2020

Changes In Student Attitudes And Beliefs After Sbirt Training

Jennifer Todd
Indiana State University

Changes in Student Attitudes and Beliefs after SBIRT Training

---

A Dissertation

Presented to

The College of Graduate and Professional Studies

Department of Applied Health Sciences

Indiana State University

Terre Haute, Indiana State University

In Partial Fulfillment

of the Requirements for the Degree

Doctorate of Health Sciences

By

Jennifer Todd

May 2020

Key Words: SBIRT, Motivational Interviewing, distance education, alcohol, substance use

Committee Members

Committee Chair: Dr. Matthew Hutchins, Ph.D.

Associate Professor, Department of Applied Health Sciences

Indiana State University

Committee Member: Dr. Jon Agley, Ph.D.

Assistant Research Scientist, Applied Health Science

Indiana University

Committee Member: Dr. Whitney Nesser, Ph.D.

Assistant Professor, Department of Applied Health Sciences

Indiana State University

Committee Member: Dr. Shiaw-Fen Ferng, Ph.D.

Professor, Department of Applied Health Sciences

Indiana State University

ABSTRACT

Substance use and abuse is a widespread issue and has resulted in the need for professionals to research and develop prevention efforts and interventions from a community based, public health approach. Those who are providing addictions related training in these settings often have limited time and resources with which to provide efficient and effective training. Information related to the impact of training with specific disciplines, such as social work, nursing, and physician assistant, is also needed in order to more effectively alter the approach based on those receiving the training. The purpose of this study was to evaluate factors that may impact the effectiveness of training provided at a local university with future health care professionals related to alcohol and Substance Use Screening, Brief Intervention, and Referral to Treatment (SBIRT). The effectiveness of training was evaluated using student self-reported changes in attitudes and beliefs prior to and after SBIRT training and also examined factors including length of training, student discipline, and format of training (face-to-face and distance). This quasi-experimental, quantitative study used a variety of methods of statistical analyses, including descriptive statistics and ANOVA, to examine student self-reported answers in pre and post-surveys after participating in SBIRT training. Specifically, the study focused on five constructs (dependent variables) identified in the surveys used, including: stated likelihood of screening and brief intervention practice; competency; perceived role legitimacy; skepticism of behavioral health care; and time utilization and compensation. Evaluation of these constructs were compared to the following independent variables: length of training; training by discipline; and format of training. Results indicated that student perceived competence improved significantly immediately post-training, while perceived role legitimacy and stated likelihood of SBI practice had some small, significant change. Student perceptions surrounding time utilization and compensation declined post-training. Furthermore, there was no significant difference when considering format of training and training by discipline.

ACKNOWLEDGEMENTS

I would like to thank my dissertation committee for all of their support and time spent assisting me through this process. Thank you Dr. Hutchins, Dr. Nesser, and Dr. Ferng-Kuo for your guidance and patience during my course work and dissertation process. Thank you Dr. Agley for your mentorship, knowledge, and patience in both this dissertation and our other adventures with SBIRT.

Thank you to my friends, extended family, and parents who started this process with me. While they may not have understood what I was doing in a dissertation program, they were always encouraging and supportive. Specifically, thank you to Mike, Josh, and Emma who truly felt the impact of working toward this goal, but who never complained. Your support was essential and overwhelming. I am truly proud and blessed to call you mine.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Substance use and abuse is a widespread issue that impacts many university students who plan to work as professionals in the health care field. The first *Surgeon General's Report on Alcohol, Drugs, and Health* (2016) highlighted the need for a national response to this issue and the need to train professionals in both prevention and treatment efforts with individuals and families facing addiction. The report noted that "alcohol and drug misuse and related disorders are major public health challenges that are taking an enormous toll on individuals, families, and society" (U.S. Department of Health and Human Services, 2016, p. ES1). In 2015, it was estimated that over 27 million people in the Unites States reported "current use of illicit drugs or misuse of prescription drugs" (p. ES1), and over 66 million people reporting binge drinking in the past month. The national costs related to alcohol use disorders and illicit drug use are $249 billion and $193 billion respectively (USDHHS, 2016).

In recent years, professionals in the addictions related field have researched and recommended training and use of various prevention models to reduce the amount and impact of alcohol and substance abuse in this country; including prevention strategies that reduce the amount of people who reach the dependence stage of addiction; thereby, saving money in treatment costs by intervening early (Agley & Gassman, 2008). At the federal and state levels of

government, officials have provided funding for research, training, and interventions related to behavioral health prevention efforts. One such effort of focus is the Screening Brief Intervention and Referral to Treatment (SBIRT) model supported by the Substance Abuse and Mental Health Services Administration (SAMHSA), which is a federal agency focused on substance abuse and mental health within the United States Department of Health and Human Services (https://www.samhsa.gov/about-us/who-we-are). The SBIRT model is used to intervene at a prevention level (Substance Abuse and Mental Health Services Administration, 2013). SBIRT provides universal screening, early intervention and a recommendation to treatment in a timely manner (SAMHSA, 2011). The SBIRT approach targets individuals who are engaging in risky and harmful drinking and substance use, but do not yet meet the guidelines for a substance use disorder. One strength of this model is that it trains professionals to engage in universal screening and can be used in a variety of settings (SAMHSA, 2013). Use of screening and brief intervention is an evidence-based practice model recently included in a report by the United States Surgeon General as an early intervention approach in "identifying behaviors that put people at risk for harms, including for developing a substance abuse disorder, and to identify patients with existing substance use disorders" (SAMHSA, 2013, p. 8).

As alcohol and substance abuse prevention strategies are further researched and developed, it is necessary for academic institutions and professional organizations to consider workforce needs and develop training programs to address these efforts (Begun, Clapp, & The Alcohol Misuse Grand Challenge Collective, 2016; McNeese, 2003; Wilkey, Lundgren, & Aodeo, 2013). Students who are prepared to work in health care and social service related settings should receive training so that they can better provide prevention and treatment efforts to those consumers they encounter. Further research is needed to study how best to provide

evidence-based addictions prevention efforts and interventions in our communities. Studies should include factors that positively or negatively impact the student learning process and their decisions to utilize skills learned in their future professional practice. This includes the study of student and professional trainings in harm reduction approaches, such as SBIRT.

Need for the Study

This pervasive issue of substance use and abuse has resulted in the need for professionals to research, develop, and be trained in prevention efforts and interventions that use a community-based, public health approach. It is necessary for those working in the field to study the impact of at-risk drinking and substance use, and to address the way in which we are responding as a country and health care professionals (Cochran & Field, 2013). In the past, the United States has declared a "war on drugs", with limited success in preventing addictions before they start (McNeese, 2003). It is time that addiction is considered a public health issue and responded to accordingly using research and training to advocate for proven strategies supported through research (American Public Health Association and Education Development Center, 2008). This may include a variety of approaches, including training related to education, harm reduction, and treatment. One way to address this national public health issue is to train new health care professionals to use prevention strategies which will actually reduce the amount of people who reach the dependence stage of addiction and save money in treatment costs (Agley & Gassman, 2008). Training of health related professionals will be needed if we are to increase the use of the prevention strategies. Furthermore, while federal health care legislation has specifically designated funding for screening and behavioral health coverage through the Affordable Care Act, there must also be trained health related professionals to implement these strategies

(Corrigan, Krase, & Reed, 2017). We have more funding for these prevention strategies, but do we have enough trained professionals to implement the strategies?

Due to limited time and resources in academic and professional settings, it is important to consider those instructional conditions mostly likely to deliver content using the most efficient and effective methods. When attempting to introduce a new skill or concept to students or professionals, there are often barriers in place, such as limited time for training, burden on faculty resources, and limited support for the training (Broyles, Gordon, Rodriguez, Hunusa, Kengor, & Kraemer, 2010). It is important for trainers to determine the most efficient and effective training formats in order to utilize resources and opportunities in the most efficient and effective manner. Currently, much of the research on SBIRT training has focused on the effectiveness of the training with specific professions, such as medical residents and nurses, or the implementation of the SBIRT model into practice. There is a need for more research to evaluate the impact of length, discipline, and format of SBIRT training in the United States as related to student's attitudes and beliefs. This research is necessary when planning and delivering SBIRT trainings in order to efficiently and effectively train future health related professionals in screening for and intervening with risky and harmful alcohol and substance use. In order for students to utilize the model in practice, according to Bandura's (1977) Self-Efficacy Theory, they must believe that they have mastered the needed skills. Information related to the impact of training with specific disciplines, such as social work, nursing, and physician assistant, is also needed in order to more effectively alter the approach based on those receiving the training.

This quasi-experimental study provided information needed to efficiently and effectively train undergraduate and graduate students in the SBIRT model. It was important to consider the various challenges that occur when introducing students to a new approach or technique,

especially when it relates to a personal and sometimes controversial issue such as alcohol and substance abuse. This research benefits those health related academic programs engaged in SBIRT related training by providing recommendations on effective and efficient training methods. The recommendations focus on how the length and format of trainings impact student self-reported changes in attitude and perceived competence as related to the SBIRT model. Whereas other research has focused on the overall effectiveness of SBIRT training and implementation of the SBIRT model into practice, this study provides information specific to training length and format, including how the impact of training may differ by discipline.

Purpose of the Study

The purpose of this study is to evaluate the factors that may impact the effectiveness of training provided at Indiana State University with future health care professionals related to alcohol and substance use screening, brief intervention, and referral to treatment. The effectiveness of training was evaluated using student self-reported changes in attitudes and beliefs prior to and after SBIRT training.

Theoretical Base

When examining factors that impact a student's likelihood and self-confidence to engage in alcohol and substance use screening and brief intervention, it is also necessary to consider the students' self-efficacy from a theoretical framework. The impact of self-efficacy on human behavior, including behavior change, is important because the experience of mastery is linked to engaging in fearful and avoidant behavior (Bandura, 1977). This relates to teaching students a new skill, such as SBIRT, in that those who feel more confident in their role and ability to have difficult conversation about a patient's alcohol or substance use, will be more likely to practice the model. Bandura felt that self-efficacy is impacted by four sources of information:

performance or mastery experience; vicarious experience; verbal persuasion; and physiological states (i.e., anxiety, worry, fear). Thus, when evaluating the effectiveness of SBIRT training, ways in which students were provided opportunities for mastery must also be considered. The length of training, aspects of training specific to disciplines taking part in the activity, and format of training must also take into account how a student is responding to the addictions prevention training, including their attitudes and beliefs regarding alcohol and substance use.

Research questions

1. What effect does SBIRT training have on student attitudes and beliefs, as defined by: competence, perceived role legitimacy, skepticism of behavioral health care, time utilization and compensation, and stated likelihood of SBI practice as related to patients with alcohol- and drug-related problems?
2. What effect does length of training have on attitudes and beliefs?
3. What effect does format of training have on attitudes and beliefs
4. What effect does student field of study have on attitudes and beliefs?

Operational Definitions

The following definitions are provided in order to clarify terminology used in the study as related to the SBIRT model as an addictions prevention effort.

1. Brief Intervention - Brief intervention refers to the use of Motivational Interviewing techniques when a person screens positive for moderate risk of alcohol or drug use. The five to 15-minute intervention focuses on addressing the person's alcohol and/or substance use and its consequences, and then consideration of behavioral change. (SBIRT Colorado).

2. At-Risk Drinkers - In this context, at-risk drinkers refer to people who drank excessive amounts of alcohol, leading to potential health related and social problems. The health-related problems include medical issues, such as high blood pressure and accidents; whereas social problems may include work related problems or relationship issues (Gassman, 2003).
3. Screening - The SBIRT model involves a multi-step process that starts with a screening process for risky alcohol and substance use. In this study, screening refers to the likelihood of asking people about the amount of alcohol they drink and substances they use, and the symptoms they experience during use (Gassman, 2003).
4. Self-efficacy – This term refers to the belief in "one's own ability to successfully accomplish something" (Hayden, 2014, p.15). This term was measured using survey questions related to competency, including "I know what questions to ask patients to obtain information on their alcohol consumption", "I am comfortable asking about a patient's drinking patterns", "I know how I would effectively go about helping patients to reduce their drinking", and "I am at ease making these statements".
5. Distance Training – Distance training refers to the training that took place via a web-based format, including use of recorded instruction, on-line videos, and use of web-based software.
6. Face-to-Face Training - Face-to-face training refers to instruction that was provided in person to students by a faculty member or other training professional.
7. Length of Training – This refers to the length of time involved in the training provided to students. The lengths include in this study are 4 hours of training or 16 hours of training.

8. Student attitudes and beliefs are defined in terms of: competence, perceived role legitimacy, skepticism of behavioral health care, time utilization and compensation, and stated likelihood of SBI practice as related to patients with alcohol- and drug-related problems.

Assumptions

1. Participants responded accurately and honestly to questions on each survey.
2. The surveys yielded valid and reliable measurements of the variables.

Limitations

1. Results are only generalizable to similar populations.
2. Small sample size may limit finding significant relationships in the data.

Delimitations

1. Only questions related to student beliefs and evaluation of training were used for this study.
2. Only data from social work, nursing, and physician assistant majors were used for this study.
3. Only data from August 2019 through December 2019 were used for this study.

Research Design

This quasi-experimental, quantitative study used a variety of methods of statistical analyses, including descriptive statistics and ANOVA, to examine student self-reported answers in pre and post-surveys after participating in SBIRT training. The surveys included questions related to student attitudes and beliefs before and after receiving SBIRT training. It was anticipated that research would reveal the extent to which students who received SBIRT training

have changes in attitudes and beliefs related to engaging in screening and brief intervention. Specifically, the study focused on five constructs (dependent variables) identified in the surveys used, including: stated likelihood of screening and brief intervention practice; competency; perceived role legitimacy; skepticism of behavioral health care; and time utilization and compensation. Evaluation of these constructs were then compared to the following independent variables: length of training; training by discipline; and format of training.

Summary

While research has shown that substance use and abuse is a widespread issue that impacts many of our university students who plan to work as professionals in the health care field (USDHHS, 2016), academic programs are still attempting to create training programs that will efficiently and effectively provide needed skills and increase confidence for students as they enter the workforce. This study provided additional research as to the factors that may impact the effectiveness of training related to alcohol and substance use screening, brief intervention, and referral to treatment. The effectiveness of training was evaluated using student self-reported changes in attitudes and beliefs prior to and after SBIRT training. It also examined factors that may impact the training results, including length of training, student discipline, and format of training (face-to-face and distance).

In preparation for discussion related to the research study, chapter 2 will provide an overview of SBIRT and disciplines involved in SBIRT training (social work, nursing, and medical students). Training length, format (distance and face-to-face), and student self-report of barriers and stigma to implementing SBIRT into practice will be identified, along with final conclusions and identification of future research that is needed.

CHAPTER 2

REVIEW OF LITERATURE

Many students graduating from a health-related profession will engage in some type of substance abuse prevention and or treatment practice (USDHHS, 2016) when they enter the workforce. There has been an increased focus on addressing risky and harmful alcohol and substance use within multiple professions, including social work, nursing, and medical related fields (Begun et al., 2016; Corrigan et al., 2017; USDHHS, 2011; Koyi et al., 2018). The increased rate of addiction to alcohol and/or substances has prompted a public health approach to prevention and intervention among health-related professionals. In fact, advocates are calling for a harm reduction public health approach versus a criminal justice perspective to address the increasing rates of addiction. This includes evaluating the public issue in terms of the impact of at-risk drinking on the economy, deaths, health issues, and accidents/injuries (Cochran & Field, 2013). It also includes changing the focus of treatment and services provided in the United States. Research is supporting the benefits of a harm-reduction approach to risky and harmful alcohol and substance use (McNeese, 2003). Specifically, social workers, nurses, and medical professionals have been tasked various government agencies, including SAMHSA, with learning and using research supported approaches to identifying risky and harmful use before it evolves

into an addiction. In fact, insurance companies provide reimbursement to the above professionals for screening and providing brief interventions related to alcohol and substance use (Corrigan et al, 2017; DHHS, 2011). As a result, it is necessary for academic institutions and professional organizations to consider the workforce needs and develop training programs to address these efforts (Begun et al, 2016; McNeese, 2003; Wilkey et al, 2013). Students who are prepared to work in health care and social service related settings should receive training, such as SBIRT, in order to provide prevention and treatment efforts to those consumers they encounter. Further research needs to be conducted related to the most effective and efficient methods for providing this training to students in undergraduate or graduate programs.

The focus of this literature review, and research study, will be to consider the most effective and efficient method of providing SBIRT training in an academic setting. While there is extensive research to be found related to the implementation of the SBIRT model in practice, the information provided in this review will be limited to SBIRT academic and professional training related topics. Research regarding SBIRT implementation in various practice settings focuses more on ways to deliver and evaluate use of the SBIRT model in various settings and with different populations. For this literature review, the researcher chose to focus on student based training, in addictions and in the SBIRT model, in peer-reviewed journals published within the last five years using on-line databases. It was also helpful to review studies cited in recent SBIRT related training studies to help build a history of SBIRT training and those publications noted as “pivotal” in the research. This included government based publications and research studies associated with multiple disciplines that provided validation for the model and evaluation instruments used in the study. Furthermore, the SAMHSA website was used as a resource to

identify relevant research related to SBIRT training and up-to-date information related to use of this model.

In the following pages, this chapter will first provide an overview of the alcohol and substance use in the United States, factors associated with misuse, and prevention approaches to this issue. Then, addictions related training currently being provided to students in health related fields will be explored. This will include the connection of self-efficacy to training in the addictions field. Next, SBIRT as a public health prevention approach will be examined, including evidence to support use of universal screening, brief intervention, and referral to treatment, and of Motivational Interviewing within the SBIRT model. Professional and student-based SBIRT training will then be explored, including social work, nursing, and medical and physician related training related studies. It is also important to review the literature related to training length and distance based academic and professional training, especially as it compared to a face-to-face training format. Finally, a review of professional and student self-report of barriers and stigma to implementing SBIRT into practice will be identified, along with final conclusions and identification of future research that is needed.

Alcohol and Substance Use in the United States

Statistics support the need for health related professionals to engage in practices that address addiction in our communities. As reported from the 2015 National Survey on Drug Use and Health, 66.7 million people reported binge drinking in the United States and 27.1 million people used illicit drugs or misused prescription drugs (Center for Behavioral Health Statistics and Quality, 2016). In the United States each year, alcohol misuse contributes to 88,000 deaths and 1 in 10 deaths among working adults (Stahre, Roeber ,Kanny, Brewer, & Zhang, 2014). Addiction also contributes to high costs related to lost workplace productivity, health care

expenses, law enforcement and other criminal justice, and losses from motor vehicle crashes (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015; National Drug Intelligence Center, 2011). Furthermore, alcohol misuse contributes to health problems, including liver and pancreatic diseases, hypertension, reproductive system disorders, trauma, stroke, and various cancers (Rehm, Mathers, Popova, Thavorncharoensap, Teerawattananon, & Patra, 2009; Sokol, Delaney-Black, & Nordstrom, 2003). In fact, more than 2,200 alcohol overdose deaths occur each year, and 76% of these deaths occur among adults between 35 and 64 (Centers for Disease Control and Prevention, 2015).

This impact on health also includes the effects of alcohol and drug use on pregnant women and their children, which can result in intellectual disabilities, speech delays, poor social skills, and facial deformities (USDHHS, 2016). Furthermore, alcohol misuse leads to nearly one-third of all traffic-related fatalities in the United States (National Highway Traffic Safety Administration, 2015). These rates indicate a need for health related professionals to engage in screening and intervention when providing services to patients. However, research indicates that health care professionals fail to recognize alcohol or substance use disorders. In a recent study by the CDC, when interacting with a health care professional, only 1 in 6 adults and 1 in 4 binge drinkers had ever been asked about their drinking behavior (McKnight-Eily et. al., 2014) indicating the need for professionals to be prepared to engage in addictions related conversations with patients.

Factors Affecting Risk for Alcohol and Substance Misuse

The research indicates that many environmental and genetic factors influence risk for alcohol and substance misuse. However, most studies reviewed indicated that one of the most supported risk factors for alcohol and substance use disorder is the age of first use and use during

adolescence and early adulthood (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005; SAMHSA, 2014). Gil, Wagner, and Tubman (2004) found that young adult regular substance users who began using substances in early adolescence were specifically more likely to: abuse alcohol (1.5 times); abuse marijuana (2 times); be dependent on marijuana (2.7 times); and be classified as having any substance use disorder (2 times) compared to abstainers in adolescence. Furthermore, alcohol and substance misuse has been linked to a presence of other psychiatric disorders, such as depression and Post-traumatic Stress Disorders (PTSD) (Hasin, Stinson, Ogburn, & Grant, 2007; Stone, Becker, Huber, & Catalano, 2012).

There is also a connection between genetics and alcohol and substance use related addiction, with the focus being on classes of genes that have been found to increase susceptibility of opioids, alcohol, methamphetamine, and cocaine (Toriello, 2014; Dick & Agrawal, 2008). It is thought that genes play as large a role as environmental factors in causes of alcohol dependence (Rietschel & Treutlein, 2012). In this area, researchers are engaging in genome-wide association studies to further explore linkages of specific genes to substance use disorders (Toriello, 2014). Dick and Agrawal (2008) noted that while some genetic factors are thought to influence psychiatric conditions in patients overall, disorder-specific genes are being identified and directly linked to alcohol and drug dependence.

Dependence on alcohol and substances has also been linked to past traumas, including experiences occurring in childhood (Najavits et al., 2017). The experiences can increase the likelihood that children will then develop alcohol and substance use disorders as an adult. The Adverse Childhood Experiences Study (ACES) has been used by researchers to examine the relationship between 10 “ACES” categories of adverse childhood experiences to illicit drug use (Dube et al., 2003). These categories include various forms of child abuse and neglect; parental

intimate partner violence; and substance misuse in the household. It was found that "the number of ACES to which a person is exposed had a strong graded relationship to the risk of drug initiation from early adolescence into adulthood" (Dube et al., 2003).

Much research has also focused on alcohol and substance use in young adults, including risk and protective factors that impact alcohol and substance use during this life stage. Stone, Becker, Huber, and Catalano (2012) completed a literature review of risk and protective factors for young adults engaging in alcohol, tobacco, and other drug use dating from 2000-2010. Results indicated that young adults have increased risk if they "are male, have substance-dependent parents" and have "low commitment to school" and are early users (Stone et al, 2012, p. 771). It was also noted that family factors, school achievement, and influence of peer use can also impact young adult use (Stone et al, 2012; Kempf, Llorca, Pizon, Brousse, Flaudias, 2017). Protective factors related to alcohol and substance misuse included increased supervision, support, and monitoring by parents (Stone et al, 2012). It was also noted that community wide risk factors included the availability of sales of alcohol and drugs; costs (included taxes) on alcohol and other drugs; and accountability for illegal sales could serve as protective factors in a community (Elder et al., 2010).

Prevention Approaches

Because alcohol and substance misuse impacts overall individual, social, and public health in so many ways, it is imperative that we engage in prevention type approaches in an attempt to address issues of misuse before they lead to dependence and addiction. Health related professionals need to address misuse before it becomes a larger problem that is much more difficult to contain. When considering prevention approaches, SAMHSA (2017) recommends a Strategic Prevention Framework (SPF) which includes evidence-based prevention strategies that

rely on planning, specific steps, reliable information, and a long-term approach. Specifically, several principles guide a prevention framework, including addressing prevention on a continuum, ranging from deterring the use to slowing the onset of dependence as it arises. Another principle involves decreasing risk factors and enhancing protective factors, and working in systems rather than isolated approaches (SAMHSA, 2017). It is also recommended that prevention programming addresses both individual and community needs by helping individuals develop health patterns while also creating environments that support health behavior (SAMHSA, 2019; USDHHS, 2016). An epidemiological approach to substance misuse can also help professionals understand the factors that place an individual at increased risk for dependence, which serves as the underlying approach to the Strategic Prevention Framework (SAMHSA, 2016).

The Institute of Medicine has defined three categories of prevention, which includes a universal approach to preventing alcohol and substance misuse; a selective approach aimed at those most at-risk; and an indicated approach targets those people who are already using substance but have not reached dependence levels (National Research Council and Institute of Medicine, 2009). There are several prevention approaches supported through various government funded programs that are addressing one or more categories of prevention. The American Public Health Association supports use of screening and brief intervention with at-risk alcohol users in order to reduce their use or stop drinking in order to improve the individual and community's health overall (American Public Health Association and Education Development Center, Inc., 2008). It is thought that engaging in screening and brief intervention can address "negative outcomes associated with excessive alcohol use: injuries and deaths, including from motor vehicle crashes; social problems, such as violence; physical and mental illnesses; and

employment, relationship, and financial problems" (APHA, 2008, p. 2). This approach is also supported by other government based entities such as the Office of the Surgeon General with the United States Department of Health and Human Services (USDHHS, 2016) and the United States Preventive Services Task Force (Moyer, 2013).

Other prevention efforts include those aimed at early childhood in which parents are identified at high risk for abuse and neglect of their children through screening, often implemented in home-based services (National Research Council and Institute of Medicine, 2009). An example of a universal approach to prevention is the use of programs in schools, and are more likely to be effective when they are targeted long term while developing protective factors. Other prevention programs may also be seen in the child welfare and juvenile justice systems, which can involve supporting foster care parents and professional staff in issues of supervision. Finally, prevention programs are also provided in college age settings due to the high incidence of binge and at-risk alcohol use in young adults (National Research Council and Institute of Medicine, 2009).

Student Addictions Training

While there seems to be agreement related to the need for students to learn about addiction related curriculum, researchers in various disciplines continue to examine the best methods of engaging students to study in this field and for providing that instruction. Upon review of the literature, the impact of self-efficacy was supported when training students preparing to enter health related professions. In regards to addictions related student training, the majority of research was found in the medical related fields, including medical residents, psychiatry, and nursing. Research related to training students entering the counseling related fields, such as social workers, was also found. Some articles were available in the public health

related journals, but were more focused on addressing opioid and heroin, with little research found on how to train future professionals to intervene early in alcohol and other substance use.

Impact of Self-Efficacy on Student Training

Bandura noted that self-efficacy is useful to consider when analyzing a person's engagement in fearful or avoidant behavior (Bandura, 1977). Efficacy can be considered as a personal conviction that one can "successfully execute the behavior required to produce the outcomes" (p. 193). This includes the idea that if someone experiences doubts regarding their ability to engage in a behavior, they are less likely to engage in that behavior. In other words, one's self-efficacy influences the choice of activities and settings, how effort will be expanded, and how much they will persist in the face of obstacles. Bandura stated "the stronger the perceived self-efficacy, the stronger the efforts" (p. 194). Petrovich (2004) noted that self-efficacy theory can help in professional training due to it: works in several areas of practice (including substance abuse); is flexible; is focused on pragmatic, client-centered interventions; and integrates physiological, cognitive, interpersonal, and societal dimensions of learning.

This theoretical approach is currently being used in various academic disciplines due to its applications in assignments with students, including use of teaching strategies that include exploring, modeling, role playing, and practice (Ogden, 2016; Holden, Barker, Kuppens, Rosenberg, 2017; Holden, Meenaghan, Anastas, & Metrey, 2002)and can be useful when designing standardized case assessments and simulation activities (Wamsley, Julian, O'Sullivan, Satterfield, Satre, McCance-Katz, & Batki, 2013; Bulfone, Fida, Ghezzi, Macale, Sili Alvaro, Palese, 2016). This also includes use of teaching approaches that mastery experience, during which students develop beliefs in their ability to engage in activities (Delich & Roberts, 2017). In fact, in a review of 64 articles from 2000 to 2013, Bartimote-Aufflick, Bridgeman, Walker,

Sharma, and Smith (2016) found a strong association between self-efficacy and student achievement, and also to self-regulation, metacognition, and motivation.

Addressing issues of self-efficacy also assists with the student's confidence in their ability to intervene in substance abuse interventions (Braxter, Puskar, Mitchell, Hagle, Gotham, & Terry, 2014). This can be further translated into practice in that feelings of self-efficacy also contribute to professionals' of SBIRT in practice (Harris, Shaw, Sherman, Lawson, 2016; Stoner, Mikko, & Carpenter, 2014). As researchers and academic professionals explore the effectiveness of training on students' future practice, it is thought that addressing self-efficacy may improve patient overall care by increasing confidence when approaching substance abuse with patients (Tanner, Wilhelm, Rossie, Metcalf, 2012).

Social Worker Student Addictions Training

The current method of training social workers for addictions work includes a variety of approaches and interventions (Bina et al, 2008; Linley, Mendoza, &, Resko, 2014; Bowen & Walton, 2015) with an emphasis on assessing students' perceived preparedness to work in addictions (Bina et al, 2008) and confidence working in this area (McCabe & Wahler, 2016). Current pedagogical approaches were found in the literature involving use of case studies, interprofessional education activities (Linley, Mendoza, & Resko, 2014; Bowen & Redmond, 2016), addiction related evidence based tools and interventions (Linley, Mendoza, &, Resko, 2014), social policy analysis (Bowen & Redmond, 2016), and evaluation and research related to health disparities (Bowen & Walton, 2015).

Bina, Harnek Hall, Mollette, Smith-Osborne, Yum, Sowbel, & Jani (2008) supported the inclusion of addictions training in social work curriculum due to the engagement of substance abuse education and perceived knowledge are factors associated with how likely students see

themselves as prepared to work in the area of substance abuse. This perception increased for those students who engaged in formal academic substance abuse training. The impact of perceived knowledge was found to be even more powerful than type of training received. Linley, Mendoza, &, Resko (2014) noted that students planning on a career in the field of substance use should receive education related to the most commonly used assessment and diagnostic tools in their area, as well as where to find information on the most current evidence-based interventions. Bowen and Redmond (2016) challenged the way in which substance use is currently addressed in coursework, noting that the topic is primarily addressed from a practice-oriented perspective with limited attention being given to the national drug policy.

In future social work student trainings, it was recommended that "specialized coursework on working with people who have substance use disorders should be provided in social work education programs" (McCabe & Wahler, 2016, p. 230) and include "education, prevention, assessment, treatment, or resource coordination and case management roles" (p. 230). More training is needed in relation to evidence based practice at the micro and macro levels, and should include an integrative care approach to working in the addictions field (McCabe & Wahler, 2016). Furthermore, interprofessional education programs are seen as an important approach to addictions related education. Programs, such as the *Josiah H. Macy Foundation*, are also available to social workers providing educational and clinical environments for collaborative care teams. This Program is focused on training the next generation of professionals, and social workers should bring their own skills related to screening, brief intervention, and referral to treatment to these initiatives (McCabe & Wahler, 2016).

Finally, Bowen & Walton (2015) supported the need for social workers to examine mental health and substance use disorders from a race-related disparities approach, "in

particular with regard to disease progression, severity, and treatment outcomes" (p. E59). Social work students should be encouraged to examine social determinants of substance use in order to obtain a more "holistic understanding" of the issue, which is necessary when attempting to achieve health equity. Furthermore, social work curriculum should link addictions to research, practice, and policy, and examine "how each of these elements is critical to coordinated effort to end health disparities" (p. E62).

Nursing Student Addictions Training

Research supports the overall need related to addictions training in the nursing field due to nurses are in a pivotal role to provide addictions interventions (Smothers, Reynolds, McEachern, Derouin, Carter, & Muzyk, 2018), especially as related to patients experiencing severe alcohol withdrawal (Gates & Brown, 2017). Current training for nurses includes a variety of curriculum formats, including from 45 minutes to multiple years of instruction and specialization (Smothers, Reynolds, McEachern, Derouin, Carter, & Muzyk, 2018). The research notes that including substance use disorder in nursing curriculum has "produced a positive impact on measured outcomes of nursing students' attitudes, knowledge, and skills" (Smothers et al, 2018, p. 138) and that universities should continue to adjust current curriculum to includes addictions related content.

Stewart and Mueller (2018) noted that nursing curriculum could be embedded into curriculum by adding module based learning involving a variety of teaching strategies, including discussion about prevention and nursing colleagues engaged in substance use disorder. The researchers felt that nursing impairment related substance abuse should be a component of addictions related curriculum in student nursing programs.

Specific student training that is needed includes nurses' response to opioid overdose with use of medication (Dion, 2016). This note only provides more skilled nurses related to administering medicine in opioid overdoses, but those students may also use the skills with their peers in a university/college setting where we have seen in increase in opioid abuse. Addictions related training should also include training related to researching best approaches to prevention and intervention, including interdisciplinary research teams. Thompson (2013) noted that students should be exposed to interdisciplinary research early in their academic careers in order to promote "efficient and effective interdisciplinary research teams to carry out innovative research within a translational science framework" (Thompson, 2013, p. 43) within the addictions field. Furthermore, academic institutions will also need to offer opportunities and support this research (Thompson, 2013).

Finally, addictions related teaching strategies should also include interprofessional education opportunities and training activities that promote team based learning and collaboration (Broyles, Conley, Harding, Jr., & Gordon, 2013). One such initiative involved Project MAINSTREAM (Multi-Agency Initiative on Substance Abuse Training and Education for America), which was a "national multidisciplinary faculty development program designed to support workforce development and sustained curricular change in substance abuse education at academic institutions around the United States" (Broyles et al, 2013, p. 30). This initiative addressed both workforce development curriculum changes to existing health professions programs, connecting faculty, community professionals, and students in education and professional training. This initiative occurred from 2001 to 2004, and was noted as "most comprehensive and well-known example of interdisciplinary collaboration in addictions education and training" Broyles et al, 2013, p. 30). Furthermore, inteprofessional training

should also focus on stigma and improve attitudes of students (Harling, 2017). Addictions training involving multiple disciplines may be useful when specifically addressing nursing students' attitudes and beliefs towards illicit drug users, which has been found to "be worse than other health and social care students" (Harling, 2017, p. 157). Interprofessional addictions training may assist academic programs in developing a shared value base and promote collaboration between health care professionals. In addition, use of interprofesional simulation prepares to students to challenges, their own roles, communication skills, understand others' roles, and manage personal anxiety when caring for patients during actuate alcohol withdrawal (Gates & Brown, 2017). IPE simulation also helps students to practice the transition of care when applicable.

Medical Professional Student Addictions Training

Addictions training in medical fields can impact attitudes of medical students and increase confidence in dealing with addictions (Feeley et al, 2018). Supplementing medical students' education with intensive experiences with patients with substance use disorders has shown positive results (Lindsey et al, 2017). While student trainings have not been found to always positively impact motivation to specialize in this area, research has supported the idea that addictions related trainings increase knowledge and confidence to deal with substance abuse (Lindsey et al, 2017).

Some of the current addictions related medical training programs include psychiatry rotations in medical schools (Feeley et al, 2018) and psychiatric fellowships (Klimas, Small, Ahamad, Cullen, Mead, Rieb, Wood, McNeil, 2017), such as the Scaife Advanced Medical Student Fellowship in Alcohol and Other Drug Dependency offered by the Institute for Research, Education and Training in Addictions (Lindsey, Hagle, Lincoln, Williams, Luongo,

2017). The Betty Ford Institute is another organization that provides addictions related training by holding a Summer Institute for Medical Students (Lindsey, Hagle, Lincoln, Williams, Luongo, 2017) for psychiatric students. However, addictions related training gaps in medical schools are still being identified (Tetrault & Petrakis, 2017; Feeley, Moore, Wilkins, & Fuehrlein, 2018). This includes training gaps in relation to specific populations, such as adolescents, or in secondary prevention efforts (Gassman, 2007). In fact, The American Association of Directors of Psychiatric Residency Training (AADPRT) Taskforce on Addictions was assembled in 2017 to address the issue of adolescent addictions. One finding included that a lack of services in adolescent addictions may be contributing to a gap in student training (Welsh, Schwartz, & DeJong, 2018). There is a need for faculty time and expertise in adolescent addictions, including addiction-specific clinical training sites where experienced faculty and supervisors are involved in the practicums (Welsh, Schwartz, & DeJong, 2018).

In a study by Billups and Shorter (2015), general psychiatry students reported four primary addictions related challenges:

> 1) limited comfort in treating patients with SUD after completion of training, (2) lack of familiarity with addictions treatment options (e.g., pharmacotherapy, psychotherapy community resources), (3) negative attitudes about the population and treatment outcomes, and (4) limited interest in the field of addictions as a career (p. 191).

These student reported challenges should be acknowledged when planning and implementing addictions related training. Furthermore, faculty reported challenges to implementing additional SA education in medical schools (Feeley et al, 2018), such as time and resource constraints, should also be considered.

As a response to the increased need for professionals to be trained in delivery addictions related treatment, in 2016 the White House Office of National Drug Control and Policy (ONDCP) urged medical schools to sign a pledge that all medical students would study addictions related issues, including various methods of controlling opioid prescription use as related to chronic pain (Tetrault & Petrakis, 2017). It was encouraged that University faculty in graduate and medical schools partner with other disciplines when designing addiction related curriculum. Partnerships, including partnerships between psychiatrists and internal medicine (Tetrault & Petrakis, 2017), and interdisciplinary trainings should be included in addictions training to teach students how to work as a team (Edens, Gafni, & Encandela, 2016).

Tetrault & Petrakis (2017) reported that training students in addictions related content should include areas of clinical interventions, educational approaches, and research and suggested a focus on "5 priority areas for addiction education: etiology and public health impact; evaluation for substance use and substance use disorders; pharmacological treatment; psychosocial treatment; and overdose prevention" (p.1387). Furthermore, trainings for medical students should not separate out addiction from those issues connected to it, including chronic pain (Edens, Gafni, & Encandela, 2016). Undergraduate and graduate students should receive education related to identification, assessment, and treatment for patients with opioid misuse and opioid use disorder, which relates to the treatment of chronic pain (Gordon & Harding, 2017).

Furthermore, curriculum around addictions should be offered during the preclinical years to start training earlier to have a greater impact on students when they enter practice (Feeley, et al, 2018). Psychiatric students identified two specific areas of focus in outpatient clinical training rotations that might serve to improve knowledge and comfort in addictions treatment, including "(1) careful instruction in the use of pharmacotherapy in outpatient treatment of substance use

disorders, and (2) introduction and close, dedicated supervision of psychotherapeutic modalities, such as cognitive behavioral therapy (CBT), aimed at reduction of substance misuse"(Billups & Shorter, 2015, p. 191). Addictions related student training should be included in psychiatric fellow programs (Edens, Gafni, & Encandela, 2016), and include a "variety of rotations, peer support and mentoring facilitated training… (involving) a combined didactic and interactive learning strategy for substance use disorder education" (Klimas, Small, Ahamad, Cullen, Mead, Rieb, Wood, McNeil, 2017, p. 8). Finally, Gassman (2007) reported that current education in medical and nursing schools is more focused on treatment with those currently in addiction than using a secondary prevention effort by identifying problem. The training needs to include screening and early intervention for less severe drinking-related issues, and include the role of education in helping patients and focus on behavior change (Gassman, 2007).

In addition to current student training, continuing education for professionals has been noted in the research. Two state-based, interprofessional initiatives to address the recent opioid abuse were also noted in the research involving New Mexico and Massachusetts. In New Mexico, a coalition of an academic medical center and government agencies reviewed the number of continuing education hours needed for physician and physician assistants related to "an overview of the prescription opioid crisis nationally and statewide, safe opioid prescribing, the use of nonopioid medications in pain management, pediatric and adolescent pain diagnosis and treatment, opioid misuse and addiction, and federal and state regulations pertaining to pain prescribing" (Katzman, Comerci, Landen, Loring, Jenkusky, Arora, Kalishman, Marr, Camarata, Duhigg,, Dillow, Koshkin, Taylor, & Geppert, 2014, p.1358).

In Massachusetts, Antman, Berman, Flotte, Flier, Dmitri, & Bharel (2016) describe an initiative that brought together public health professionals and medical educators to address

prescription drug misuse. This group developed uniform standardized prevention and management strategies, specifically related to opioid prescribing practices. These evidence based practices addressed "the importance of screening and using the prescription drug monitoring system, understanding the potential treatment options for pain and substance use disorders, and the need for patient centered interviewing" (p. 1349). This group also expanded "interprofessional education opportunities designed to better equip collaborative teams for primary, secondary, and tertiary prevention of opioid use disorders" (p. 1350).

Recent efforts to address substance use disorder training with physicians include use of the Extension for Community Healthcare Model (ECHO), which is a model used to train providers specifically in rural or underserved communities where training may be more difficult to obtain. The ECHO model, initially established at the New Mexico Health Science Center, is a distance based model that uses technological tools to train and support primary care providers (PCP's) working in a community "to develop knowledge and self-efficacy in the care of a variety of complex health conditions", including substance use disorders (SUD's) (Komaromy, et al., 2016, p. 21). Use of this model can also be found in Indiana through the Indiana Opioid Use Disorder (OUD) ECHO program, which includes use of content such as "general OUD management and/or assessment and management of psychiatric comorbidities", use of case studies, and mentorship to PCP's (Agley, Adams, & Hulvershort, 2018, p. 573).

SBIRT as an Addictions Prevention Effort

SBIRT is an acronym for Screening, Brief Intervention, and Referral to Treatment, and refers to a model that has been proven to be useful when intervening at a prevention level (SAMHSA, 2013; Moyer, Finney, Swearingen, & Vergun, 2002). Screening and brief intervention first appeared in studies in 1961 when physicians reported that "people with

alcoholism were more likely to follow-up in an alcohol clinic after brief advice from a psychiatrist in an emergency department, than after no advice" (Saitz, 2007, p. 4). Since that time, SBIRT has been expanded to many settings and is used as a universal screening in a variety of health care related agencies.

SBIRT is targeted towards individuals who are engaging in risky and harmful drinking, but do not yet meet the guidelines for a substance use disorder (SAMHSA, 2013). SBIRT is used to provide universal screening, early intervention and a recommendation to treatment in a timely manner (SAMHSA, 2011; Simioni, Rolland, & Cottencin, 2015). One strength of this model is that it screens everyone and can be used in a variety of settings (SAMHSA, 2013). Use of screening and brief intervention is an evidence based practice model, that has recently been included in a report by the United States Surgeon General as an early intervention approach in "identifying behaviors that put people at risk for harms, including for developing a substance abuse disorder, and to identify patients with existing substance use disorders" (SAMHSA, 2013, p. 8).

SBIRT involves use of a range view approach of alcohol and substance use which "suggests that all substance use has a level of risk and that harm or consequences can occur even before a person is dependent" (DeSalle & Agley, 2015, para. 6). The level of risk is based on several factors, including gender, number of drinks in one day, and number of drinks in a week. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) identifies low risk drinking as no more than 3 drinks in a single day (7 per week) and for men no more than 4 in a single day (14 per week) (Bondy, et al. 1999). These drinking limits were based on the idea that abstinence is not always needed; instead, drinking amounts should be the focus in a harm-reduction approach. In fact, this approach should actually be integrated with abstinence only treatment

services (Futterman, Lorente, & Silverman, 2004). The SBIRT process involves 4 tiers, including pre-screening, screening, brief intervention, and referral to treatment (DeSalle & Agley, 2015). It is also an approach that has been recommended to universally apply with all clients in a health care setting, which will avoid the impact of judgement on health care providers' choices when screening for patients at-risk for risky alcohol and substance use (O'Brien, 2014).

SBIRT has been found to be effective, specifically with the use of alcohol (Savage, 2012). Researchers in California found that use of SBIRT in emergency departments impacted "the use among men (more than women), among those with relatively higher risk status (versus lower risk), and among those with only one substance of misuse (versus both alcohol and illicit drug misuse)" (Woodruff, Eisenberg, McCabe, Clapp, & Homan, 2013, p. 269). This is somewhat consistent with other studies, which also reported the greatest impact with those who scored at a high level of risk for alcohol misuse (Insight Project Research Group, 2009). A significant study completed by Babor et al (2007) examined 25 years of research related to SBIRT components. The findings supported the idea that screening tests are valid; brief intervention can reduce alcohol use and is effective with smoking and marijuana; SBIRT can be used with both adults and adolescents; and brief treatment is effective with certain substances. A limitation of SBIRT included use with substance use (McCance-Katz & Satterfield, 2012), especially when evaluating a patient's follow up when referred to services (Glass et al., 2015).

The American Public Health Association and Education Development Center, Inc. (2008) created a manual that provides public health professionals with information related to SBIRT for implementation into practice. This includes support for use of brief intervention to address risky and harmful alcohol use. Various research studies have recommended to embed screening and

brief intervention services into public health services (Babor & Higgins-Biddle, 2000; Agley & Gassman, 2008; Smith, 2016; American Public Health Association and Education Development Center, 2008; McNeese, 2003).

While the SBIRT model has been implemented and supported by the United States federal government, it has also been utilized and researched in other countries. For example, researchers in Britain examined the use of SBIRT in an emergency department and found that "referral for brief interventions was associated with lower alcohol consumption at 6 months compared with the simple provision of a health information leaflet" (Crawford, Patton, Touquet,, Drummond, Byford, Barrett, Reece, Brown, & Henry, 2004, p. 1337)

SBIRT has been found to be effective in various settings. While it was initially supported for use in primary care settings (Agley & Gassman, 2008; Agley et al., 2014; Babor, Del Boca, & Bray, 2017), this model has been proven to also be effective in other settings. An 11 cross-site evaluation funded by SAMHSA supported use of SBIRT in primary care and medical settings (Babor et al., 2017). This included an examination of the use of the model and concluded that brief intervention was cost-effective in terms of reducing alcohol use. SBIRT has also proven to address alcohol use in adolescents in a school setting (Mitchell et al, 2012), specifically as a prevention effort with adolescent substance use disorders (Smith, 2016). Using SBIRT to screen risky alcohol use and to provide education about drinking limits is effective, especially when there is buy-in about the model across campus (Naegel Himmel, & Ellis, 2013). Finally, use of the model is supported for use in non-medical fields, such as counseling (Russett, 2016), and emergency departments (Woodruff et al., 2012).

Two pivotal publications reviewed included the *SBIRT White Paper* (2011) which identified the various components of SBIRT and its effectiveness for various health conditions.

For example, evidence has been found for use of screening with alcohol misuse/abuse; illicit drug use misuse/abuse; and tobacco use. Brief intervention and brief treatment are effective for alcohol misuse/abuse and tobacco use. Finally, referral to treatment is effective for alcohol misuse/abuse; illicit drug use misuse/abuse; and tobacco use (SAMHSA, 2011). Babor et al. (2007) reviewed 25 years of history in research related to SBIRT and verified that self-reported screening tests are valid for use when assessing risky and harmful alcohol use. They also found literature to support the idea that brief intervention can reduce alcohol use, this approach is acceptable with both genders, adolescents, and adults; and brief intervention is effective with smoking and marijuana use. The authors recommended that research should focus on the role of connecting people to treatment resources and how best to implement SBIRT (Babor et al., 2007). In fact, a gap in the literature identified the need for more research to support that SBIRT leads to clients seeking alcohol treatment (Glass et al, 2015).

For SBIRT to be utilized in various settings with the populations identifies above, it is recommended the approach be taught in both an academic and professional setting. Research supports the need for training of SBIRT as a prevention model in social work practice (Cochran & Field, 2013) and professional trainings, especially new professionals (Nunes, Richmond, Marzano, Swenson, & Lockhart, 2017). There is support for universities to include curriculum and research to be provided to professionals working in non-medical fields (Russett, 2016).

Screening, Brief Intervention, and Referral to Treatment

Connors and Volk (2003) define screening as “the skillful use of empirically based procedures for identifying individuals with alcohol-related problems or consequences or those who are at risk for such difficulties” (p. 1). Screening can have one of three outcomes, including no apparent risk of substance abuse; in need of brief intervention; and in need of a substance

abuse assessment (Steenrod, 2009). First, if a client is in no apparent risk of substance abuse, then there is no need for further intervention. Next, if a client needs a brief intervention, then one must be conducted in a "community sector program". Finally, if the client needs a substance abuse assessment, then one must be conducted in a "specialty sector" (Steenrod, 2009, p. 8). Screening tools should be brief and able to use across a variety of populations, including those patients who are considered a vulnerable group (Salvalaggio et al., 2013).

The SBIRT model uses a set of pre-screen questions, which can be either self-administered or completed as part of an interview. While patients using a self-administered pre-screen may score positive for alcohol more often than those completing an interview, patients may not score positive more often as compared to an interview, when identifying their own drug use (Agley, Crabb, Harris, Gassman, & Gerke, 2015). After the pre-screen questions are used in SBIRT, patients are screened using a variety of longer screening tools as indicated by the pre-screen answers. The AUDIT is the primary alcohol use screen used in SBIRT and is supported for risky alcohol misuse by the World Health Organization (Babor & Higgins-Biddle, 2001; Connors & Volk, 2004). The CRAFFT tool is used in SBIRT for adolescent alcohol and other drug use (Massachusetts Department of Public Health Bureau of Substance Abuse Services, 2009; NIAAA, 2005). These tools are also recommended for use with the SBIRT model in various settings (Vaca, Winn, Anderson, Kim, & Arcila, 2011).

For screening and at-risk youth, D'Amico et al. (2016) examined several screening tools with at-risk youth. The National Institute on Alcohol Abuse and Alcoholism Screening Guide (NIAAA SG), the Personal Experience Screening Questionnaire Problem Severity Scale (PESQ-PS), and the Car-Relax-Alone-Forget-Family and Friends-Trouble (CRAFFT) screener were proven to be effective in different areas of screening. It must be noted that using SBIRT with at-

risk youth involves a specialized training that addresses unique challenges when working with children under 18 years old (Whittle, Buckelew, Sattferfield, Lum, & O'Sullivan, 2015).

Brief intervention has been supported for use with alcohol and some illegal substances (SBIRT Colorado, 2008), and is utilized when a screening indicates the need for it. It involves a protocol to be used in substance abuse prevention and treatment and is supported as one of the protocols to be used by the United States Department of Health and Human Services (USDHHS, 1999) and the World Health Organization (WHO, 2010). There are several reasons that brief interventions are useful when intervening in at-risk alcohol use, including situations when education about safe drinking behaviors and consequences of alcohol and drug abuse are needed (Steenrod, 2009). Brief interventions also result in a plan implemented to reduce the use and to increase accountability and potential referral to further treatment as needed (Steenrod, 2009). Brief intervention can be provided face-to-face, but have also been computer guided screening and intervention included "personalized feedback, readiness to change, reasons for cutting down, goal setting, and a printed personal alcohol reduction plan" (Vaca et al., 2011, p. 146).

Referral to treatment is the final phase of the SBIRT model, and yet has the least amount of research to support its use. This is considered the weakest part of the SBIRT model due to weak connections between primary health providers and specialty treatment care (Berger, DiPaolo, Topitzes, Davis, & Otto-Salaj, 2016). There is limited research to support the effectiveness of SBIRT in follow through with accessing alcohol and substance abuse treatment (Glass et al, 2015) and with heavy users (Saitz, 2007). This may be part of the reasoning that SBIRT has not yet been proven effective with substance use. It is encouraged that systems need to be better connected to assist patients in identifying resources by developing more effective

processes and streamlining the referral process for better coordination of care (Berger et al., 2016).

Motivational Interviewing

Motivational Interviewing (MI) is an approach that focuses on conversation about change, and more specifically when one person is acting as the helping professional (Miller & Rollnick, 2013). This approach is seen as a constructive way to have more effective conversations about changing behavior and involves helping a person to "talk themselves into change, based on their own values and beliefs" (Miller & Rollnick, 2013, p. 4). MI is an evidence-based practice being delivered in many curriculums as an approach for students to use in their student and future professional practice (Hohman, Pierce, & Barnett, 2015). This approach is useful for students to learn when dealing with clients who demonstrate ambivalence to change. Not only is MI a useful approach when dealing with an alcohol or substance abuse issue, it has also been found to be effective in the medical field with other disorders that involve lifestyle change, such as diabetes management (Cole et al., 2012).

The MI approach encourages professionals to consider factors that influence a person's willingness to change. When attempting to understand what motivates a person to change or utilize a newly learned behavior, one must consider how changes in behavior occur. Using the Transtheoretical Model, behavior change is understood as a process that occurs in stages (Hayden, 2014). This theory, also known as Stages of Change theory, helps us understand that behavior change occurs over time and that one stage helps us get to the next stage. The stages include: pre-contemplation, contemplation, preparation, action, and maintenance. This theory for understanding human behavior has been found effective in working in the addictions field and

should be considered by professionals when encouraging changes in behavior related to alcohol and substance use (USDHHS, 1999).

MI is an approach that can be taught across disciplines, such as medical residents, nurses, and social workers (Cole et al., 2012; Broyles et al, 2010; Hohman et al., 2015, including health and non-health related professionals who provide both face-to-face and distance care (Cook et al., 2017). In fact, there are many similarities between MI and a social work approach to practice, including use of professional values (i.e., right to self-determination) and empowerment of clients (Stanhop, Tennell, Borhman, & Hamovitch, 2016). Due to these connections, social workers have found themselves in training roles within health care settings as a public health approach to prevention of alcohol and substance misuse. The USDHHS supports the training of health care providers using MI in alcohol and substance abuse screening and brief intervention, noting that MI has proven useful when providing this type of intervention and treatment (USDHHS, 1999).

However, it was noted in the research that it is very important that all disciplines trained in MI receive timely feedback in order to ensure MI consistent behaviors (Schumacher, Madson, & Nilsen, 2014). The ability to effectively and efficiently perform MI based interventions is impacted by the adequacy of training and follow up supervision provided to the professionals (Darnell, Dunn, Atkins, Ingraham, & Zatzick, 2015; Schumacher et al., 2014). While research is still needed to support use of MI with a range of substances (McCambridge, Slym, Strange, 2008), the overall use of MI is supported with alcohol when providers are well- trained. Training can prove difficult for some health care providers due to the need for “re-programming” past use of non-MI approaches (Schumacher et, 2016). Those being trained in this approach need to

receive adequate training and supervision to ensure fidelity or accurate use of MI skills is in place during practice (Schumacher et al. 2016).

Within the MI training approaches, there is some debate at what point a professional is adequately trained to engage in an MI approach. It is thought that while some differences may occur based on discipline, providing at least 8 hours of MI training is adequate to achieve a basic level of proficiency (Cook et al., 2017), while 4 hours may be adequate when training on a specific MI skill (i.e., Virginia Reel) (Cole et al., 2012). As noted above, the supervision received after MI training is also essential to maintaining fidelity to the approach and truly using the MI skills/approach (Darnell et al., 2015).

SBIRT Training for Social Workers, Nurses, and Medical Professionals

Training future health care workers in the SBIRT model has been proven to be effective in changing attitudes, perceptions, and knowledge of students as they prepare to enter professional practice (Carlson et al, 2017; Senreich & Straussner, 2013; Agley et al, 2016; Babor & Higgins-Biddle, 2004; Cameron, Lee, & Harny, 2010). When professionals do not engage in addictions related training prior to graduating, they lack skills to accurately complete a formal addictions related assessment tool (Harris & Yu, 2016). In fact, professionals may not perceive it as their responsibility to engage in screening for risk use or lack confidence in performing brief interventions (Ramos, Sebastian, Murphy, Oreskovich, & Condon, 2017). In fact, training has been shown to increase professional confidence, which then increases the likelihood of performing screening and brief intervention (Agley et al, 2016; Mahmoud, Terhorst, Lindsay, Puskar, & Mitchell, 2017). Furthermore, training for students and health care related professionals has been supported by the Council on Social Work Education (CSWE), American Psychiatric Nurse's Association, and American Academy of Pediatrics, SAMHSA, The Joint

Commission (TJC), the Centers for Medicare and Medicaid Services (CMS), and the American Nursing Association Board of Directors (CSWE, 2016; Mitchell et al., 2015; Whitfield e. al., 2015; Rundio, 20120; Montag et al., 2015).

Training Social Workers. Social workers and future social workers should be knowledgeable about and trained in screening and providing brief interventions with clients. Barriers for social workers to engage in utilization of screening tools has been connected to low self-confidence (Carlson et al., 2017). Structured training sessions provided to students during their degree education has been found to impact attitudes and perceptions of future practitioners (Carlson et al., 2017), knowledge (Putney, O'Brien, Collin, Levine, 2017), and role adequacy (Senreich, Ogden, & Greenberg, 2017; Senreich & Straussner, 2013). Master of Social Work students who engaged in substance abuse related curriculum were more likely to perceive themselves as competent to work with substance abuse issues (Bina et al., 2008; Corrigan, Slater, & Bill, 2009). The more substance abuse courses taken, the more likely students were to engage in substance assessment during their field practicums.

When examining undergraduate student training in substance abuse issues, one finds that there is limited education and training for social work students at the college or university level. One study examined 216 Master of Social Work programs accredited by the Council on Social Work Education (CSWE) in the United States as related to their delivery of substance use education (Quinn, 2010). This led to many conclusions, including that an "overwhelmingly (98%) did not have substance abuse/misuse courses as a requirement for all students…and a significant amount of schools (21.3%) did not have any required (or limited options) courses or training related to substance abuse/misuse" (p. 9). Only four schools (1.9%) had a requirement for students to take a substance use/misuse course. The authors referred to this lack of substance

use education and/or training as “institutional denial or minimization” and recommended that CSWE reconsider how it integrates substance use education and training into social work curriculum (Quinn, 2010).

When training social work students in assessment of substance abuse, Osborne & Benner (2012) considered social work students’ perceptions after receiving a series of 4 Power Point training modules related to SBIRT. The survey found that students “more strongly agreed they had a good understanding of substance use and abuse and felt more confident in their ability to screen for alcohol or drug problems; to assess clients’ readiness to change behaviors; to discuss clients’ substance use and advise them to change behavior; and to refer clients to specialized treatment” (p. e37). Finally, students who were trained realized the importance of incorporating substance use screening in their practice (Osborne & Benner, 2012; Carlson et al., 2017).

Embedding SBIRT related curriculum into social work curriculums may prove challenging, but it is necessary to evaluate how we prepare the next generation of professionals to utilize a prevention approach to addictions related intervention (Russett & Williams, 2015). Belfiore, Blinka, BrintzenhofeSzoc, & Shields (2017) recommended a scaffolding approach, which allows for an integration of addiction curriculum across course; while another study supported the integration of SBIRT across course sequences, including policy, field, theory, and research (Corrigan et al., 2009). Cochran and Field (2013) explained the importance of SBIRT training in social work curriculum and noted that CSWE should support training of this model in social work programs. Finally, the importance of connection learned skills to field practice was also supported (Russett, 2015), which also helped agencies to accept use of SBIRT during the field practicums.

Barriers for students to implement SBIRT into field work may impact their ability to practice learned skills prior to graduation. These barriers may include field supervisor's understanding and/or support for the model; lack of fit for SBIRT and the agency policies/processes; time in agency to engage in model; and lack of resources for agency to implement model (Ogden, Vinjamuri, & Kahn, 2016). While just teaching SBIRT in social work curriculum may not directly increase the number of students interested in working in the addictions field, there is research to support that structured training in undergraduate and graduate social work programs impact knowledge and attitudes related to screening and brief interventions (Senreich & Straussner, 2013).

Finally, due to the profession's similarity in skills and approaches with the SBIRT model, social workers should also be open to training medical students in screening and brief intervention curriculum as a best practice approach to identifying risky alcohol users. Incorporating inter-professional instructors (social workers) to teach, monitor, and provide feedback to medical students can be used in various settings, including emergency departments/training program (Duong, O'Sullivan, Satre, Soskin, & Satterfield, 2016). This further supports the idea of an interdisciplinary approach to screening and brief intervention, and the need to have professionals working together to accomplish the goals of the model (Stanton, Atherton, Toriello, & Hodgson, 2012).

Training Nurses. When attempting to teach undergraduate students, it is important to consider their attitudes and perceptions related working with clients who alcohol and drugs. Puskar, Gotham, Terhorst, & Hagle (2013) found that "following in-class education and training, nursing students reported changes in perceptions of their role in working with patients who use alcohol and drugs" (p. 126), including their perceptions of "role adequacy" or ability to engage in this

professional responsibility (Broyles et al., 3013). This type of training helped the nursing students feel supported by colleagues when asking patients about their alcohol or drug use, increased their knowledge and skill in the area (Mitchell, Gryczynski, O'Grady, & Schwartz., 2013), and impacted their feelings about the right to ask these kinds of questions to patients. It also positively impacted their "work satisfaction and self-esteem in dealing with patients who use alcohol (not so for drugs)" (Gotham, Terhorst, & Hagle, 2013, p. 126), and increased the likelihood of performing screening and brief intervention in clinical practice (Agley et al, 2016; Mahmoud et al., 2017). Finally, nursing students see the implementation of SBIRT curriculum as: a protocol that increases awareness of nurses related to screening for alcohol and substance; useful (although there was some debate as to the extent it should be implemented in various settings); and a nurse's responsibility (Braxter et al., 2014).

Finnell, Nowzari, Reimann, Fischer, Pace, & Goplerud (2018) addressed the importance of screening and brief intervention in the field of nursing. The authors insist that SBIRT champions are needed in the nursing profession, and these professionals can encourage the use of skills and competence in these areas. Nurses are in an important position to deliver screening and brief intervention because they provide direct services to people at risk for substance abuse, through prevention, treatment, and intervention health care services (Montag et al., 2015). While SBIRT with substance use is not as strongly supported, nurses are still in a good position to conduct screenings (Puskar et al., 2013).

Furthermore, Broyles et al. (2010) noted that accreditation measure by the Joint Commission on Accreditation and Healthcare Organization (JCAHO) directly addresses the use of screening and brief intervention. Nurses possess skills that make them more suitable for addressing unhealthy alcohol use, including the ability to communicate effectively and provide

patient education. Also, nursing led SBIRT is more cost effective than physician led use of the model in health care settings (Broyles et al., 2010).

When supporting the implementation of an SBIRT teaching model for nurses, it should be noted that research supports the training of nurses in undergraduate and graduate curriculums (Puskar, Kane, Lee, Mitchell, & Albrecht, 2016). The curriculum should address issues of stigma, neurobiology of substance use disorder, and provided evidence based approached to addiction (Worley & Delaney, 2018). Agley et al. (2016) reported that "students' perception of their competence with SBIRT significantly predicted whether they would screen patients for alcohol use during their clinical encounters" (p. 234). This upholds the idea that teaching screening and brief intervention skills in nursing curriculums will promote future nursing related professionals to utilize these skills when they enter clinical practice (MacMillian, Winn, Coke, Biers, & Shellenberger, 2015); thus, increasing the overall rate of screening and brief intervention with patients in a health care related setting. If the students feel competence, then they will utilize the skills in practice (Agley et al., 2016; Gotham, Knopf-Amelung, Krom, Stilen, & Kohnle, 2014).

Training Medical Professionals. SBIRT training has been successfully conducted with medical residents across various specialties, including pediatrics, psychiatry, emergency medicine (Bray et al., 2014; Clemence et al., 2016). Training with new medical professionals can address knowledge deficits and provider stigma related to substance use disorder. There is a need to include competencies in medical schools related to addictions related content to address medical providers' lack of knowledge, such as use of the SBIRT model (Rasyidi, Wilkins, & Danovitch, 2012). This may also include inclusion of standardized patients in simulated practice with SBIRT skills (Wamsley et al, 2013). In fact, one survey found that physician residents did not know

accurate information related to recommended standard drinking limits, even though they reported knowing so (Welsh e. al., 2013).

Training in the SBIRT model for medical providers has also been found to impact their stigma related to substance use disorder in that addictions related courses changes attitudes of providers across multiple disciplines (Koyi et al., 2018; Malone et al., 2015). In fact, those with the lowest pre-test knowledge and/or experience report the greater impact of SBIRT training (Malone, et al., 2015). Some studies report that residents desire addictions related training to improve their skills and increase their confidence, including how to manage competing expectations with addictions related interventions (Clemence et al., 2016; Duong et al., 2017).

Provider stigma can have an impact on a medical professional's ability to identify risky or harmful alcohol or substance use. One study evaluated the ability of medical school students to identify substance use disorders in adolescents through use of a hypothetical case study (Lee, Abrante, Colby, Lopez, & Jordan, 2008). This study also reported on bias (through attributional analysis) against drinkers by the medical students, as discovered in their prognosis, thoughts on controllability, and desire to help the patient. In fact, "less than 25% of the participants were able to identify adolescent alcohol use disorder (AUD)" (p. 714). Those students who had previous training or direct experience in working with adolescent alcohol users were more likely to diagnosis an alcohol use disorder. Interestingly, only 30% of the participants reported receiving addictions related training in their medical curriculum (Lee et al., 2008). This study is consistent with other research that addresses missed diagnoses for physicians when assessing non-traditional patients and their alcohol use (National Center on Addiction and Substance Use, 1998).

Training Summary. Overall, when implementing a student training program, it was noted that students (when compared to university faculty and field instructors) appeared to be the most receptive and comfortable with the new skill (Ogden et al., 2016). This was possibly due to the fact that students had not already established their own method of practice and were able to assimilate SBIRT into their knowledge and practice base. Furthermore, faculty were more open and accepting of the model when they became more comfortable and knowledgeable about it. This supports the idea that faculty need to become "fluent in SBIRT" before they can teach it to students (Ogden et al., 2016).

SBIRT Training Length and Format

Length. While research related to SBIRT training has mainly focused on the impact on provider and student knowledge, attitudes, and future use of the model, some studies have provided information related to training length and effectiveness. Overall, whether it's a one hour or 4 to 6-hour training, there is overall satisfaction with training by those who attend; however, it was found that the longer trainings may enhance Motivational Interviewing (MI) skills and the belief that the participants may use the skills learned (Agley et al., 2014). Senreich, Ogden, and Greenberg (2017) noted that SBIRT training had a significant impact on social work students' attitudes and role adequacy post training, with classes taking place over 3 to 5 sessions and lasting 2 hours each. Broyles et al. (2013) found that at least 2 hours of training was more effective with role adequacy in both a face-to-face and distance format. Another training with medical residents that lasted 15 hours reported that provider stigma was impacted by this length of training (Koyi et al., 2018). It should be noted that a review of the research surrounding SBIRT training length is limited, and was found to be an area of need for further study.

Training Format. The delivery of SBIRT related education to students and professionals can also be accomplished in a distance format. It is not uncommon to find distance elements in SBIRT trainings, prior to, during, or following the traditional face-to-face method delivery. Or, some SBIRT trainings are delivered only by web-based materials in a self-paced or structure format (Broyles et al., 2013; Mitchell et al., 2018; Carneiro & Souza-Formigoni, 2018; Stoner, Mikko, & Carpener, 2014; Truncali et al., 2011). Distance based trainings are seen as a preferred alternative to traditional face-to-face instruction, especially when combined with elements of in-person components or when implemented in a systematic process (Koetting & Freed, 2017; Broyles et al., 2013; Finnell ey al., 2014; Marshall et al., 2012; Mitchell et al. 2018). These trainings have also been found to have similar impact as face-to-face instruction, especially as related to self-efficacy (Koetting & Freed, 2017; Marshall et al., 2012; Pringle, Kearney, Rickard-Aasen, Campopiano, & Gordon, 2017); role adequacy (Broyles et al, 2013; Puskar et al., 2017); role support, role legitimacy, and work satisfaction (Puskar et al., 2017); communication with patients (Lanken et al, 2015; Truncali et al., 2011); and future use in professional practice (Carneiro & Souza-Formigoni, 2018).

When considering distance based SBIRT training, it is also important to consider this consists of a variety of formats. Distance training components ay include use of web-based modules that include recorded instruction, on-line support materials, and internet based or recorded videos (Finnell et al. 2014; Marshall et al.2014, Osborne et al., 2016 Distance delivery may also include self-guided, web-based information that includes limited structure and instruction (Broyles et al. 2013; Puskar et al., 2017). A distance format that included a web-based tutor and blog providing resource materials (Carneiro & Souza-Formigoni, 2018) and live webinar component (Puskar et al., 2017) were also found in the literature. Finally, this training

structure may also include the addition of simulation activity (either web-based or in-person) to web-based models, which provides practice of skills using a case scenario that are difficult to teach in a distance format (Koetting & Freed, 2017; Osborn et al, 2016; Neft e. al., 2018; Pringle et al., 2017).

The benefits to distance training with SBIRT are also identified as reasons for continuing to research and utilize distance format training modules and materials. One benefit includes the ability of trainers and/or faculty to reach more students and professionals and provide them with needed alcohol and substance abuse related professional skills. Distance training allows academic and professional organizations to provide specialized training to those with access to internet and web-based programming. For example, an international study detailed the ability of a partnership between the Brazil government and an academic institution within that country to provide screening and brief intervention related training to over 14,000 people, referred to as the SUPERA project (Carneiro & Souza-Formigoni, 2018). Furthermore, professionals working in rural areas also have access to specialized training (i.e., SBIRT) through the use of distance training formats (Puskar et al., 2017). Faculty and students also positively view distance-based education due to it is more flexible with scheduling and use of resources (Pringle et al., 2017; Truncali et al., 2011). Finally, distance training related to intervening with substance related issues has also been found to be more efficient with graduate level students or professionals who already possess some previous training related to screening, brief intervention, or substance use disorders (Lanken et al. 2015).

Barriers and Stigma When Implementing SBIRT in Professional Practice

When providing training, it is important to also address barriers and stigma related to assessing and providing brief interventions for risky alcohol and substance use. Specifically,

barriers at the physician level have impacted implementation, and include concerns about lack of medical provider time (Agley et al., 2014; Broyles et al., 2010; Holland, Pringle, & Barbetti, 2009; Mertens et al., 2015; Ramos et al., 2017; Rahm et al. 2015; Rumball & Tober, 2013; Satre et al., 2012). It was also noted that some agencies lacked provider training in screening and brief intervention or SBIRT/MI skills (Broyles et al., 2010; Harris & Yu, 2016; Ramos et al., 2017; Singh, Gmyrek, Hernandez, Damon, & Hayashi, 2017). Other studies noted provider concerns about patient privacy and impact on the patient-provider relationship (Broyles et al., 2010; Fortney et al., 2004; Schermer, 2005). Another obstacle included provider stigma and lack of confidence in dealing with substance use disorder (Fortney et al., 2004; Hodgson et al., 2016; Holland et al., 2009); alignment with other organization priorities (Broyles et al., 2010; Rohm et al., 2015; Singh et al., 2017; Vendetti, McRee, & Del Boca, 2017) and lack of funding/reimbursement for SBIRT related activities (Holland e. al., 2009; Ramos et al., 2017; Schermer, 2005; Singh et al., 2017).

How do we address these barriers to using screening and brief intervention techniques? Broyles et al. (2010) suggest that providers from all disciplines need engaged to "determine the most effective SBIRT delivery models…maximize resource utilization…reducing staff perceptions of burden and ambivalence" (p. 222). Also, the interdisciplinary approach to screening and brief intervention, especially in primary care settings, should be addressed (Hodgson et al., 2016). This includes identifying research agendas that evaluate the effectiveness and implementation of SBIRT, specifically when utilizing an interdisciplinary approach. Next, SBIRT "champions" should be created in the various disciplines across clinical peer role models. This includes educating both undergraduate and graduate students in various health related field in order to identify these "champions". This could also include unique substance abuse and

addiction training programs for nurse practitioners, social workers, and psychologists. In order to prevent confusion or misuse of the model, scheduled training and education is a key component for all disciplines (Broyles et al., 2010; Naegle, Himmel, & Ellis, 2013). Finally, the barriers could be addressed by promoting flexible SBIRT reimbursement models that do not require physicians to deliver the screening and brief intervention (Broyles et al., 2010).

Summary

A review of the research supported the inclusion of addictions related curriculum, specifically SBIRT training, with students entering the health related fields (Begun et al., 2016; Corrigan et al., 2017; USDHHS, 2011; Koyi et al., 2018; CSWE, 2016). It was indicated that addictions related training impacts student knowledge, attitudes, and beliefs (Feeley et al., 2018; Lindsay et al., 2017), and that SBIRT specific training increases student self-report of confidence in engaging in addictions related conversation (SAMHSA, 2013; Moyer, Finney, Swearingen, & Vergun, 2002; Carlson et al. 2017; Senreich & Straussner, 2013). Furthermore, several authors noted that health related professionals, across many disciplines, are still not receiving adequate addictions relate content in their curriculums or professional trainings (Quinn, 2010; Rasyidi, Wilkins, & Danovitch, 2012; Welsh et al, 2013).

While reviewing SBIRT specific research, numerous articles were found to support the implementation of SBIRT into practice settings (especially in medical settings) (SAMHSA, 2013; Moyer, Finney, Swearingen, & Vergun, 2002; Russett, 2016; Babor et al., 2017), specifically the use with SBIRT when intervening with alcohol use and abuse (SAMHSA, 2013; Savage, 2012; Saitz, 2007). It was also noted that SBIRT impacts the participants' knowledge, attitudes, and beliefs, and that an increase in confidence when performing the model has been found to lead to increased use of the SBIRT model in practice (Agley et al., 2016; Mahmoud et

al., 207). Many of the articles reviewed also identified barriers to implementing the SBIRT model into practice (Agley et al., 2014; Broyles et al., 2010; Holland, Pringle, & Barbetti, 2009; Mertens et al., 2015; Ramos et al., 2017; Rahm et al. 2015; Rumball & Tober, 2013; Satre et al., 2012), and some noted resistance for professionals and organizations to implement SBIRT due to training challenges (Broyles et al., 2010; Rohm et al., 2015; Singh et al., 2017; Vendetti, McRee, & Del Boca, 2017).

The gaps found in the research included limited information related to the impact of the format of training on student perceptions, with format referring to delivery of SBIRT training (distance or face-to-face). While some of the research included information on formatting, there were limited studies comparing the two format within the same study. Another gap found involved comparison of the impact of length of training on student perceptions within same sample set. This includes examining the length of training to determine how much or how little training is needed to achieve some impact on student self-perceptions related to engaging in addictions related practice. In addition, there was also limited information found in terms of differences in the impact of student trainings as compared between disciplines or fields of study.

In conclusion, research supports the positive impact of addictions related student training (including SBIT) for future health professionals, which then challenges academic institutions to deliver this student training using effective and efficient methods. In order to respond to the challenge for quality addictions related student training, future research is needed to determine how best to deliver this to undergraduate and graduate level students. This includes research involving the training of future health related students in evidence-based addictions models currently utilized in professional practice, such as SBIRT, and how to best deliver those student trainings within the current academic environment.

CHAPTER 3

METHODS

Participants

The participants of the study included a sample of undergraduate and graduate students (18 years and older) who received SBIRT training from August 2019 to December 2019. This sample consisted of students who were enrolled in a course which included the SBIRT training and self-identify as social work, nursing, or physician assistant (P.A.). The data set included about 200 students, with a majority of the students enrolled in the nursing, social work, and physician assistant programs. The same materials were used to teach both face-to-face and distance students.

The nursing student group consisted of undergraduate students in both a distance and face-to-face course, taught by the researcher. The P.A. student group consisted of graduate students enrolled in that degree program taught by the researcher in a face-to-face format. The social work student group consisted of undergraduate and graduate students in both a face-to-face and distance format, taught by the researcher. The students were engaged in SBIRT training ranging from 4 to 16 hours.

Research Design

The research study involved a quasi-experimental design during which students were exposed to SBIRT training, and then reported any changes in attitudes and beliefs by completing surveys before and after the training. The data was collected from a series of 3 self-reported surveys (see appendix A, B, and C) administered during SBIRT training at Indiana State University. The data were analyzed to address the research questions, which focused on the effects of the training on student attitudes and beliefs. Differences in results based on length of training, student discipline, and format (face-to-face or distance) were also examined. Overall, the goal of the study was to help SBIRT trainers to determine the most efficient and effective manner in which to train students to use this approach. The trainings were offered both synchronous and asynchronous, involving an on-campus student trainings and an on-line learning module for distance students.

As part of the SBIRT training process, the students completed a series of surveys before (Pre-Survey), immediately after (Post-Test 1Survey), and 30 days post training (Post-Test 2). The Post-Test 1 and Post-Test 2 Surveys included questions related to the students' reactions to the training. These surveys used both a Likert scale type of question and a set of short answer questions. Additional socio-demographic data was collected including gender, race, academic status (undergraduate or graduate student), and format for training (face-to-face or distance).

Instrumentation

The surveys for this study were previously used at the institution as part of data collection for the SBIRT SAMHSA grant and included components of training evaluation and student self-reported changes in attitudes and beliefs. The survey tools included Likert scale type of question (see appendix A, B, and C), and were collected at various stages of training. The tools included:

a Pre-Survey completed prior to the training; a Post-Test 1 Survey completed immediately following training; and a Post-Test 2 Survey completed at 30 days post training. The Post-Test 1 and Post-Test 2 Surveys included questions developed during the previous grant period and some added questions.

The survey tools were delivered to students involved in the SBIRT training in an electronic format using Qualtrics software. Prior to the survey delivery, students were provided with an electronic consent form and an explanation of the purpose of the surveys. In the consent form, it was identified that the surveys were voluntary and used for research purposes.

A different version of the Post-Test 1 and Post-Test 2 Survey tools were used as a method of data collection for program evaluation at Indiana State University during SAMHSA SBIRT grant related training. These two tools were adapted from an original SAMHSA survey tool to evaluate student self-reported changes in beliefs, as related to predicting the likelihood of students to perform screening and brief intervention in clinical practice after training (Agley et al, 2016; Gassman, 2003). Questions from the adapted surveys (identified in the paragraphs below regarding Pre, Post-Test 1, and Post-Test 2 surveys) were also used during the ISU SBIRT data collection. The validity of these questions were supported by Gassman (2003) when she used "a simultaneous equation path analysis (EQS version 5.7) to examine multivariate relationships" among several variables (including those questions indicated in Figure 1). When the Wald test was used to adjust variables used, "the final model fit the data ($X^2(1) = 0.037$, $p < .0843$) and had a comparative fit index equal to 1.0" (Gassman, 2003, p. 148). Specifically, the areas of competence and perceived role legitimacy were included in the group of questions that were deemed most related to predicting the likelihood of students to perform screening and brief intervention in clinical practice after training.

Reliability for using the Pre, Post-Test 1, and Post-Test 2 surveys was supported in research during a study by Carlson, Schwindt, Agley, Gassman, McNelis, Vannerson, and Crapp (2017) (with the questions described in Figure 1) through use of Cronbach Alpha. The alpha levels resulted in scores ranging from .574 to .758 at pre-test (pre-survey); from .517 to .779 at post-test; and from .673 and .813 at follow-up (30 day follow-up survey) (Carlson et al., 2017, p. 20).

In the paragraphs below, each survey and its various components are described.

Pre-Survey

Students completed the pre-survey prior to participation in the SBIRT training. A copy of this survey is provided in Appendix A. In this survey, various questions addressed competency; perceived role legitimacy; skepticism of behavioral health care; time utilization and compensation; and stated likelihood of SBI practice. Figure 1 identifies the questions related to each area of analysis as related to competency; perceived role legitimacy; skepticism of behavioral health care; and time utilization and compensation. This survey also asked the students to identify their “field of study”, which allowed the researcher to make comparisons related to this during data analysis.

Scale 1: Competence
Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree)
"I know what questions to ask patients to obtain information on their alcohol consumption."
"I am comfortable asking about a patient's drinking patterns."
"I know how I would effectively go about helping patients to reduce their drinking."
"I am at ease making these statements."

Scale 2: Perceived Role Legitimacy
Response options ranged from 1 (Always) to 4 (Rarely or Never) and included the option 'Not Sure'
"How often do you think colleagues in your field screen patients for drinking problems?"
"How often do you think colleagues in your field state their concerns about patients' drinking patterns and related health risks?"
Response options ranged from 1 (Most of my colleagues would approve) to 4 (They would not approve) and included the option 'Not Sure'
"How do you think colleagues in your field would feel about your screening patients for drinking problems?"
"How do you think your colleagues would feel about your stating concerns about a patient's drinking patterns and health risks?"

Scale 3: Skepticism of Behavioral Healthcare
Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree); reverse-coded items were recoded prior to analysis to obtain consistent directionality.
"I am not aware of a single problem drinker who ever cut back on his or her drinking upon advice from his or her care provider (e.g., physicians, nurses or social workers)."
"In general, I am somewhat skeptical about the efficacy of behavioral medicine."
"Given adequate information and training, care providers (e.g., physicians, nurses or social workers) can help patients reduce their alcohol consumption."

Scale 4: Time Utilization and Compensation
Response options ranged from 1 (Strongly Agree) to 5 (Strongly Disagree); reverse-coded items were recoded prior to analysis to obtain consistent directionality.
"There is not enough time to advise patients about drinking."
"Patients would not be willing to pay a fee for alcohol counseling."

Figure 1

Scales of Constructs as Predictive of SBI Performance (Carlson, Schwindt, Agley, Gassman, McNelis, Vannerson, & Crapp, 2017)

Competence. There were 4 questions that related directly to a person's feelings of competence in screening for alcohol- or drug-related problems (see Figure 1 for a complete list of these questions). These answers were based on a response ranging from 1 (Strongly Agree) to 5 (Strongly Disagree) (Carlson et al., 2007) resulting in a potential range of scores from 4 through 20. This included questions number 1 through 4. Lower scores indicated a higher level of confidence.

Perceived Role Legitimacy. There were a total of 4 questions that related to perceived role in screening for alcohol- or drug-related problems (see Figure 1 for a complete list of these questions). The first 2 questions were based on a response ranging from 1 (Always) to 4 (Rarely or Never) and included the option 'Not Sure'. This resulted in a range of scores from 2 through 8, with lower scores indicating an increased level of perceived role legitimacy.

The second set of questions were based on a response rating from 1 (Most of my colleagues would approve) to 4 (They would not approve) and included the option 'Not Sure' (Carlson et al., 2007) resulting in a potential range of scores from 2 through 8. This included questions number 10 through 13. Lower scores indicated an increased level of perceived role legitimacy.

Skepticism of Behavioral Health Care. These 3 questions reflected the student's beliefs regarding behavioral health care (see Figure 1 for a complete list of these questions). They included a response option ranging from 1 (Strongly Agree) to 5 (Strongly Disagree), with a potential range of scores 3 through 15. This included question numbers 5 through 7. Lower scores on questions 5 and 6 on the survey indicated an increased level of skepticism, while a higher score on question 7 indicated an increased level of skepticism. These questions were reverse-coded prior to analysis to obtain consistent directionality.

Time Utilization and Compensation. The last 2 questions reflected the student's beliefs about time utilization and compensation (see Figure 1 for a complete list of these questions). They included response options ranging from 1 (Strongly Agree) to 5 (Strongly Disagree), with a potential range of scores 2 through 10. This included questions numbers 8 and 9. Lower scores indicated the belief that there is not enough time to conduct the model and that patients will not pay for alcohol counseling. These questions were reverse-coded prior to analysis to obtain consistent directionality.

Stated Likelihood of SBI Practice. There were 3 questions which directly related to the self-reported likelihood that students will utilize the screening and brief intervention skills learned in the training. These questions started with "On average, how likely in the next 12 month that you will …" followed by: "ask patients who are current drinkers about their alcohol consumptions patterns?"; "state to patients your medical concerns about their drinking patterns or related health risks?"; and "write in patients' charts your medical concerns about their drinking patterns or related health risks?". This included question numbers 14 through 16. The potential scores ranged from 3 to 24, with lower scores indicating a higher likelihood of engaging in SBIRT practice.

Variables. In addition to the above questions, students were asked to identify their gender, race, academic status (undergraduate or graduate student), and format for training (face-to-face or distance. Specifically, gender and race were used as variables when analyzing results.

Post-Test 1 Survey

The Post-Test Survey were completed with students immediately following participation in the SBIRT training. A copy of this survey is provided in Appendix B. This survey used the

same format as the Pre-Survey in that it included questions related to: competency; perceived role legitimacy; skepticism of behavioral health care; time utilization and compensation (as described above); and stated likelihood of screening and brief intervention practice. The researcher compared pre and post survey information through use of a 4 digit, student identified code that was identified by the student on each survey.

Post-Test 2 (30 Day Follow-Up) Survey

The last survey given to students 30 days post-training included the same questions as listed in the Pre-Survey and Post-Test 1 Survey. A copy of this survey is provided in Appendix C. The time frame for delivery of this survey to students was intentionally set to examine if there were additional changes in student attitudes and beliefs 30 days post-training.

Data Collection

Prior to the SBIRT training and survey collection, the researcher obtained Institutional Review Board (IRB) approval at Indiana State University for completion of this study. In addition, student participants were informed of the purpose of the study and method for data collection. One week prior to the training, the researcher conducted an in-person visit to the students' classrooms and discussed the informed consent process, including the purpose of the survey. Students were asked to use their laptop computers to complete the Pre-Survey process sent to them in an email. If they chose to participate, students consented to participate in the study by clicking on the survey on-line link provided in the email. This allowed for anonymous agreement to either participate or opt out of the survey process. A respondent-generated personal code was used for matching of pre and post-test surveys. For ethical protections, students were also informed that participation in the survey process was voluntary (all students received the

instruction regardless of participation in the survey) and that they could withdraw from the survey process at any time.

Those students who chose to complete the surveys were asked to identify a personal code on the Pre-Survey, which was used to connect their pre and post-test surveys. These steps helped ensure student confidentiality as related to the survey process, while also allowing the researcher to collect pre and post-test survey information. Immediately following the SBIRT training, students were asked to complete the Post-Test 1 Survey. They were sent an email from the researcher with a link to the on-line Post-Test 1 Survey. Students were directed to use the same 4 digit code as used in the Pre-Survey. Then, 30 days following the training, the researcher again visited the classroom and asked the students to participate in the Post-Test 2 Survey. For those students choosing to participate, an on-line link was provided and they were asked to identify the same code as used in the Pre-Survey and Post-Test 1 Survey.

After the survey data was received, the data transferred directly from Qualtrics to SPSS, leaving little room for transcription error. The data results was also categorized by course and semester/year of training delivery in order to assist the researcher in identifying the format and length of training provided to each group.

Data Analysis

This quasi experimental, quantitative study used SPSS software to analyze student self-reported answers in pre and post-surveys administered as part of an SBIRT training. The results of the surveys in terms of competency; perceived role legitimacy; skepticism of behavioral health care; time utilization and compensation; and stated likelihood of SBI practice were analyzed in regards to differences based on length of training; discipline of trainees; and format of training. Analysis was conducted separately to evaluate the influence of gender and race.

Based on the research questions previously described, data were analyzed in this study using a variety of techniques. Descriptive statistics were used to summarize data obtained in the pre-survey and post-test surveys, determining central tendency including the mean and standard deviation of the data. Specifically, the mean and standard deviation were calculated for the following categories: competency; perceived role legitimacy; skepticism of behavioral health care; time utilization and compensation; and stated likelihood of SBI practice. Analysis of Variance (ANOVA) using a one-way omnibus was used to analyze changes in scores in all other comparisons. This includes differences between groups in terms of length of training, discipline, and format. The significance level was adjusted downward to account for multiple analyses within the same cluster.

Protection of Participants' Rights

During the initial data collection process, the protection of participants' rights were built into the survey process. First, prior to the trainings, students were provided with a consent form and an explanation of the purpose of the surveys. In the consent form, it was also identified that the surveys are voluntary and they could withdraw from the survey process at any time without any negative impact on their participation it the training and course grade. For those students who chose to participate in the survey process, the process identified above used an anonymous personal code to maintain confidentiality of the surveys collected.

Summary

In this chapter, an overview was provided related to the research design and approach, sample, treatment, instrumentation, data collection, data analysis, and protection of participants'' rights. This study focused on the factors that may impact the effectiveness of training provided at a local university with future health care professionals related to alcohol and substance use

screening, brief intervention, and referral to treatment. Using the method noted above, it was anticipated that research would reveal the extent to which students who received SBIRT training have changes in attitudes and beliefs related to engaging in alcohol and substance use screening and brief intervention.

CHAPTER 4

RESULTS

This chapter will offer a review of the data collection process, descriptive statistics related to the data sample used for analysis, and a summary of the data analysis process. The research questions will be reviewed, including the outcomes for each research question after data analysis using Cronbach's alpha reliability, descriptive statistics, and analysis of variance (ANOVA) for analysis.

Data Collection

Prior to the SBIRT training and survey collection, the researcher obtained Institutional Review Board (IRB) approval at Indiana State University for completion of this study. The data for this study was collected from August 2019 to December 2019 by the either the researcher or researcher assistant (RA) after completion of SBIRT trainings with undergraduate and graduate students enrolled in social work, nursing, and physician assistant courses at ISU. This included synchronous and asynchronous SBIRT trainings with students in nursing, social work, physician assistant courses on the campus of ISU.

During the trainings, the researcher collected a series of surveys before (pre-survey), immediately following (post-test 1 survey) and 30 days following (post-test 2 survey) the training. A research assistant facilitated data collection in the researcher's own class in order to

avoid any feelings of coercion for the students as related to the researcher assigned a final course grade.

The SBIRT trainings utilized the same materials for all courses, including distance and face-to-face methods of instruction. The nursing student training involved students enrolled in a second year nursing class included both a distance and face-to-face 4 hour format. For this training, the instructor visited the classroom prior to training to explain the survey collection process and facilitate the students' selection of either distance or face-to-face format using a Qualtrics Survey. The face-to-face student group for this training was divided into 2 sections with training completed on October 10th or 14th on the campus of ISU. The students selected to attend one of the trainings. The nursing students assigned to the distance format for SBIRT training were allowed access to the on-line SBIRT training materials on the Blackboard educational management system used by Indiana State University the week of 7th through 14th in order to coincide with the face-to-face training group. Prior to the training, the students were emailed the informed consent and a link to the pre-survey for anonymous and voluntary completion. Immediately following the training and 30 days post training, the researcher again emailed all students in the class the informed consent a link to the surveys.

The 16 hour SBIRT training was completed in September 2019 over two Saturdays on the campus of ISU. The researcher facilitated the training, which was comprised of social work and nursing undergraduate students at ISU. Prior to the training, the RA used the Blackboard educational management system to email the students in the class the informed consent and a link to the pre-survey. The RA assisted with the survey collection for this class due to the researcher was the instructor assigned for this particular course. Use of an RA to facilitated survey collection allowed for minimal feelings of coercion for the students to participate in the

survey process. Immediately following and 30 days post training, the RA again emailed the informed consent and links to the post-test surveys,

The 4 hour SBIRT face-to-face trainings with the undergraduate social work students in a 2nd year social work course, which occurred in September 2019 on the campus of ISU. Prior to the training, the researcher visited the class in order to explain the survey process and then emailed the informed consent and a link to the pre-survey for anonymous and voluntary completion. Immediately following the training and 30 days post training, the researcher again emailed all students in the class the informed consent a link to the surveys. The 4 hour SBIRT face-to-face trainings with graduate level social work students in a clinical level course also occurred in September 2019 on the campus of ISU. Prior to the training, the researcher visited the classroom to explain the survey process and then emailed students the informed consent and a link to the pre-survey for anonymous and voluntary completion. Immediately following the training and 30 days post training, the researcher again emailed all students in the class the informed consent a link to the surveys.

The 4 hour SBIRT face-to-face trainings with the ISU physician assistant graduate students occurred in one of their on-campus classes in October 2019 on the campus of ISU. Prior to the training, the researcher visited the students in the classroom to explain the survey process and then emailed students the informed consent and a link to the pre-survey for anonymous and voluntary completion. Immediately following the training and 30 days post training, the researcher again emailed all students in the class the informed consent a link to the surveys.

Sample and Socio-Demographic Information

The initial sample consisted of surveys completed by students using Qualtrics software prior to and after SBIRT training. For the initial group of 2nd year nursing students who completed the SBIRT training, 54 students completed the pre-survey and post-test 1 survey,

while 40 students completed the post-test 2 survey. This included students who completed the training both distance and face-to-face in that group. For the group of students who completed 16 hours of SBIRT training, 7 students completed the pre-survey, 5 students completed the post-test 1 survey, and one student completed the post-test 2 survey. For the group of undergraduate social work students who completed 4 hours of SBIRT training, 35 students completed the pre-survey, 28 students completed the post-test 1 survey, and 28 students completed the post-test 2 survey. For the graduate level group of social work students who completed 4 hours of SBIRT training, 14 students completed the pre-survey, 12 students completed the post-test 1 survey, and 9 students completed the post-test 2 survey. For the final group of physician assistant students, 36 students completed the pre-survey, 28 students completed the post-test 1 survey, and 28 students completed the post-test 2 survey. See table 1 for a breakdown of surveys collected using Qualtrics software before and after each training.

Table 1

Training Groups and Qualtrics Surveys Collected

SBIRT Training Groups	Pre-Surveys Collected	Post-test 1 Surveys Collected	Post-test 2 Surveys Collected
Nursing (distance and face-to-face) Students	54	54	40
16 hours Group	7	5	1
Undergraduate Social Work Students	35	28	28
Graduate Social Work Students	14	12	9
Physician Assistant Students	36	28	28

The socio-demographic questions were included on the pre-survey. After modification of the raw data file for errors in duplicate survey submissions and missing identification codes, the sample used in the data analysis for this study included 116 survey responses for the pre-survey, 115 survey responses for the post-test 1 survey, and 96 survey responses for the post-test 2 survey. The sample included 86.2% females (*n* = 100) and 13.8% males (*n* = 16). The racial breakdown included 81.9% white (n=95), 13% black or African American (n=11.2), 4.3% Asian (*n* = 5), and 2.6% other (*n* = 3). The students self-reported academic major included 43.1% nursing (*n* = 50), 32.8 social work (*n* = 38), and 24.1% physician assistant (PA) (*n* = 28). The format of SBIRT training included 74.1 face-to-face (*n* = 86) and 25.9 distance (*n* = 30). Table 2 provides a breakdown of the socio-demographic data.

Table 2

Summary Socio-Demographic Information

	Frequency	Percent
Gender		
Female	100	86.2
Male	16	13.8
Race		
Asian	5	4.3
Black or African American	13	11.2
White	95	81.9
Other	3	2.6
Academic Major		
Nursing	50	43.1
Physician Assistant (PA)	28	24.1
Social Work	38	32.8
Format		
Face-to-Face	86	74.1
Distance	30	25.9

Data Analysis

Dataset Merging

The researcher completed the following steps to prepare the data for cleaning. First, the survey data for each administration point were downloaded from the Qualtrics survey platform into SPSS files. This was completed separately for pre-survey, post-test 1, and the post-test 2. Then, for each SPSS file, the researcher removed entries that did not have a student identification code or that had an identification code without survey responses. For the pre-survey, 15 entries did not have a student identification code and 7 entries were blank. For the post-test 1 survey, 4 entries did not have a student identification code and 2 were blank. For the post-test 2 survey, 2

entries did not have a student identification code and 4 were blank. A total of 34 entries were removed at this point.

At this time, variables for post-test 1 and post-test 2 were renamed so that data sets could be combined. After these procedures were completed, there was a total of 122 pre-surveys (file 1), 121 post-test 1 surveys (file 2), and 101 post-test 2 surveys (file 3). The researcher then combined these files to form a master data file. In doing so, the files were merged using case-sensitive student identification code as the key variable. This file has been retained in unmodified form for transparency.

Finally, an additional variable was added to the master data SPSS file to identify length of training for data analysis. This adjustment was made to address the research question related to the impact of length of training (4 hours or 16 hours) on the survey results. This variable was added during the data preparation phase of the study because the researcher realized this research question was not included on the student surveys completed during data collection; therefore, the variable and data information was added to the dataset using a manual process post-data collection. Using information from the original Qualtrics surveys, the researcher manually matched the student identification code of those participating in a 16 hour training (n=5) to the data set for all 3 surveys conducted with that student group. The rest of the variable data set reflected a 4 hour training (n=152).

Data Cleaning

In the merged data file, 14 cases had an identical student identification code except for capitalization (SE1802 and se1802), and no data overlapped (e.g., no cases within matched pairs both responded to the same variable), indicating that these 14 cases represented 7 distinct individuals, so those 14 cases were collapsed into 7 cases manually. Then, the researcher

addressed the presence of multiple entries with the same identification code. Ten cases involved multiple entries for the same student identification code; therefore, five entries were deleted due to the collapse of these pairs. In addition, five more entries were deleted due to they involved multiple entries with the same student identification code with much variance and missing responses among the data set; therefore, all of those entries deleted. Finally, 4 more entries were collapsed into 2 entries due to the student identification codes appeared to be similar at post-test, just expanded in the number sequence (i.e. 1234 and 123456).

The next steps in the data cleaning process involved use of the Syntax file in SPSS to reverse code questions number 5 and 6 related to skepticism of behavioral health care and questions number 8 and 9 related to time utilization and compensation. This process of reverse coding was completed for the pre-survey, post-test 1 survey, and post-test 2 survey prior to data analysis.

Finally, two potential responses to the survey questions for the Role Legitimacy and the Stated Likelihood of Practice scales were removed from the data set due to they did not fall within the ordinal scale used with those groups of questions. Using the SPSS Syntax function, the researcher first removed answer number 5 (identified as “Not sure or Never” in the survey) from the data and then answer number 9 (identified as “I do not intend to see patients in the next 12 months” within the survey) from the Stated Likelihood of Practice scale was removed.

Reliability

Using the Syntax file in SPSS, the Cronbach alpha test evaluated reliability, or internal consistency, within each scale used in the survey (i.e., competence, perceived role legitimacy, skepticism of behavioral health care, time utilization and compensation, and stated likelihood of SBI practice as related to patients with alcohol- and drug-related problems). See table 3 for

specific alpha values for each scale. For the overall reliability, the desired Cronbach's alpha value was .70 or higher. Three of the scales used in the surveys resulted in at least an alpha value of .70 or higher, including the competence, perceived role legitimacy, and stated likelihood of SBI practice scales. The scale for time utilization and compensation was lower for the pre-survey (.379) and post-test 1 survey (.607), which will need to be considered when drawing conclusions on data analysis discussed later in the study. Finally, the scale related to skepticism of behavioral health care yielded low reliability, possibly due to the type of questions asked within the scale. For Example, this scale used the question "In general, I am somewhat skeptical about the efficacy of behavioral medicine" is a higher-level thinking question, which may result in varied responses based on student level of understanding. Because this scale resulted in low reliability, this data will not be used in data analysis for this research study.

Table 3

Cronbach Alpha Scores for Scales

	Pre-Survey	Post-Test 1 Survey	Post-Test 2 Survey
Competence	.876	.876	.885
Perceived Role Legitimacy	.693	.707	.780
Skepticism of Behavioral Health Care	.029	.151	.364
Time Utilization and Compensation	.379	.607	.568
Stated Likelihood of SBI Practice	.943	.931	.972

Research Questions and Outcomes

Research Question #1 - What effect does SBIRT training have on student attitudes and beliefs, as defined by: competence, perceived role legitimacy, skepticism of behavioral health care, time utilization and compensation, and stated likelihood of SBI practice as related to patients with alcohol- and drug-related problems?

Null Hypothesis – After participation in SBIRT training, there is no effect on student attitudes and beliefs, as defined by: competence, perceived role legitimacy, skepticism of behavioral health care, time utilization and compensation, and stated likelihood of SBI practice as related to patients with alcohol- and drug-related problems.

The effect of SBIRT training on student attitudes and beliefs as defined in the survey question scales noted were analyzed by comparing the change in responses from the pre-survey

to the post-test survey 1 (administered immediately following training) and the change in responses from the pre-survey to the post-test survey 2 (completed 30 days post training). Furthermore, results were analyzed to also determine if there was a change in responses from the post-test survey 1 to post-test survey 2 and overall comparison data were presented. These results are indicated in table 4 below.

The means for each of the outcomes were compared using repeated measures analysis of variance (ANOVA) via the general linear model (SPSS v.26) to analyze differences in mean scores for participants, if any, between pre-survey, post-test, and 30-day follow-up (Tabachnick & Fidell, 2013). The scales used in the study were revised to reflect the Likert-type data and adjusted for responses that weren't logically ordinal. Furthermore, as described previously, Skepticism of Behavioral Health Care was an unreliable scale with this sample, and therefore will not be included in the Results. Because this research question included for separate analyses, critical alpha was set at .0125 (a standard Bonferroni correction).

Perceived Competence. For this scale, scores closer to 1 indicate high perceived competence, and scores closer to 5 indicate low perceived competence. There was improvement in mean scores from pre-survey (M = 2.59, SD = .94) to both post-test (M = 1.42, SD = .42) and 30-day follow-up (M =1.58, SD = .52). The overall analysis indicated that this was a significant, strong effect (F = 89.22, p<.001, *partial* η^2 = .579). This result was consistent with Carlson, Schwindt, Agley, Gassman, McNelis, Vannerson, and Crabb (2017) when evaluating participant perceived competence immediately following training and 30 days post-training in their study using the same survey. Post-hoc tests, adjusted internally by SPSS using Bonferroni corrections, indicated significant differences between pre-survey and post-test (MD = 1.17, SE = .11, p<.001), pre-

survey and follow-up (*MD* = 1.01, *SE* = .12, *p*<.001), and post-test and follow-up (*MD* = -.16, *SE* = .05, *p* =.008).

Perceived Role Legitimacy. For this scale, scores closer to 1 indicate high perceived role legitimacy, and scores closer to 5 indicate low perceived role legitimacy. There was improvement in mean scores from pre-survey (*M* = 2.10, *SD* = .59) to both post-test (*M* = 1.79, *SD* = .60) and 30-day follow-up (*M* =1.78, *SD* = .58). The overall analysis indicated that this was a significant, small effect (*F* = 13.14, *p*<.001, *partial* η^2=.190). Post-hoc tests, adjusted internally by SPSS using Bonferroni corrections, indicated significant differences between pre-survey and post-test (*MD* = .31, *SE* = .08, *p*=.001) and pre-survey and follow-up (*MD* = .33, *SE* = .08, *p* = .001). No significant difference was observed between post-test and follow-up.

Time Utilization and Compensation. For this scale, scores closer to 1 indicate positive perceptions about time utilization and potential for compensation, and scores closer to 5 indicate more negative perceptions about time utilization and potential for compensation. There was an increase in mean scores from pre-survey (*M* = 3.22, *SD* = .86) to both post-test (*M* = 3.55, *SD* = .88) and 30-day follow-up (*M* =3.33, *SD* = .92). The analysis indicated that the overall change not significant at the critical alpha level of .0125 (*F* = 4.35, *p* = .015, *partial* η^2=.063). Post-hoc tests, adjusted internally by SPSS using Bonferroni corrections, indicated significant differences between pre-survey and post-test (*MD* = -.33, *SE* =.11, *p* =.008). No significant difference was observed between pre-survey and follow-up and post-test and follow-up.

Stated Likelihood of SBI Practice. For this scale, scores closer to 2 indicate high likelihood of SBI practice, and scores closer to 8 indicate low likelihood of SBI Practice. There was an improvement in mean scores from pre-survey (*M* = 4.39, *SD* = 1.82) to both post-test (*M* = 3.70,

SD = 1.67) and 30-day follow-up (*M* =3.68, *SD* = 1.42). The overall analysis indicated that this was a significant, small effect ($F = 8.06$, $p = .001$, *partial* $\eta^2 = .128$). Post-hoc tests, adjusted internally by SPSS using Bonferroni corrections, indicated significant differences between pre-survey and post-test (*MD* = .70, *SE* = .19, $p = .002$) and pre-survey and follow-up (*MD* = .71, *SE* = .38, $p = .008$). No significant difference was observed between post-test and follow-up.

Gender and Race. In the initial proposal, the researcher planned to analyze results based on gender and race to determine if there would be a significant difference based on these variables. However, survey results indicated a heavy response with both gender and race making comparisons difficult to analyze.

In regards to gender, females (n = 100) outnumbered males (n = 16) in the pre-survey; females (n = 82) outnumbered males (n = 12) in the post-test 1survey; and females (n = 65) outnumbered males (n = 6) in the post-test 2 survey. For race, the sample in the pre-survey consisted mostly of students who identified as white (n = 95), compared to black or African American (n = 13), Asian (n = 5), and other (n = 3). For the post-test 1 survey, students identified mostly as white (n = 79), compared to black or African American (n = 9), Asian (n = 4), and other (n = 2). For the post-test 2 survey, students identified mostly as white (n = 58), compared to black or African American (n = 8), Asian (n = 3), and other (n = 2).

Table 4

Comparison of Pre-Survey, Post-Test 1 Survey, and Post-Test 2 Survey by Scale

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-Test 2 Survey (SD)	Post-Test 1 – Pre Mean Difference (*SE*)	Post-Test 2 – Pre Mean Difference (*SE*)	Post-Test 2 – Post- Test 1 Mean Difference (SE)	Test Value (*F*)	Significance Value (*p* – Value)	Partial Eta Squared (partial η^2)
Competence	*n* = 66 2.59(.94)	*n* = 66 1.42(.42)	*n* = 66 1.58(.52)	1.17(.11) *p <.001*	1.01(.12) *p <.001*	-.16(.05) *p =.008*	89.22	<.001*	.579
Perceived Role Legitimacy	*n* =57 2.10(.59)	*n* =57 1.79(.60)	*n* =57 1.78(.58)	.31(.08) *p =.001*	.33(.08) *p =.001*	.01(.05) *p =1.00*	13.14	<.001*	.190
Skepticism of Behavioral Health Care	NA	NA	NA	NA	NA	NA	NA	NA	NA
Time Utilization and Compensation	*n* = 66 3.22(.86)	*n* = 66 3.55(.88)	*n* = 66 3.33(.92)	-.33(.11) *p = .008*	-.11(.11) *p = .916*	.21(.12) *p =.251*	4.35	.015	.063
Stated Likelihood of SBI Practice	*n* = 56 4.39(1.82)	*n* = 56 3.70(1.67)	*n* = 56 3.68(1.42)	.70(.19) *p =.002*	.71(.23) *p = .008*	.02(.19) *p = 1.00*	8.06	.001*	.128

*Significant at $p < .0125$.

Research Question #2 - What effect does length of training have on attitudes and beliefs?
Null Hypothesis – After SBIRT training, there is no difference in attitudes and beliefs based on length of training.

The data reviewed for this research question resulted in a low response rate for the 16 hour training compared to the response rate for the 4 hour training. This prevented the researcher from engaging in planned comparisons for this group. Overall statistics related to the 4 hour and16 hour training survey results were identified below in tables 5 and 6. Significance in comparing the two groups was not evaluated due to low response rate. However, when reviewing the data in both tables, it is interesting to note both groups note overall improvement from the pre-survey to post-test 1 surveys related to areas of perceived competence, perceived role legitimacy, and stated likelihood of SBI practice, which is consistent with findings in research question #1. The scores for the pre-survey to the post-test 1 survey for time utilization and compensation was consistently higher indicating a decline in these scores post training. Overall, there was also increased standard deviation from the group as a whole within the stated likelihood of SBI practice scale.

Table 5

Frequencies for 4 Hours Length of Training

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-Test 2 Survey (SD)
4 hours			
Competence	*n* = 112 2.47(.88)	*n* = 110 1.55(.60)	*n* = 94 1.60(.55)
Perceived Role Legitimacy	*n* = 112 2.18(.67)	*n* = 111 1.92(.57)	*n* = 92 1.85(.62)
Skepticism of Behavioral Health Care	NA	NA	NA
Time Utilization and Compensation	*n* = 112 3.15(.82)	*n* = 111 3.32(.99)	*n* = 94 3.31(.96)
Stated Likelihood of SBI Practice	*n* = 112 4.91(2.17)	*n* = 108 4.33(2.22)	*n* = 94 4.31(2.26)

Table 6

Frequencies for 16 Hours Length of Training

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-Test 2 Survey (SD)
16 hours			
Confidence	*n* = 4 2.69(.63)	*n* = 4 1.19(.38)	*n* = 1 1.00
Perceived Role Legitimacy	*n* = 4 2.13 (.78)	*n* = 4 2.38(.52)	*n* = 1 1.00
Skepticism of Behavioral Health Care	NA	NA	NA
Time Utilization and Compensation	*n* = 4 3.50(.58)	*n* = 4 3.88(.95)	*n* = 1 2.5
Stated Likelihood of SBI Practice	*n* = 4 5.08(2.23)	*n* = 4 3.33(.47)	*n* = 1 2.00

Research Question #3 - What effect does format of training have on attitudes and beliefs?

Null Hypothesis – After SBIRT training, there is no difference in attitudes and beliefs based on format of training.

This research question involved comparison of the effects of format (distance or face-to-face) on student attitudes and beliefs using the scales in the pre-survey and post-test 1 surveys only. The means for each of the outcomes were compared using repeated measures analysis of variance (ANOVA) via the general linear model (SPSS v.26) to analyze differences in mean

scores for participants, if any, between pre-survey and post-test 1. The post-test 2 survey was not used for this analysis due to the low response rate 30 days post-training. Furthermore, this analysis involved use of the nursing students only in order to utilize a similar sample for comparison. Refer to tables 7 – 10 for data related to training format.

Perceived Competence. For this scale, scores closer to 1 indicate high perceived competence, and scores closer to 5 indicate low perceived competence. The effect of training format was measured by the interaction effect of the ANOVA model. The analysis did not indicate that perceived competence was affected by training format ($F = 1.27$, $p = .267$, *partial* $\eta^2 = .031$).

Perceived Role Legitimacy. For this scale, scores closer to 1 indicate high perceived role legitimacy, and scores closer to 5 indicate low perceived role legitimacy. The effect of training format was measured by the interaction effect of the ANOVA model. The analysis did not indicate that perceived role legitimacy was affected by training format ($F = .04$, $p = .837$, *partial* $\eta^2 = .001$).

Time Utilization and Compensation. For this scale, scores closer to 1 indicate positive perceptions about time utilization and potential for compensation, and scores closer to 5 indicate more negative perceptions about time utilization and potential for compensation. The effect of training format was measured by the interaction effect of the ANOVA model. The analysis did not indicate that time utilization and compensation was affected by training format ($F = .14$, $p = .708$, *partial* $\eta^2 = .004$).

Stated Likelihood of SBI Practice. For this scale, scores closer to 2 indicate high likelihood of SBI practice, and scores closer to 8 indicate low likelihood of SBI Practice. The effect of training format was measured by the interaction effect of the ANOVA model. The analysis did

not indicate that time utilization and compensation was affected by training format ($F = .37$, $p = .547$, *partial* $\eta^2 = .009$).

Table 7

ANOVA Results for Format: Competence

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-test 1 – Pre Mean Difference	Test Value (F)	Significance Value (p – Value)	Partial Eta Squared (partial η^2)
Distance (n = 23)	2.32(.98)	1.37(.41)	.95			
Face-to-Face (n = 19)	2.57(.95)	1.29(.37)	1.28			
Combined Sample (n = 42)	2.44 (SE = .150)	1.33 (SE = .061)	1.11 (SE = .147)		<.001	
Within Subjects Effects (Time)				57.11	<.001	.588
Interaction (Time * Group)				1.27	.267	.031
Between Subjects Effects (Group)				.24	.631	.006

[a] Response options ranged from 1 (strongly agree) to 5 (strongly disagree).

Table 8

ANOVA Results for Format: Perceived Role Legitimacy

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-test 1 – Pre Mean Difference	Test Value (*F*)	Significance Value (*p* – Value)	Partial Eta Squared (partial η^2)
Distance (*n* = 19)	2.10(.63)	1.82(.62)	.28			
Face-to-Face (*n* = 16)	2.37(.69)	2.04(.64)	.33			
Combined Sample (*n* = 35)	2.24 (*SE* = .112)	1.94 (*SE* = .107)	.30 (*SE = .102)*		.006	
Within Subjects Effects (Time)				11.17	.002	.218
Interaction (Time * Group)				.04	.837	.001
Between Subjects Effects (Group)				.244	.624	.006

[a] Response options ranged from 1 (always) to 4 (rare or never).

Table 9

ANOVA Results for Format: Time Utilization of SBI Practice

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-test 1 – Pre Mean Difference	Test Value (*F*)	Significance Value (*p* – Value)	Partial Eta Squared (partial η^2)
Distance (*n* = 23)	3.30(.88)	3.41(1.11)	-.11			
Face-to-Face (*n* = 19)	3.36(.72)	3.36(.87)	0			
Combined Sample (*n* = 42)	3.34 (*SE* = .130)	3.39 (*SE* = .157)	-.05 (.144)		.708	
Within Subjects Effects (Time)				.14	.708	.004
Interaction (Time * Group)				.14	.708	.004
Between Subjects Effects (Group)				.002	.969	.000

[a] Response options ranged from 1 (strongly agree) to 5 (strongly disagree); reverse coded items were recoded prior to analysis.

Table 10

ANOVA Results for Format: Stated Likelihood of SBI Practice

	Pre-Survey Mean (SD)	Post-Test 1 Survey (SD)	Post-test 1 – Pre Mean Difference	Test Value (*F*)	Significance Value (*p* – Value)	Partial Eta Squared (partial η^2)
Distance (*n* = 22)	4.24(1.64)	3.56(1.23)	.68			
Face-to-Face (*n* =19)	4.96(1.79)	3.98(1.53)	.98			
Combined Sample (*n* = 41)	4.60 (*SE* = .268)	3.77 (*SE* = .216)	.83 (*SE* = .247)		.002	
Within Subjects Effects (Time)				11.32	.002	.225
Interaction (Time * Group)				.37	.547	.009
Between Subjects Effects (Group)				1.86	.180	.046

[a] Response options ranged from 2 (every time) to 8 (I do not intend to perform this behavior).

Research Question #4 - What effect does student field of study have on attitudes and beliefs?

Null Hypothesis – After SBIRT training, there is no difference in attitudes and beliefs based on student field of study.

The final research question focused on the effect of student field of study when analyzing the effect of SBIRT training on student attitudes and beliefs as defined in the survey question scales noted. These scores were analyzed by comparing the change in responses from the pre-survey to the post-test survey 1 (administered immediately following training) and the change in responses from the pre-survey to the post-test survey 2 (completed 30 days post training). The means for each of the outcomes were compared using repeated measures analysis of variance (ANOVA) via the general linear model (SPSS v.26) to analyze differences in mean scores for participants, if any, between pre-survey and post-tests. These results are indicated in table 11 below. As described previously, Skepticism of Behavioral Health Care was an unreliable scale with this sample, and therefore will not be included in the Results. Because this research question included for separate analyses, critical alpha was set at .0125 (a standard Bonferroni correction).

Perceived Competence. For this scale, scores closer to 1 indicate high perceived competence, and scores closer to 5 indicate low perceived competence. The effect of student field of study was measured by the interaction effect of the ANOVA model. The analysis did not indicate that time utilization and compensation was affected by field of study (F = .57, p = .571, *partial* η^2 = .018).

Perceived Role Legitimacy. For this scale, scores closer to 1 indicate high perceived role legitimacy, and scores closer to 5 indicate low perceived role legitimacy. The effect of student field of study was measured by the interaction effect of the ANOVA model. The analysis did not indicate that time utilization and compensation was affected by field of study (F = 1.20, p = .307, *partial* η^2 = .038).

Time Utilization and Compensation. For this scale, scores closer to 1 indicate positive perceptions about time utilization and potential for compensation, and scores closer to 5 indicate lower perceptions about time utilization and potential for compensation. The effect of student field of study was measured by the interaction effect of the ANOVA model. The analysis did not indicate that time utilization and compensation was affected by field of study (F = .2.33, p = .059, *partial* η^2 = .069).

Stated Likelihood of SBI Practice. For this scale, scores closer to 2 indicate high likelihood of SBI practice, and scores closer to 8 indicate low likelihood of SBI Practice. The effect of student field of study was measured by the interaction effect of the ANOVA model. The analysis did not indicate that time utilization and compensation was affected by field of study (F = .66, p = .522, *partial* η^2 = .021).

Table 11
ANOVA Results for Student Field of Study

	Pre-Survey Mean (*SE*)	Post-Test 1 Survey Mean (*SE*)	Post-Test 2 Survey Mean (*SE*)	Post-Test 1 – Pre Survey Mean Difference (*SE*)	Post-Test 2 – Pre-Survey Mean Difference (*SE*)	Post-Test 2 – Post-Test 1 Mean Difference (*SE*)	Test Value (*F*)	Significance Value (*p* – Value)	Partial Eta Squared (partial η^2)
Competence	2.58	1.43	1.59	1.16	1.00	-.16			
Combined Sample	(.118)	(.052)	(.064)	(.108)	(.118)	(.051)			
(*n* = 66)									
Interaction							.57	.571	.018
(Time * Group)									
Perceived Role Legitimacy	2.10	1.79	1.78	.31	.32	.006			
Combined Sample	(.079)	(.077)	(.075)	(.080)	(.084)	(.047)			
(*n* = 57)									
Interaction							1.20	.307	.038
(Time * Group)									
Time Utilization and	3.19	3.54	3.34	-.35	-.15	.20			
Compensation	(.099)	(.101)	(.114)	(.105)	(.107)	(.120)			
Combined Sample									
(*n* = 66)									
Interaction							2.33	.059	.069
(Time * Group)									
Stated Likelihood of SBI	4.36	3.63	3.58	.74	.79	.05			
Practice	(.261)	(.241)	(.203)	(.203)	(.241)	(.203)			
Combined Sample									
(*n* = 65)									
Interaction							.66	.522	.021
(Time * Group)									

Summary

In summary, results of this research study indicated the most significant change in student attitudes and beliefs following SBIRT training involved perceived competence in that there was a strong, significant effect related to students immediately following the SBIRT training. Data analysis also detected some small, significant effects for perceived role legitimacy and stated likelihood of practice from pre-survey to post-tests. However, data indicated a decline in time utilization and compensation throughout the student data from pre-survey to post-test. When examining for the effect of length of training on the scales measured, comparisons were not made in this research study due to low survey responses. When comparing format of training (distance or face-to-face), no significance was found indicating the type of training in which students participated did not impact the effects on their attitudes and beliefs. Finally, the analysis resulted in no effect on the scales measured by student field of study.

These results add to the field of literature focused on SBIRT training with university students across nursing, social work, and physician assistant programs. Specifically, this study supported the findings in the literature review presented in chapter 3 that SBIRT training increases student self-report of confidence in engaging in addictions related conversation (SAMHSA, 2013; Moyer, Finney, Swearingen, & Vergun, 2002; Carlson et al. 2017; Senreich & Straussner, 2013). Furthermore, the results also indicated that trainings delivered in a distance format have similar impact as face-to-face instruction. This supports findings in the literature review completed for this research study, especially as related to self-efficacy (Koetting & Freed, 2017; Marshall et al., 2012; Pringle, Kearney, Rickard-Aasen, Campopiano, & Gordon, 2017); role adequacy (Broyles et al, 2013; Puskar et al., 2017); role support, role legitimacy, and work satisfaction (Puskar et al., 2017); and future use in professional practice (Carneiro & Souza-Formigoni, 2018). In the following pages, chapter 5 of this research study will elaborate on these

findings and consider implications for practice. Limitations to be considered with this study and recommendations for future research will also be discussed.

CHAPTER 5

DISCUSSION AND CONCLUSION

Discussion

The pervasive issue of substance use and abuse has resulted in the need for professionals to be trained in prevention efforts and interventions that use a community-based, public health approach. It is necessary for those working in the field to study the impact of at-risk drinking and substance use, and to address the way in which we are responding as a country and health care professionals (Cochran & Field, 2013). One way to address this national public health issue is to train new health care professionals to use prevention strategies, which will actually reduce the amount of people who reach the dependence stage of addiction and save money in treatment costs (Agley & Gassman, 2008). This training should occur with health related undergraduate and graduate students prior to graduation and should be delivered using instructional conditions mostly likely to deliver content using the most efficient and effective methods.

The purpose of this research study was to evaluate the factors that may impact the effectiveness of SBIRT training with future health care professionals related to alcohol and substance use screening, brief intervention, and referral to treatment. The effectiveness of SBIRT training delivered on the campus of ISU with nursing, social work, and physician assistant students was evaluated using student self-reported changes in attitudes and beliefs prior to and after the training. This quasi-experimental, quantitative study used a variety of methods of statistical analyses, including descriptive statistics and ANOVA, to examine student self-reported answers in pre and post-surveys after participating in SBIRT training. The surveys included

questions related to student attitudes and beliefs before and after receiving SBIRT training. Specifically, the study focused on five constructs (dependent variables) identified in the surveys used, including: stated likelihood of screening and brief intervention practice; competency; perceived role legitimacy; skepticism of behavioral health care; and time utilization and compensation. Evaluation of these constructs included comparison to the following independent variables: length of training; training by discipline; and format of training.

Overall, results of this research study indicated the most significant change in student attitudes and beliefs following SBIRT training involved perceived competence in that there was a strong, significant effect related to students immediately following the SBIRT training. While some small, significant effects for perceived role legitimacy and stated likelihood of practice from pre-survey to post-tests were found, there was a decline in time utilization and compensation throughout the student data from pre-survey post-test. When considering format of training (distance or face-to-face) and student field of study, no significant effects were found on student attitudes and beliefs.

Limitations

When considering the research method and analysis process used during the study, limitations were identified that could impact the quality of the research completed. The first limitation of this research study involves use of a small sample size within comparison groups (i.e., distance or face-to-face training) and limited variability in gender and race. This small sample limited the researcher's ability to generalize the findings to the population of students who may engage in SBIRT training. Specifically, the research question related to length of training produced a low response rate resulting in limitations for performing data analysis. Furthermore, due to the heavy response in the research study sample from those students identifying as female and white, the study results are more generalizable to those students in a university setting.

Another limitation involves with whom the research was conducted. The research study only examined SBIRT training with university students enrolled in a course and should not be used when planning SBIRT trainings with health care professionals already working in the field. There are differences that should be considered when delivering SBIRT training to students and professionals who already have experience in their academic disciplines. Therefore, this research should not be considered relevant to health care professionals. A final limitation includes the researcher's inexperience in data analysis. The scope and depth of discussion may be impacted by the researcher's lack of experience in completing research compared to other experienced scholars. The researcher may have engaged in more complex data analysis; therefore, results and conclusions may be expanded on with more experience in analysis and interpretation.

Conclusions

These results add to the field of literature focused on SBIRT training with university students across nursing, social work, and physician assistant programs. Specifically, this study concluded that:

- SBIRT specific training increases student self-report of competence in engaging in addictions related conversation, which is also consistent with findings in the literature review (SAMHSA, 2013; Moyer, Finney, Swearingen, & Vergun, 2002; Carlson et al. 2017; Senreich & Straussner, 2013). The method in which the SBIRT trainings were conducted influenced the students' perceived competence, which will then influence their likelihood of asking these important questions with patients in their future practice.
- After SBIRT training, there was a decline in students' perceptions about time utilization and compensation throughout the student data from pre-survey to post-test. This may indicate that student believe there will not be adequate time to complete the phases of SBIRT within their future health care practice. Or, these results may also indicate that

students do not feel like patients will be willing to pay a fee for SBIRT related services (i.e., alcohol counseling).

- When comparing format of training (distance or face-to-face), no significance was found indicating the type of training impacted student attitudes and beliefs. This supports the findings in the literature review, especially as related to self-efficacy (Koetting & Freed, 2017; Marshall et al., 2012; Pringle, Kearney, Rickard-Aasen, Campopiano, & Gordon, 2017); role adequacy (Broyles et al, 2013; Puskar et al., 2017); role support, role legitimacy, and work satisfaction (Puskar et al., 2017); and future use in professional practice (Carneiro & Souza-Formigoni, 2018. SBIRT trainings can be delivered either distance or face-to-face and still yield change in student attitudes and beliefs. This conclusion is important to consider when planning future SBIRT trainings with university faculty. Based on this study's results, future SBIRT trainings involving both distance and face-to-face formats can be delivered without fear of difference in effectiveness based on format.
- Finally, the analysis indicated there is no effect on the scales measured by student field of study. This supports the idea that students can be trained in SBIRT using similar teaching approaches without altering the content or instructional method. The results also indicated that university students can be instructed in courses or other academic settings involving multiple disciplines at the same time and within one group without impact on training outcomes. This is useful as universities continue to support inter-professional education courses and projects, specifically those related to SBIRT education.

Recommendations

Based on the results of the research study, it will be useful to communicate recommendations to educators who deliver SBIRT training to students in a university setting in order for them to improve the quality of student trainings. Recommendations derived from the

current study should also be considered in the event the researcher of this study continues to evaluate SBIRT related trainings using a similar research method. Furthermore, recommendations for future research related to SBIRT trainings should also be communicated to those who plan to engage in that research.

Recommendations for Educators

- Research supports the effectiveness of using prevention efforts like screening and brief intervention to address public health issues (Agley & Gassman, 2008, SAMHSA, 2019; USDHHS, 2016). Educators should be knowledgeable about and provide opportunities for students to engage in these types of training prior to graduation. These opportunities will provide them with valuable, real-world skills that will benefit the graduates, employers, and patients with which they work. Educational departments who commit to providing this type of learning to their students will contribute greatly to the overall problem issue of addiction in the health related fields.
- When providing SBIRT training in an academic setting, educators should evaluate how to best deliver the training with university students. Training and educational techniques that allow for the most efficient and effective delivery with students should continue to be evaluated in order to overcome time constraints and fewer resources at universities. Educators should focus on specific instructional methods, such as those evaluated in this study (i.e., format and length of training), that impact student outcomes.
- Finally, educators should consider SBIRT training in both distance and face-to-face formats and in classes involving multiple disciplines. This study indicated that SBIRT training using similar instructional methods resulted in similar outcomes regardless of format or by student field of study (discipline). Educators should continue to teach SBIRT, even if it requires a distance format. Educators should also consider providing

SBIRT training in a course that includes multiple disciplines, including inter-professional education courses.

Recommendations to Improve the Study

- When reviewing the current research study method and implementation, several areas of improvement were noted by the researcher. First, the data collection method had some flaws, including use of a student identification code that involved directions for creating the code or using their own code. These directions may have confused the students resulting in loss of research data. This loss was primarily due to errors in matching the student identification codes pre and post-surveys. This method of identification between surveys impacted the sample size overall and comparisons between groups. It is recommended that the researcher use a different method of student identification code in future research using a similar survey collection process.
- The use of three surveys across multiple groups also made data collection more complex and difficult to manage. Multiple data sets had to be combined and then cleaned to result in one set that could be utilized for data analysis. It is recommended that future research focus on one type of training format, length of training, or discipline in the future to minimize the potential for errors in data collection and analysis.

Recommendations for Future Research

- It is recommended that future research related to SBIRT training with university students be conducted as it relates to length of training, and it should occur separately in more focused studies. These future studies would better answer the questions surrounding differences in results when adjusting for these variables. While this research study attempted to evaluate the potential need for more or less hours of SBIRT training with students, the sample size was too low to generalize information. The researcher encourages future study related to these factors due to consideration of university time

and resources in regards to SBIRT training. Specifically answering the question "can similar results be obtained from student SBIRT training in fewer hours?".

- Finally, it is recommended that future research focus on specific elements of SBIRT training through research with students. This research study focused on SBIRT training as a whole, including Motivational Interviewing (MI) education. The elements of SBIRT, including screening, brief intervention, the process of referral to treatment, and MI education, should be studied separately. A future study should focus on how to more efficiently and effectively train on the elements within SBIRT training. This would benefit those providing the training in an academic setting. Furthermore, factors such as student field of study and academic level (undergraduate or graduate) could also be considered when training on the various elements of SBIRT. This type of research would provider trainers with quality information when planning for future student trainings.

Summary

Addictions related education is essential in today's health care field and university students need to feel prepared to address alcohol and substance use disorder issues after graduation. Academic institutions need to consider the workforce needs and develop training programs to address these efforts, including evidenced based prevention efforts such as SBIRT (Begun et al, 2016; McNeese, 2003; Wilkey et al, 2013). The results of this research are particularly relevant to the researcher due to the on-going delivery of SBIRT related training and substance use disorder education provided within the researcher's own academic work at ISU. As universities continue to develop and improve on their delivery of addictions related education, including here at ISU, it is vital that factors that impact the effectiveness of training be evaluated. Research supports that addictions, specifically SBIRT training, impacts student competence, perceived role legitimacy, and likelihood of future use of screening and brief

intervention skills. Therefore, universities should continue to engage in this type of instruction to better serve patients in our students' future practice.

References

Agley, J., Adams, Z., & Hulvershorn, L. (2018). Extension for Community Healthcare Outcomes (ECHO) as a tool for continuing medical education on opioid use disorder and comorbidities. Addiction, 114, 571-575. Retrieved from https://onlinelibrary.wiley.com/doi/full/10.1111/add.14494

Agley, J., Crabb, D., Harris, L., Gassman, R., & Gerke, S. (2015). An assessment of SBIRT prescreening and screening outcomes by medical setting and administration methodology. *Health Services Research and Managerial Epidemiology*, 1-6.

Agley, J., & Gassman, R. (2008). A state-based model of prevention: Indiana's example. *Health Promotion Practice, 9* (2), 199-204.

Agley, J., Gassman, R., DeSalle, M., Vannerson, J., Carlson, J., & Crabb, D. (2014, December). Screening, Brief Intervention, and Referral to Treatment (SBIRT), and Motivational Interviewing for PGY-1 medical residents. *Journal of Graduate Medical Education,* 765-769. Doi: 10.4300/JGME-D-14-00288.1

Agley, J., McIntire, R., DeSalle, M., Tidd, D., Wolf, J., & Gassman (2014). Connecting patients to services: Screening, brief intervention, and referral to treatment in primary health care. *Drugs: Education, Prevention, and Policy, 21* (5), 370-379.

Agley, J., McNelis, A., Carlson, J., Schwindt, R., Clark, C., Kent, K., Lay, K., Gassman, R., & Crabb, D. (2016). If you teach it, they will screen: Advanced practice nursing students' use of screening and brief intervention in the clinical setting. *Journal of Nursing Education, 55* (4), 231- 235. doi:10.3928/01484834-20160316-10

American Public Health Association and Education Development Center, Inc. (2008). *Alcohol screening and brief intervention: A guide for public health practitioners*. Washington, DC: National Highway Traffic Safety Administration, U.S. Department of Transportation.

Babor, T., Del Boca, F., Bray, J. (2017). Screening, Brief Intervention and Referral to Treatment: Implications of SAMHSA's SBIRT initiative of substance abuse policy and practice. *Addiction, 112* (2), 110-117. doi: 10.1111/add.13675

Babor, T., & Higgins-Biddle, J. (2000). Alcohol screening and brief intervention: Dissemination strategies for medical practice and public health. *Addictions, 95* (5), 677-686.

Babor, T., McRee, B., Kassebaum, P., Grimaldi, P., Ahmed, K., & Bray, J. (2007). Screening, Brief Intervention, and Referral to Treatment (SBIRT): Towards a public health approach to the management of substance abuse. *Substance Abuse, 28* (3), 7-30. doi:10.1300/J465v28n03_03

Bandura, A. (1977). Self-efficacy: Towards a unifying theory of behavioral change. *Psychological Review, 84* (2)191-215.

Bartimote-Aufflick, K., Bridgeman, A., Walker, R., Sharma, M., & Smith, L. (2016). The study, evaluation, and improvement of university student self-efficacy. *Studies in Higher Education, 41*(11), 1918-1942. doi: 10.1080/03075079.2014.999319

Begun, A., Clapp, J, & and The Alcohol Misuse Grand Challenges Collective. (2016). Reducing and preventing alcohol misuse and its consequences: A grand challenge for social work. *International Journal of Alcohol and Drug Research, 5*(1), 72-83. doi:10.7895/ijadr.v5i2.223

Belfiore, M. N., Blinka, M., BrintzenhofeSzoc, K., & Shields, J. (2017). Screening, Brief Intervention, and Referral to Treatment (SBIRT) curriculum integration and sustainability: Social work and nursing faculty perspectives. *Substance Abuse,* 1-7. doi: 10.1080/08897077.2017.1377672

Berger, L., DiPaolo, M., Topitzes, D., Davis, D., & Otto-Salaj, L. (2016). Organizational factors associated with adoption and implementation of Screening, Brief Intervention and Referral to Treatment for substance misuse. *Alcoholism: Clinical and Experimental Research, 40,* 123A.

Billups, D., & Shorter, D. (2015). Needs assessment survey of addictions training in general psychiatry residency. *The American Journal on Addictions, 24,* 191-192. doi: 10.1111/ajad.12211

Bina, R., Hall, D., Mollette, A., Smith-Osborne, A., Yum, J., Sowbel, L., & Jani, J. (2008). Substance abuse training and perceived knowledge: Predictors of perceived preparedness to work in substance abuse. *Journal of Social Work Education,* 44 (3), 7-20.

Bondy, S., Rehm, J., Ashley, M.J., Walsh, G., Single, E., & Room, R. (1999). Low-risk drinking guidelines: The scientific evidence. *Canadian Journal of Public Health, 90* (4), 264-270. Retrieved from http://www.jstor.org/stable/41994025

Bowen, E., & Redmond, H. (2016). Teaching note - no peace without justice: Addressing the United States' war on drugs in social work education. *Journal on Social Work Education, 52* (4), 503-508. doi: 10.1080/10437797.2016.1198296

Bowen, E., & Walton, Q. (2015). Disparities and the social determinants of mental health and addictions: Opportunities for a multifaceted social work response. *Health and Social Work, 40* (3), d59-e65. doi: 10.1093/hsw/hlv034

Braxter, B., Puskar, K., Mitchell, A., Hagle, H., Gotham, H., & Terry, M. (2014). Nursing students' experiences with Screening, Brief Intervention, and Referral to Treatment for substance use in the clinical/hospital setting. *Journal of Addictions Nursing, 25* (3), 122-129. doi: 0.1097/JAN.0000000000000037

Bray, J., Kowalchuk, A.,Waters, V., Allen, E., Laufman, L., & Shilling, E. (2014). Baylor Pediatric SBIRT medical residency training program: Model description and evaluation. Substance Abuse, 35, 442-449. doi: 10.1080/08897077.2014.954026

Broyles, L., Conley, J., Harding, Jr., J., & Gordon, A. (2013). A scoping review of interdisciplinary collaboration in addictions education and training. *Journal of Addiction Nursing, 24* (1), 29-36. doi: 10.1097/JAN.0b013e318282751e

Broyles, L., Gordon, A., Rodriguez, K., Hunusa, B., Kengor, C., & Kraemer, K. (2010). SBIRT implementation: Moving beyond the interdisciplinary rhetoric. *Substance Abuse, 31,* 221-223.

Broyles, L, Gordon, A., Rodriguez, K., Hanusa, B., Kengor, C., & Kraemer, K. (2013). Evaluation of a pilot training program in alcohol Screening, Brief Intervention and Referral to Treatment for nurses in inpatient settings. *Journal of Addictions Nursing, 24* (1), 8-19. doi: 10.1097/JAN.0b013e31828767ef

Bulfone, G.,Fida, R., Ghezzi, V., Macale, L., Sili , A., Alvaro, R., & Palese, A. (2016). Nursing student self-efficacy in psychomotor skills: Findings from a validation, longitudinal, and correlational study. *Nurse Educator, 41*(6), E1-E6. doi: 10.1097/NNE.0000000000000285

Cameron, J., Lee, N., & Harney, A. (2010). Changes in attitude to, and confidence in, working with comorbidity after training in screening and brief intervention. *Mental Health and Substance Use: Dual Diagnosis, 3* (2), 124-130. doi: 10.1080/17523281003712674

Carneiro, A., & Souza-Formigoni, M. (2018). Country-wide distance training for delivery of screening and brief intervention for problematic substance use: A pilot evaluation of participant experiences and patient outcomes. *Substance Abuse, 39* (1), 102-109. doi: 10.1080/08897077.2017.1365801

Carlson, J., Agley, J., Gassman, R., McNelis, A., Schwindt, R., Vannerson, J., Crabb, D., & Khaja, K. (2017). Effects and durability of an SBIRT training curriculum for first-year MSW students. *Journal of Social Work Practice in the Addictions, 17*, 135-149. doi: 10.1080/1533256X.2017.1304946.

Carlson, J., Schwindt, R., Agley, J., Gassman, R., McNelis, A., Vannerson, J., Crabb, D (2017). Effects of training on social work, nursing and medical trainees' knowledge, attitudes and beliefs related to screening and brief intervention for alcohol use. Journal of Alcohol and Drug Education, 61 (1), 14-35. Retrieved from https://ezproxy.indstate.edu/login?url=https://search.proquest.com/docview/1900042569?accountid=11592

Center for Behavioral Health Statistics and Quality. (2016). *Results from the 2015 National Survey on Drug Use and Health: Detailed tables*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Centers for Disease Control and Prevention (CDC). (2015). *Alcohol poisoning deaths: A deadly consequence of binge drinking*. Retrieved March 9th, 2019 from https://www.cdc.gov/vitalsigns/alcohol-poisoning-deaths/index.html

Clemence, J., Balkoski, V., Schaefer, B., Lee, M., Bromley, N., Maisonneuve, I., Hamilton, I., Lukowitsky, M., Poston, J.,Hall, J., Pieterse, P., Antonikowski, A., & Glick, S. (2016). Multispecialty Screening, Brief Intervention, and Referral to Treatment (SBIRT) training in an academic medical center: Resident training experience across specialties. *Substance Abuse, 37* (2), 356-363. doi: 10.1080/08897077.2015.1082953

Cochran, G., & Field, C. (2013) Brief intervention and social work: A primer for practice and policy. *Social Work in Public Health, 28,* 248-263. doi: 10.1080/19371918.2013.759016

Cole, B., Clark, D., Seale, J., Shellenberger, S., Lyme, A., Johnson, J., & Chhabria, A. (2012). Reinventing the reel: An innovative approach to resident skill-building in Motivational Interviewing for brief intervention. *Substance Abuse, 33,* 278-281. doi: 10.1080/08897077.2011.639696

Connors, G., & Volk, R. (2004, July 4). Self-report screening for alcohol problems among adults. *National Institute on Alcohol Abuse and Alcoholism*. Retrieved from file:///C:/Users/jtodd5/Documents/Jen%20Classes/AHS%20818/Self-Report%20Screening%20for%20Alcohol%20Problems%20Among%20Adults.htm

Cook, P., Manzour, S., Aagaard, L., O'Connell, L., Corwin, M., Gance-Cleveland, B. (2016). Results from 10 years interprofessional training Motivational Interviewing. *Evaluation and the Health Professions, 40* (2), 159-179. doi: 10.1177/0163278716656229

Corrigan, M., Krase, J., & Reed, K. (2017). A social work response to the Affordable Care Act: Prevention and early intervention. *Journal of Psychoactive Drugs, 49* (2), 169-173. doi: 10.1080/02791072.2017.1295333

Corrigan, M., Slater, J., & Bill, M. L. (2009). Teaching note: The development of a substance abuse curriculum in a master's of social work program. *Journal of Social Work Education, 45* (3), 513-520.

Council on Social Work Education (CSWE). (2016). Incorporation SBIRT into social work curriculum. Webinar retrieved from https://learningacademy.cswe.org/products/incorporating-sbirt-into-social-work-curriculum#tab-product_tab_contents__1

Crawford, M., Patton, R., Touquet, R., Drummond, C., Byford, S., Barrett, B., Reece, B., Brown, A., & Henry, J. (2004). Screening and referral for brief intervention of alcohol-misusing patients in an emergency department: A pragmatic randomized controlled trial. *The Lancet, 364,* 1334-1339.

D'Amico, E., Parast, L., Meredith, L., Ewing, B., Shadel, W., & Stein, B. (2016). Screening in primary care: What is the best way to identify at-risk youth for substance use? *Pediatrics, 138* (6). Retrieved from http://pediatrics.aappublications.org/content/138/6/e20161717.

Darnell, D., Dunn, C., Atkins, D., Ingraham, L, & Zatzick, D. (2016). A randomized evaluation of motivational interviewing training for mandated implementation of alcohol screening and brief intervention in trauma centers. *Journal of Substance Abuse Treatment, 60,* 36-44. doi: 10.1016/j.jsat.2015.05.010

Delich, N., & Roberts, S. (2017). Empowering students through the application of self-efficacy theory in school social work: An intervention model. *International Journal of Social Work, 2*(1), 1-13. doi: 10.4148/2161-4148.1022

DeSalle, M., & Agley, J. (2015). SBIRT: Identifying and managing risky substance abuse. *Counseling Today, October*, 46-51. Retrieved from http://ct.counseling.org/2015/09/sbirt-identifying-and-managing-risky-substance-use/

Dick, D. M., & Agrawal, A. (2008). The genetics of alcohol and other drug dependence. *Alcohol Research & Health, 31*(2), 111-119.

Dion, K. (2016). Improving outcomes of opioid overdose: Preparing nursing students to intervene. *Journal of Addictions Nursing, 27* (1), 7-11. doi: 10.1097/JAN.0000000000000106

Dube, S., Felitti, V., Dong, M., Chapman, D., Giles, W., & Anda, R. (2003). Childhood abuse, neglect, and household dysfunction and the risk of illicit drug use: The adverse childhood experiences study. *Pediatrics, 111*(3), 564-572.

Duong, D., O'Sullivan, P., Satre, D., Soskin, P., & Satterfield, J. (2016). Social workers as work-based instructors of alcohol and drug Screening, Brief Intervention and Referral to Treatment (SBIRT) for emergency medicine residents. *Teaching and Learning in Medicine, 38* (3), 303-313.

Edens, E., Gafni, I., & Encandela, J. (2016). Addiction and chronic pain: Training Addiction Psychiatrists. *Academic Psychiatry, 40*, 489-493. doi: 10.1007/s40596-015-0412-z

Elder, R. W., Lawrence, B., Ferguson, A., Naimi, T. S., Brewer, R. D., Chattopadhyay, S. K., . . . Task Force on Community Preventive Services. (2010). The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms. *American Journal of Preventive Medicine, 38*(2), 217-229.

Feeley, R., Moore, D., Wilkins, K., & Fuehrlein, B. (2018). Focused addiction curriculum and its impact on student knowledge, attitudes, and confidence in the treatment of patients with substance use. *Academic Psychiatry, 42,* 304–308. doi: 10.1007/s40596-017-0771-8

Finnell, D. S., Nowzari, S., Reimann, B., Fischer, L., Pace, E., & Goplerud, E. (2014). Screening, Brief Intervention, and Referral to Treatment (SBIRT) as an integral part of nursing practice. *Substance abuse, 35*(2), 114-118. doi: 10.1080/08897077.2014.888384

Finnell, D., Savage, C., Hansen, B., Sanchez, M., White, K., Johnson, A., & Seale, P. (2018). Integrating substance use content in an ''overcrowded'' nursing curriculum. *Nurse Educator, 43* (3), 128-131. doi: 10.1097/NNE.0000000000000438

Fortney, J., Mukherjee, S., Curran, G., Fortney, S., Han, X., & Booth, B. (2004). Factors associated with perceived stigma for alcohol use and treatment among at-risk drinkers. *The Journal of Behavioral Health Services and Research, 31* (4), 418-429.

Futterman, R., Lorente, M., & Silverman, S. (2004). Integrating harm- reduction and abstinence-based substance abuse treatment in the public sector. *Substance Abuse, 25* (1), 3-7. doi: 0.1300/J465v25n01_02

Gassman, R.A. (2003). Medical specialization, profession, and mediating beliefs that predict stated likelihood of alcohol screening and brief intervention: Targeting educational interventions. *Substance Abuse, 24,* 141-156.

Gassman, R. A. (2007). Practitioner-level predictors of alcohol problem detection and management activities. *Journal of Substance Use, 12,* 191–202. doi:10.1080/ 14659890701237215

Gates, S., & Brown, (2017). Preparing nursing and social work students to care patients in acute alcohol-withdrawal. *Journal of Addictions Nursing, 28* (3), 143-147. doi: 10.1097/JAN.0000000000000178

Gil, A., Wagner, E., Tubman, J. (2004). Associations between early-adolescent substance use and subsequent young-adult substance use disorders and psychiatric disorders among a multiethnic male sample in south Florida. *American Journal of Public Health, 94*(9), 1603-1609.

Glass, J., Hamilton, A., Powell, B., Perron, B., Brown, R., & Ilgen, M. (2015). Revisiting our review of Screening, Brief Intervention and Referral to Treatment (SBIRT): Meta-analytical results still point to no efficacy in increasing the use of substance use disorder services. *Addiction, 111,* 179-183.

Gordon, A., & Harding, J. (2017). From education to practice: Addressing opioid misuse through health care provider training. *Substance Abuse, 38* (2), 119-121. doi: 10.1080/08897077.2017.130993

Gotham, H., Knopf-Amelung, S., Krom, L., Stilen, P., & Kohnle, K. (2014). Competency-based SBIRT training for health-care professionals: Nursing and social work students. *Addiction Science and Clinical Practice, 10* (1), A14. Retrieved from http://www.ascpjournal.org/content/10/S1/A14

Harling, M. (2017). Comparisons between the attitudes of student nurses and other health and social care students toward illicit drug use: An attitudinal survey. *Nurse Education Today, 48,* 153-159. doi: 10.1016/j.nedt.2016.10.012

Harris, B.R., & Yu, J. (2016). Attitudes, perceptions and practice of alcohol and drug screening, brief intervention and referral to treatment: a case study of New York State primary care physicians and non-physician providers. *Public Health, 139,* 70-78. doi: 10.1016/j.puhe.2016.05.007

Harris, B.R., Shaw, B.A., Sherman, B.R., Lawson, H.A. (2016). Screening, brief intervention, and referral to treatment for adolescents: Attitudes, perceptions, and practice of New York school-based health center providers. *Substance Abuse,* 37 (1), 161-167. doi: 10.1016/j.puhe.2016.05.007

Hasin, D. S., Stinson, F. S., Ogburn, E., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry, 64*(7), 830-842.

Hayden, J. (2014). *Introduction to health behavior theory (2nd ed.).* Boston, MA: Jones and Bartlett Publishers.

Hodgson, J., Stanton, M., Borst, C., Moran, M., Atherton, L., Toriello, P., & Winter, A. (2016). Implementation of SBIRT: Focus group analysis of Provider Teams in academic and community healthcare settings. *Journal of Rehabilitation, 82* (4), 48-59.

Hohman, M., Pierce, P., Barnett, E. (2015). Motivational Interviewing: An evidence-based practice for improving student skills. *Journal of Social Work Education, 51,* 287-297.

Holden, G., Barker, K., Kuppens, S., & Rosenberg, G. (2017). Self-efficacy regarding social work competencies. *Research on Social Work Practice, 37* (5), 594-606. doi: 10.1177/1049731515586466

Holden, G., Meenaghan, T., Anastas, J., & Metrey , G., (2002). Outcomes of social work education: The case for social work self-efficacy. *Journal of Social Work Education, 38*(1), 115-133. Retrieved from https://www.jstor.org/stable/23043650

Holland, C., Pringle, J., & Barbetti, V. (2009). Identification of physician barriers to the application of screening and brief intervention for problem alcohol and drug use. *Alcoholism Treatment Quarterly, 27*, 174-183. doi: 10.1080/07347320902784890

InSight Project Research Group. (2009). SBIRT outcomes in Houston: Final report on InSight, a hospital direct-based program for patients at risk for alcohol or drug use problems. *Alcohol Clinical and Experimental Research,* 33 (8), 1374-1381.

Institute of Medicine, & Committee on Crossing the Quality Chasm. (2006). *Improving the quality of health care for mental and substance-use conditions*. Washington, DC: National Academies Press.

Katzman, J., Comerci, G., Landen, M., Loring, L., Jenkusky, S., Arora, S., Kalishman, S., Marr, L., Camarata, C., Duhigg, D., Dillow, J., Koshkin, E., Taylor, D., & Geppert, C. (2014). Rules and values: A coordinated regulatory and educational approach to the public health crises of chronic pain and addiction. *American Journal of Public Health, 104* (8), 1357-1362.

Kempf, C.,Llorca, P., Pizon, F., Brousse, G., & Flaudias, V.(2017). What's new in addiction prevention in young people: A literature review of the last years of research. *Frontiers Psychology, 8,* (1131), 1-16. doi: 10.3389/fpsyg.2017.01131

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 593-602.

Klimas, J., Small, W., Ahamad, K., Cullen, W., Mead, A., Rieb, L., Wood, E, McNeil, R. (2017). Barriers and facilitators to implementing addiction medicine fellowships: A qualitative study with fellows, medical students, residents and preceptors. *Addiction Science and Clinical Practice*, 12, p. 1-10. doi: 10.1186/s13722-017-0086-

Koetting, C., & Freed, P. (2017). Educating undergraduate psychiatric mental health nursing students in Screening, Brief Intervention, Referral to Treatment (SBIRT) using an online, interactive simulation. *Archives of Psychiatric Nursing, 31*, 241-247. doi: org/10.1016/j.apnu.2016.11.004

Komaromy, M., Duhigg, D., Metcalf, A., Carlson, C., Kalishman, S., Hayes, L., Burke, T., Thornton, K., & Arora, S. (2016). Project ECHO (Extension for Community Healthcare Outcomes): A new model for educating primary care providers about treatment of substance use disorders. *Substance Abuse, 37*(1), 20-24. doi: http://dx.doi.org/10.1080/08897077.2015.1129388

Koyi, M., Nelliot, A., MacKinon, D., Rastegar, D., Fingerhood, M., Alvanzo, A., Feldman, L., & Neufeld, K. (2018). Changes in medical student attitudes towards patients with substance use disorders after course exposure. *Academic Psychiatry, 42*, 283-287. doi:10.1007/s40596-017-0702-8

Lanken, P., Novack, D., Daetwyler, C., Gallop, R., Landis, J.R., Lapin, J., Subramaniam, G., & Schindler, B. (2015). Efficacy of an internet-based learning module and small-group debriefing on trainees' attitudes and communication skills toward patients with substance use disorders: Results of a cluster randomized controlled trial. *Academic Medicine, 90* (3), 345-354. doi: 10.1097/ACM.0000000000000506

Lee, C., Abrantes, A., Colby, S., Lopez, S., & Jordan, T. (2008). Medical student judgments of adolescents with alcohol use disorders (AUD). *Substance Use & Misuse, 43*, 709-721. doi:10.1002/j.2161-1874.2014.00027

Lindsey, D., Hagle, H., Lincoln, P., Williams, J., Luongo, P. (2017). Exploring medical students' conceptions of substance use: A follow-up evaluation. *Substance Use,* 38:4, 464-467. doi: 10.1080/08897077.2017.1342735

Linley, J., Mendoza, N., &, Resko, S. (2014). Working on treatment teams: Educating social work students to function as addiction specialists within interdisciplinary groups. *Social Work Education, 33,* (5), 642-655. doi: 0.1080/02615479.2014.919095

MacMillian, D., Winn, S., Coke, S., Biers, A., & Shellenberger, S. (2015). Utilization of standardized patients and case studies to evaluate effect of SBIRT training for APRN's. *Addiction Science & Clinical Practice, 10* (2), 031.

Mahmoud, K., Terhorst, L., Lindsay, D., Puskar, K., & Mitchell, A. (2017). Undergraduate nursing students' perceptions of individuals with drug use problems. *Journal of Addictions Nursing, 28 (4),* 196-202. doi: 10.1097/JAN.0000000000000194

Malone, G., Vale, Arismendez, S., Warzinski, S., Amodei, N., Burge, S., Wathen, P., Conde, P., Palmer, R., & Williams, J. (2015). South Texas residency Screening, Brief Intervention, and Referral to Treatment (SBIRT) training: 12-Month outcomes. *Substance Abuse, 36,* 272-280. doi: 10.1080/08897077.2014.988839m

Marshall, V., McLaurin-Jones, T., Kalu, N., Kwagyan, J., Scott, D., Cain, G., Greene, W., Adenuga, B., & Taylor, R. (2012). Screening, Brief Intervention, and Referral to Treatment: Public health training for primary care. *American Journal of Public Health, 102* (8), e30-e36.

Massachusetts Department of Public Health Bureau of Substance Abuse Services. (2009). *Adolescent Screening, Brief Intervention, and Referral to Treatment (SBIRT) for alcohol and other drug use.*

McCabe, H., & Wahler, E. (2016). The Affordable Care Act, substance use disorders, and low-income clients: Implications for social work. *Social Work, 61* (3), 228-233. doi: 10.1093/sw/sww030

McCambridge, J., Slym, R., & Strang, J. (2008). Randomized controlled trial of Motivational Interviewing compared with drug information and advice for early intervention among young cannabis users. *Addiction, 103,* 1809-1818. doi: 10.1111/j.1360-0443.2008.02331.x

McCance, E., & Satterfield, J. (2012). SBIRT: A key to integrate prevention and treatment of substance abuse in primary care. *The American Journal on Addictions, 21,* 176-177. doi: 10.1111/j.1521-0391.2011.00213.x

McKnight-Eily, L. R., Liu, Y., Brewer, R. D., Kanny, D., Lu, H., Denny, C. H., . . . Centers for Disease Control and Prevention. (2014). Vital signs: Communication between health professionals and their patients about alcohol use - 44 states and the District of Columbia, 2011. *MMWR, 63*(1), 16-22. Retrieved from https://ezproxy.indstate.edu/login?url=https://search.proquest.com/docview/1490691163?accountid=11592

McNeece, C.A. (2003). After the war on drugs is over: Implications for social work education. *Journal of Social Work Education,39* (2), 193-212. doi: 10.1080/10437797.2003.10779131

Mertens, J., Chi, F., Weisner, C., Satre, D., Ross, T, Allen, S., Pating, D., Campbell, C., Lu, Y., & Sterling, S. (2015). Physician versus non-physician delivery of alcohol screening, brief intervention, and referral to treatment in adult primary care: ADVISe cluster randomized controlled implementation trial. *Addiction Science and Clinical Practice, 10,* 26-43.

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change.* New York: Guilford Press.

Mitchell, A., Finnell, D., Kane, I., Halge, H., Puskar, K., & Savage, C. (2018). Time-conscious alcohol screening and brief intervention for students, nurses, and nurse leaders. The Journal of Continuing Education in Nursing, 49 (10), 467-473. doi: 10.3928/00220124-20180918-07

Mitchell, A., Fioravanti, M., Kane, I., Puskar, K., Hagle, H., & Bouchek, L. (2015). A call for universal alcohol, drug screening. *American Journal of Nursing, 115* (6), 11.

Mitchell, S., Gryczynski, J., Gonzales, A., Moseley, A., Peterson, T., O'Grady, K., & Schwartz, R. (2012). Screening, Brief Intervention, and Referral to Treatment (SBIRT) for substance use in a school-based program: Services and outcomes. *The American Journal on Addictions, 21,* S5-S13.

Mitchell, S., Gryczynski, J., O'Grady, K., & Schwartz, R. (2013). SBIRT for adolescent drug and alcohol use: Current status and future directions. *Journal of Substance Abuse Treatment, 44,* 463-472. doi: 10.1016/j.jsat.2012.11.005

Montag, A., Brodine, S., Alcaraz,, J., Clapp, J., Allison, M., Calac, D, Hull, A., Gorman, J., Jones, K., & Chambers, C. (2015). Effect of depression on risky drinking and response to a Screening, Brief Intervention, and Referral to Treatment intervention. *American Journal of Public Health, 105* (8), 1572-1576.

Moyer, A. (2013). Screening and behavioral counseling interventions in primary care to reduce alcohol misuse: U.S. Preventive Services Task Force recommendation statement. *Annals of Internal Medicine, 159*(3), 1-9. doi: 10.7326/0003-4819-159-3-201308060-00652

Moyer, A., Finney, J., Swearingen, C., & Vergun, P. (2002). Brief interventions for alcohol problems: A meta-analytic review of controlled investigations in treatment-seeking and non-treatment-seeking populations. *Addiction, 97*, 279-292.

Naegle, M., Himmel, J., & Ellis, P. (2013). SBIRT goes to college. *Journal of Addictions Nursing, 24* (1), 45-50.

National Center on Addiction and Substance Abuse (CASA) at Columbia University. (1998). *Under the rug: Substance abuse and the mature woman.* New York, NY: CASA.

National Drug Intelligence Center. (2011). *National drug threat assessment*. Washington, DC: U.S. Department of Justice.

National Highway Traffic Safety Administration. (2015). *Traffic safety facts 2014 data: Alcohol-impaired driving*. (DOT HS 812 231). Washington, DC: U.S. Department of Transportation. Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812231.

National Institute on Alcohol Abuse and Alcoholism (NIAAA). (2017). *Drinking levels defined*. Retrieved from https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking.

National Research Council and Institute of Medicine. (2009). *Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities*. Washington, DC: National Academies Press. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK32775/

Najavits, L. M., Hyman, S. M., Ruglass, L. M., Hien, D. A., & Read, J. P. (2017). Substance use disorder and trauma. In S. Gold, J. Cook, & C. Dalenberg (Eds.), *Handbook of trauma psychology*. Washington, DC: American Psychological Association.

Neft, M., Mitchell, A., Puskar, K., Fioravanti, M., Hagle, H., Lindsay, D., & O'Donnell, J. (2017). Interprofessional education for Screening, Brief Intervention, and Referral to Treatment for substance use. *Journal of Interprofessional Education and Practice, 10*, 12-14. doi: 10.1016/j.xjep.2017.10.004

Nunes, A., Richmond, M., Marzano, K., Swenson, C., & Lockhart, J., (2017). 10 years of implementing Screening, Brief Intervention, and Referral to Treatment (SBIRT): Lessons learned. *Substance Abuse, 38* (4), 508-512. doi:10.1080/08897077.2017.1362369

O'Brien, P. (2014). Performance measurement: A proposal to increase use of SBIRT and decrease alcohol consumption during pregnancy. *Maternal Child Health Journal, 18,* 1-9.

Ogden, L. (2016). Teaching note: Fostering practice self-efficacy: an exercise to promote student self-efficacy and evidence-based practice. *The Journal of Baccalaureate Social Work, 21,* 23-31.

Ogden, L., Vinjamuri, M., & Kahn, J. (2016). A model for implementing an evidence-based practice in student fieldwork placements: barriers and facilitators to the use of "SBIRT". *Journal of Social Service Research, 42* (4), 425-441. Doi: 10.1080/01488376.2016.1182097

Osborne, V., & Benner, K. (2012). Utilizing Screening, Brief Intervention, and Referral to Treatment: Teaching assessment of substance abuse. *American Journal of Public Health, 102* (7), e37-e38.

Osborne, V., Benner, K., Sprague, D., & Cleveland, I. (2016). Simulation real life: Enhancing social work education on alcohol screening and brief intervention. *Journal of Social Work Education, 52* (3), 337-346. doi: 10.1080/10437797.2016.1174629

Petrovich, A. (2004). Teaching notes: Using self-efficacy theory in social work teaching. *Journal of Social Work Education, 40*(3), 429-443. Retrieved from https://www.jstor.org/stable/23043993

Pringle, J., Kearney, S., Rickard-Aasen, S., Campopiano, M. & Gordon, A. (2017). A statewide Screening, Brief Intervention, and Referral to Treatment (SBIRT) curriculum for medical residents: Differential implementation strategies in heterogeneous medical residency programs. *Substance Abuse, 38* (2), 161-167. doi: http://dx.doi.org/10.1080/08897077.2017.1288195

Puskar, K., Gotham, H., Terhorst, L., & Hagle, H. (2013). Effects of screening, brief intervention, and referral to treatment (SBIRT) education and training on nursing students' attitudes toward working with patients who use alcohol and drugs. *Substance Abuse, 34,* 122-128.

Puskar, K., Kane, I., Lee, H., Mitchell, A., & Albrecht, S., (2016). Interprofessional Screening, Brief Intervention, and Referral to Treatment (SBIRT) education for registered nurses and behavioral health professionals. *Issues in Mental Health Nursing,* 37, 682-687. doi: 10.1080/01612840.2016.1198946

Puskar, K., Lee, H., Mitchell, A., Kane, I., Albrecht, S., Frank, L., Hagle, H., Lindsay, D., & Houze, M. (2017). Interprofessional collaborative education for substance use screening: rural areas and challenges. *Online Journal of Rural Nursing and Health Care, 16* (1). Retrieved from http://dx.doi.org/ 10.14574/ojrnhc.v16i1.385.

Puskar, K., Mitchell, A., Albrecht, S., Frank, L., Kane, I., Hagle, H., Lindsay, D., Lee, H., Fioravanti, M., & Talcott, K. (2016). Interprofessional collaborative practice incorporating training for alcohol and drug use screening for healthcare providers in rural areas. *Journal of Interprofessional Care, 30* (4), 542-544. doi: 10.1080/13561820.2016.1178219

Putney, J., O'Brien, K., Collin, C., & Levine, A. (2017). Evaluation of alcohol Screening, Brief Intervention, and Referral to Treatment (SBIRT) training for social workers. *Journal of Social Work Practice in the Addictions, 17,* 169 - 187. doi: 10.1080/1533256X.2017.1302884

Quinn, G. (2010). Institutional denial or minimization: Substance abuse training in social work education. *Substance Abuse, 31,* 8-11. doi: 10.1080/08897070903442475

Rahm, A., Boggs, J., Martin, C., Price, D., Beck, A., Backer, T., & Dearing, J. (2015). Facilitators and barriers to implementing Screening, Brief Intervention, and Referral to Treatment (SBIRT) in primary care in integrated health care settings. Substance Abuse, 36, 281-288. doi: 10.1080/08897077.2014.951140

Ramos, M., Sebastian, R., Murphy, M., Oreskovich, K., & Condon, T. (2017). Adolescent substance use: Assessing the knowledge, attitudes, and practices of a school-based health care workforce. *Substance Abuse, 38 (2),* 230-236. doi: 10.1080/08897077.2017.1287149

Rasyidi, E., Wilkins, J., & Danovitch, I. (2012). Training the next generation of providers in addictions medicine. *Psychiatric Clinics of North America, 35,* 461-480. doi: /10.1016/j.psc.2012.04.001

Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *The Lancet, 373*(9682), 2223-2233.

Rietschel, M., & Treutlein, J. (2012). The genetics of alcohol dependence. *Annals of the New York Academy of Sciences, 1282*(2013), 39-70. doi: 10.1111/j.1749-6632.2012.06794.x

Rumball, K., & Tober, G. (2013). Modificaiton of a traditional motivational interviewing-based brief intervention training for hospital staff: The approach and refer method. *Drugs: Education, Prevention, and Policy, 20* (5), 417-424.

Rundio, A. (2012). SBIRT – The new sixth vital sign? A policy perspective. *Journal of Addictions Nursing, 23 (3),* 208-209.

Russett, J. (2016). Best practices start with screening: A closer look at Screening, Brief Intervention, and Referral to Treatment in adolescent, military, and LGBTQ populations. *Journal of Addictions and Offender Counseling, 37,* 116-126. doi: 10.1002/jaoc.12020

SBIRT Colorado. (2008). Guideline for alcohol and substance use screening, brief intervention and brief treatment. Retrieved from coloradguidelines.org.

SBIRT Colorado. (n.d.). Why SBIRT? Retrieved from https://www.integration.samhsa.gov/clinical-practice /sbirt/SBIRT_Colorado _WhySBIRT.pdf.

Sacks, J. J., Gonzales, K. R., Bouchery, E. E., Tomedi, L. E., & Brewer, R. D. (2015). 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine, 49*(5), e73-e79.

Saitz, R. (2007). Screening and brief intervention enter their 5th decade. *Substance Abuse, 28* (3), 3-6.

Salvalaggio, G., Dong, K., Vandenberghe, C., Kirkland, S., Mramor, K., Brown, T., Taylor, M., McKim, R., Cummings, G., & Wild, T. (2013). Enhancing screening, brief intervention, and referral to treatment among socioeconomically disadvantaged patients: Study protocol for a knowledge exchange intervention involving patients and physicians. *BMC Health Services Research, 13,* 108-118.

Satre, D., McCance-Katz, E., Moreno-John, G., Julian, K., O'Sullivan, P., & Satterfield, J. (2012). Using needs assessment to develop curricula for Screening, Brief Intervention, and Referral to Treatment (SBIRT) in academic and community health settings. *Substance Abuse, 33,* 298-302.

Savage, C. (2012). Screening, brief intervention, and referral to treatment and the role of treatment. *Journal of Addictions Nursing, 23* (3), 200-202.

Schemer, C. (2005). Feasibility of alcohol screening and brief intervention. *The Journal of Trauma, Injury, Infection, and Critical Care 59* (3), S119-S123. doi: 10.1097/01.ta.0000174679.12567.7c

Schumacher, J., Madson, M., & Nilsen, P. (2014). Barriers to leaning Motivational Interviewing: A survey of Motivational Interviewing trainers' perceptions. *Journal of Addictions and Offender Counseling, 35,* 81-96.

Senreich, E., Ogden, L., & Greenberg, J. (2017). Enhancing social work students' knowledge and attitudes regarding substance-using clients through SBIRT training. *Journal of Social Work Education, 53* (2), 260-275. doi: 10.1080/10437797.2016.1266979

Senreich, E., & Straussner, S. (2013). The effects of MSW education on students' knowledge and attitudes regarding substance abuse clients. *Journal of Social Work Education, 49*, 321-336. doi: 10.1080/10437797.2013.768485

Simioni, N., Rolland, B., Cottencin, O. (2015). Revisiting our review of Screening, Brief Intervention, and Referral to Treatment (SBIRT): Meta-analytical results still point to no efficacy in increasing the use of substance use disorder services. *Addictions, 111,* 179-183.

Singh, M., Gmyrek, A., Hernandez, A., Damon, D., & Hayashi, S. (2017). Sustaining Screening Brief Intervention, and Referral to Treatment (SBIRT) services in health-care settings. *Addiction, 112* (2), 92-100. doi: 10.1111/add.13654

Smith, D. (2016). Training and implementation support strategies for Screening, Brief Intervention, and Referral to Treatment (SBIRT) models in secondary schools. *School Social Work Journal, 40* (2), 79-82.

Smothers, Z., Reynolds, V., McEachern, M., Derouin, A., Carter, B., & Muzyk, A. (2018). Substance use education in schools of nursing: A systematic review of the literature. *Nurse Educator, 43* (3), 136-139. doi: 10.1097/NNE.0000000000000449

Sokol, R. J., Delaney-Black, V., & Nordstrom, B. (2003). Fetal alcohol spectrum disorder. *JAMA, 290*(22), 2996-2999.

Stahre, M., Roeber, J., Kanny, D., Brewer, R. D., & Zhang, X. (2014). Contribution of excessive alcohol consumption to deaths and years of potential life lost in the United States. *Preventing Chronic Disease, 11*, E109. doi: 10.5888/pcd11.130293

Stanhope, V., Tennille, J., Bohrman, C., & Hamovitch, E. (2016). Motivational Interviewing: Creating a leadership role for social work in the era of healthcare reform. *Social Work in Public Health, 31* (6), 474-480. doi: 10.1080/19371918.2016.1160338

Stanton, M., Atherton, W., Toriello, P., & Hodgson, J. (2012). Implementation of a "learner-driven" curriculum: An Screening, Brief Intervention, and Referral to Treatment (SBIRT) interdisciplinary primary care model. *Substance Abuse, 33,* 312-315.

Steenrod, S. (2009). The interface between community-based and specialty substance abuse treatment sectors: navigating the terrain in social work. *Journal of Social Work Practice in the Addictions, 9,* 4-20.

Stewart, D., & Mueller, C. (2018). Substance use disorder among nurses: A curriculum improvement initiative. *Nurse Educator, 43* (3), 132-135. doi: 10.1097/NNE.0000000000000466

Stone, A. L., Becker, L. G., Huber, A. M., & Catalano, R. F. (2012). Review of risk and protective factors of substance use and problem use in emerging adulthood. *Addictive Behaviors, 37*(7), 747-775.61. doi: 10.1016/j.addbeh.2012.02.014

Stoner, S., Mikko, A. T., & Carpenter, K. (2014). Web-based training for primary care providers on Screening, Brief Intervention, and Referral to Treatment (SBIRT) for alcohol, tobacco, and other drugs. *Journal of Substance Abuse Treatment, 47,* 362-370. doi: 10.1016/j.jsat.2014.06.009

Substance Abuse and Mental Health Services Administration (SAMHSA). (n.d.) *Screening, Brief Intervention, and Referral to Treatment (SBIRT)*. Retrieved from https://www.samhsa.gov/sbirt.

Substance Abuse and Mental Health Services Administration. (2011). *Screening, brief intervention and referral to treatment (SBIRT) in behavioral healthcare*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration. (2013). *Systems-level implementation of screening, brief intervention, and referral to treatment: Technical assistance publications (TAP), series 33.* HHS Publication No. (SMA) 13-4741. Rockville, MD; Substance Abuse and Mental Health Services Administration.

Substance Abuse and Mental Health Services Administration (SAMHSA). (2016). *Center for the Application of Prevention Technologies (CAPT): Epidemiology and prevention.* Retrieved from http://cms.samhsa.gov/capt/practicing-effective-prevention/epidemiology-prevention

Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (July 17, 2014). *The TEDS report: Age of substance use initiation among treatment admissions aged 18 to 30*. Rockville, MD. Retrieved from https://www.samhsa.gov/data/sites/default/files/WebFiles_TEDS_SR142_AgeatInit_07-10-14/TEDS-SR142-AgeatInit-2014.htm

Substance Abuse and Mental Health Services Administration (SAMHSA). (2017). *Focus on Prevention. HHS Publication No. (SMA) 10–4120*. Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration. Retrieved from https://store.samhsa.gov/system/files/sma10-4120.pdf

Tabachnick, B.G., & Fidell, L.S. (2013). *Using multivariate statistics (*6th ed.). Upper Saddle River: Pearson Education, Inc.

Tanner, TB. Wilhelm, S.E, Rossie, K.M., & Metcalf, M.P. (2012). Web-based SBIRT skills training for health professional students and primary care providers. *Substance Abuse, 33*, 316-320. doi: 10.1080/08897077.2011.640151

Tetrault, J., & Petrakis, I. (2017). Partnering with psychiatry to close the education gap: An approach to the addiction epidemic. *Journal of General Internal Medicine, 32* (12), 1387-1389. doi: 10.1007/s11606-017-4140-9

Thompson, D. (2013). Interdisciplinary research training in substance abuse and addictions. *Journal of Addiction Nursing, 24* (1), 39-44. doi: 10.1097/JAN.0b013e3182876811

Toriello, H. (2014). Genetics and substance use disorders. *International Public Health Journal, 6*(3), 235-243.

Truncali, A., Lee, J., Ark, T., Gillespie, C., Triola, M., Hanley, K., Gourevitch, M., & Kalet, A. (2011). Teaching physicians to address unhealthy alcohol use: a randomized controlled trial assessing the effect of a web-based module on medical student performance. *Journal of Substance Abuse Treatment, 40,* 203-213. doi: 10.1016/j.jsat.2010.09.002

United States Department of Health and Human Services (USDHHS) (2016). *Facing addiction in America: The Surgeon General's report on alcohol, drugs, and health*. Washington, DC: USDHHS.

Vaca, F. Winn, D., Anderson, C., Kim, D., & Arcila, M. (2011). Six-month follow-up of computerized alcohol screening, brief intervention, and referral to treatment in the emergency department. *Substance Abuse, 32,* 144-152.

Vendetti, J., McRee, B., & Del Boca, F. (2017). Development of the SBIRT checklist for observation in real-time (SCORe). *Addiction, 112* (2), 34-42. doi: 10.1111/add.13657

Wamsley, M., Julian, K., O'Sullivan, P., Satterfield, J., Satre, D., McCance-Katz, E., & Batki, S. (2013). Designing standardized patient assessments to measure SBIRT skills for residents: A literature review and case study. *Journal of Alcohol and Drug Education, 57* (1), 46-65,

Welsh, C., Earley, K. Delahanty, J., Wright, K., Berens, T., Williams, A., Barnett, B., & DiClemente, C. (2014). Residents' knowledge of standard drink equivalents: Implications for screening and brief intervention for at - risk alcohol use. *The American journal on Addictions, 23,* 194-196. doi: 10.1111/j.1521-0391.2013.12080.x

Welsh, J., Schwartz, A., & DeJong, S. (2018). Addictions training in child and adolescent psychiatry fellowships. *Academic Psychiatry*. https://doi.org/10.1007/s40596-018-0959-6

Whittle, A., Buckelew, S., Satterfield, J., Lum, P., & O'Sullivan, P. (2015). Addressing adolescent substance use: Teaching Screening, Brief Intervention, and Referral to Treatment (SBIRT) and Motivational Interviewing (MI) to residents. *Substance Abuse, 36*, 325-331.

Wilkey, C., Lundgren, L., & Amodeo, M. (2013). Addiction training in social work schools: A nationwide analysis. *Journal of Social Work Practice in the Addictions, 13*, 192-210. doi: 10.1080/1533256X.2013.785872

Woodruff, S., Eisenberg, K., McCabe, C., Clapp, J., & Homan, M. (2013). Evaluation of California's alcohol and drug screening and brief intervention project for emergency department patients. *Western Journal of Emergency Medicine, 14* (3), 263-270.

Worley, J., & Delaney, K. (2018). Turning the tide in treatment of substance abuse: A nursing response. *Journal of Nursing Education and Practice, 8* (2), 116-124. doi: 10.5430/jnep.v8n2p116

APPENDIX A: Pre-Survey

Screening, Brief Intervention, and Referral to Treatment (SBIRT): Pre Survey

---

Please identify a personal code to be used for both pre and post-test survey collection:

_____

Please provide the following socio-demographic information:

Gender:

- ○ Female (1)
- ○ Male (2)
- ○ Other: Specify (3) _____

Race:

- ○ Alaska Native (1)
- ○ American Indian (2)
- ○ Asian (3)
- ○ Black or African American (4)
- ○ Native Hawaiian or Pacific Islander (5)
- ○ White (6)
- ○ Other (Specify): _____ (7)

Academic Major/Field of Study:

- ○ Nursing (1)
- ○ Physician Assistant (PA) (2)
- ○ Social Work (3)
- ○ Non-Nursing, PA, Social work (4)

Training Format:

- ○ Face-to-Face (1)
- ○ Distance (2)

The following statements refer to your role in screening patients for alcohol- or drug-related problems such as health problems (e.g., high blood pressure, accidents) or social problems (e.g., difficulty with spouse).
Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
1. I know what questions to ask patients to obtain information on their alcohol consumption. (1)	○	○	○	○	○
2. I am comfortable asking about a patient's drinking patterns. (2)	○	○	○	○	○

The following statements refer to stating your concerns about a patient's drinking and health related risks or advising patients to cut back or stop drinking.

Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
3. I know how I would effectively go about helping patients to (1)	○	○	○	○	○
4. I am at ease making these statements. (2)	○	○	○	○	○
5. I am not aware of a single problem drinker who ever cut back on his or her drinking upon advice from his or her care provider (e.g., physicians, nurses, or social workers). (3)	○	○	○	○	○
6. In general, I am somewhat skeptical about the efficacy of behavioral medicine. (4)	○	○	○	○	○
7. Given adequate information and training, care providers (e.g., physicians, nurses, or social workers) can help reduce their alcohol consumption. (5)	○	○	○	○	○
8. There is not enough time to advise patients about drinking. (6)	○	○	○	○	○
9. Patients would not be willing to pay a fee for alcohol counseling. (7)	○	○	○	○	○

Q10 How often do you think colleagues in your field screen patients for drinking problems?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Not sure (5)

Q11 How often do you think your colleagues state their concerns about patients' drinking patterns and related health risks?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Never (5)

Q12 How do you think colleagues in your field would feel about your screening patients for drinking problems?

- Most of my colleagues would approve (1)
- They would be fairly approving (2)
- They would be somewht approving (3)
- They would not approve (4)
- Not sure (5)

Q13 How do you think your colleagues would feel about your stating your concerns about a patient's drinking patterns and health risks?

- Most of my colleagues would approve (1)
- They would be fairly approving (2)
- They would be somewhat approving (3)
- They would not approve (4)
- Not sure (5)

The following statements refer to likelihood of asking about a patient's

drinking patterns or related health risks.

Choose the answer that best describes your thoughts on the following statements.

	Every time (2)	Nearly every time (3)	More than half the time (4)	About half the time (5)	Less than half of the time (6)	Once in awhile (7)	I do to intend to perform this behavior (8)	I do not intend to see patients in the next 12 months (9)
14. On average, how likely is it in the next 12 months that you will ask patients who are current drinkers about their alcohol consumption patterns? (1)	○	○	○	○	○	○	○	○
15. On average, how likely is it in the next 12 months that you will state to patients your medical concerns about their drinking patterns or related health risks? (4)	○	○	○	○	○	○	○	○
16. On average, how likely is it in the next 12 months that you will write in patients' charts your medical concerns about their drinking patterns or related health risks? (9)	○	○	○	○	○	○	○	○

APPENDIX B: Post-Test 1

Screening, Brief Intervention, and Referral to Treatment (SBIRT) Post-Test 1 Survey

Please identify the personal code to be used for both pre and post-test survey collection:

_____

The following statements refer to your role in screening patients for alcohol- or drug-related problems such as health problems (e.g., high blood pressure, accidents) or social problems (e.g., difficulty with spouse).
Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
1. I know what questions to ask patients to obtain information on their alcohol consumption. (1)	○	○	○	○	○
2. I am comfortable asking about a patient's drinking patterns. (2)	○	○	○	○	○

The following statements refer to stating your concerns about a patient's drinking and health related risks or advising patients to cut back or stop drinking.

Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
3. I know how I would effectively go about helping patients to (1)	○	○	○	○	○
4. I am at ease making these statements. (2)	○	○	○	○	○
5. I am not aware of a single problem drinker who ever cut back on his or her drinking upon advice from his or her care provider (e.g., physicians, nurses, or social workers). (3)	○	○	○	○	○
6. In general, I am somewhat skeptical about the efficacy of behavioral medicine. (4)	○	○	○	○	○
7. Given adequate information and training, care providers (e.g., physicians, nurses, or social workers) can help reduce their alcohol consumption. (5)	○	○	○	○	○
8. There is not enough time to advise patients about drinking. (6)	○	○	○	○	○
9. Patients would not be willing to pay a fee for alcohol counseling. (7)	○	○	○	○	○

Q10 How often do you think colleagues in your field screen patients for drinking problems?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Not sure (5)

Q11 How often do you think your colleagues state their concerns about patients' drinking patterns and related health risks?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Never (5)

Q12 How do you think colleagues in your field would feel about your screening patients for drinking problems?

- ○ Most of my colleagues would approve (1)
- ○ They would be fairly approving (2)
- ○ They would be somewht approving (3)
- ○ They would not approve (4)
- ○ Not sure (5)

Q13 How do you think your colleagues would feel about your stating your concerns about a patient's drinking patterns and health risks?

- ○ Most of my colleagues would approve (1)
- ○ They would be fairly approving (2)
- ○ They would be somewhat approving (3)
- ○ They would not approve (4)
- ○ Not sure (5)

The following statements refer to likelihood of asking about a patient's

drinking patterns or related health risks.

Choose the answer that best describes your thoughts on the following statements.

	Every time (2)	Nearly every time (3)	More than half the time (4)	About half the time (5)	Less than half of the time (6)	Once in awhile (7)	I do to intend to perform this behavior (8)	I do not intend to see patients in the next 12 months (9)
14. On average, how likely is it in the next 12 months that you will ask patients who are current drinkers about their alcohol consumption patterns? (1)	○	○	○	○	○	○	○	○
15. On average, how likely is it in the next 12 months that you will state to patients your medical concerns about their drinking patterns or related health risks? (4)	○	○	○	○	○	○	○	○
16. On average, how likely is it in the next 12 months that you will write in patients' charts your medical concerns about their drinking patterns or related health risks? (9)	○	○	○	○	○	○	○	○

APPENDIX C: Post-Test 2 (30 Day Follow- Up Survey)

Screening, Brief Intervention, and Referral to Treatment (SBIRT) Post-Test Survey

Please identify the personal code to be used for both pre and post-test survey collection:

_____

The following statements refer to your role in screening patients for alcohol- or drug-related problems such as health problems (e.g., high blood pressure, accidents) or social problems (e.g., difficulty with spouse).
Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
1. I know what questions to ask patients to obtain information on their alcohol consumption. (1)	○	○	○	○	○
2. I am comfortable asking about a patient's drinking patterns. (2)	○	○	○	○	○

The following statements refer to stating your concerns about a patient's drinking and health related risks or advising patients to cut back or stop drinking.

Choose the answer that best describes your extent of agreement or disagreement with the following statements.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
3. I know how I would effectively go about helping patients to (1)	○	○	○	○	○
4. I am at ease making these statements. (2)	○	○	○	○	○
5. I am not aware of a single problem drinker who ever cut back on his or her drinking upon advice from his or her care provider (e.g., physicians, nurses, or social workers). (3)	○	○	○	○	○
6. In general, I am somewhat skeptical about the efficacy of behavioral medicine. (4)	○	○	○	○	○
7. Given adequate information and training, care providers (e.g., physicians, nurses, or social workers) can help reduce their alcohol consumption. (5)	○	○	○	○	○
8. There is not enough time to advise patients about drinking. (6)	○	○	○	○	○
9. Patients would not be willing to pay a fee for alcohol counseling. (7)	○	○	○	○	○

Q10 How often do you think colleagues in your field screen patients for drinking problems?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Not sure (5)

Q11 How often do you think your colleagues state their concerns about patients' drinking patterns and related health risks?

- Always (1)
- Usually (2)
- Sometimes (3)
- Rarely or Never (4)
- Never (5)

Q12 How do you think colleagues in your field would feel about your screening patients for drinking problems?

- ○ Most of my colleagues would approve (1)
- ○ They would be fairly approving (2)
- ○ They would be somewht approving (3)
- ○ They would not approve (4)
- ○ Not sure (5)

Q13 How do you think your colleagues would feel about your stating your concerns about a patient's drinking patterns and health risks?

- ○ Most of my colleagues would approve (1)
- ○ They would be fairly approving (2)
- ○ They would be somewhat approving (3)
- ○ They would not approve (4)
- ○ Not sure (5)

The following statements refer to likelihood of asking about a patient's

drinking patterns or related health risks.

Choose the answer that best describes your thoughts on the following statements.