alcohol use. N = 7658 participants received SBIRT intervention in emergency departments.</td>
<td>Change in social cost, quality adjusted life years gained, and the cost of SBIRT interventions.</td>
<td>After 6 months of the application of SBIRT interventions: Social cost change was $544.55 lower than baseline per participants. SBIRT cost was $12.81.</td>
<td>Utilizing SBIRT in the emergency department is effective in reducing social costs of alcohol misuse.</td>
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<td>To examine the effectiveness of SBIRT in the emergency department to reduce alcohol consumption (Cherpitel et al., 2009)</td>
<td>Randomized controlled trial. Compared drinking pattern between intervention and control groups at base line to</td>
<td>N = 446 participants were randomized into three groups: Intervention N = 145. Assessment N = 129. Screening N = 147.</td>
<td>Drinking patterns were measured using: Drinking days per week. Number or drinks per drinking day.</td>
<td>In assessment group reduction in: Days per week from 2.3 to 1.7. Drinks per week from 5.1 to 3.8.</td>
<td>Both groups received assessment and brief intervention showed reduction in drinking behaviors with no</td>
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<td>after 3 months follow up participants were randomized into three groups: Screening group: screened for alcohol use only. Assessment group: received assessment for blood alcohol levels, chief complaint, self-report assessment of alcohol within 6 hours of onset of chief complaint, and other questions. Intervention group: received brief motivational interventions.</td>
<td>Randomized and blinded. Settings: Emergency department in Sosnowiec, Poland</td>
<td>Maximum drinks in an occasion last month. Percentage of at-risk drinking. At risk drinking: drinking more than 3 drinks for female or 4 drinks for male in one day or more than 7 drinks for female or 14 drinks for male in one month.</td>
<td>Maximum drinks from 8.2 to 6.6. At risk drinking percentage from 87.4% to 57.5%. ( P&lt;.05 )</td>
<td>significant difference between both groups.</td>
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To examine the efficacy of brief motivational interventions in the reduction of alcohol use among freshman students (Kazemi et al., 2015).

Pre-and post-intervention design. Compared alcohol use behaviors before and after receiving brief motivational interventions.

Convenient sampling used to recruit \( N = 900 \) participants \( N = 710 \) voluntary participants. \( N = 190 \) mandated participants. Settings: South Eastern University.

1) Daily drinking questionnaire. (screening tool) 2) Rutgers Alcohol Problem Index questionnaire. (Screening tool).

Mandatory group: Mean number of drinks a week was reduced from 8.4 at baseline to 1.22 after 12 months. Mean number of alcohol related problems was reduced from 5.79 at baseline to 0.58 after 12 months. Voluntary group: Brief motivational intervention showed significant effects to reduce the risky alcohol behaviors among freshman students.
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<td>To review the literature on the effectiveness of brief interventions in the emergency department in the reduction of alcohol misuse behaviors (Landy et al., 2016).</td>
<td>Systematic review. Examined studies were published before June/2014 on the effect of brief interventions in the reduction of alcohol misuse behaviors in the emergency department, published in English, and was conducted among adults.</td>
<td>Out of 443 references identified, the review included 34 study articles that met the inclusion criteria. Studies’ rigor were examined by two independent researchers that classified studies as: Strong: 17 studies. Moderate: 13 studies. Week: 3 studies.</td>
<td>Alcohol consumption after 3 months, after 6 months, after 12 months, admissions to emergency department or inpatient, alcohol related injuries, and alcohol risky behaviors.</td>
<td>Alcohol consumption after 3 months: 9 moderate to strong studies reported reduction in consumption after 3 months. Some favored intervention group and some found no difference. After 6 months: some studies reported favored intervention group. Some studies found significant reduction in both groups, and some studies reported no difference between the control and intervention groups and no effect on alcohol misuse after 6 months. After 12 months:</td>
<td>The systematic review result did not provide strong evidence to support the use of brief intervention in the ED. However, most studies resulted in a positive impact of brief intervention on alcohol consumption.</td>
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<td>To examine the effect of SBIRT on the healthcare utilization and cost (Paltzer et al., 2016).</td>
<td>Pre and post and comparison groups were used to examine the change of healthcare utilization after receiving SBIRT interventions.</td>
<td>Sample: N = 7367 patients who received SBIRT interventions, were compared to 6571 patients who received usual care. Settings: 33 healthcare facilities in WN, mainly primary care.</td>
<td>Utilization Outpatient days, inpatient days, inpatient admissions, emergency department visits. Cost: Used Monte Carlo simulation to estimate the cost of services.</td>
<td>Some studies favored the intervention groups, but majority did not report any difference between the intervention and control groups. Hospitalizations: majority of studies found no difference between the intervention and control groups. Alcohol related injuries: most studies found significant reduction in intervention group. Alcohol risky behaviors: most studies found no difference between the control and intervention groups.</td>
<td>In the group who received SBIRT, there was increase in outpatient days, a decrease in inpatient days and admissions, and a decrease in emergency department visits. Average annual saving per patient was $439. The net average saving of SBIRT among WN Medicaid patients was $391.</td>
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<td>To examine the effect of brief interventions on alcohol and driving risky behaviors (Sommers et al., 2013)</td>
<td>Randomized controlled trial design examined effectiveness of brief interventions on alcohol risky driving behaviors.</td>
<td>A sample of 476 participants aged between 18 to 44 years at the study time, were randomized into two groups an intervention group and the usual care group. Settings: level one trauma center in Cincinnati.</td>
<td>Risky drinking</td>
<td>Intervention group: Maximum number of drinks was reduced by two drinks after six months of receiving interventions. Control group: Maximum number of drinks was reduced by one drink after six months of visiting the emergency department.</td>
<td>Using brief intervention and emergency departments can help in the reduction of alcohol use behaviors.</td>
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<td>To evaluate the application of SBIRT in Emergency Departments. (Woodruff et al., 2013)</td>
<td>Single group pre and post intervention design. Examined the efficacy of SBIRT in the emergency department.</td>
<td>Randomized sampling. Screened N = 2436 participants with alcohol/drug misuse who received SBIRT. 1,504 failed to follow up. N = 672 participants completed the study. Setting: 12 emergency department and trauma centers in San Diego County, California.</td>
<td>6 months post intervention follow up to evaluate the effectiveness of SBIRT by comparing the last 30 days numbers of: 1) Prevalence of Binge drinking. 2) Days of binge drinking 3) Prevalence of non-prescribed drug use, 4) Days of non-prescribed drug use. 5) Prevalence of marijuana use 6) Days of marijuana use.</td>
<td>Reduction in all of the 6 outcomes; $P&lt;0.001$. Prevalence: 1) Binge drinking reduced from 29 to 17.9. 2)Non-prescribed drug use reduced from 38.5 to 14.8 3) Marijuana use was reduced from 28.4 to 11.8. Number of days: 1) Binge drinking was reduced from 3.05 to 2.66.</td>
<td>The application of SBIRT in the emergency department settings resulted in the reduction of self-reported alcohol and drug use.</td>
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Cost of SBIRT was $48 per patient.
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<td>To examine the outcomes of brief interventions on alcohol and marijuana use. (Woolard et al., 2013)</td>
<td>Randomized controlled trial. Compared brief intervention to usual care in efficacy on alcohol and marijuana use.</td>
<td>Settings: an emergency department of a hospital in Rhode Island state. Sample: 554 participants who are 18 years and older, who reported using alcohol in the last month and marijuana in the last year.</td>
<td>1) Alcohol use disorder inventory test. 2) Alcohol, marijuana, and drug index. (screening tool)</td>
<td>2) Non-prescribed drug use was reduced from 5.05 to 1.69. 3) Marijuana use was reduced from 4.04 to 1.59.</td>
<td>Brief interventions help in the reduction of the risky alcohol and marijuana behaviors.</td>
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<td>To examine the effectiveness of brief interventions as a part of SBIRT interventions in reducing illicit drug use (Young et al., 2014).</td>
<td>Systematic review. Included literature that was published after April 2012 on the effectiveness of brief intervention in the reduction of illicit substance use, published in English or French, in a randomized controlled trial. Studies were conducted on the</td>
<td>Five studies were included out of 8,836 records. Included 5 studies.</td>
<td>Brief interventions compared to no interventions. Brief interventions compared to written information. Substance use, frequency, change in days used cannabinoids, change in days using other drugs, change in</td>
<td>4 out of 5 studies resulted in non-significant results. One study provided low quality evidence favoring brief intervention in reducing substance use behaviors. Limitations: Limited number of studies. The results</td>
<td>There is no evidence that brief intervention is effective in the reduction of substance use behaviors. The studies included in this review are non-representative to the published studies.</td>
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<td>age group 12 years and older with positive screen for substance use participants did not seek other treatment, and participants were recruited after screening. four sessions of interventions or less, and interventions compared to no interventions or delayed interventions.</td>
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<td>days of abstinence, and harms related to use,</td>
<td>were driven from one study only.</td>
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*Note. DV = dependent variable; IV = independent variable, SBIRT = screening, brief intervention, and referral to treatment.*
APPENDIX C

IRB EXIMPTION LETTER

CALIFORNIA STATE UNIVERSITY, LONG BEACH
OFFICE OF RESEARCH & SPONSORED PROGRAMS

DATE: September 6, 2017
TO: Tajialdeen Zamil, MSN
FROM: CSULB IRB

PROJECT TITLE: [1112575-1] Implementation of screening, brief interventions, and referral to treatment (SBIRT) in the emergency Care Center.
REFERENCE #: 18-039
SUBMISSION TYPE: New Project

ACTION: EXEMPT
EFFECTIVE DATE: August 24, 2017

Thank you for submitting the New Project materials for this project, The California State University, Long Beach Institutional Review Board has ACKNOWLEDGED your submission.

No further action on submission 1112575-1 is required at this time because the CSULB IRB has determined your project qualifies for IRB Exempt status according to the Department of Health and Human Services (DHHS) regulations at 45 CFR 46.101 (b)(1).

The following items are acknowledged in this submission:

• Abstract/Summary - Zamil, Final proposal Updated 08102017.docx (UPDATED: 08/15/2017)
• Application Form - SBIRT IRB Application CSULB ZAMIL 0815.docx (UPDATED: 08/19/2017)

If you have any questions, please contact the CSULB IRB at (562) 985-7619 or IRB@csulb.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within California State University, Long Beach Institutional Review Board’s records.
APPENDIX D

TRAIN THE TRAINER SESSION CONTENT

4/11/18

Start, not End, with a Q & A

- What is your Collaborative Care Model?
- How do you currently screen for SUD?
- How do you view SBIRT?
- How do you practice inter-professional care?
- What if your patient has a time and cost-effective way to deal with difficulty conversations about change?

Welcome

- Please introduce yourself to the group:
  - Name
  - Current position
  - General experience
- Knowledge of SBIRT
- Knowledge of SBIRT training
- Personal goals for the training
- Any topics you hope to share

Goals and Objectives

- Define the parameters of successful treatment outcomes
- Identify what works, when, and when to modify

SBIRT Module One

- Recommendation for Understanding of Substance Use Problems

A New Initiative

- Substance use screening, brief intervention, and referral to treatment (SBIRT) is a systems change initiative. As such, we are required to shift our worldview to new paradigms, and:
  - Preventation: Have we individualized substance use?
  - Outreach: Have we identified substance use problems?
  - Treatment: Have we treated substance use problems?

Historically

- Substance Use Services have been fragmented, focusing on two areas only:
- Prevention: Reducing or eliminating the onset of substance use
- Treatment: Providing time, cost, and labor intensive care to patients who are acutely or chronically ill with a substance use disorder.

Substance Use is

- A Public Health Problem

Learning from Public Health

- The public health system of care (public health service, cancer, diabetes, hypertension, tuberculosis, vitamin deficiencies, renal failure) provides preventative services prior to the onset of acute symptoms, and delays or prevents the development of chronic conditions.
AUDIT Scoring and Zones

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No risky drinking</td>
</tr>
<tr>
<td>1-7</td>
<td>Moderate drinking</td>
</tr>
<tr>
<td>8-15</td>
<td>High risk drinking</td>
</tr>
<tr>
<td>16+</td>
<td>Very high risk drinking</td>
</tr>
</tbody>
</table>

Brief Intervention and Brief Negotiated Interview

- Motivational Interviewing
- Mobile HIV Testing

What is BI/BNI?
A Brief Intervention or Brief Negotiated Interview is a **time limited, individual counseling** session.

What are the Goals of BI/BNI?
- **The general goal of BI/BNI is to**
  - Increase the patient's awareness of substance use.
  - Enhance the patient's motivation to discuss and choose change.
  - **Use BI/BNI to promote minimally invasive interventions**
  - **Discuss the patient's readiness to change** and reduce their risk of
  - **Help the patient develop coping strategies** to manage their use.
- **The goals of BI/BNI will not be implemented but a variety of**
- **Motivational counselor**
- **The patient's specific needs**

What is Your Role?
- **Truly** feedback about the screening results.
- **Clarify** information on the risks of substance use
- **Identify** the patient's readiness to change
- **Discuss** the patient's motivation to change
- **Engage** the patient in exploring new behaviors regarding their substance use.
- **Support** the patient in seeking change with their substance use
- **Listen** with interest and support

Ask Yourself
Who has the best idea in the room?

The Patient

WHERE DO I START?

What you do depends on where the patient is in the process of change.
- **Understand** where the patient is in the process of change.
- **Share** where the patient is coming from.

*PEOPLE ARE BETTER PERSUADED BY THE READING THEY THEMSELVES DESIGNED THAN THOSE THAT COME INTO THE MINDS OF OTHERS* —MAURICE
**Ambivalence**

All change contains an element of ambivalence.  

- "I want to change, but don't want to change"

- Patient's ambivalence about changes, the "need" of the patient.

**Motivational Interviewing**

- "Motivational interviewing" is a form of counseling that helps people start and maintain behavior change.

**Why Motivation**

- Research has shown that motivation-enhancing approaches are associated with greater engagement in treatment and positive treatment outcomes.
- *American Journal of Community Psychology,* 2011
- A positive attitude and commitment to change are also associated with positive outcomes.
- *Health and Human Services,* 2012

**Motivational Interviewing**

- "Motivational interviewing" is an approach that helps people start and maintain behavior change.

**Goal of MI**

- To realize and amplify awareness between present behavior and desired goals.

**How?**

- Create cognitive awareness between where one is and where one wants to be.

**The MI Shift**

- From feeling responsible for changing patients' behavior to supporting them in thinking and talking about their own reasons and means for behavior change.
Importance Ruler
- On a scale of 1-10 how important is it to you to change your drinking, drug use, substance use?
- Why not a higher number?
- What would it take to move to a higher number?

Readiness Ruler
- On a scale of 1-10 how ready are you to make a change in your drinking, drug use, substance use?
- Why not a lower number?
- Why would it take to move to a lower number?

Confidence Ruler
- On a scale of 1-10 how confident are you that you could change your drinking, drug use, substance use?
- Why not a lower number?
- Why would it take to move to a lower number?

The Keys to Readiness
- Readiness
- Importance
- Confidence

Videos in an Emergency Center
- How will you think this patient will be to change her use or decrease her risk as a result of this intervention?

Zingers
- Push back, Resistance, Denial, Excuses:
  - Look, I don't have a drinking problem.
  - My dad was an alcoholic, I still like him.
  - I can quit anytime I want to.
  - Just like the time
  - That's all there is to do in Orange County!

Handling Zingers
- I'm not going to push you to change anything you don't want to change.
- I'm not here to convince you that you have a problem.
- I'll just like to give you some information.
- I really like to hear your thoughts about...
- What you decide to do is up to you.

Brief Interventions for Patients at Risk for Substance Use Problems
The 3rd Task: Options for Change

- Giving Advice Without Telling Someone What to Do
  - Provide Clear Information (Advice or Feedback)
    - What happens in some people's lives...
    - My recommendation would be that...
    - What is their reaction?
    - What are your thoughts?

- Closing the Conversation ("SEW")
  - Summarize patient's views, especially the patient's view
  - Encourage them to share their views
  - What agreement was reached (repeat it)

Role Play

- Left previous Dr. Role Play Options (a-d)
  - Acknowledge what, offer another option.
  - Summarize patient's view
  - Review what patient agrees to do.

Referral to Treatment

- For patients at risk for substance dependence
  - Module 5
  - Feedback Matrix
    - Lister and Understanding
    - Press and Core
    - Important Considerations
    - Feedback Matrix
  - Options Explained
    - Menu of Options

Referral to Treatment

- "Warm hand-off" Approach to Referrals
  - Support is offered in the form of a written referral
  - Provide a written referral to patients when available services
  - Provide a written referral to patients when available services
  - Provide a written referral to patients when available services
  - Provide a written referral to patients when available services

- What if the person does not want a referral?
  - Encourage follow-up at the point of contact
  - Offer follow-up visits
  - Review goals and progress
  - Review tips for progress
APPENDIX E

NURSING STAFF FACE TO FACE TRAINING CONTENT

4/11/18

SCREENING, BRIEF INTERVENTION AND REFERRAL TO TREATMENT (SBIRT)
St. Joseph Hospital
Emergency Care Center

Tajasken Jari, R.N., MSN, PNP/CPN

WELCOME

- Please introduce yourself to the group:
  - Name
  - General experience
  - Knowledge of SBIRT
  - Knowledge of Motivational Interviewing
  - One thing you hope to learn

Questions

- Are we screening for substance use?
- How do you currently screen for Substance use?
- What is SBIRT?
- How do you view SBIRT?
- Would you like a time and cost-effective way to deal with difficulty conversations about change?

Goals and Objectives

- Identify SBIRT as a systematic approach to target substance use.
- Understand the information screening does and does not provide.
- Define brief motivational intervention.
- Describe the goals of conducting a BI.
- Understand the counselor’s role in providing BI.
- Develop knowledge of Motivational Interviewing as it relates to the SBIRT model.
- Describe referral to treatment.

What is SBIRT?

- SBIRT is an evidence-based systematic approach to target substance use behaviors. The approach consists of the following:
  - Screening: Universal screening for quickly assessing use and severity of alcohol, illicit drug, and prescription drug use, misuse, and abuse
  - Brief Intervention: Brief motivational and awareness-raising intervention given to risky or problematic substance users
  - Referral to Treatment: Referrals to specialty care for patients with substance use disorders

Why is SBIRT Important to Public Health and Safety?

- Unhealthy and unsafe alcohol and drug use are major preventable public health problems resulting in more than 300,000 deaths each year.
- The costs to society are more than $600 billion annually.
- Effects of unhealthy and unsafe alcohol and drug use have far-reaching implications for the individual, family, workplace, community, and the healthcare system.
Harms Related to Hazardous Alcohol and Drug Use

Increased risk for—
- Injury/trauma
- Criminal justice involvement
- Social problems
- Mental health consequences (e.g., anxiety, depression)
- Increased absenteeism and accidents in the workplace

Medical and Psychiatric Harm of High-Risk Drinking

Screening Does Provide
- Immediate rule-out of low/no risk users.
- Immediate identification of level of risk.
- A context for a discussion of substance use.
- Information on the level of involvement in substance use.
- Insight into areas where substance use may be problematic.
- Identification of patients who are most likely to benefit from brief intervention.
- Identification of patients who are most likely in need of referral for further assessment.

Historic Response to Substance Use
- Previously, substance use intervention and treatment focused primarily on substance abuse universal prevention strategies and on specialized treatment services for those who met the abuse and dependence criteria.
- There was a significant gap in service systems for at-risk populations.

Validated Screening Tools
- AUDIT-C: Alcohol Use Disorder Identification Test Consumption.
- Single Question: Single Question Drug Screening tool.
- AUDIT: Alcohol Use Disorder Identification Test.
- DAST: Drug Abuse Screening Test.

Pre-screening & Screening
- Prescreening process: all patients visiting the emergency care center will be screened using AUDIT-C and Single Question Drug screening tool.
- Screening process: all patients screened positive using the prescreening tools will be screened using AUDIT and DAST tools.
86

4/11/18

A Standard Drink

<table>
<thead>
<tr>
<th>Fluid</th>
<th>Alcohol</th>
<th>Fluid</th>
<th>Alcohol</th>
<th>Fluid</th>
<th>Alcohol</th>
<th>Fluid</th>
<th>Alcohol</th>
</tr>
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<tbody>
<tr>
<td>15 oz</td>
<td>14 oz</td>
<td>6 oz</td>
<td>6 oz</td>
<td>12 oz</td>
<td>1 oz</td>
<td>1 oz</td>
<td>1 oz</td>
</tr>
</tbody>
</table>

AUDIT: C Questions

1. How often do you have a drink containing alcohol?
   - Never
   - Once or twice a month
   - Once or twice a week
   - 1-2 times a week
   - More than 2 times a week

2. How many alcoholic drinks do you have on average on a day when you drink?
   - 1 or 2
   - 3 or 4
   - 5 or 6
   - More than 6

3. How many times do you have 5 or more drinks during a session?
   - Never
   - Once or twice a month
   - Once or twice a week
   - 1-2 times a week
   - More than 2 times a week

4. How many times in the past year have you felt the need to cut down on your drinking?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

5. How many times in the past year have you been angry with yourself because of your drinking?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

6. How many times in the past year have you felt physical ill and needed medical care because of your drinking?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

7. How many times in the past year have you felt guilty about your drinking?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

8. How many times in the past year have you been into trouble at work, school or family because of your drinking?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

9. How many times in the past year have you gone out of your way to get more alcohol?
   - Never
   - Once or twice
   - 3 to 5 times
   - More than 5 times

10. How many times in the past year have you been physically hurt as a result of your drinking?
    - Never
    - Once or twice
    - 3 to 5 times
    - More than 5 times

11. How many times in the past year have you been arrested on a charge of driving while intoxicated (DUI)?
    - Never
    - Once or twice
    - 3 to 5 times
    - More than 5 times

12. How many times in the past year have you seen yourself on a television screen or in a newspaper with a headline that said: Your Name Doing Something Unusual or Unbecoming?
    - Never
    - Once or twice
    - 3 to 5 times
    - More than 5 times

13. How many times in the past year have you had someone come to your home and tell you that you had a problem with alcohol?
    - Never
    - Once or twice
    - 3 to 5 times
    - More than 5 times

14. How many times in the past year have you had your drinking brought up in a social setting?
    - Never
    - Once or twice
    - 3 to 5 times
    - More than 5 times

A score of 8 or more indicates a risk of drinking. See your doctor to check on your drinking.

AUDIT C Score

<table>
<thead>
<tr>
<th>Score</th>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
<th>Very High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>Low risk</td>
<td>Low risk</td>
<td>Low risk</td>
<td>Low risk</td>
</tr>
<tr>
<td>4-7</td>
<td>Medium risk</td>
<td>Medium risk</td>
<td>Medium risk</td>
<td>Medium risk</td>
</tr>
<tr>
<td>8-15</td>
<td>High risk</td>
<td>High risk</td>
<td>High risk</td>
<td>High risk</td>
</tr>
<tr>
<td>16-30</td>
<td>Very high risk</td>
<td>Very high risk</td>
<td>Very high risk</td>
<td>Very high risk</td>
</tr>
</tbody>
</table>

Interpreting AUDIT Scores

- For Men:
  1. Low risk: If scored between 0-7.
  4. Dependent (Hazardous): If score 20 or more.

- For Women:
  1. Low risk: If scored between 0-3.
  2. Risky: If scored 4-7.
Interpreting AUDIT Scores

- For Women:
  1. Low risk: If scored between 1 - 7.

Single Question Tool for Drug Use

- "How many times in the past year have you used an illegal drug, recreational marijuana, or used a prescription medication for nonmedical reasons?"

- The result is considered positive if scored one or more.

DAST 10

<table>
<thead>
<tr>
<th>Score</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Drink for any reason</td>
</tr>
<tr>
<td>1</td>
<td>Drink to get drunk</td>
</tr>
<tr>
<td>2</td>
<td>Drink bigger or more often</td>
</tr>
<tr>
<td>3</td>
<td>Drink faster than scheduled</td>
</tr>
<tr>
<td>4</td>
<td>Eaten or missed meals or important activities</td>
</tr>
<tr>
<td>5</td>
<td>Acquired a driver's license or license to drive (or license)</td>
</tr>
<tr>
<td>6</td>
<td>Acquired a driving tolerance or license to drive (or license)</td>
</tr>
<tr>
<td>7</td>
<td>Broke any law or got into trouble with the police</td>
</tr>
<tr>
<td>8</td>
<td>Lost a job or educational position</td>
</tr>
<tr>
<td>9</td>
<td>Lost an important relationship or met one of the criteria for alcohol use disorder</td>
</tr>
</tbody>
</table>

Interpretation of DAST-10 Results

1. Risky use: if scored <3.


What is After Screening?

Brief Intervention:

- A Brief Intervention is a time limited, individual counseling session that lasts between 5 - 10 minutes.

- Brief intervention session will use motivational interviewing strategies and skills to increase insight and enhance the client’s own motivation to change.
Research Shows

- Brief interventions:
  - Are low cost and effective
  - Are most effective among persons with less severe problems
  - “Brief interventions are feasible and highly effective components of an overall public health approach to reducing alcohol misuse.”

Motivational Interviewing

- Focused on competency and strength
- Motivational interviewing offers the client, empathy, free-choice, supports self-efficacy, and encourages exploration that changes can be made.
- Is individualized and client-centered
- Research indicates that positive outcomes are associated with flexible programming and focus on individual needs (Irvin et al., 1999).
- Does not entail
- Motivational interviewing involves naming, especially with those who may not agree with a diagnosis or don’t see a specific behavior as problematic.

Motivational Interviewing

- Creates therapeutic partnerships
- Motivational interviewing encourages an active partnership where the client and counselor work together to establish treatment goals and develop strategies.
- Uses empathy and authority
- Research indicates that positive outcomes are related to empathy and warmth and supportive listening.
- Focuses on less intensive treatment
- Motivational interviewing places an emphasis on less intensive, but equally effective care, especially for those whose use is problematic or risky but not yet serious.

Goal of MI

- To create and amplify discrepancy between present behavior and broader goals.

How?

- Create cognitive discrepancy between where one is and where one wants to be.
- Weigh the pros & cons.

Why Motivation

- Research has shown that motivation-enhancing approaches are associated with greater participation in treatment and positive treatment outcomes.
  - (Lahey, 1996; Miler et al., 1996)
- A positive attitude and commitment to change are also associated with positive outcomes.
  - (Miller and Tonigan, 1996)
  - (Prochaska and DiClemente, 1992)

Weigh Pros & Cons

- Strategies for Weighing the Pros and Cons
  - What do you like about drinking?
  - What do you dislike about drinking?
  - What else?

- Summarize Both Pros and Cons
  - “On the one hand, you want...
    - and on the other hand...”

[Images of Motivational Interviewing and Weigh Pros & Cons]
Listen & Understand
Listen for the Change Talk
May be drinking didn't play a role in what happened.
If it wasn't for the drinking, the violence would never have happened.
Using is not really much fun anymore.
I can't afford to be in this mess again.
The last thing I want to do is hurt someone else.
I know I can quit because I've stopped before.
Summarize, so they hear it twice!

Importance Ruler
- On a scale of 1-10 how important is it for you to change your drinking, drug use, substance use?
- Why not a lower number?
- What would it take to move to a higher number?

Readiness Ruler
- On a scale of 1-10 how ready are you to make a change in your drinking, drug use, substance use?
- Why not a lower number?
- What would it take to move to a higher number?

Confidence Ruler
- On a scale of 1-10 how confident are you that you could change your drinking, drug use, substance use?
- Why not a lower number?
- What would it take to move to a higher number?

The Keys to Readiness
- Readiness
  - Importance
  - Confidence

Options for Change
During Menus you can also explore previous strengths, resources, and successes
- Have you stopped drinking/drug using before?
- What personal strengths allowed you to do it?
- Who helped you and what did they do?
- Have you made other kinds of changes successfully in the past?
- How did you accomplish those things?
Options for Change

What are you thinking you will do?
What changes are you thinking about making?
Where are you in your options?
What happens next?

Options for Change

Giving Advice Without Telling Someone What to Do
- Provide Clear Information (Advise or Feedback)
- What happens to some people is that...
- My recommendation would be that...
- Elicit their reaction
  - What do you think?
  - What are your thoughts?

Referral to Treatment

Approximately 5% of patients screened will require referral to substance use evaluation and treatment.
A patient may inappropriate for referral when:
- Assessment of the patient's responses to the screening reveals serious medical, social, legal, or interpersonal consequences associated with their substance use.
- These high-risk patients will receive a brief intervention followed by referral.

Referral to Treatment

- Always:
  - Follow appropriate confidentiality (62, CFR part 2) and HIPAA regulations when sharing information.
  - Establish a relationship with your community providers and ensure you have a referral agreement.
  - Maintain a list of providers, support services, and other information that may be helpful to patients.
  - Reduce barriers and build bridges.

Role Playing
APPENDIX F

RESEARCH COUNSEL PRESENTATION

4/11/18

Background: Substance Use Disorders

- Substance related disorders are classified under 10 major drug classes: marijuana, opioids, cocaine, hallucinogens, inhalants, stimulants, sedatives, and nicotine (APA, 2013, p. 881).
- Alcohol use disorder (AUD) has the highest prevalence among substance use disorders, with more than 21% of young adults (age 18-25) reporting recent use of alcohol (National Institute on Alcohol Abuse and Alcoholism, 2014).

Significance

- AUD and opioid addiction have been declared a public health crisis.
- One million individuals are estimated to have AUD annually in the U.S. (Center for Disease Control, 2014).
- The estimated annual cost of AUD-related deaths between the years 2005 to 2010 was $50 billion (NIAAA, 2014).

Significance

- 2015 National Survey on Substance use Distances Above and Beyond Health Services Administration (NIAAA, 2016).
- 14M people used alcohol in the past year.
- 10M used illicit drugs in the past year.
- 7M engaged in binge drinking in the past year.
- 7M engaged in heavy drinking more than 5 days in the past 30 days.
- 1 in 5 of people used illicit drugs in the past year.

Significance

- 2015 rates in Orange County, Orange County Health Care Agency (OCHCA, 2015).
- 35% used alcohol in the past year.
- 20% used non-marijuana drugs in the past year.
- Hospitalizations, visits, and mortality rates in OCHCA, 2014.
- 1100 drug and alcohol-related hospitalizations in 2013.
- 220,000 visits to OCHCA, 2014.
- 13 non-alcohol drug-related deaths in 2013 and 2012.
- Overdose deaths rates have increased by 61% between 2009 and 2012.

Problem Statement

- Overcrowded emergency rooms and inpatient beds are currently treated at Orange County hospitals. And at Orange County Hospital Emergency Rooms, emergency care center patients, OCHCA's highest number of Q5-rates in the us.
- Mixed opportunities to improve health population outcomes.
Purpose

- To develop, implement, and evaluate the Screening, Brief Intervention, and Referral to Treatment (SBIRT) in the Emergency Care Center at Saint Joseph Hospital OSU-Duarte.
- To target substance use behaviors among EHC patients.

Theoretical Framework
Ottawa Model of Research Use

Summary of Evidence

<table>
<thead>
<tr>
<th>Quality</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Strong</td>
</tr>
<tr>
<td>4</td>
<td>Moderate</td>
</tr>
<tr>
<td>3</td>
<td>Low</td>
</tr>
<tr>
<td>2</td>
<td>Very Low</td>
</tr>
<tr>
<td>1</td>
<td>Not sufficient</td>
</tr>
</tbody>
</table>

Levels of evidence according to the hierarchy of design of evidence-based practice. (Prosser-Davies, Wolfe, & Syme, 2001)

Literature Review: Screening, Brief Intervention, and Referral to Treatment (SBIRT)

<table>
<thead>
<tr>
<th>Database</th>
<th>Sample Population</th>
<th>Study Design</th>
<th>Primary Outcome</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed</td>
<td>SubSTANCE, addiction, and drug use</td>
<td>Cross-sectional</td>
<td>Effectiveness of SBIRT in reducing health care and social costs of substance use</td>
<td>Supported evidence</td>
</tr>
</tbody>
</table>

Ethical Considerations

- The project proposal will be presented to both IRB at SJH and OSHU.
- Written consent is obtained and written personal information is shared for this project.
- The target population for this project is the nursing staff in the EHC.
Methods

**Testing**
- Pre-Emergency Care (before injury)
  - Blood pressure
  - Pulse
- Pre-Emergency Care (after injury)
  - Blood pressure
  - Pulse
  - Oxygen saturation
- Post-Emergency Care (before injury)
  - Blood pressure
  - Pulse
- Post-Emergency Care (after injury)
  - Blood pressure
  - Pulse
  - Oxygen saturation
  - Body temperature

**Participants**
- 200 injured workers
- 150 participants
- 100 control groups
- 50 test groups

**Notes**
- 11.01% on dose of any kind

Implementation

- **Train-the-Trainers**
  - 10-15 minutes
  - 20-30 minutes

- **Collaboration with Orange County Community Healthcare Swab Project**

- **Trainers**
  - Educators
  - Tested staff

- **Implement the SIT**
  - 20-40 minutes

- **Advance training**
  - 20-40 minutes

- **Facilitate implementation**
  - 20-40 minutes

- **Assist in training staff**
  - 20-40 minutes

Cont. Implementation

- **Nursing staff training**
  - 20-40 minutes
  - 20-40 minutes

- **Assist in training staff**
  - 20-40 minutes

- **Advance training**
  - 20-40 minutes

Cont. Implementation

- **Incorporating SIT into the nursing workflow in the emergency care center**
  - Pre-screening (SIT & Single Question Drug Screen)
  - Screening tools (SIT & SIT+IQ)
  - Brief motivational interview
  - Referral to treatment

- **Improving documentation of SIT administration by nurses in the PMR**
  - Pre-screening tools
  - Screening tools
  - Medical record intervention
  - Referral to treatment

- **Wearing a SIT**
  - 20-40 minutes

- **Nursing staff training**
  - 20-40 minutes

- **Advance training**
  - 20-40 minutes

- **Facilitate implementation**
  - 20-40 minutes

- **Assist in training staff**
  - 20-40 minutes

- **Advance training**
  - 20-40 minutes

- **Facilitate implementation**
  - 20-40 minutes
Cont. Implementation

- Re-categorization: women who are in the treatment stage that falls between 1.0–1.9 months, it is due to increase length and enhance the client's own motivation to change.
- Referrer to treatment: referring patients to the appropriate level or substance used program based on their level of the intervention.

Motivational Interviewing

- Using open-ended questions
- Reflection listening
- Affirmation
- Summarizing
- Eliciting change talk

Outcome Evaluation

- Staff Knowledge:
  - Pre-post paper and pencil, questionnaires on the same day after training, and 30–60 days after training.
  - Staff knowledge will be evaluated using the confidence test (C test) by Jean Grady.
  - Re-test performance.
- Aggregate percent of the percentage of the patients responded SIRT Intervention 60 days after launching the project.
- Data analysis will be processed by using the Statistical Package for Social Sciences (SPSS) Version 24.3 software.

Planned Statistical Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>Test of Difference</th>
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<tbody>
<tr>
<td>Percentage of client receiving training</td>
<td>- Parallel test between mean of percent knowledge scores and family planning skills</td>
</tr>
<tr>
<td>Agreement on performance standards</td>
<td>- Parallel test between mean of percent knowledge scores and family planning skills</td>
</tr>
<tr>
<td>Educational level, income, gender</td>
<td>- Parallel test between mean of percent knowledge scores and family planning skills</td>
</tr>
<tr>
<td>Age of patient and knowledge before training</td>
<td>- Parallel test between mean of percent knowledge scores and family planning skills</td>
</tr>
<tr>
<td>Knowledge of patients and knowledge before training</td>
<td>- Parallel test between mean of percent knowledge scores and family planning skills</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre</th>
<th>Post</th>
<th>P-Val</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>60%</td>
<td>80%</td>
<td>0.015</td>
</tr>
<tr>
<td>Self-care</td>
<td>70%</td>
<td>90%</td>
<td>0.034</td>
</tr>
<tr>
<td>Support</td>
<td>80%</td>
<td>95%</td>
<td>0.021</td>
</tr>
</tbody>
</table>
APPENDIX G

SBIRT ALGORITHM
## APPENDIX H

### DEMOGRAPHIC QUESTIONNAIRE

#### Staff Demographics

Please respond to the questions below; we appreciate your collaboration and assure you that no data will be used on the individual level. Your data will be treated confidentially and privately and will only be used for the purposes of this project.

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>What is your age (round to the closest year): ____________________</td>
</tr>
<tr>
<td>2</td>
<td>Length of experience as nurse in years (to the closest year): ___________</td>
</tr>
<tr>
<td>3</td>
<td>How many years have you worked as a nurse in the Emergency Department? _______________</td>
</tr>
<tr>
<td>4</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>1-Female</td>
</tr>
<tr>
<td></td>
<td>2-Male</td>
</tr>
<tr>
<td></td>
<td>3- Other, specify: __________________</td>
</tr>
<tr>
<td>5</td>
<td>Highest level of nursing education:</td>
</tr>
<tr>
<td></td>
<td>1-ADN</td>
</tr>
<tr>
<td></td>
<td>2-BSN</td>
</tr>
<tr>
<td></td>
<td>3-MSN</td>
</tr>
<tr>
<td></td>
<td>4-Doctoral degree (PhD, DNP, DNSc…etc.)</td>
</tr>
<tr>
<td>6</td>
<td>Do you have experience with Screening, brief intervention, and referral to treatment (SBIRT)?</td>
</tr>
<tr>
<td></td>
<td>1-Yes</td>
</tr>
<tr>
<td></td>
<td>2-No</td>
</tr>
<tr>
<td>7</td>
<td>If you are familiar with SBIRT, how many years? ____________</td>
</tr>
<tr>
<td>8</td>
<td>Are you familiar with using motivational interviewing?</td>
</tr>
<tr>
<td></td>
<td>1-Yes</td>
</tr>
<tr>
<td></td>
<td>2-No</td>
</tr>
<tr>
<td>9</td>
<td>If you are familiar with using motivational interviewing, how many years? ______________</td>
</tr>
<tr>
<td>10</td>
<td>How many years of experience do you have with substance use treatment? ______________</td>
</tr>
</tbody>
</table>
APPENDIX I

LEVEL OF EVIDENCE

Level of Evidence

- Level I: Evidence from a well designed systematic review of RCTs.
- Level II: Evidence from a well designed RCT.
- Level III: Evidence from a well designed controlled trial (no randomization)
- Level IV: Evidence from a well designed case control or cohort study.
- Level V: Evidence from a systematic review of qualitative or descriptive studies.
- Level VI: Evidence from a qualitative or or descriptive study.
- Level VII: Evidence from the opinion of authority and/or expert committees.

Levels of evidence according to the hierarchy of Melnyk pyramid of evidence based practice (Fineout-Overholt, Melnyk, & Schultz, 2005).

Summary of Evidence

- Level 1 of evidence: (Landy et al., 2016) & (Young et al., 2014).

- Level 2 of evidence: (Cherpitel et al., 2009), (Sommers et al., 2013), & (Woolard et al., 2013).

- Level 4 of evidence: (Aldridge, Linford, & Bray, 2017), (Barbosa, Cowell, Bray, & Aldridge, 2015; Paltzer et al., 2016), (Kazemi, Levine, Qi, & Omochowski, 2015), (Paltzer et al., 2016), & (Woodruff et al., 2013).