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Treatment Providers' Beliefs and Knowledge About Evidence-Based Practices

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Walden University
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Abstract

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by

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MS, Pacifica Graduate School of Psychology, 2002

BS, Southern Utah University, 2000

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Treatment providers working with adults in substance use treatment have been slow to implement evidence based practices (EBPs) into their treatment approaches. For treatment providers there are barriers to implement EBPs such as lack of resources, knowledge, and beliefs about EBPs as well as their beliefs about addiction. The consolidated framework for implementation research (CFIR) is investigating tools to decrease provider's barriers. Therefore, the purpose of this study was to investigate whether online training from addiction technology transfer center (ATTC) affected knowledge or beliefs about EBPs while controlling for beliefs about addiction. The dependent variables of knowledge and beliefs about EBPs were derived from the individual characteristics category in the (CFIR) model. A 2-group, pretest/posttest, experimental design was used to investigate the the research questions on the effect the ATTC online training had on knowledge and beliefs about EBPs. A convenience sample of 43 licensed or certified treatment providers were randomly assigned to an experimental group who took the online training, followed by the posttests and a control group who waited the length of the online training to complete the posttests. ANCOVAs using beliefs about addiction and the pretests as covariates, did not reveal differences between the experimental and control groups on the posttest scores, suggesting the online training from the ATTC was not an effective tool to influence knowledge or beliefs about EBPs, even when controlling for beliefs about addiction. The positive social impact this study provided was information for future researchers investigating tools for the CFIR model or providers implementing EBPs into their treatment facility.

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Dedication

I would like to dedicate this massive project to my family. My daughter, mom, grandkids, brothers, and dad who have cheered me on when I felt like stopping. To my son who may not be physically cheering me on but I know in my heart he is cheering me on. I am not sure I would have finished if it wasn't for the support and encouragement from my family that told me I could do it. For my work family, I would like to say thank you, I could not have done this without all of the people that have been there throughout this journey. Thank you so much for believing in me when I didn't believe in myself.

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I would like to acknowledge my committee chair, Dr. Patricia Loun, for all of her support and help during this journey. She has encouraged me and given me feedback that has helped me finish this project. I would also like to acknowledge my 2nd committee chair, Dr. Jessica Tischner.

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Chapter 1: Introduction to the Dissertation

Introduction to the Study

The American Society of Addiction Medicine (2010) has defined *addiction* as a chronic disease involving brain reward, motivation, memory, and related circuitry. Many individuals suffer from this disease, and it is treatable. Those who suffer from addiction may relapse, deal with the progressive development of the disease, and the potential for fatality if not treated (Smith, 2012). An individual who suffers from the disease of addiction has shown an inability to stop a dysfunctional behavior brought on by drugs or other repeated activities despite the adverse consequences (Smith, 2012). The disease of addiction disrupts areas of the brain responsible for cognitive, emotional, and social behaviors and, if left untreated, the disease becomes progressive, resulting in disability or premature death (Smith, 2012).

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; *DSM-5*; American Psychiatric Association, 2013) is a manual of symptoms and markers to aid in diagnosing mental illnesses, which include substance use disorders. This manual uses a continuum of severity in symptoms instead of a classification of an addict or not. The *DSM*-5 Task Force has added a new category called addictive and related disorders that includes both substance and nonsubstance/behavioral addictions (Grant et al., 2010).

Treatment for those who suffer from addiction has been changing and evolving. Traditional approaches followed from the premise that an individual need to surrender control and is powerless, while other approaches may promote a person's ability to feel empowered and gain a sense of self-efficacy (Miller, 2006; Smith & Liu, 2014).

According to Luke, Ribisl, Walton, and Davidson (2002), treatment approaches and differing beliefs about addiction among providers that influence their treatment approaches have caused some contradiction within the treatment community. Many treatment providers have subscribed to a traditional model, which aligns with the moral model of addiction, while other treatment providers have promoted scientifically supported treatment approaches that are aligned with the disease model of addiction, and others align with a combination of both (Smith & Liu, 2014). Treatment for addiction has been improving; however, there are still questions as to what happens in real-world settings and how to improve treatment outcomes for those who suffer from addiction.

As addiction treatment improves, there are still many individuals suffering from addiction who do not seek treatment. Individuals who suffer from addiction do not seek treatment for several reasons. First, there is a stigma attached to the disease of addiction (van Boekel, Brouwers, Weeghel, & Garretson, 2013). Second, there is the thought that treatment does not work. Third, there may be denial about the severity of their addiction (van Boekel et al., 2013). According to Miller, Sorenson, Selzer, and Brigham (2006), substance use and alcohol use disorder treatment has been developed by individuals who were suffering from addiction and turned away from the medical community to form a system to help themselves and others. This system was formed into Alcoholics Anonymous (AA) and has evolved into a treatment model for addiction (Miller et al., 2006). Treatment providers adopted the 12-step model from AA for addiction treatment, and according to Gifford et al. (2012), this model is referred to as 12-step facilitation.

Introducing the disease model of addiction spurred clinical studies to advance treatment for addiction (National Institute on Drug Abuse, 2012). This research has produced evidence-based practices (EBPs), which are treatment models that show scientific evidence for treating addiction (Sorenson & Kosten, 2012). Some researchers have studied EBPs in a controlled condition rather than a real-world setting. Several barriers exist for treatment providers when it comes to implementing an EBP. For example, treatment providers in real-world settings tend to reject an EBP if it is different from the model the provider is currently using (Sorenson & Kosten, 2011), and Treatment providers often have an ideological commitment to a certain treatment model, and introducing a newer treatment model may conflict with their ideology (Sorenson & Kosten, 2011). Other barriers in implementing EBPs for providers are a lack of knowledge and beliefs about the EBP (Damschroder & Hagedorn, 2011). The field of implementation science seeks to understand implementation processes and to identify treatment provider and organization characteristics to enhance the routine use of EBPs (Damschroder & Hagedorn, 2011; Smith & Liu, 2014).

Background on Implementation of EBPs

EBPs are treatment practices that have shown scientific efficacy in treatment for those who suffer from addiction (Smith & Liu, 2014). Implementation of EBPs has been slow in addiction treatment because of barriers, such as time, training, and resources (Reickmann et al., 2011); providers' characteristics, which include beliefs about addiction (Smith & Liu, 2014); and regard for those who suffer from addiction (van Boekel et al., 2013). Treatment provider's characteristics include beliefs, attitudes, and

self-efficacy toward the EBP as well as their knowledge of the EBP (Damschroder &

Hagedorn, 2011). In this study, I focused on two barriers: (a) beliefs and knowledge

about EBPs and (b) beliefs about addiction.

Treatment providers have implemented EBPs through training and workshops,

online formats, and manual-guided therapies (Benishek, Kirby, Dugosh, & Padovano,

2010). Researchers have investigated what among the various training methods brought

the most significant results; however, the results have varied. According to Manuel et al.

(2011), providers may learn the EBP in a workshop or an online training course, but if the

EBP is incompatible with their background or beliefs, they may be less likely to

implement this EBP into their treatment modality. Manuel et al. suggested that training

for treatment providers may need to adapt to the providers' clinical skills, beliefs, and

motivational levels.

According to the Addiction Technology Transfer Center (ATTC; 2003, 2010),

one problem is the overlap of key terms used in the implementation sciences that may

confuse treatment providers. The ATTC has published online training and articles to

increase awareness and knowledge and decrease the confusion among treatment

providers. Investigating the type of training was not within the scope of this research;

however, I used online training published by ATTC in this study. According to Substance

Abuse and Mental Health Administration (SAMHSA; 2010), the ATTC designed this

training to give treatment providers a conceptualization about the delivery of EBPs and

how these practices can improve their work. This training provided information about the

importance of using EBPs and highlights some key issues related to the implementation of EBPs.

Problem Statement

The treatment for addiction has come from a tradition of wisdom and strong beliefs from individuals in recovery (Miller et al., 2006). These types of approaches may or may not have scientific efficacy (Smith & Liu, 2014). Beliefs and traditions about treatment for addiction are roots in the system and changing those beliefs and methods to EBP is not a simple process (Miller et al., 2006). One barrier that influences a treatment provider's decision to use EBPs is their beliefs about addiction (Smith & Liu, 2014). Other barriers that influence a treatment provider's decision to implement EBPs into their treatment practices are their knowledge and beliefs about the EBPs (Damschroder & Hagedorn, 2011; Sorenson & Kosten, 2011). Additional barriers include training treatment providers within their organizations (Olmstead, Abraham, Martino & Roman, 2012), staff resistance, organizational readiness to change, and resources (Amodeo et al., 2011). These barriers have led to the specific study of research in the implementation of EBP in treatment.

The consolidated framework for implementation research (CFIR) is an organizing model used to build knowledge about what works and why when implementing EBPs in treatment (Damschroder & Hagedorn, 2011). The CFIR brings meaning to key terms in the implementation sciences by organizing these terms into categories. In this study, I focused on the individual characteristics' category within the CFIR model. Damschroder and Hagedorn's (2011) individual characteristics category of the CFIR model includes

five constructs: beliefs and knowledge about the EBP, self-efficacy, individual stage of change, individual identification to the organization, and other personal attributes that include beliefs and attitudes toward addiction. Research addressing the beliefs and knowledge about EBPs and how these constructs affect implementation has been limited (Damschroder & Hagedorn, 2011). In this study, I assessed these constructs to provide information on the effect online training had on treatment provider's beliefs and knowledge about EBPs while controlling for beliefs about addiction.

Purpose

The purpose of this study was to investigate online training, which was the independent variable, and the effect the online training has on the dependent variables of knowledge and beliefs about EBPs. I used the variable of beliefs about addiction as a covariate. In this study, I employed a quantitative, experimental approach. The online training was published and produced by the ATTC (2010) and provides knowledge about EBPs in addiction treatment, the importance of implementing EBPs, and steps to implementing EBPs. According to Damschroder and Hagedorn (2011), there is a need to investigate tools and instruments that increase the implementation of EBPs among treatment providers. The CFIR model has five categories (Damschroder & Hagedorn, 2011);. however, I only focused on two constructs within one category of the CFIR model: individual characteristics. The independent variable had two levels, those who took the online training and those who did not take the online training.

Research Questions and Hypotheses

RQ1: Controlling for beliefs about addiction, does online training published by ATTC affect knowledge of effective treatment practices as measured by the Evidence-Based Practice Questionnaire? (This questionnaire determines knowledge about EBPs in the healthcare field.)

$H_0$1: There is no statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on knowledge about effective treatment practices after attending online training published by the ATTC on EBPs.

H_a1: There is a statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on knowledge about effective treatment practices after attending online training published by the ATTC on EBPs.

RQ2: Controlling for beliefs about addiction, does online training published by ATTC affect beliefs about implementing effective treatment approaches as measured by the Evidence-Based Practice Attitudes Scale among treatment providers?

$H_0$2: There is no statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on beliefs about EBPs after attending online training published by the ATTC about EBPs.

H_a2: There is a statistically significant difference in the mean posttest

scores between the control and experimental group controlling for pretest

scores and beliefs about addiction on beliefs about EBPs after attending

online training published by the ATTC about EBPs.

Framework

Implementation theory is a newer theory (Gonzales, Handley, Ackerman &

O'Sullivan, 2012). Implementation theorists research what works and why in

implementing EBP into real-world settings (Damschroder & Hagedorn, 2011).

Implementation theory is a process model that effectively translates new technologies

into real-world treatment settings (Damschroder & Hagedorn, 2011). The CFIR is one

model in the implementation sciences and was developed to consolidate terminology

from a comprehensive list of constructs that have established efficacy within the literature

of implementation (Damschroder & Hagedorn, 2011). The CFIR model breaks down 39

constructs into five categories: intervention characteristics, inner and outer settings,

individual characteristics, and process (Damschroder & Hagedorn, 2011).

In this study, I focused on one category in the CFIR model: individual

characteristics. Within the individual characteristic category, there are five constructs:

knowledge and beliefs about EBP; self-efficacy; individual stage of change; individual

identification with the organization; and personal attributes, which include beliefs and

attitudes toward addiction (Damschroder & Hagedorn, 2011). The categories identify

implementation efforts, and each category consists of constructs that require investigation

(Sorenson & Kosten, 2011). According to Damschroder and Hagedorn (2011), there is a

need for more information about the constructs of beliefs about EBPs and knowledge of EBPs for the individual characteristic category. One gap within the CFIR model is tools and instruments that can be used to increase the implementation efforts of EBPs. In this study, I examined the use of the online training produced by the ATTC and used this training as a tool within the individual characteristics' category of the CFIR model. By investigating the effect of ATTC online training, the findings of this study provide information on one approach for assessing and analyzing beliefs and knowledge about EBPs.

Nature of Study

For this quantitative experimental study, the control group and the experimental group completed the pretest and posttest. The experimental group watched online training before the posttest. The control group took the posttest after the equivalent amount of time with no online training. The ATTC produced and presented the online training used. The online training uses information from *The Change Book: A Blueprint for Technology Transfer* (ATTC; 2003, 2010). The ATTC (2014) creates publications and other materials to improve technology transfer for health providers. The ATTC is a national network and cooperates with SAMHSA and the Center for Substance Abuse Treatment (CSAT), continuing to create resources to improve the implementation of EBPs. This online training informed participants of what it means to implement EBP, how to implement EBP into their practices, and why using EBP in treatment can improve overall treatment for those suffering from addiction.

The online training was the intervention and the independent variable in this study. The dependent variables were beliefs about EBPs, measured by the Evidence-Based Practice Attitude Scale (Aaron, 2004), and knowledge about EBPs, measured by the Evidence-Based Practice Questionnaire (Upton & Upton, 2006). The disease model subscale of the Short Understanding of Substance Abuse Scale (SUSS) was developed by Humphrey, Greenbaum, Noke, and Finney (1996), and adapted from Moyers and Miller (1993). Smith and Liu (2014) measured the covariate of beliefs about addiction using the SUSS. I used the disease model subscale from the SUSS to measure participant beliefs about addiction.

In this study, I used a convenience sample of treatment providers who were willing to take part in this study. Randomization was used to separate the participants into the control and experimental groups. The inactive control group was selected because, according to Karlsson and Bergmark (2014), superiority of a bona fide treatment compared to no-treatment established in several studies suggests that no-treatment is more effective to show support for treatment effects. At the time of the study, the treatment providers were currently working in an inpatient or outpatient addiction treatment center and worked directly with the clients. The participants were licensed or certified as a substance abuse or mental health counselor. An ANCOVA was used to analyze the main and interaction effects of the covariates on the dependent variables. I used the pretest scores and the subscale disease model scores from the SUSS as covariates to control for participants' beliefs about addiction on their posttest scores. I

used this statistical analysis because it has been shown to obtain more statistical power in detecting treatment effects.

Definitions

Treatment provider: An individual who is licensed or certified as a substance abuse counselor or mental health provider (ATTC, 2011). This individual is currently working in an inpatient or outpatient setting treating individuals who suffer from addiction.

Knowledge: Treatment provider's knowledge about EBPs (Damschroder & Hagedorn, 2011).

Beliefs: The treatment provider's belief toward EBPs as effective treatment approaches (Damschroder & Hagedorn, 2011).

Beliefs about addiction: Treatment provider's beliefs about substance abuse and whether it is treatable (Smith & Liu, 2014).

Evidence-based practices (EBPs): Discrete, flexible therapies that have been shown to have efficacy in the treatment of substance use disorders (Sorenson & Kosten, 2011).

Evident-based treatments: More specialized treatments that have been standardized and have a specific manual-guided approach (Sorenson & Kosten, 2011).

Assumptions

One assumption I made in this study was whether a change in a treatment provider's beliefs and knowledge about EBPs would change a treatment provider's behavior; however, determining whether an online training increases implementation of

EBPs was beyond the scope of this study. I also assumed the participants would answer each question honestly. Another assumption was that participants would watch the online training in its entirety. Participants may have had information about EBPs through conference attendance, which could have affected how they answered the pretests.

Scope and Delimitations

In this study, I investigated just two constructs within one category of the CFIR model, the individual characteristic category. I specifically focused on researching tools and measurements for the CFIR model, which was in need of further research. The research sample was composed of 52 treatment providers from Utah who were working in addiction treatment for 1 year or longer. The primary data gathering method was the pretest and posttest. The intervention and tool that was investigated was online training from the ATTC that addressed and taught the effectiveness of EBPs. I chose the constructs of beliefs and knowledge, which were shown to be barriers to implementing EBPs. The construct beliefs about addiction was similarly related to the dependent variables and was a covariate in this study. The results of this study are generalizable to treatment providers who are: (a) currently working in treatment, (b) in the state of Utah, and (c) have worked with individuals suffering from addiction for 1 year or longer. The results may not generalize to treatment providers in other geographic areas.

Limitations

There were several limitations to this study. One limitation was that participants may have had experience with addiction either personally or from a close family member, which could affect their belief toward substance use and treatment. According to Manuel

et al. (2011), instruments that are self-rated may not be objective when assessing

outcomes because participants may not answer honestly. Another possible limitation was

the time between pretest and posttest; uncontrollable outside interruptions between

pretest and posttest could have affected the results.

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Significance

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In this study, I investigated the effect the ATTC online training had on treatment

provider's beliefs and knowledge about EBPs as defined by the individual characteristics

in the CFIR model. The ATTC (2011) fosters and facilitates communication between

researchers, addiction treatment organizations, and clinicians. The ATTC (2011) creates

publications from research using terms that are easy to understand, raises awareness

about EBPs through presentations and trainings, and helps organizations in making

decisions about EBPs that match their organization's needs and resources. I chose the

ATTC online training because of this organization's efforts to increase the use of EBPs

by providing resources for researchers, trainers, and clinical supervisors. The category of

individual characteristics within the CFIR model separates the constructs of interest and

allowed me to narrow the investigation to show whether online training has an effect on

knowledge and beliefs about EBPs. My thought was if this study showed empirical

evidence affecting treatment provider's knowledge and beliefs about EBPs, then this

training could be used as a recommended training within the CFIR model.

With this study, I also aimed to find instruments to improve the implementation of

EBPs, which would improve a treatment provider's ability to treat those who suffer from

addiction and improve the overall treatment of addiction. This online training may also be

recommended for criminal justice, corrections, health workers, and faith-based personnel that deal with those who suffer from addiction. Treatment for individuals who suffer from addiction needs to be improved to improve recovery from drugs and alcohol. Finding tools that could affect treatment provider's beliefs and knowledge about EBPs is one barrier that could be improved using tools created by organizations such as the ATTC. The stigma about those who suffer from addiction continues; however, treatment provider's learning about effective treatment practices that are evidence-based and implementation of these practices into treatment for individuals suffering from addiction can improve treatment outcomes and reduce stigma about this disease.

Summary

Addiction is a treatable disease. The disease model of addiction has spurred research to increase the efficacy of treatment for addiction. Investigating EBPs in scientific settings, researchers have found practices that have been shown to be efficacious; however, these EBPs are slow to be implemented in real-world settings National Institute on Drug Abuse, (2012). For treatment providers to implement EBPs into real-world settings, continuing to investigate what works and why is necessary (Damschroder & Hagedorn, 2011). In this study, I focused one of the models, the CFIR model, within implementation theory, a process model that brings new technology into real-world treatment settings. According to Damschroder and Hagedorn (2011), the CFIR model is in early development and needs further study and investigation. The CFIR is a contextual model that consolidates terminology that has shown scientific evidence toward the implementation of EBPs and has 39 constructs separated into five categories

(Damschroder & Hagedorn, 2011). In this study, I specifically focused on the category of individual characteristics. According to Damschroder and Hagedorn, the CFIR needs research to determine instruments and measures to improve implementation efforts; therefore, I used an experimental, pretest/posttest, two-group design to investigate the online training published by the ATTC as the independent variable to determine whether this training affected treatment provider's beliefs and knowledge about EBPs while controlling for beliefs about addiction.

In the following chapter, I discuss the history of treatment for addiction, studies showing barriers to implementation of EBPs, implementation theory, models within the theory, and research showing the effectiveness of online training. The CFIR model provides the constructs for investigating instruments and tools in the implementation sciences (Damschroder & Hagedorn, 2011).

Chapter 2: Literature Review

Introduction

Alcohol and substance abuse affect nearly 21 million people aged 12 years old and older per year, and the costs of addiction are nearly $600 billion per year in the United States alone, according to the and NIDA (2017). According to SAMHSA (2017), there are only a handful of individuals who seek help. There are several reasons that those who suffer from alcohol or substance abuse disorder do not seek help, including denial about the severity of their alcohol or substance abuse, fear of the negative response from other people, and lack of confidence that treatment would help (Barney et al., 2006; Schomerus & Angermeyer, 2008; van Boekel et al., 2013). The individuals diagnosed with a SUD may also have co-occurring mental health disorders; among these individuals, there are only about 4% to 13% who can access treatment for both (SAMHSA, 2009; Watkins, Burnam, Kung, & Paddock, 2001; Woo et al., 2012).

There is still a stigma attached to substance and alcohol abuse disorders, and according to van Boekel et al. (2013), general practitioners and psychiatrists have low regard for those who suffer from alcohol or substance abuse disorder. Treatment provider's low regard toward those who suffer from addiction has shown association with anger and fear toward the addicted individual and the individual's lack of personal responsibility for their disease (van Boekel et al., 2013). The moral model of alcohol and SUD stemmed from the premise that those who suffer from alcohol and substance abuse are unable to control themselves (van Boekel et al., 2013).

Alcohol and SUD are treatable; however, there is a high relapse rate (Miller, et al., 2006). The definition of relapse is how often symptoms reoccur, and the relapse rate of addiction is comparable to the relapse rates of diabetes and hypertension (NIDA, 2012). Relapse rates for addiction range between 40% and 60%, which is similar to the relapse rate of Type 1 diabetes, which is 30 to 50% (NIDA, 2012). Many individuals who have gone into treatment for alcohol and substance abuse disorders relapse; however, this does not mean the treatment did not work. It means treatment should be reinstated and readjusted or a different treatment should be tried to help the individual regain control over the alcohol or substance use (NIDA, 2012). Over the last 15 years, treatment has changed for individuals suffering from alcohol and substance abuse, and these changes from treatment providers have come as the disease model became an accepted model for alcohol and substance abuse (Miller et al., 2006).

There are varying views about treatment for alcohol and SUDs, and these views come from professionals who are in recovery themselves and professionals who are not in recovery but treat those who suffer from alcohol and SUDs (Curtis & Eby, 2010). Individuals who are in recovery may use their journey to help others with their substance and alcohol abuse. Amodeo et al. (2011) suggested that the attitudes and experiences of treatment providers who are implementing EBP are relevant. Treatment provider's experience with substance or alcohol use may determine the treatment models for their clients. There is variability among treatment providers over the need to learn new treatments. Treatment providers who have used a 12-step approach have shown to be less interested in the use of other evidence-based behavioral or pharmacotherapies

(McGovern et al., 2004; Miller et al., 2006; Moyers & Miller, 1993; Thomas, Wallack,

Lee, McCarty, & Swift, 2003). According to Herschell et al. (2010), the underutilization

of EBPs in community settings has led organizations to advocate for the implementation

and testing of EBPs and evidence-based treatments. Researchers have highlighted the

need for effective implementation strategies and the lack of data on how to transfer

knowledge from training into real-world settings (Fixsen et al., 2005; Gotham, 2004;

Herschell et al., 2010).

In a now classic article, Kalb and Propper (1976) stated that there are two types of

training approaches: *craft* and *scientific*. In a craft model, the treatment provider learns

from observing and modeling the work of a seasoned provider, and in a scientific model,

the provider is exposed to several treatments and is looking critically at the evidence to

determine the course of treatment (Miller et al., 2006). A survey of 99 directors by

Levinson, Schafer, Sylvester, Meland, and Hansen (1982) showed that providers in a

treatment center for alcohol use disorder preferred to get their information via face-to-

face or the craft model instead of scientific journals, books, or conferences (Miller et al.,

2006). This tradition in treatment is slowly changing as perceptions of EBP change

(Miller et al., 2006; Rogers, 2003).

According to Amodeo et al. (2011), disseminating and implementing EBPs has

been a focus and goal in the addiction field since an Institute of Medicine (1998) report

called for improvement in healthcare through research-based treatments and increased

researcher-practitioner collaboration. Many barriers keep treatment providers from

implementing EBPs. In this study, I focused on beliefs and knowledge of EBP and beliefs

about SUDs from the consolidated framework for implementation research (CFIR)

model. According to Damschroder and Hagedorn (2011), the CFIR is a newer model in

the implementation sciences and uses related implementation theories to consolidate

terminology and concepts within these theories. Researchers use the CFIR model to

evaluate implementation strategies in studies for SUD treatment. The CFIR uses five

categories to provide information about why implementation fails or is partially

successful in guiding future efforts at implementing EBPs (Sorenson & Kosten, 2011).

Th CFIR categories are inner setting, outer setting, intervention characteristics, individual

characteristics, and the process of implementation (Damschroder & Hagedorn, 2011). In

this study, I focused on one of the five categories of the CFIR model, individual

characteristics, which includes beliefs and knowledge about EBPs; self-efficacy;

readiness to change; and personal attributes, including beliefs about addiction from

individual treatment providers (see Damschroder & Hagedorn, 2011).

Organization of the Literature

Chapter 2 is a comprehensive review of the literature on substance and alcohol

abuse treatment. In the first section, I review the disease model of addiction, recovery,

and the role of treatment in SUDs. The second section includes a review and definitions

of treatment providers and EBPs, previous investigations showing barriers to using

practices that are evidence-based, and the role a treatment provider plays in implementing

EBP. The third section contains a review of the implementation of EBP and the current

models that are being investigated to help bridge the gap between science and practice.

Literature Search Strategy

I searched several databases to ensure a better understanding of addiction, past and current treatments, and the implementation of EBP in treatment for SUD. The databases used were PsycARTICLES, PsycINFO, Sage Publications, Google Scholar, and Proquest Articles and Dissertations. The extant research on the barriers to implementing EBPs in SUD treatment was extensive and included a newer model of investigating the implementation of EBPs. The implementation sciences are a newer model of research to determine the most effective routes to disseminate EBP into treatment (Damschroder & Hagedorn, 2011). This literature review includes articles that were relevant to this study. I found limited research about implementation science and implementation models.

The list of search terms used to locate the literature reviewed included *substance abuse treatment, EBP, addiction treatment, alcohol treatment, implementation, dissemination of treatment, barriers, beliefs,* and *attitudes*. I also conducted a search for resources regarding instruments for measuring beliefs toward addiction treatment, knowledge about EBPs, and beliefs about addiction as well as resources for training methods, workshops, power analysis, and ANCOVA.

Disease of Addiction

The disease model of addiction has reduced some of the stigma surrounding alcohol and SUDs (Miller et al., 2006). The disease model was introduced in the middle of the 20th century (Miller et al., 2006). Even with the introduction of the disease model, individuals who suffer from alcohol and SUDs deal with prejudice and discrimination,

are undermined by the criminalization of behaviors associated with the disorder, and

occupy a space in a society that creates shame and disgrace (Gagne, White, & Anthony,

2007). Much of the information in the extant literature is about the disease of addiction

and the problems that surround this disease, while the stories of recovery and how

individuals have recovered are unpublicized (Gagne et al., 2007). The stigma continues

for individuals suffering from addiction because the focus is on the addiction and

associated behaviors (Gagne et al., 2007).

Recovery from Addiction

In both the addiction and mental health fields, the term *recovery* is not defined,

but the vision of recovery is guiding policies in mental health systems, according to

Gagne et al. (2007). Within the addiction field, the term recovery has been used to

organize a construct for transformative change with the focus going toward processes for

long-term resolution of alcohol and SUDs (Gagne et al., 2007). An individual in recovery

is not returning to the premorbid functioning or remission of symptoms but is more about

finding purpose and meaning in life, regaining citizenship, and feeling valued despite

their disease or conditions (Davidson, O'Connell, Tondora, Kirk, & Rockholtz, 2007).

An individual recovering from addiction is in the process of continued growth that is

personal and individualized; recovery also has multiple pathways, not a one-size-fits-all

direction (Gagne et al., 2007). Gagne et al (2007 p. 33) stated "recovery stories tell how

these individuals are active agents in their recovery process and not passive in what

happens to them." Treatment providers who are client centered, offer a choice for

individualized treatment, honor each person's growth, focus on the individual strengths,

and attend to the overall health and wellness of the individual dealing with addiction often use motivational interviewing (MI), which is an EBP (Miller & Rollnick, 2002). This EBP has shown effective outcomes in addiction treatment and allows individuals to be active agents in their recovery process (Miller & Rollnick, 2002). Treatment providers using EBPs, such as MI, have shown them to be effective in the long-term recovery of addiction; however, addiction treatment is not to the point of focusing on assisting individuals to be progressive in their recovery (Gagne et al., 2007). According to Glasner-Edwards and Rawson (2010), increasing training and information about EBPs enhance addiction treatment and improves treatment outcomes. According to Gagne et al. (2007), the focus of treatment has been on the pathology of problems, such as individuals ending up in the least desirable places in society, financial problems, familial problems, and criminalization of behaviors associated with addiction. EBPs focus on coping skills and tools to deal with life pressures instead of focusing on the specific problem of alcohol or substance abuse (Hershenberg, Drabick, & Vivian, 2012). Two of these EBPs that focus on coping skills and tools are cognitive behavioral therapy and interpersonal psychotherapy (Hershenberg, et al., 2012). Assisting individuals with recovery means changing the focus of treatment to an EBP to improve treatment outcomes (Amodeo et al., 2013; Glasner-Edwards & Rawson; Institute of Medicine, 1998, 2006). However, the implementation of EBPs continues to be a struggle for treatment providers.

Defining Treatment Providers

For this study, the term, treatment provider, referred to those individuals who hold a license or certificate to provide SUD treatment. Another term used is staff members,

who are those who work directly with clients in day-to-day activities. Some facilities may use the term front line staff, direct care staff, or residential counselors to refer to staff members. Staff members do not have any licenses or certificates. Many staff members may have experience with SUD or may pursue education to be a treatment provider. Staff members are running the day-to-day schedule and assisting in maintaining the structure of the program.

Many treatment providers have personal experiences with alcohol or substance abuse and may be in recovery themselves (Curtis & Eby, 2010). A treatment provider's personal experience may affect the way this profession views recovery because a treatment provider in recovery may give personal experiences with recovery more credit than an EBP (Curtis & Eby, 2010). A treatment provider's personal and professional identities align in the field of alcohol and substance abuse treatment and create a unique situation (Curtis & Eby, 2010). Treatment providers who are in recovery themselves may identify more strongly with their work and beliefs about treatment than professionals in other fields (Curtis & Eby, 2010). Many substance abuse treatment settings employ counselors based on their own experiences and not based on educational background (Heinrich & Cummings, 2014). Employing counselors this way can limit clinical exposure to EBPs and increase the level of skepticism toward EBP (Campbell, Catlin, & Melchert, 2003; Horvatich, 2006; Mulvey, Hubbard, & Hayashi, 2003; Woo et al., 2012).

The treatment provider's belief toward addiction and treatment for addiction has come from the premise "tear them down to build them up" (Tiebout et al., 1963; Miller et al., 2007, p. 4). Tiebout's writings and lectures spurred this belief early on. Tiebout

suggested that therapists could help the recovery process by confronting narcissistic and faulty reasoning. Tiebout's premise about "tearing someone down to build them up" began treatment provider's use of harsh confrontation in counseling in the 1950s. Treatment providers supported these techniques, which were never scientifically supported, and thought of as problems of countertransference. This model of treatment became the treatment approach and remains today (Miller et al., 2007). Treatment provider's beliefs about addiction and confrontational approaches are from four assumptions: a) addiction is rooted in immature, defective characters encased in an ego-based defense mechanism, b) the passive methods of psychotherapies are ineffective in decreasing the defensive structure and altering the defective characteristics, c) the addict is reachable by a dynamic charge that breaks through this defense mechanism, d) verbal confrontation is the most effective means of engaging and changing the addicts behavior (Bassin, 1975; Miller et al., 2007). The treatment approaches that have come from Tiebout's premise have been shown to have harmful effects (Miller et al., 2007). However, this belief continues today.

Treatment providers may hold contradictory beliefs about addiction which may conflict with best treatments for addiction (Luke et al., 2002). Treatment provider's beliefs about addiction and approaches for treatment may come more from their own personal experiences of addiction and not from a scientific approach (Luke et al., 2002). Treatment provider's beliefs about addiction also determine the model of treatment they use. The models are AA, disease, and moral models. These models share one common belief and differ in other beliefs. The common belief is alcohol and substance users are

unable to control their use. The differing beliefs are as follows: the disease model is different from the AA model on the belief that recovery requires help from a professional, and the moral model aligns with addiction as a character weakness instead of a biological basis for the addiction (Luke et al., 2002). Treatment provider's experiences, knowledge, and perceptions form their beliefs about addiction influence the model of treatment the provider uses (Curtis & Eby, 2010).

Treatment providers working in addiction treatment may lack the training to assess and provide treatment for co-occurring mental health disorders. There is a large number of individuals with a co-occurring mental health disorder, and many treatment provider's lack the training to recognize or treat mental health disorders (SAMHSA, 2009; Woo et al., 2012). Individuals suffering from addiction need appropriate treatment for co-occurring disorders. This treatment is critical because of the associated effects such as greater severity of substance abuse, increased risk of suicide, poor treatment response, and decreased recovery rates (Aharonovich, Liu, Nunes, & Hasin, 2002; Davis et al., 2006; Rush et al., 2005; Saatcioglu, Yapici, & Cakmak, 2008; Watkins, Paddock, Zhang, & Wells, 2006; Woo et al., 2012).

Another interesting claim about treatment providers in the alcohol and substance abuse counseling field is that about half of the counselors hold either a license or certificate to counsel and the other half are in recovery themselves and do not have any formal education or training (Curtis & Eby, 2010). According to Bride, Kintzle, Abraham, and Roman (2012), treatment providers with a higher level of education are more likely to implement EBPs. Some studies have investigated the possible link to

treatment providers who do not have formal training or education and how this affects the

implementation of EBP (Curtis & Eby, 2010). According to Amodeo et al. (2011), only a

few studies have assessed limitations in implementing EBP among staff members

(Brown, 2004; Godley et al., 2001; Riley et al., 2008). Brown (2004) interviewed

treatment staff involved in the CSAT Methamphetamine Project as one form of

treatment. This study identified that a lack of knowledge and lack of time were factors in

the implementation of EBP. Godley et al. (2001) interviewed 16 therapists and 3 case

managers to compare five manual-guided therapies in a multisite field experiment. The

findings showed that treatment provider flexibility, client adapting to the intervention,

characteristics of the intervention, and provision for adequate time to learn the model

were all factors in implementing the manual-guided Evidence-based treatment. Riley et

al. (2008) used a qualitative design to chronicle an EBP implemented into nine program

sites for adolescents. The authors used interviews to collect data about the protocol of the

EBP. The findings showed that eight out of nine programs made significant changes to

the protocol of the EBP to fit their program and client needs.

Treatment Providers and EBPs

Treatment providers may be asked to utilize EBP. However, there may be

attitudinal barriers that would influence the implementation of EBP (Amodeo et al.,

2011). When a treatment provider experiences EBP as a burden or their perception of the

EBP is negative, implementation of the EBP may be more difficult (Amodeo et al.,

2011). The goal is to implement EBPs into treatment for addiction, however, if there are

negative responses among the provider, counselor, and supervisor this could negatively

affect the adoption of EBPs (Amodeo et al., 2011). When a treatment provider is considering an EBP to implement into treatment, some of the barriers to consider are the amount of time the practice would take to learn, resources that would be needed, and whether this new practice aligns with current beliefs of the treatment provider (Amodeo et al., 2011).

In 1998, the Institute of Medicine (IOM) called for greater improvement in health care using research-based treatments and increased researcher-practitioner collaboration (Amodeo et al.,2011; IOM, 1998). The improvement called for by the IOM has been a slow process, moreover, determining the barriers that impede implementation of EBP continues to be researched (Amodeo et al., 2011).

Treatment Models

Treatment was nonexistent until a group of individuals who were looking for help from the medical community were turned away and formed a support group to help other individuals who are suffering from alcohol and SUDs (Miller et al., 2006). These individuals formed Alcoholics Anonymous (AA) and are considered the treatment for addiction (Smith & Liu, 2012). From the wisdom of individuals who formed AA, came 12-step facilitation which has shown effectiveness in treatment settings according to, Benishek et al. (2009). However, according to White and Miller (2007), verbal confrontation also came from the AA model and had shown to have a negative effect on treatment for addiction. There have been researchers studying confrontational counseling, motivational interviewing, 12-step facilitation, relapse prevention, and contingency management, comparing the effectiveness of these models used in substance use disorder

treatment. Findings from White and Miller showed confrontational counseling has harmful effects in vulnerable populations, and earlier studies linked verbal confrontation to negative effects (Loneck et al., 1996; Miller et al., 1993; Benishek et al., 2009). There is also little information about what happens in actual treatment sessions since most community-based treatment facilities do not record or video sessions according to Smith and Liu (2014). This lack of knowledge can make it difficult to know whether traditional techniques, EBP, or both are used in actual sessions (Gifford et al., 2012; Smith & Liu, 2014). There is research comparing treatment models, however, to understand and evaluate these treatment models more knowledge about routine practice is needed (Smith & Liu, 2014).

EBPs and Treatments

Since the introduction of the disease model of addiction, science has begun to investigate treatment models that have been found effective in the recovery of alcohol and substance abuse disorders. These practices are considered EBPs (Cunningham, Henderson, Niccols, Dobbins, Sword, & Chen,…Schmit, L., 2012). The American Psychological Association Presidential Task Force on Evidence-based Practice (2006) defined EBP as the combination of available research and clinical expertise in the framework of patient needs to be based on their characteristics, culture, and preferences. The definition of EBP is treatment models and interventions informed by evidence through clinical expertise, as well as patient needs, values, and preferences, and the ability to integrate these models into individual care (Herschell, Kolko, Baumann, & Davis, 2010; Kazdin, 2008). Since the introduction of the disease model, there is an

improvement in alcohol and SUD. However, among treatment providers, there is still

hesitancy in utilizing EBP. One reason for this hesitancy is that EBP is a broad construct

that includes many treatment interventions and their effectiveness (Hershenberg et al.,

2012). These interventions are evidence-based treatments that are tested through

randomized control trials to test the effectiveness (Damschroder & Hagedorn, 2011;

Treweek & Zwarenstein, 2009). According to Manuel et al. (2014), evidence-based

treatments examples are cognitive behavioral therapy, motivational interviewing,

contingency management, and 12-step facilitation. Health services focused on the EBT

effectiveness, and implementation science is concerned with the scientific study of how

these interventions are going from clinical knowledge to real-world use (Damschroder &

Hagedorn, 2011; Rubenstein & Pugh, 2006). This study focused on the implementation

sciences by using the CFIR model (Damschroder & Hagedorn, 2011). The CFIR model,

as previously defined, is broken up into five categories. The categories systematically

address each component for the successful implementation of an EBP (Sorenson &

Kosten, 2011). The CFIR is in the early stages of development, and quantitative data is

needed to answer questions the developers have about each category (Damschroder &

Hagedorn, 2011). One question the developers have asked is about the category of

individual characteristics and how the barriers of beliefs and knowledge about EBPs,

self-efficacy, readiness to change, and personal attributes, which include belief about

addiction affect implementing EBPs (Damschroder & Hagedorn, 2011). This study

focused on answering the research questions about beliefs and knowledge about EBPs

while controlling for beliefs about addiction to determine whether online training affects

these constructs. According to Sorenson and Kosten (2011), the CFIR model has the potential to show how characteristics of individuals determine whether an EBP was implemented successfully or not.

Hershenburg et al., (2012) organized EBP into three sections or components. These components are research evidence, clinical expertise, and client characteristics. Researchers investigated these components for the advances and gaps in the literature. The authors then came up with recommendations for training within the education system for doctoral students in the psychology field. The authors recommended that educators who are teaching students adopt EBPs into their teaching. The recommendations were to focus more on how and what gets taught to help students learn to assess and analyze data to take into real-world settings. The authors also suggested training variables that are associated with increases in providers' competency in EBTs and client outcomes (Hershenburg et al., 2012). The recommendation from researchers is utilizing the data from client outcomes within a clinical setting to do the research. This recommendation may help bridge EBPs into real-world treatment settings (Hershenburg et al., 2012).

Implementation of EBPs

For treatment providers making the transition from traditional techniques to EBPs can be a slow process (Cunningham et al., 2012). There are many reasons that EBPs are slow to be implemented into treatment for alcohol and SUDs. Research has shown that treatment provider's attitude, biases, and personal beliefs (Cunningham et al., 2012), personal experience with addiction (Reickmann, Bergmann, & Rasplica, 2011), education and licensure (Curtis & Eby, 2010), low regard for those suffering from alcohol and

substance abuse disorders (van Boekel, 2013), and lack of time, training, and resources (Reickmann, Farentinow, Tillotson, Kocarnik, & McCarty, 2011) are factors that affect a treatment provider's decision to implement EBPs into their treatment practice.

According to Bride et al. (2012), treatment provider's level of education was correlated highly with the implementation of EBP. The authors investigated the level of education and implementation of EBP and found that those with a higher level of education were more likely to implement EBP. According to Carroll, Martino, and Rounsaville (2010), treatment provider's overestimate the amount of EBP delivered. Carroll et al. found differences between observation of the implementation of EBP and self-rated scores from treatment providers. Independent observers scored each treatment provider's session on the use of EBPs. The study audiotaped 379 treatment sessions. The treatment sessions were given ratings by 15 independent raters who were unaware of the treatment type. The researchers compared independent rater scores and the self-ratings from the treatment provider. The findings showed that less than 5% of the sessions used EBP and the EBP most often used was CBT, and 12-step facilitation (Carroll et al., 2010). The researchers showed that treatment providers tend to rate themselves higher than the independent observers did (Carroll et al., 2010).

Many treatment provider's worry that using EBP decreases the therapeutic alliance with their client especially since many EBP come from published manuals (Bearman, Wadkins, Bailin, & Doctoroff, 2014). Bearman et al. (2014) also suggested that incomplete knowledge about EBPs has shown to be an obstacle. The biggest challenge to implementing EBP according to a survey of 1,630 treatment providers, is the

high cost of training and lack of training resources locally (Bearman et al., 2014; Cook, Biyanova, & Coyne, 2009). Some researchers have found that training and workshops do not change treatment provider's behavior or facilitate adequate proficiency with new interventions or EBP (Bearman et al., 2014; Beidas & Kendall, 2010; Herschell et al., 2010). According to Bearman et al., there are still questions and recommendations to find out what works in the implementation of EBPs and how to change the treatment provider's behavior toward implementing the EBP (Bearman et al., 2014). Authors suggest rigorous trials in real-world settings to gain information about workshops and training. This study used treatment providers currently working with individuals who suffer from addiction and investigated the effects online training had on their beliefs and knowledge about EBPs. I used the category of individual characteristics in the CFIR model to investigate online training as a tool for this category.

According to Bearman et al. (2014), psychology students were given the Modified Practice Attitude Scale before and after class in EBP, which is a required class, to determine whether education influenced attitude toward EBPs. The graduate students in clinical, counseling and school counseling showed significant changes in attitude toward EBP from time one and time two. Students in bachelor level psychology courses showed slight changes between time one and time two (Bearman et al., 2014). The participants' change from time one to time two ties into the research suggesting that the level of education may play a role in attitude toward EBP. More information is needed to determine what may help change the attitude of treatment providers toward EBPs

(Aarons, 2004; Patterson, Maguin, Ramsey, & Stringfellow, 2014; Stahmer & Aarons, 2009).

In one study Herschell et al. (2010) reviewed 55 studies and evaluated six training methods of EBPs. This study showed a variety of training methods including self-directed study, pyramid training, written material, and web-based training, and workshops. The methods used were group comparison, pre- and posttest, single subject, survey design, comparison study and time series. The clinical settings were 32 California treatment centers. Findings showed follow-ups to training improved adoption of EBP over reading written or web-based material or attending workshops without follow-up (Herschell et al., 2010). This study reviewed research from 1990 to 2010. The study was designed to help define characteristics of EBP for counselors, psychiatrists, psychologists, support staff, nursing staff for mental health and substance abuse populations (Herschell et al., 2010). The EBPs in this overview included medication interventions, motivational effectiveness training, solution-focused treatment, contingency reinforcement management, matrix model, and voucher-based reinforcement therapy. This study evaluated six training methods and found that further research is needed to test specific training models such as web-based material and workshops. Investigations and recommendations from continued rigorous trials which would include a representative sample of clinicians and follow-up assessments would provide information for effective training methods and materials. According to Herschell et al. (2014), conducting rigorous trials would give evidence-based training strategies for

implementing EBPs. This study investigated one training strategy to determine the effect it had on treatment provider's beliefs and knowledge about EBPs.

Agency directors' perspectives also suggested that provider resistance, access to EBP research, and training costs are challenges (Tuchman & Sarasohn, 2011). Many agency directors think about their workers as developing where new therapists and interns offer information about EBPs, and long-time providers tend to be stuck in a rut of how they always do things and are resistant to try new approaches (Proctor et al., 2007; Tuchman & Sarasohn, 2011).

Barriers to Implementation of EBP

Some studies suggest that successful implementation of EBP takes engagement from administrators, treatment providers, and treatment staff to create an environment that administers the EBP (Fixsen et al., 2005; Tuchman & Sarasohn, 2011). Further studies of treatment provider's perspectives and experiences of treatment interventions are needed especially from program workforce perspectives (Herbeck, Hser, & Teruya, 2008). According to Tuchman and Sarasohn (2011), barriers to implementing EBPs into an organization are motivation, caseloads, supervision and support, readiness to change as an organization, and the organizational culture.

According to Tuchman and Sarasohn (2011), EBP has gained increased attention. However, the challenges to implementing these practices have made it difficult to transfer into real-world settings. Agency directors indicate limited access to research, provider resistance, and training costs as challenges to implementation (Tuchman & Sarasohn, 2011). Authors Tuchman and Sarasohn used a semi-structured interview of staff and

residents across variations of program processes. Experts of the motivational therapeutic

community (MTC) trained staff members, however, during this training, there were staff

changes that may have affected the outcome of this research. The interviews lasted 45 –

60 minutes. Twenty staff and residents participated. The interview transcripts were

organized and coded in the Grounded theory technique following Strauss and Corbin

(1998) model. The questions interviewers asked staff were "what were you told? What

have the experts communicated to the staff? Did you feel prepared for the changes

made"? (Tuchman & Sarasohn, 2011, p. 109). Staff interviews suggested that

implementing some of the MTC skills offered more choices, increased individualization

of services, and often felt overwhelmed and confused. However, there was an increased

reliance on staff support instead of peer support. Most staff reported feeling inadequately

prepared and had inadequate resources to facilitate MTC; as well as being hampered by

time, communication, and training (Tuchman & Sarasohn, 2011). Authors found that lack

of training and resources; staff feeling uninformed enough to be efficient at providing

MTC, and administrators lack a clear vision of the service model implemented hampered

implementation. Treatment providers need motivation and access to material to change

their traditional approaches. This material needs to come from the leadership of the

facility or agency.

     Researchers suggest other barriers to implementation of EBP may be trying to

combine EBP with other treatment approaches (Smith & Liu, 2014). For clients, this may

feel confusing because cognitive-behavioral and motivational interviewing approaches

help clients become empowered and gain control of their life, and traditional treatment

encourages surrender and powerlessness (Miller, 2008; Smith & Liu, 2014). These two approaches can be conflicting and if the treatment provider aligns with traditional treatment approaches it may be difficult to implement other models that have shown empirical evidence (Smith & Liu, 2014). However, there may be room for both models in the treatment of addiction.

According to Smith and Liu (2014), implementing EBP may or may not involve getting rid of former practices. When a treatment provider is utilizing motivational interviewing and cognitive behavioral therapy it is also possible the provider uses traditional techniques too. Gifford et al. (2012) found that a treatment provider adopts EBP components to their existing practices. A treatment provider who is utilizing a 12-step approach may also overlap their treatment with a cognitive-behavioral relapse prevention approach. The findings suggest that there are EBP clusters implemented by treatment providers and not adherence to a purely theoretical model. Adherence to a purely theoretical model seems to be more important to the treatment developers than it is to the treatment providers who tend to focus on helping clients initiate abstinence, become engaged in treatment, and activate recovery behaviors to maintain recovery (Gifford et al., 2012).

Controversy About EBPs

Pearson et al. (2012) did a meta-analysis of NIDA's Principles of alcohol and substance abuse treatment as part of the evidence-based principles of treatment (EPT) project. Pearson et al., found several practices that show evidence of effective treatment for alcohol and substance use disorders. The practices found to be effective are: matching

treatment to clients' needs and attending to multiple needs of clients, e.g., counseling for the risk of HIV. Other effective practices are using a therapeutic community, contingency management, and cognitive behavioral therapy as counseling approaches, and treatment plan evaluations and reassessments as necessary.

According to Pearson et al. (2012), cognitive behavioral therapy is founded on learning theory principles. However, there is not one specific protocol for cognitive behavioral therapy, and many of the treatment goals differ, e.g., skills training, relapse prevention, behavioral analysis, or cognitive restructuring. The authors found cognitive behavioral therapy to have the smallest effect size and received the least marginal support in their meta-analysis. One reason for this is that treatment providers may utilize certain aspects of this model instead of using the treatment model. Cognitive-behavioral therapy has shown effectiveness in other studies which may attribute to utilizing certain aspects of CBT such as relapse prevention (Pearson et al., 2012). Understanding which parts of CBT offer the most effective treatment and implementing these practices into treatment may increase the effectiveness of cognitive-behavioral therapy as an EBP.

For individuals suffering from addiction, there is not a specific treatment model. However, some EBPs have been shown to be effective. The treatment system for alcohol and substance abuse disorders needs to use effective treatment protocols to improve overall treatment and reduce the stigma of treatment for those who suffer from alcohol and substance use disorders.

The controversy over what EBP is and is not can also be confusing for treatment providers. A treatment provider lacks knowledge about EBPs adds to this confusion.

Treatment provider's lack knowledge about the empirical support for EBPs is one reason

EBP is less frequently used (Benishek et al., 2010). According to Sorenson and Kosten

(2011), most treatment providers are ideologically committed to a certain treatment

model based on their personal experience. When a treatment provider has a preferred

treatment model, and the model conflicts with a newer EBP, the implementation of this

EBP results in implementation failure (Sorenson & Kosten, 2011).

Some research suggested that utilizing 12-step facilitation in treatment has been

shown to be effective (Benishek et al., 2010). According to, Tuchman and Sarasohn

(2011), a primary role of the 12-step model is to guide a new member through the

prescribed 12-step process as well as to gain social support for abstaining from alcohol

and drugs. An individual's involvement in 12-step facilitation has been shown to predict

their ability to abstain from alcohol following treatment (Cloud, Rowan, Wulff, &

Golder, 2007; Fiorentine, 1999; Fiorentine & Hillhouse, 2000a; Moos, Schaefer,

Andrassy, & Moos, 2001). When researchers compare 12-step facilitation to other

treatment models such as cognitive behavioral therapy, findings showed 12-step

facilitation and CBT overlap (Gifford et al., 2012). Identifying areas of overlap with

EBPs may provide a foundation in implementation efforts (Gifford et al., 2012).

There are EBPs that have shown efficacy in treatment for addiction; there are also

treatment models used by treatment providers that are not validated scientifically. For

administrators and treatment providers one barrier to implementing EBP is that EBPs are

not well known, and treatment providers do not have sufficient knowledge to feel

comfortable in implementation (Benishek et al., 2010). This study investigated whether online training about EBPs affected knowledge about EBPs.

Benishek et al. (2010) interviewed program directors and counselors and found that 38% of the program directors and 48% of the counselors were not familiar with contingency management which has shown to be efficacious as an EBP. There were Veterans Administration administrators who knew about contingency management and its efficacy but had not implemented this EBP into their treatment program (Benishek et al., 2010; Willenbring et al., 2004). According to, Roger's theory of diffusion, treatment provider's perceive certain types of relationships between their current practices and a newer EBP. Roger's theory predicts that providers evaluate whether the newer EBP is compatible with their existing practice and if the new practice brings benefits beyond what their current practice brings (Gifford et al., 2012; Rogers, 2003). The system of addiction treatment is a conglomerate of treatments used in the past, ideological differences, and scientifically supported treatments.

Improving the system of treatment for alcohol and substance abuse disorders has brought on a newer wave of research dedicated to the implementation of EBPs. Researchers are finding a way to incorporate effective treatment practices into real-world SUD treatment services. For treatment providers implementing EBP into SUD, treatment services do not need to take away the therapeutic alliance or expertise. Instead, it is an overall improvement in the system of treatment for alcohol and substance abuse.

Implementation Theory

Implementation theory is the science of implementing EBPs and EBTs into real-world settings according to Sorenson and Kosten (2011). Implementation science introduces readers to the main concepts of the theories and the roles in advancing science (Damschroder & Hagedorn, 2011). There are several organizing frameworks to build knowledge about what is working, where, and why. According to Damschroder and Hagedorn (2011), implementation requires a steady push of investigation that provides evidence-based implementation activities to get the evidence-based clinical intervention into use, along with consideration to the need of establishing external validity.

Defining both EBP and EBT for this section is essential because of the terminology in the implementation sciences (Sorenson & Kosten, 2011). EBTs are specific interventions that are standardized, and providers adhere to a manual-guided approach; EBP is flexible therapeutic techniques that may include components from an EBT. An example of an EBP is 'rolling with resistance' which comes from the EBT of MI. Rolling with resistance is a component of MI and used with clients who are resistive to treatment (Miller & Rollnick, 1993; Sorenson & Kosten, 2011). MI is an EBT that has a standardized approach delivered from a published manual and adherence is specific to a set number of weeks (Sorenson & Kosten, 2011). Many substance use programs use parts of an EBP instead of the whole EBT package because of the conflict between treatment provider's beliefs about treatment and disagreement with the EBT package (Read, Kahler, & Sorenson, 2001; Sorenson & Kosten, 2011). One example of this conflict is introducing a medication for opiate-dependent clients in a facility that is abstinent-based.

There may be treatment providers who recovered without the use of medications and struggle with the thought of medication to aid in recovery (Sorenson & Kosten, 2011). For providers who believe in abstinent based treatments, introducing a medication can cause conflict with their beliefs. According to Lehman, Becan, Joe, Knight, and Flynn (2012), when there are negative beliefs about the EBP or EBT implemented treatment providers are less likely to adhere to the model.

Researchers' progress in the study of substance use treatment has been difficult because different models do not consider the same factors and differ in study outcomes, label the variables differently, so the terminology becomes incompatible across models (Sorenson & Kosten, 2011). There may be a need to unify these terms to the implementation sciences. One model that is beginning to do just this is the CFIR. According to Sorenson and Kosten (2011), CFIR allows descriptions of change that are directed from the top or comes from the bottom of the changing hierarchy.

Implementation researchers are concerned with "scientific investigation" that supports the movement of clinical knowledge into routine clinical use (Damschroder & Hagedorn, 2011; Rubenstein & Pugh, 2006). A breakdown in assessing and understanding the implementation trial can lead to the conclusion that an EBP is not effective under clinical conditions. Therefore, an important ingredient is to know the difference between implementation processes and effectiveness outcomes (Damschroder & Hagedorn, 2011).

The ATTC is an organization focusing on integrating EBPs with addiction treatment. The ATTC provides training, material, and key terms to improve

understanding and consensus regarding the direct meaning and conceptual relationships

between technology transfer and implementation of EBPs into treatment according to, the

ATTC Network Technology Transfer Workgroup (2011). The ATTC along with

SAMHSA provides workforce development for promoting research-based interventions

for addiction treatment. Experts in implementation sciences combined with national and

regional reach situate the ATTC Network to facilitate the integration of addiction services

(Sacks, et al., 2016).

Models and Theories in Implementation of EBP

There are process theories that are active or prescriptive theories and discuss how

implementation should be planned, organized, and scheduled and explanatory theories

which are descriptive theories and describe how change occurs and what influences

change (Damschroder & Hagedorn, 2011; Grol, Bosch, Hulscher, Eccles, & Wensing,

2007). An example of a process theory is the Ottawa Model of Research Use, which

assesses barriers and facilitators before implementation, monitors the intervention and

degree of use during implementation, and evaluates outcomes (Damschroder &

Hagedorn, 2011; Graham & Logan, 2004). An example of the explanatory theory is

Roger's diffusion of innovations theory (Damschroder & Hagedorn, 2011; Rogers, 2003).

Roger's theory suggests that the more complicated the innovation, the probability that it

spreads through the organization lessens. One theory by Mendel and colleagues (2008) is

a model where there are elements of both processes and explanatory theories for

implementing interventions in community settings (Damschroder & Hagedorn, 2011).

This model recognizes stages of diffusion which are adoption, implementation, and

sustainment as well as the many levels that need consideration from the macro system components such as, policies, economic considerations, and outside organizations such as special interest groups (Damschroder & Hagedorn, 2011).

Authors have recognized the contextual barriers and facilitators in models that influence implementation (Damschroder & Hagedorn, 2011). According to, Lehman et al. (2012), the authors provided an outline for introducing EBP within the broad range of situations encountered by public and private substance use disorder treatment centers. This outline showed areas where the CFIR model can help identify possible barriers to organizational and provider change (Sorenson & Kosten, 2011).

According to Damschroder and Hagedorn (2011), areas to be developed are (a) intervention characteristics, a construct measuring the intervention source, (b) outer setting construct addressing peer pressure from competing agencies and external policies and incentives to make changes, (c) inner setting construct describing structural characteristics, organizational culture, and the reward system for using the intervention; (d) characteristics of individuals such as beliefs and knowledge about EBPs, the individual stage of change, and personal attributes such as beliefs about addiction that affect willingness to change, (e) process area which has to do with internal implementation leaders, external change agents, and executing the planned change.

Implementation theory is a focus of study that establishes evidence-based implementation activities intended to get the EBP into clinical use with consideration to the need for external validity (Damschoder & Hagedorn, 2011). These investigations support the movement from the clinical knowledge to routine use (Damschroder &

Hagedorn, 2011; Rubenstein & Pugh, 2006). If a treatment provider has incomplete

knowledge, uses too much or too little of the intervention, uses a nonstandard variable of

the intervention across the patient, provider, or setting, or uses the wrong intervention,

the result could be a low rate of translation into routine use (Damschroder & Hagedorn,

2011). One highlight of EBP implementation is that when a provider implements EBPs

provider differentiates between processes and effectiveness (Damschroder & Hagedorn,

2011; Fixen et al., 2005). The process explains whether the intervention is being

implemented as designed and effectiveness explains whether the intervention has

effective outcomes. The CFIR model is a process model according to Damschroder and

Hagedorn (2011).

Consolidated Framework for Implementation Research

There is an effort among researchers in the implementation theory to consolidate

and unify terminology and concepts in these theories, and the CFIR is a practical and

comprehensive construct that is establishing evidence-based in the literature

(Damschroder & Hagedorn, 2011). Many theories in implementation have a lot in

common. However, constructs and definitions vary across theories and many times

different terms are used to describe similar constructs which can confuse providers

(Damschroder & Hagedorn, 2011).

The CFIR model has five main domains: intervention characteristics; outer

setting; inner setting; individual characteristics; and implementation process

(Damschroder & Hagedorn, 2011). The CFIR model enables a complex array of

influences on implementation by pulling together many scientific disciplines into a single

pragmatic framework. This model helps with differing definitions and terms that describe the same construct (Damschroder & Hagedorn, 2011).

Within each of the five domains, there are constructs put together from a shared perception from local stakeholders on what influences implementation (Damschroder & Hagedorn, 2011; Greenhalgh et al., 2004; Weiner, 2009). A brief explanation of each of the five domains and the constructs were reviewed; however, this study, the focus was on the category of individual characteristics.

The first domain is the characteristics of the intervention, which is about how complex the intervention is. The first domain includes multiple roles in the organization, interventions advantage over other interventions if the intervention needs to be piloted before a full-scale launch of the intervention, whether the intervention can be adapted, and the strength and quality of the evidence supporting the intervention. Characteristics of the intervention also consider clinical and patient experience, and the design, packaging, and cost of the intervention (Damschroder & Hagedorn, 2011; Rogers, 2003; Rycroft-Malone, 2004).

The second domain is the outer setting, which is the extent organizations have an accurate knowledge of patient needs and resources and the priority placed on these needs (Damschroder & Hagedorn, 2011). An example of outer setting in SUD treatment is showing individual therapy as required for effective outcomes. However, many treatment centers only provide group therapy because it is less expensive. The influence of the outer setting needs consideration before the implementation of an EBP; other

considerations are designing approaches that sustain this environment (Damschroder & Hagedorn, 2011).

The third domain is the characteristics of the inner setting which is a set of complex factors involving the team, individual providers, clinics, and multiple levels of factors considered (Damschroder & Hagedorn, 2011; Plesk & Greenhalgh, 2001; Weiner, 2009). Other factors considered are size and age of the organization, social architecture, cultural climate, implementation climate, implementation readiness, nature, and quality of communication within the setting, and relational networks (Damschroder & Hagedorn, 2011).

The fourth domain is the characteristics of the individual. The fourth domain places categories of treatment provider's characteristics such as, knowledge and beliefs about EBPs, the level of confidence in using the intervention, individual readiness to change, organizational commitment to change, and personal attributes which include beliefs about addiction and capability to change (Damschroder & Hagedorn, 2011). This study investigated knowledge and beliefs about EBPs while controlling for beliefs about addiction among individual providers within the category of characteristics of individuals.

The fifth domain is Intentional implementation which is about the implementation process itself (Damschroder & Hagedorn, 2011). The specific plan in which the implementation of intervention should depend on the underlying theory used to help guide the plan. One example of this type of theory is the Plan-Do-Study-Act (PDSA) which comes from the Institute for Healthcare Improvement (2003).

Other Implementation Models

Other theories that have provided information for implementation strategies are Roger's (2003) diffusion of innovations theory a descriptive theory discussing how ideas spread either spontaneously or intentionally. Rogers considers four main factors in his theory. The factors are as follows: (a) the innovation or the idea which is viewed as new by the individual, or clinic, (b) communication channels and how the information gets from one person to another, (c) rate of adoption or the speed the innovation is adopted, and (d) social systems and how the system engages in problem-solving to accomplish the common goal (Damschroder & Hagedorn, 2011).

The Organizational Readiness to Change is a theory from Simpson and colleagues which study the organizational factors on adopting EBP in SUD (Damschroder & Hagedorn, 2011). Researchers used instruments to measure characteristics of organizational readiness to change and help identify barriers and facilitators for adopting EBP (Damschroder & Hagedorn, 2011; Lehman, Greener, & Simpson, 2002; Simpson & Dansereau, 2007). These instruments look at a four-step change model. The first step exposes users to the new practice through a workshop or intervention. The second step looks at the leadership decision and whether to adopt based on organizational needs. The third step is implementing the new practice using an exploratory approach to access staff and patient response. The fourth step uses the new practice routinely by targeted users (Damschroder & Hagedorn, 2011; Simpson, 2002; Simpson & Dansereau, 2007).

According to Greenhalgh et al. (2004), a conceptual model which included the steps from Simpson's model and characteristics and innovations from Rogers's model

was used to examine 500 articles. There was only one article that used this conceptual

model to guide implementation strategies (Bradley & Williams, 2009; Damschroder &

Hagedorn, 2011). There are many factors to consider when implementing an EBP into

SUD treatment, and while implementation theories are developed, there are missing

factors among these theories. The CFIR model has been developed to assist in using all

constructs in the context of the implementation of EBP in SUD treatment. Decision-

makers can use this construct to prioritize where to apply resources to help reduce

barriers when implementing EBP (Damschroder & Hagedorn, 2011).

Most clinical trials do not provide sufficient information about precise details of

the intervention, and social-science-based studies provide very detailed information about

single or small samples of cases (Damschroder & Hagedorn, 2011; Davidoff, 2009). The

challenge is to synthesize these studies which are what the CFIR model can provide

(Damschroder & Hagedorn, 2011). This framework can provide a way to organize

findings of context which presents a systematic approach to assessing and reporting all

five domains of influences in the implementation of EBP. More information,

assessments, and measurements are needed to guide implementation, report results, and

provide recommendations for refinements and validation to advance implementation

theory (Damschroder & Hagedorn, 2011).

Summary

Researchers have found barriers that decrease the likelihood of EBPs from being

implemented in real-world settings. These barriers range from limited time and resources

to treatment provider's attitudes about EBPs. According to Amodeo et al. (2011), when a

treatment provider finds an EBP to be difficult to understand, the chances of implementing that EBP decrease. The barriers of attitude, knowledge, and readiness to change come from a treatment provider's education, their experience with recovery, or both. EBPs come from clinical trials, and more research is needed to find what works when implementing these practices into actual treatment programs (Herschell et al., 2014).

According to Glasner-Edwards and Rawson (2010), increasing training and information about EBPs enhance addiction treatment and improves treatment outcomes. Researchers in the implementation sciences investigate how and what works when it comes to implementing an EBP (Damschroder & Hagedorn, 2011). Failure to understand the implementation process can lead to the conclusion that the EBP is not effective in clinical settings. This study focused on beliefs and knowledge about EBPs and controlled for beliefs about addiction to determine the effects the ATTC online training had on these constructs among treatment providers. This study used the CFIR as a way to focus on one area of concern. One of the problems in EBPs is some EBPs overlap in terminology and interventions which can confuse treatment providers (Gifford et al., 2012). There may be a need to unify these terms in the implementation sciences (Sorenson & Kosten, 2011). The CFIR model categorizes key terms and organizes these terms to improve the implementation of EBP. This study utilized the terms of beliefs and knowledge about EBPs and beliefs about addiction in the category of individual characteristics within the CFIR model.

Implementation theory researchers study how EBPs get implemented in real-world settings. The CFIR is one model in the implementation sciences. The CFIR model categorizes constructs that are shown to be barriers to the implementation of EBPs. The five categories in the CFIR model provide a framework and a way to organize information to increase the implementation of EBPs. The CFIR model is a newer model, and more studies are needed to provide information on instruments and tools to influence implementation within each category (Damschroder & Hagedorn, 2011). This study focused on the individual characteristics of the CFIR model and provided information on the effect the ATTC online training had on treatment provider's beliefs and knowledge of EBPs. Since treatment provider's beliefs about addiction has been shown to influence providers' decision to implement EBPs (Cunningham et al., 2012), I used this variable as a covariate.

The following chapter discusses the research methods, participants, instrumentation, and the data analysis plan. Chapter 3 also discusses threats to validity, limitations, and ethical concerns.

Chapter 3: Research Method

Introduction

The purpose of this study was to investigate whether online training by the ATTC was an effective tool to affect treatment provider's beliefs and knowledge about EBPs, while accounting for the treatment provider's beliefs about addiction as a covariate. The intervention for this study was online training presented by the ATTC under the cooperation of SAMHSA and the CSAT. The dependent variables beliefs and knowledge about EBPs were measured by Aarons's (2004) Evidence Based Practice Attitude Scale (EPBAS), and Upton and Upton's (2006) Evidence Based Practice Questionnaire (EBPQ). The covariate beliefs about addiction were measured by Humphrey's (1996) SUSS disease model subscale.

In this chapter, I discuss the research design and methodology, population, sampling and recruitment procedures, and participants of the study. An ANCOVA was used to test the effectiveness of the online training, using beliefs about addiction and the pretest as covariates and the posttest scores as the dependent variable.

Research Design and Rationale

In this study, I employed a quantitative, experimental, pretest-posttest design to address the research questions and the problem statement. The problem was treatment provider's knowledge and beliefs about EBPs and beliefs about addiction that may negatively affect the implementation of EBPs into addiction treatment. A treatment provider's beliefs about addiction influences the treatment model chosen to treat addiction, and these beliefs may be from a lay position and not necessarily from a

professional position (Luke et al., 2002). These beliefs may also influence a providers' willingness to learn about and implement EBPs in treatment (Miller et al., 2006).

I used the experimental design to examine the effect an instructional medium had on the dependent variables between the experimental and control group. This experimental design was justified because I was interested in showing the effect the online training had on treatment provider's beliefs and knowledge about EBPs. A pretest/posttest design aligned with the scope, framework, and research questions of this study. In this research design, preexisting beliefs and knowledge about EBPs were measured by EBPAS and EBPQ pretest scores and beliefs about addiction were measured by the SUSS, while the disease model subscale score was used as a covariate to control for these factors in the assessment of the effects the ATTC training had on the posttest EBPAS and EBPQ scores. The random assignment of each group helped eliminate selection bias. The inactive control group did not have exposure to the defined intervention, and the experimental group was exposed to the defined intervention. The ATTC online training was chosen as the independent variable because the content of the training addresses the definition of EBPs, implementation of EBPs, the effect EBPs have on efficacy in addiction treatment, and different types of EBPs. Using the quantitative measures, I compared the scores between the control group and the experimental group and repeated each two times.

I did not choose a qualitative design for this study because it would not have addressed the effectiveness of the online training on the dependent variables. By using the quantitative research approach, I was able to use pretest and posttest scores to

measure the variables of beliefs and knowledge about EBPs and show whether the intervention affected the dependent variables. I chose this design and investigated the differences in the mean scores of the DV while controlling for beliefs about addiction and the pretest score to adjust the effects the covariates had on the posttest mean scores between the control and experimental groups.

Methodology

Population

The population for this study was treatment providers from Utah who were currently working with a treatment setting for SUDs for 1 year or more. The participants were either licensed or certified as a substance use counselor or mental health counselor.

Sample Size

I calculated the sample size with G Power, Version 3.1.9.2 (2014), using ANCOVA fixed effects, main effects, and interactions. The effect size was large at .4, which is acceptable when comparing two groups. Among the social sciences, an alpha level of .05 and a power level of .80 is an acceptable level (Fisher, 2013). The sample size was 52.

Sampling and Sampling Procedures

I used a convenient sample of treatment providers from Utah. The sample was composed of individuals who were the first to respond to the advertisement for the study.

Recruitment Procedures

I advertised the study by e-mail from a provider list generated from *Psychology Today*, which is an online marketing tool for programs and providers to advertise their practices. Treatment programs and providers received an e-mail invitation to participate with the subject line of "Seeking participants for a research study". In the recruitment e-mail, I discussed the purpose of the study, what was required to participate in the study, the date and time of the study, and the use of e-mail and online tools. Individuals interested in participating answered three questions to ensure they met the criteria for the study. These questions were: (a) are you currently licensed as a mental health provider or certified as a substance abuse counselor in Utah?, (b) Have you been practicing for 1 year or longer? and (c) Are you currently working with individuals who are suffering from a SUD? Any individual who answered "no" to any of these questions was excluded from the study.

I sent participants who met the inclusion criteria and agreed to take part in this study an e-mail with instructions discussing how and when to use the identification number, the date and time of the study, time needed to complete the study, how to sign and e-mail the informed consent back, and my contact information. The informed consent was attached to this e-mail. In the e-mail, I also informed participants about the role of e-mails and online tools in this study as well as how they could opt-out of receiving e-mails or decline participation without any consequences. Participants read the instructions and then printed, signed, scanned, and e-mailed back the informed consent.

Participants were randomly assigned to one of the two groups by the flip of a coin. I used heads for the control group and tails for the experimental group. Once all informed consent forms were returned, I flipped a coin to place each participant in either the control or experimental group. Identification numbers were used to ensure confidentiality for participants and also allowed me to track each participant anonymously.

Data Collection

I sent the participants the informed consent form along with their identification number and date and time of the study. The participants were asked to use the identification number in the subject line of e-mails as well as on the pretests, EBPAS, EBPQ, the disease model subscale of the SUSS, and the posttest EBPAS and EBPQ. I answered any questions from participants up to the day of the experiment.

The day of the study, participants received an e-mail with the link to the online meeting (at gotomeetings.com). The online meeting link was Health Insurance Portability and Accountability Act (HIPAA) compliant. Through this website, I was able to separate the control and experimental groups into separate classrooms and could control the timing, which provided more control over the study. Once all participants had signed in to gotomeetings.com, the study began. I welcomed participants, asked if there were any questions and when all questions were answered, I provided the link for the EBPAS, EBPQ, and the disease model subscale for the SUSS, allowing 15 minutes for completion of the pretest. I was able to view all participant chat messages; however, the participants saw my chat with only them and not other participants. After participants had completed

the EBPAS, EBPQ, and the disease model subscale of the SUSS pretests, they typed

"done" into the chat room. I then posted the link to the ATTC online training to the

experimental group. Since the control group was an inactive control group, they got

instructions to set a timer for 1 hour and 40 minutes, and once the time had passed, they

typed "done" into the goto meetings room. The control group stayed logged into the

meeting room during this time. Once the experimental group had finished the 1 hour and

40 minute ATTC online training, they typed "done" into the chat room. I then provided

the link to both the control and the experimental groups for the EBPAS and EBPQ

posttests, which was housed on SurveyMonkey. I gave participants 10 minutes to

complete the posttests. Once all participants completed the posttest, they typed "done"

into the chat room. I then debriefed, explaining how they can see results of the study and

answering any questions posed. I thanked the participants and ended the study.

  The total time for the study was 2 hours and 30 minutes. I used the participants'

identification numbers to identify test scores in the data collection process. The data were

collected in the Survey Monkey database in my account and were transferable to

Statistical Platform Software Solution (SPSS). I cleaned the data set by taking out

incomplete or missing data.

Instrumentation

Aarons's (2004) EBPAS was developed to measure attitudes and beliefs about EBPs among treatment providers. To create it, developers surveyed 322 clinical and case management service providers and 51 program managers from 51 public sector programs providing mental health services in San Diego, CA. Eighty percent of the participants were full-time employees from disciplines of psychiatry, social work, psychology, marriage and family therapy, drug rehabilitation, criminology, education, and public health. A total of 18 items were initially identified through a literature review and consultation with mental health providers, which was reduced to 15 items after the factor analysis showed three items that did not have internal reliability. The categories identified through the literature review and consultations were an openness to innovations, rigidity to training, perceptions to research-based interventions, consistency in therapeutic practices over time, interest in using new interventions, the perception of the importance of requirements and empirical support for interventions, and divergent attitudes to adopt EBPs. The development of the scale included discussions with providers and researchers, item generation, data collection, and exploratory and confirmatory factor analysis, and reliability and validity analyses to come up with the four subscales and the EBPAS total score. The analysis and scoring are summarized in the following paragraph.

The EBPAS has four subscales of attitudes toward implementing EBPs. According to Aarons (2004), 322 participants from 51 clinical settings were surveyed with the initial 18-item scale. The instrument is scored on a Likert scale with 0 meaning

not at all to 4 meaning *very great extent.* The final 15-item scale has an overall scale

alpha of .77. The instrument has the following four subscales: subscale appeal (four

items; $a = .80$) measures the extent to which the provider would adopt a new practice if it

is intuitively appealing, makes sense, could be used correctly, or used by other colleagues

who are happy with it; the requirements subscale (three items; $a = .90$) measures the

extent to which the provider would adopt a new practice if required by an agency,

supervisor, or state; the openness subscale (four items; $a = .78$) measures the extent to

which a treatment provider is open to trying new interventions or therapy; and the

divergence subscale (four items; $a = .59$) measures the extent to which a provider

perceives research-based interventions as not clinically useful and less important than

clinical experience (Aarons, 2004). This measure has been used in treatment settings

among interns and licensed therapists to measure attitudes toward a specific treatment

approach (Patterson et al., 2014).

In this study, I used the EBPAS as a total score scale and not as separate

subscales. The EBPAS was available to use for research without written consent from the

author. Cronbach's alpha is a measure to check the internal consistency of an instrument

(Fisher, 2013), so I checked the reliability of the EBPAS with my sample using a

Cronbach's alpha. The EBPAS was available to use for research without written

permission from the author.

The SUSS (Humphreys et al., 1996) is an instrument measuring staff members'

beliefs about the nature and treatment of SUDs (Moyer & Miller, 1996). The SUSS has

three subscales: disease model, psychosocial model, and the eclectic model of addiction

(Humphreys et al., 1996). The disease model of addiction shows treatment provider's

beliefs about the disease model of addiction, the psychosocial model of addiction shows

treatment provider's beliefs toward social and environmental factors, and the eclectic

model shows treatment provider's beliefs about combined social and biological factors

(Humphreys et al., 1996). A national survey of 382 substance abuse treatment providers

was presented with the psychometric measure (Humphreys et al., 1996). The results were

as follows: the subscale for disease model was reliable and had an internal consistency of

$r = .78$, the psychosocial model was $r = .75$, and the eclectic subscale was $r = .61$.

Construct validity was supported by confirmatory factor analysis replicated by Moyers

and Miller (1996) from Humphreys et al. (1996).

In this study, I was interested in the beliefs about addiction, so I measured the

covariate of beliefs about addiction with the subscale disease model in the SUSS

instrument. The disease model subscale has seven questions and is scored on a Likert

scale of 1 *strongly disagree* to 5 *strongly agree*. I also checked the internal consistency of

this instrument with a Cronbach's alpha. The SUSS was available to use for research

without written consent from the author.

The EBPQ (Upton & Upton, 2006) is a measurement of knowledge about EBP's

in the healthcare field. The EBPQ was tested on providers with a range of ages and

specialties. The age ranges were 22 to 29, 5.5%, 30 to 39, 19.7%, 40 to 49 18.1%, 50 to

59 35.4%, and 60 to 69 21.3%. The providers were 12.5% surgeons, 12.5% mental health

providers, 11.0% elder care specialists, and 36% were nurses, the remaining providers

were in private practice; the study did not specify what type of private practice. The

initial item pool was piloted with a group of 33 senior healthcare professionals and then

reduced via item analysis and scaling methods according to, Upton and Upton (2006).

The EBPQ has 24 items that are organized into three subscales, the practice of EBP,

attitude toward the clinical effectiveness of EBP, and knowledge associated with EBP.

The explained variance for the first factor was 33.08% (the practice of EBP; *eigenvalue*

3.97), the second 17.07% (attitude toward EBP, *eigenvalue* 3.97), and the third 11.63%

(knowledge associated with EBP, *eigenvalue* 1.40). The total variance was 61.77% and

each subscale loaded onto separate factors. Pearson correlation for each subscale and

total score were statistically significant. For the practice of EBP $r = 0.71$ *(P < .001)*, for

attitude toward clinical effectiveness $r = .95$ *(P < .001)*, and for knowledge associated

with EBP was $r = .54$ *(P < .001)*. *Cronbach's α* exceeds 0.70 for all subscales. According

to Rice et al. (2010), researchers administered the EBPQ to 180 social workers, and the

reliability and validity remained high. The authors recommended the EBPQ for

educational programs, policy development, and management initiatives for health care

providers (Upton & Upton, 2006). The entire questionnaire was found reliable at alpha

.87. This study used the questionnaire in this format and is scored on a Likert scale of 1 to

7, the higher score indicating a positive attitude toward knowledge and effectiveness of

EBPs. To ensure test reliability of the EBPQ, I ran a Cronbach's alpha. The EBPQ was

developed at Sheffield University, Sheffield United Kingdom and was available for

research without the written permission of authors.

Intervention

The intervention for this study was online training presented by the ATTC. This training is designed to give treatment providers a way to conceptualize how research-based methods can improve their work (ATTC, 2010). The training objectives are to define EBPs, describe a model of implementation and how EBPs can be used to improve the clinical process, and review methods to increase implementing EBPs into community treatment settings (ATTC, 2010).

The ATTC online training in EBPs is not designed to give treatment provider's specific skills to implement an EBP but is intended to give providers information about how EBPs can improve their work (ATTC, 2003). The online training was developed and produced by the ATTC to make it more accessible to a national audience. The format of the online training developed from *The Change Book: A Blueprint for Technology Transfer*. This document is a systematic approach to implementing change strategies within a system. The ATTC originally published *The Change Book* in 2000 and updated the book in 2004. The ATTC continues to provide information, tools, and publications to increase the implementation of EBPs in addiction treatment (ATTC, 2010).

The online training *Technology Transfer in the Innovation Process* is for use by researchers, facilities, and individual providers to effect change in their organization according to ATTC (2011). The information synthesized from research indicates what is working and what is not working in addiction treatment. The contributors were Jon Gold who provided an overview of CSAT's technology transfer initiatives and the role CSAT plays in implementing EBPs. Thomas Valente, Ph.D., summarized current research and explained the concept of utilizing opinion leaders for the adoption of EBPs. Dennis

McCarty, Ph.D., was over the strategies of using EBPs within organizations. Mary

Marden Velasquez, Ph.D., operationalized the stages of change and the use of these

concepts in the adoption of EBPs (ATTC, 1999). Contributors for the online training

include Heather Gotham, Ph.D., Nancy Roger, M.S., Holly Hagle, M.A., Daniel Squires,

Ph.D., Eric Hulsey, Dr. P.H., Pamela Waters, M. Ed., Laurie Krom, M.S., Aaron

Williams, M.A. The ATTC provides presentations and training material for research,

training, and information for providers without written permission.

The ATTC online training is free training to use for research and teaching. The

training lasts 1 hour and 40 minutes. It is a classroom-style training, and during the

training, participants were asked to write down answers to questions that were discussed

in the previous section. There were three sections.

Data Analysis Plan

The data analysis was through SPSS Version 21 (IBM, 1994, 2017). I cleaned the

dataset by screening for missing values, and incomplete scores. The dataset included only

cases with both pretest and posttest completed scores. The statistical analysis ANCOVA

was used to analyze the data. This test statistic is used to adjust the effects a covariate has

on the dependent variables by adjusting the posttest mean scores due to the effects of the

covariate. The ANCOVA looked for differences in the mean scores between the groups;

using the pretest and the SUSS as covariates.

RQ1: Controlling for beliefs about addiction, does online training published by

ATTC affect knowledge of effective treatment practices as measured by the

Evidence-Based Practice Questionnaire? (This questionnaire determines

knowledge about EBPs in the healthcare field.)

> $H_0 1$: There is no statistically significant difference in the mean posttest
>
> scores between the control and experimental group controlling for pretest
>
> scores and beliefs about addiction on knowledge about effective treatment
>
> practices after attending online training published by the ATTC on EBPs.
>
> $H_a 1$: There is a statistically significant difference in the mean posttest
>
> scores between the control and experimental group controlling for pretest
>
> scores and beliefs about addiction on knowledge about effective treatment
>
> practices after attending online training published by the ATTC on EBPs.

RQ2: Controlling for beliefs about addiction, does online training published by

ATTC affect beliefs about implementing effective treatment approaches as

measured by the Evidence-Based Practice Attitudes Scale among treatment

providers?

> $H_0 2$: There is no statistically significant difference in the mean posttest
>
> scores between the control and experimental group controlling for pretest
>
> scores and beliefs about addiction on beliefs about EBPs after attending
>
> online training published by the ATTC about EBPs.
>
> $H_a 2$: There is a statistically significant difference in the mean posttest
>
> scores between the control and experimental group controlling for pretest
>
> scores and beliefs about addiction on beliefs about EBPs after attending
>
> online training published by the ATTC about EBPs.

I used the ANCOVA to conduct and test the hypotheses. ANCOVA is used to test the main and interaction effects which covary with the dependent variables. The covariate beliefs about addiction is similarly related to the DV, and the effect can be reduced using an ANCOVA. The pretest was also a covariate in this design to control for initial group differences. The test statistic has more power to detect the differences in mean scores.

The test statistic ANCOVA has several assumptions. The first assumption was using a covariate to reduce within-group error variance, which means the covariate must be independent of the experimental effect, this assumption was taken care of using pre-test scores as a covariate. Second, the covariate has a linear relationship with the dependent variable. This was shown through a scatterplot to assess any violations of this assumption. Third, is the homogeneity of variances and if violated the Levene test was used to verify the assumption. The fourth assumption was the error term independence of the covariate and categorical independent variable. However, randomization ensured the assumption was met. The fifth assumption was the homogeneity of covariate regression coefficients which states the measure on the covariate coefficient was the same for both groups and formed by the categorical variable. This can cause a Type I error however a solution to this is to use bootstrap for model parameters and post hoc for robustness (Field, 2012).

Threats to Validity

Threats to validity were as follows. External validity threats were the representative sample that does not generalize to all treatment providers across the

country. This study sample treatment providers were from Utah, and the views of addiction and treatment may differ from those of other areas.

Internal validity threats were history or the conditions between pretest and posttest. A pretest may sensitize the participant in unanticipated ways which could affect their posttest score. The online training was 1 hour and 40 minutes and could have caused statistical regression from pretest to posttest due to history effects.

Ethical Procedures

The ATTC online training has been placed in the public domain by SAMHSA/CSAT and does not require permission to copy or reproduce the material. The ATTC National Office also provides copies of the publication.

Aaron (2004), the author of the EBPAS, provided permission to use this instrument for studies without contacting the author. Humphreys et al. (1996) provided permission to use the SUSS without contacting the author. Upton and Upton (2006) have permitted the use of the EBPQ without contacting the author. The three instruments were available to use for research and advancement efforts in treatment practices.

The ethical concerns for this study were as follows. The participants confidentiality ensured by using numbers as identification. Each participant was assigned a number that they used on each instrument and in the subject line of all e-mails. The informed consent discussed confidentiality, the purpose of the study and the use of the results, what the numbers on their informed consent represent, why participants were given numbers for their pretests and posttests, and how they could have declined participation without consequence.

Summary

This quantitative research was designed to investigate beliefs and knowledge about EBPs, which are two constructs, that are shown to be barriers to implementing EBPs. The dependent variables were knowledge and beliefs about EBPs, and the variable of beliefs about addiction was a covariate in this investigation. The CFIR model categorizes variables which allowed this study to investigate two constructs within the individual characteristics' category. The research questions asked whether the intervention influenced knowledge and beliefs about EBPs while controlling for beliefs about addiction to form the experimental design. The dependent variable of beliefs about EBPs was measured using Aaron's (2004) EBPAS. The variable knowledge about EBPs measured by EBPQ (Upton & Upton, 2006). The covariate beliefs about addiction was measured by the subscale, disease model, in the SUSS (Humphrey et al., 1996) instrument. The intervention was the online training from the ATTC and lasted 1 hour and 40 minutes. The independent variable had two levels which were those who attended the online training and those who did not. Participants ($N= 52$) volunteered to be part of this study. Participants were recruited through online formats using e-mail to advertise the study to request volunteers. Participants were informed of each step and given a number for identification purposes to ensure their confidentiality. Participants were either licensed or certified to treat mental health and substance use disorders. In this study, the data analysis of ANCOVA was used to analyze the dataset. The ANCOVA was used to test the main and interaction effects of the covariate on the dependent variables, controlling for the effects of the variables that covary with the dependent variable. The

covariates were the pretest and beliefs about addiction. If there was an effect between the experimental and control group from the findings, then this online training could be used as one of the tools within the individual characteristics of the CFIR model.

The external validity threat of generalizability comes from participants from Utah which may not generalize to other treatment providers in other communities. The internal threat was one of history from pre-test to post-test and maturation threat from events out of the participants control. Treatment providers may sensitize from pretest to posttest. The results shown in Chapter 4 provides information about instruments and measures used in this study.

Chapter 4: Results

Introduction

The purpose of this study was to investigate whether online training about EBPs

by the ATTC had an effect on treatment provider's beliefs and knowledge about EBPs

while controlling for their beliefs about addiction. Treatment providers use treatment

practices that stem from their experiences with addiction, beliefs about treatment, and

training (Miller et al., 2006). EBPs are scientifically proven treatments that are

recommended and used in substance use treatment; however, treatment providers may

use other methods that have come from their traditions and beliefs about treatment and

addiction, otherwise known as treatment as usual (Miller et al., 2006). Implementing

EBPs into substance use treatment has been a slow process. In this study, I used three

variables that have been shown to be barriers for treatment providers with the

implementation of EBPs into substance use treatment: the DVs of beliefs and knowledge

about EBPs and beliefs about addiction and the pretest as covariates. A pretest and

posttest design were employed and the ATTC online training was used as the

intervention. In this chapter, I discuss the research questions and hypothesis, the data

collection process, the statistical analysis, and the results as well as provide a summary of

the findings.

Research Questions and Hypotheses

RQ1: Controlling for beliefs about addiction, does online training published by ATTC affect knowledge of effective treatment practices as measured by the EBPQ?

> $H_0 1$: There is no statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on knowledge about effective treatment practices after attending online training published by the ATTC on EBPs.
>
> $H_a 1$: There is a statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on knowledge about effective treatment practices after attending online training published by the ATTC on EBPs.
>
> RQ2: Controlling for beliefs about addiction, does online training published by ATTC affect beliefs about implementing effective treatment approaches as measured by the EBPAS among treatment providers?
>
> $H_0 2$: There is no statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest scores and beliefs about addiction on beliefs about EBPs after attending online training published by the ATTC about EBPs.
>
> $H_a 2$: There is a statistically significant difference in the mean posttest scores between the control and experimental group controlling for pretest

scores and beliefs about addiction on beliefs about EBPs after attending

online training published by the ATTC about EBPs.

I hypothesized that online training would not have a statistically significant

difference in the treatment provider's knowledge or beliefs about EBPs while controlling

for beliefs about addiction and the pretest.

Data Collection

I began the data collection process with advertising on LinkedIn and Facebook to

recruit participants, after gaining approval from Walden University's Institutional Review

Board (Approval No. 07-25-18-0294048). Treatment providers were not as willing to do

the study without some type of compensation, so data collection took longer than

anticipated. Data collection took place from August 2018 to July 2019.

Recruitment Procedures

Through LinkedIn and Facebook, I recruited 16 participants. Initially, I e-mailed

over 50 treatment providers through *Psychology Today* but received zero responses from

this recruitment procedure. After 4 months of zero responses, I opted for social media

groups that treatment providers belonged to, which was a discrepancy in the recruitment

procedures. I used the group page to advertise that I was seeking participants and

included the inclusion criteria. I asked those interested to message me directly. These

participants would reply to the advertisement or message me through the social media

sites. I had seven individuals reply to the advertisement that did not respond back with

dates to do the study. Sixteen individuals replied and agreed to participate online: 10 in

the experimental group and six in the control group. One participant in the online

experimental group did not complete the posttests, so the total number of online

participants was 15, as shown in Table 1.

After several months of no responses to advertising on social media, I started to

recruit by contacting clinical directors from substance use facilities working with adults,

which is a discrepancy in the recruitment procedure. I would call and speak with clinical

directors, who would then ask their team if they would be willing to do the study. The

clinical director would then let me know a date and time to come to their facility and do

the study with the providers who agreed. Out of the seven clinical directors contacted,

three clinical directors gave me dates to come and conduct the study. There were 31

participants who participated in the study face-to-face at their facility. There were three

participants from this cohort who did not complete the posttests: two were in the control

group and one in the experimental group. The total number of participants who

completed the study face to face was 28, as shown in Table 1.

Collecting Data

When an online individual participant agreed to participate and agreed to a date

and time they could do the study, I flipped a coin to determine whether they were in the

control or experimental group and assigned them a participant number in an Excel

spreadsheet. Each participant received the informed consent form through e-mail and

returned it through e-mail prior to the date of the study. On the date the individual agreed

to do the study, the participant received the pretest through the Survey Monkey link. If

the participant was in the control group, they received the posttest through the Survey

Monkey link after the 1 hour and 40-minute duration had passed. The participants used

Google Meet for communication. Google Meet gave the participants the 1 hour and 40-minute time frame and allowed them to let me know they had completed the posttests. Six participants were in the control group did the study online.

Participants that did the study online and were in the experimental group received and returned the consent form through e-mail. On the date the individual participant agreed to do the study, the participant in the experimental group logged on to Google Meet and received the pretest through the Survey Monkey link. When the participant completed the pretest questionnaires, they received the online training through the ATTC link on Google Meet. Once this was completed, the posttest link was then sent through Survey Monkey. Participants communicated that they were done when they completed their posttest questionnaires. Ten participants were in the experimental group and participated in the study online.

Thirty-one participants were drawn from three substance abuse facilities. Participants from the facility provided a date they could do the study, so I went to the facility then to do the study. After participants signed informed consents, I flipped a coin to determine whether the participant was in the control or experimental group. Each participant put their initials on the informed consent forms, pretests, and posttests and then received the pretest to complete. The experimental group completed the pretest, online training, and posttest in one room. The control group went to another room and completed the pretest, and 1 hour and 40 minutes later, the control group came back to that room and completed the posttest. The pretest and posttest were completed via paper-

and-pencil. There were 18 face-to-face participants in the control group and 13 in the experimental group.

Sample Size Revision

The data collection process did not go as planned and took longer than expected. After 10 months, there were 47 participants. The sample size for the original design of the study was 52, so a revision of the sample size was considered. I conducted a G Power analysis (see Faul, Erdfelder, Lang, & Buchner, 2007) using 42 participants, with $\alpha = .95$, effect size $= .25$, $df = 1$, and two groups. The results of the analysis indicated a power of .82, which is a large effect size, critical $f = .052$, and noncentrality of 2.62, so a sample size of 42 was acceptable. After e-mailing to file for a change in sample size with Walden University Institutional Review Board, committee chair, and second chair, all parties were in agreeance and the sample size was adjusted to 42.

Data Entry

I kept track of participants on an Excel spreadsheet by their participant number, including whether they were in the control or experimental group, whether they were an online participant or face-to-face participant, and whether they were a licensed treatment provider or a substance use counselor. The 16 participants who completed the study online took the pretest and posttest questionnaires through the Survey Monkey link. I manually added the resulting data from the 31 participants who completed the study in a face-to-face setting to the stored data on Survey Monkey with the 16 participants who completed it online. The data entry process for the face-to-face participants was done in the order of their participant number from the Excel spreadsheet.

Data Cleaning

   I transferred all participant responses to SPSS from Survey Monkey. There were

47 total participants; however, there were three participants in the experimental group

and one in the control group with missing posttests. Data for the four participants with

missing posttests were deleted. After cleaning the data, the total sample size was 43.

<div align="center">

Intervention Fidelity

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   The intervention used in this study was an online training from the ATTC. The

intervention was 1 hour and 40 minutes long. The experimental group watched the online

training from Google Meet instead of GoToMeeting. The 27 participants who completed

the face-to-face training watched the online training from my laptop. This was a

discrepancy from the original proposal. The 16 participants who completed the study

online took the pretest and posttest questionnaires through the Survey Monkey link. The

other 27 participants completed the questionnaires with paper and pencil, which was

another discrepancy in the design of the study.

<div align="center">

Demographics

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   The population for this study was treatment providers who work with adults who

suffer from SUDs. The sample size was 43 participants. Table 1 shows the demographics,

how many substance abuse counselors and licensed providers were in each group, and

whether they were face-to-face participants or online participants. There were 16

participants from northern Utah and 27 participants from southern Utah.

   The population for this study was approximately 2,700 treatment providers from

Utah. This population included licensed social workers, licensed marriage and family

therapists, and licensed professional counselors, which all require a master's degree as well as certified substance abuse counselors, which require a bachelor's degree. The sample was representative of this population with certified substance use counselors and licensed therapists. The inclusion criteria for participation in this study were being licensed as a social worker, marriage and family therapist, professional counselor, or certified substance use counselor and currently working with adults who suffer from SUDs. As shown in Table 1, I did not differentiate between the three types of licensed therapists, I only differentiated between a licensed therapist and certified substance use counselor. In Utah, all three master's degree therapists can do the same job in substance use treatment.

Table 1

Demographics for the Control, Experimental Groups, and Type of Provider

	N	%
Total substance use counselor	18	38%
Total control group	6	13%
Face-to-face control group	4	8.5%
Incomplete face to face	2	4.2%
Online control group	0	0
Incomplete online	0	0
Total experimental group	12	26%
Incomplete face to face	0	0
Online experimental group	4	8.5%
Incomplete online	1	2.1%
Licensed providers total	29	62%
Control group total	18	38%
Face-to-face control group	12	23%
Incomplete face to face	0	0
Online control group	6	13%
Incomplete online	0	0
Experimental group total	11	23%
Face-to-face experimental group	5	11%
Incomplete face to face	1	2.1%
Online experimental group	5	11%
Incomplete online	0	0
Total participants	47	100%
Total incomplete	4	8.5%
Total sample	43	91.5%

Note. Total substance use counselors versus licensed providers broken into control and experimental groups, face to face and online participants, and whether the participant completed or left portions incomplete.

Results

Evidence-Based Practice Questionnaire

The variable knowledge about EBPs measured by EBPQ is a Likert scale of 1 to 7 with 7 being most knowledgeable. As demonstrated in Table 2 pretest mean scores and

standard deviations for the experimental group were 3.78 (.91) and pretest mean scores for the control group 3.94 (1.04). The posttest mean and standard deviation scores for the experimental group were 4.33 (.140) and for the control group were 3.88 (.228).

Evidence-Based Practice Attitude Scale

The variable of beliefs about EBPs measured by EBPAS is also a Likert scale from 0 to 4, with the higher score being the most favorable beliefs about EBPs. Table 2 shows the pretest mean and standard deviation for the experimental group was 3.01 (.374) and the mean and standard deviation for the control group was 3.05 (.247). The posttest mean and standard deviation scores for the experimental group were 3.32 (.083) and for the control group mean and standard deviation scores were 3.21 (.06).

Short Understanding Substance Abuse Scale

The covariate of beliefs about addiction was measured by the SUSS and is a Likert scale of 1 to 5 with 1 equals strongly disagree, 2 equals disagree, 3 equals neutral, 4 equals agree, and 5 equals strongly agree. The covariate measured beliefs about addiction by using the subscale disease model of the SUSS. Table 2 shows the pretest mean and standard deviation scores for the experimental group 3.08 (.541) and the mean and standard deviation scores for the control group were 3.43 (.794).

Table 2

Descriptive Statistics for the Variables

	M	SD
Experimental group pretest EBPQ	3.78	.905
Control group pretest EBPQ	3.94	1.04
Experimental group post EBPQ	4.33	.140
Control group post EBPQ	3.88	.228
Experimental pretest EBPAS	3.01	.374
Control group pretest EBPAS	3.05	.247
Experimental group post EBPAS	3.32	.083
Control group post EBPAS	3.21	.06
Experimental group covariate SUSS	3.08	.541
Control group covariate SUSS	3.43	.794

Note. CI 95%.

Assumptions

Before an ANCOVA was run, tests for assumptions were conducted. The assumptions that needed to be met are as follows. The first assumption was testing the pretest scores between the control group and the experimental group to determine the pretests were similar between the groups. The second assumption was the homogeneity of regression. This assumption looks at whether the groups for each dependent variable and across treatments are linear. The third assumption was homogeneity of variance. This assumption determines whether there is variance among the control and experimental group. The assumption is met if the test is not statistically significant. The last assumption was normal distributions for each group and on each dependent variable.

The data set also had a univariate outlier on the post-EBPQ however, the *Mean* score was between 1 and 7, and according to Osborne, (2004), when data points are legitimate the data set is more likely to be representative of the population. So, the data of this participant were used in the analysis.

ANOVAs were run to test for group differences in the pretest scores of the EBPQ and EBPAS. Both were not statistically significant at $p > .05$ indicating there were no differences between the experimental and control group in the pretest scores. The first assumption was met.

Homogeneity of regression was tested with an ANCOVA using a custom model to determine the relationship between the dependent variable's knowledge and beliefs about EBPs and the covariate beliefs about addiction on the levels of independent variables. The results were not statistically significant $p > .05$ for either of the dependent variables which indicated there was no interaction on the levels of independent variables between the dependent variables and the covariate. The homogeneity of regression condition has been met.

Levene's analysis was run to test the assumption of variance across groups on the dependent variables' knowledge about EBPs and beliefs about EBPs. The results were not statistically significant for knowledge about EBPs measured by the EBPQ $F(1, 41) = 3.387$, $p = .073$, or for beliefs about EBPs measured by the EBPAS, $F(1, 41), = .010$, $p = .921$. The results indicate the assumption of variance has been met and equal variances across groups are assumed.

The Shapiro-Wilk was conducted to test for normal distribution. The control group for the dependent variable EBPQ was $p = .433$ and shows normal distribution but for the experimental group, $p = .045$ and suggests non-normality. According to Rheinheimer and Penfield (2001), the ANCOVA test is robust and can override violations of normality, therefore the normal distribution was met.

The Shapiro-Wilk conducted for the EBPAS showed the normal distribution for both the control group at $p = .310$ and the experimental group at $p = .939$. The results for the normal distribution of the EBPAS were met.

Results for Research Question 1

An ANCOVA was used to investigate RQ1 does online training from the ATTC affect a treatment provider's knowledge about EBPs while controlling for beliefs about addiction? The dependent variable was knowledge about EBPs and was measured by the EBPQ while controlling for beliefs about addiction, measured by SUSS.

The results for group differences on knowledge about EBPs while controlling for beliefs about addiction and the pretests were not statistically significant, $F (1, 39) = 3.33$, $p = .076$, η2 $= .079$. See Table 2.

It was noted that beliefs about addiction measured by the SUSS was not a significant predictor of EBPQ scores (see Table 2). Therefore, an ANCOVA was rerun by controlling for pretest scores without the SUSS. After controlling for pretest scores the experimental group had marginally higher scores $F (1, 40) = 3.86$ $p = .056$, η2 $= .088$ on the EBPQ posttest than the control group. See Table 3.

Table 3

ANCOVA Results Post-EBPQ

Source	*SS*	*df*	*MS*	*F*	*p*	η2
SUSS	.040	1	.040	.041	.816	.001
PreEBPQ	4.99	1	4.99	6.78	.013	.148
Group	2.44	1	2.44	3.32	.076	.079
Error	28.69	39	.736			

Note. $p < .05$.

Table 4

ANCOVA Results Post EBPQ without the SUSS

Source	*SS*	*df*	*MS*	*F*	*p*	η2
PreEBPQ	4.99	1	4.99	6.95	.012	.148
Group	2.77	1	2.77	3.86	.056	.088
Error	28.74	40	.718			

Note. $p < .05$.

Results for Research Question 2

An ANCOVA was used to investigate RQ2 does online training affect treatment provider's beliefs about EBPs while controlling for beliefs about addiction? The dependent variable beliefs about EBPs were measured by the EBPAS and the beliefs about addiction were measured by the SUSS.

The results for group differences on beliefs about EBPs while controlling for beliefs about addiction and pretests were not statistically significant F (1, 39) = 2.02, p = .163, η2 = .049. See Table 4

It was noted that the SUSS, beliefs about addiction, was not a statistically significant predictor of the EBPAS posttest scores. Therefore, an ANCOVA analysis was rerun using the pretest scores without the SUSS. The results F (1, 40) = 2.38 p = .131, η2 = .056 show the experimental group did not differ on the EBPAS posttest scores. See Table 5

ANCOVA Results Post-EBPAS

Source	SS	df	MS	F	p	η2
SUSS	.003	1	.003	.041	.840	.001
PreEBPAS	1.37	1	1.37	18.02	.000	.316
Group	.154	1	.154	2.02	.163	.049
Error	2.97	39	.076			

Note. *p* < .05.

Table 6

ANCOVA Results Post-EBPAS Without the SUSS

Source	*SS*	*df*	*MS*	*F*	*p*	η2
PreEBPAS	1.37	1	1.37	18.44	.000	.316
Group	.177	1	.177	2.38	.131	.056
Error	2.97	40	.074			

Note. $p < .05$.

Summary

Treatment providers may use different types of therapy which include treatment as usual, EBPs, or both. According to Damschroder and Hagedorn (2011), the CFIR model beliefs and knowledge about EBPs are variables that need further investigation to improve the implementation of EBPs in substance use disorder treatment. The CFIR model investigates how and why EBPs get implemented into treatment for those suffering from substance use disorders.

This study investigated whether ATTC online training would affect treatment provider's knowledge and beliefs about EBPs while controlling for their beliefs about addiction. This investigation used a pretest/posttest design to determine posttest score differences between the experimental and control groups. The data was analyzed by an ANCOVA. The dependent variables of knowledge and beliefs about EBPs were two of the constructs in the characteristics of individuals category in the CFIR model and controlled for the covariate of beliefs about addiction, also one of the variables in this

category in the CFIR model. The covariate beliefs about addiction have also been shown to influence a treatment provider's choice of treatment for substance use disorders (Miller et al., 2006).

The results for knowledge about EBPs did not have a statistically significant effect when the beliefs about addiction were controlled for. The results show that SUSS and pretest only account for 7.9% of the strength of the score between the experimental and control group. However, rerunning the ANCOVA using the pretest as the covariate without the SUSS the difference between groups indicated a slight increase in the strength of the score between groups of 9%. This slight increase was minimal, and the results were still not significant. The online training did not affect a treatment provider's knowledge about EBPs. The results were not statistically significant so, for RQ1, the null hypothesis was accepted.

The results for beliefs about EBPs were also not statistically significant between groups. The results show that the SUSS and pretest scores account for 4.9% of the strength of the score between the groups. The ANCOVA was rerun without the SUSS using the pretest only as the covariate and the strength of the score had a slight increase between groups was 5.9%. After running the second ANCOVA without the SUSS the covariate beliefs about addiction only accounted for a small portion of the strength of the score, however, this difference is minimal between the control and experimental groups. The results suggest the online training did not affect a treatment provider's beliefs about EBPs. The findings for RQ2, were not statistically significant so, the null hypothesis is accepted.

The conclusions and discussion about the results and possible further studies are discussed in Chapter 5. Also, discussed in Chapter 5 are limitations to the study, implications for social change by continuing the investigation of EBPs.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to determine whether online training had an effect on a treatment provider's knowledge or beliefs about EBPs. In the first research question, I asked whether online training from the ATTC affected a treatment provider's knowledge about EBPs while controlling for beliefs about addiction and the pretests. In the second question, I asked whether online training affected a treatment provider's beliefs about EBPs while controlling for beliefs about addiction and the pretests. Previous researchers have suggested that knowledge and beliefs about EBPs are shown to be barriers to the implementation of EBPs (Benichek et al., 2010).

With this study, I sought to build on the extant research discussed in Chapter 2. According to Damschroder and Hagedorn (2011), there is a gap in the literature concerning the CFIR model. One of the gaps is in the category of individual characteristics. The authors suggested further studies are needed for the category of individual characteristics, so the variables used in this study were from this category: I chose knowledge and beliefs about EBPs. In this study, I determine whether there would be a difference between the experimental and control groups on the posttest score means after controlling for beliefs about addiction and the pretests. The covariate beliefs about addiction were used because this variable may have a relationship with or influence other variables, such as knowledge or beliefs about EBPs. Researchers have shown that many treatment providers maintain a negative belief toward individuals with SUDs (van Boekel et al., 2013). This belief calls into question a provider's treatment practices for an

individual with SUDs (MacDonald, Lamb, Thomas, & Khentigan, 2016), so I used

beliefs about addiction, not as one of the main factors, but to see if beliefs about addiction

interfered with either of the variables used in this study.

In order to improve adoption of EBPS, the training process for treatment

providers needs to address how and why to implement EBP and increase their knowledge

and decrease their misconceptions about the EBPs (Padwa & Kaplan, 2018). Healthcare

researchers focus on which interventions work best for what populations; however, the

emphasis of implementation science is the development of knowledge concerning the

adoption of effective treatments in real-world settings (Padwa & Kaplan, 2018). The

ATTC online training aligns with implementation science research but not healthcare

research. The online training used in this study from the ATTC addresses misconceptions

of EBPs, defines what EBPs are and how an EBP can improve treatment outcomes, and

explains where providers can continue to learn more about EBPs.

There are several key findings from this study. The first key finding was about a

treatment provider's knowledge of EBPs, which was not affected by online training from

the ATTC. The second key finding suggests that online training from ATTC does not

affect a treatment provider's beliefs about EBPs. The third key finding suggests that

beliefs about addiction do not interfere with the treatment provider's knowledge or

beliefs about EBPs when it comes to online training from the ATTC to learn about EBPs.

In Chapter 5, I summarize the investigation and discuss the outcomes relative to

current and future research. The results are discussed in relation to the research questions

and hypotheses. Finally, I offer recommendations to expand the depth of the current

study and generalize the results for future research before making final conclusions about the study.

Interpretations of the Findings

With this study, I aimed to add to the existing research about treatment provider's barriers toward implementing EBPs. Barriers, such as knowledge and beliefs about EBPs, tend to decrease treatment provider's implementation of EBPs into SUD treatment (Damschroder & Hagedorn, 2011). Amodeo et al. (2011) found that training treatment providers about EBPs and specific EBTs may need to include misconceptions that providers may have about EBP to help address the barriers that arise when implementing an EBP. Furthermore, researchers are addressing how and why the implementation of EBPs has been slow to be used in real-world settings (Hershenburg et al., 2012).

Researchers began investigating the implementation of EBPs in the early 2000s (Miller et al., 2006). The authors of the CFIR model categorized factors after synthesizing theories that had emerged from early implementation research (Damschroder & Hagedorn, 2011). Recent studies have identified how factors within each category of the CFIR impact EBP delivery (Sorenson & Kosten, 2011).

For this study, treatment providers were placed in the experimental group and watched the ATTC online training or in the control group and did not watch the online training. The instrument used to measure knowledge about EBPs were the EBPQ (Upton & Upton, 2006), while the EBPAS measured beliefs about EBPs (Aarons, 2004) and the disease model subscale of the SUSS measured beliefs about addiction (Humphreys et al., 1996). The implementation of EBPs in substance use treatment has been a slow process

and the CFIR model uses 39 variables to help determine the reason why (Damschroder & Hagedorn, 2011).

This study addressed two barriers in the CFIR model through use of the concept of learning about EBPs through an online format and whether the barriers would be affected. The results show the ATTC online training did not affect treatment provider's knowledge or beliefs about EBPs. The results of this study were not significant.

Interpretation of Knowledge about EBPs

Knowledge about EBPs has been shown to be a barrier in the implementation of EBPs in substance use treatment (Lundgren et al., 2012). Therefore, I asked whether online training about EBPs would affect treatment provider's knowledge about EBPs in this study. The EBPQ was used as the pretest and posttest instrument. The ATTC online training discussed misconceptions about EBPs, why EBPs are important, types of EBPs, and strategies to implement EBPs. The findings suggest the online training from the ATTC was not an effective tool for increasing knowledge about EBPs and that beliefs about addiction were not related to the changes in scores. After taking the beliefs about addiction out of the analysis, the findings show a small difference in the strength of the scores; however, the results are still not significant. According to Curtis and Eby (2010), treatment provider's use of EBPs was determined by their knowledge, beliefs about addiction, and preferences toward the treatment they use in contrast to my study findings.

For treatment providers, there may be several reasons why the training did not affect their knowledge about EBPs. First, the online training from the ATTC may be information that is already known. The ATTC is an organization that produces

information for the transfer of research information to real-world settings in substance

use treatment. The main goal of the ATTC is to give information about EBPs to treatment

providers nationwide. The ATTC has many methods to deliver information, such as

online training, pamphlets, and booklets as well as addressing audiences of treatment

providers at many of the national conferences. Consequently, treatment providers may

have already learned the information contained in the online training by attending a

conference or through booklets or the ATTC website. Second, the ATTC online training

may need a different approach to improve knowledge about EBPs. According to Pittman

and Lawdis (2016), online training may need a multifactored approach to be effective.

Researchers have showed that online multifactorial training utilized several learning

styles to increase providers' knowledge (Gavarkovs, Blunt, & Petrella, 2019). The

authors found that when treatment providers could do the training at their own pace and

follow the online training with a written workbook that coincided with the visual and

audio aspects of the training, it improved their competency. The ATTC offers online

training; however, the training used for this study used only the visual and auditory

aspects, so it was not multifaceted. Other researchers have found that evaluating online

training with other approaches, such as face-to-face training, would further protocols

needed to utilize an online training platform to improve effectiveness (Gavarkovs, Blunt,

& Petrella, 2019).

Interpretations of Beliefs About EBPs

Beliefs about EBPs have also been shown to be a barrier to the implementation of

EBPs. According to Cunningham et al. (2012), treatment provider's attitude and beliefs

about an EBP are a barrier in implementing EBPs into SUD treatment. In this study, I

asked whether online training about EBPs would affect beliefs about EBPs. The ATTC

online training discussed misconceptions about EBPs to reduce concerns a provider may

have about EBPs and addressed concepts to decrease biases about EBPs by using clear

language and ensuring the information is relevant with practical application. I used the

EBPAS for the pretest and posttest instruments and the SUSS as the instrument to

measure beliefs about addiction. After taking beliefs about addiction out of the analysis, I

did not find evidence that beliefs about addiction interfered with beliefs about EBPs. The

findings of this study align with those of Bearman et al. (2015) who reported that

attitudes of bachelor-level students were not affected by learning about EBPs. Since the

participants in this study were either licensed or certified providers in the state of Utah,

their education level might explain why there was no effect from the online training. The

results of this study may also show that the ATTC online training is not an effective tool

for addressing barriers, such as beliefs about EBPs. The ATTC online training may do

more for knowledge of EBPs and not be sufficient to decrease barriers like beliefs about

EBPs. According to Habley and Dimidjian (2015), compared to traditional training

methods, online training offers a unique platform that is well suited for providers to learn

EBPs. However, online training also needs to affect barriers that treatment providers have

about EBPs. I did not find providers' beliefs about EBPs to be affected.

Interpretations of the Findings in Relation to the Theoretical Framework

The CFIR model has 39 constructs that are organized into five categories

(Damschroder & Hagedorn, 2011). The individual characteristic category has five

variables, and for this study, I chose to use three of those variables. This category focuses on individual traits of treatment providers, such as beliefs about EBPs, knowledge about EBPs, beliefs about addiction, and stages of change. I chose to investigate online training and whether there would be an effect on a treatment provider's knowledge and beliefs about EBPs while controlling for beliefs about addiction to add to the research that suggests attitude, biases, personal beliefs, personal experience with addiction, and low regard for those suffering from alcohol and SUDs are barriers to implementation of EBPs (see Cunningham et al., 2012; Reickmann et al., 2011; van Boekel 2013). I did not find evidence in this study to support that treatment provider's knowledge and beliefs about EBPs are affected by online training about EBPs.

Concerning the CFIR model, the findings of this study provide information about knowledge and beliefs about EBPs and whether online training affects these factors in the CFIR model. For treatment providers, the ATTC online training did not affect their knowledge or beliefs about EBPs; this does not mean the training is not effective as a learning tool; however, the training did not affect barriers shown to affect the implementation of EBPs.

Other implications of this study show the online training and beliefs about addiction do not necessarily affect a treatment provider's learning about EBPs. Treatment providers are required to get Continuing Education credits for their licenses and certificates, which might affect the way a provider views learning about EBPs. For a treatment provider, continuing education may change the way knowledge about EBPs is viewed because it is a licensure expectation and treatment providers are used to

continuing their education for their licenses. According to Doumas, Miller, and Esp (2019), continuing education does not address the research-to-practice gap, and the newer models of therapies may not translate to real-world settings. Treatment providers may learn new treatment practices but implementing these practices into treatment is another story.

In order to improve implementation practices models, like the CFIR, researchers may need to determine how the variables, such as knowledge and beliefs about EBPs in the individual characteristics' category, affect the steps to implement a specific EBP into a substance use treatment program. Researchers may also want to study how beliefs about addiction affect implementation practices because this variable did not interfere with knowledge or beliefs about EBPs. It may be possible that beliefs about addiction have less of an effect on learning about EBPs.

According to Benishek et al. (2010), EBPs are slow to be implemented into substance use treatment for many reasons. Treatment providers may use a certain method that does not align with the newer EBP, so a treatment provider may resort back to what they have more confidence in applying. According to Doumas et al. (2019), treatment providers may not feel confident or efficacious about a learned EBP, so they are resistant to applying it to their treatment practices.

Treatment providers may have knowledge about EBP but turning this knowledge into their treatment practice may need more investigation (Doumas et al., 2019). This is an area where models such as the CFIR help identify areas of concern to narrow down variables that are problematic. This study suggests that knowledge about EBPs was not

significantly affected by online training. However, the next step may be to determine how knowledge about EBPs may affect the real-world implementation of EBP. The same is true for beliefs about EBPs.

Treatment provider's beliefs about EBPs were not affected by the ATTC online training. This finding may imply that beliefs about EBPs are not a barrier when it comes to information from online training, however implementing EBPs and how beliefs about EBPs affect real-world implementation needs more investigation. Researchers have found that when a newer EBP is suggested the provider may push back if the practice does not align with the current treatment practice they are using (Benishek et al., 2010; Sorenson & Kosten, 2011). This study adds to the research for the CFIR model about a treatment provider's beliefs about EBPs and whether online training like the ATTC effects a treatment provider's beliefs about EBPs. Online training such as the ATTC training may provide information that is useful for a treatment provider but may not be what is needed to affect barriers about implementing EBPs.

This study also adds to the research about beliefs about addiction. Even though this was not the main factor being studied the results show that beliefs about addiction do not interfere with knowledge or beliefs about EBPs when it comes to online training about EBPs. The covariate in this study was thought to be a nuisance and could interfere with other variables however, for this study that was not the case. It is not clear whether knowledge or beliefs about EBPs determines a treatment providers ability to learn and implement a specific EBP. However, the self-study of EBPs has been shown to be less effective in the dissemination of EBPs (Doumas et al., 2019). For the CFIR model

continuing to research individual characteristics and how a treatment provider learns and implements an EBP is an important direction. The next step in the investigation of individual characteristics of the CFIR model might be how these variables affect a treatment provider's ability to implement a specific EBP into their treatment practices for substance use disorders. Treatment providers may learn about specific EBP such as motivational interviewing or cognitive behavioral therapy but according to Padwa and Kaplan (2018), more formal training of EBPs shows better outcomes for implementing the newer treatments.

Limitations of the Study

The first limitation of this study was the results may not generalize to other treatment providers in other areas of the country. This study was a sample of treatment providers from Utah and the results may be different in other areas of the country.

The second limitation of this study was a small sample size. An ANCOVA analysis can have a sample size of up to several hundred participants. This study had 43 participants which are small sample size and can decrease the power of the study and cause a Type II error.

The third limitation of this study was the data collection process. Initially, I wanted a specific date to do the study with all participants. However, setting up a date that was agreeable to all those who had agreed to participate was difficult at best, so I opted to do the study for participants on the dates and times they could do the study. According to Ochieng (2009), the concept of method congruence and what was planned for a given study does not mean that a researcher does not have flexibility in the methods

of the study but that the researcher's thinking is congruent with the methods that have been embarked upon.

The fourth limitation was using self-report questionnaires. Self-report questionnaires are widely used in research and are found to be reliable. Self-report questionnaires are also banking on the individual that completes the questionnaire is understanding the question and are answering honestly and to the best of their ability (Creswell, 2009). Some of the questions in the EBPAS, EBPQ, and SUSS may be sensitive for some treatment providers because of past experiences of substance use or being part of a family that has dealt with SUD. This may affect the answers of a self-report questionnaire.

Recommendations

The first recommendations for future research are continuing the investigation of knowledge about EBPs. Since there was a marginal difference between the groups without the covariate of beliefs about addiction it may be possible to investigate knowledge with a different covariate such as the role of the organization's leadership, or staff cohesiveness with the EBP. According to Ehrhart et al. (2019), the National Institute on Drug Abuse is funding studies that are examining the implementation and sustainability of EBPs in real-world settings with interest in the environment and how this impacts the providers' successful uptake of an EBP.

The second recommendation is researching steps that treatment providers use to implement EBPs. Investigating how a treatment provider determines which EBP they use may shed light on what type of knowledge and training is useful to treatment providers.

Suggestions from Upton et al. (2014) further research is necessary to determine barriers

preventing implementation of EBPs and develop educational interventions for treatment

providers to implement EBPs into substance use treatment.

The third recommendation is to investigate specific EBPs and how beliefs about a

specific EBPs affect the implementation process for a treatment provider. According to

Padwa and Kaplan (2018), provider's beliefs about EBPs that do not align with the

spiritual aspects of SUD which are central to the self-help philosophy of recovery affect

the implementation of EBPs. Researchers have been encouraged to clarify staff attitudes

toward new EBPs and how this affects the implementation of newer approaches (Amodeo

et al., 2011). Treatment provider's beliefs and attitudes about EBPs may affect the

implementation process more than it does the learning process. Most recently research for

the implementation sciences is investigating the treatment provider's attitude coupled

with leadership and their ability to demonstrate the importance of EBPs (Ehrhart et al.,

2019)

The findings from this study may also show the need to investigate specific

providers within a facility to determine expectations and/or support from the leaders and

the effect this has on the provider's beliefs about EBPs. Future studies may want to avoid

focusing on individual treatment providers and instead focus on a specific SUD facility or

facilities, by comparing treatment providers within several facilities. Researchers may

want to investigate the management attitudes toward EBPs, and the training provided to

treatment providers within the facility. This type of study would align with newer

research from Moullin et al., (2019) and the exploration, preparation, implementation,

and sustainability framework. The exploration, preparation, implementation, and sustainability framework discussed inner and outer categories of the implementation process and how categories such as management and providers work together. Researching a specific SUD facility and how they learn, train, and support the adoption of EBPs compared to another facility may offer more information on the individual characteristic category of the CFIR model. This type of study would allow a researcher to have treatment providers and managers in one facility compared to treatment providers and managers in another facility.

Ongoing research for the CFIR model might benefit from assessing all five categories of the CFIR model. Padwa and Kaplan (2019) indicated the most promising approaches to implementation of EBPs is simultaneously addressing issues of several of the CFIR categories. This approach may help researchers gain more information about how these categories may be interfering with or working together. Another area for further research may be how treatment providers can effectively utilize the online resources about EBPs in substance use disorder treatment and improve their ability to implement EBPs.

Implications

Two implications for social change exist based on the results of the study. The results are beneficial to treatment providers, the leadership of substance use facilities, certainly clients of substance use facilities, and other researchers interested in the implementation sciences. The study demonstrates the need to continue understanding how and why a treatment provider implements an EBP into substance use treatment.

The first implication is that the findings of the current study may add to the body of knowledge about the individual characteristics category of the CFIR model. This study was able to determine that knowledge about EBPs was not affected by online training. Even though the results were not statistically significant there was information about knowledge about EBPs that can move research forward. Finding a way to understand how EBPs are learned and implemented and what improves knowledge about EBPs is the next step. This study also looked at beliefs about EBPs which were not significantly affected by online training. The implication that beliefs about EBPs were not affected by online training reduces the ongoing needed research into understanding how beliefs about EBPs are affected by online training.

The second implication is that treatment providers may gain more tools into how to learn about EBPs and where to learn about EBPs from online training. The ATTC provides many training and resources for learning about EBPs and the online training went over the resources and websites to gain more information about EBPs. The experimental group watched the online training from the ATTC, and the control group received the website information in the thank you for participating letters so they could watch the training if they choose to. Treatment providers often are busy with the everyday challenges of substance use treatment so finding resources to learn about EBPs online may help with their time constraints. According to Reickmann et al (2012), time constraints for treatment providers have been shown to be a barrier in the implementation of EBPs. For future researchers in the area of implementation sciences, this study did provide information about knowledge about EBPs; the next step may be to investigate

how a treatment provider's knowledge about EBPs translates into their treatment

practices.

Conclusions

In this study, I analyzed how online training affected knowledge and beliefs about

EBPs among treatment providers from Utah. I controlled for beliefs about addiction and

the pretests. Although knowledge and beliefs about EBPs are shown to be barriers in

implementing EBPs into substance use treatment, this study did not show significant

evidence confirming that knowledge or beliefs were affected by an online training from

the ATTC, while controlling for beliefs about addiction. The research community should

continue to investigate how knowledge and beliefs about EBPs affect a treatment

provider's decision to implement EBPs in substance use treatment. Future research may

also investigate a group of treatment providers in a substance use treatment center to gain

insight into how individual characteristics of the CFIR model affects treatment providers

implementation of EBPs into the SUD facilities they work for.

The results of this study may contribute to a growing body of research about the

barriers that affect the implementation of EBPs for the CFIR model. The social change

ramification from this study may be that knowledge and beliefs were not affected by

online training which may extend to a treatment provider's ability to learn EBPs, so the

next step of investigation may be, do these variables affect treatment provider's decision

making about what treatment they are using? In this study, I did not find significant

evidence for the research questions asked, however understanding that knowledge and

beliefs about EBPs were not affected by the ATTC online training may help in

understanding the role these training may have when it comes to addressing barriers like knowledge and beliefs about EBPs. Even though the results were not significant the information can still push research forward.

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Appendix A: G Power Output

F tests - ANCOVA: Fixed effects, main effects and interactions

Analysis:	A priori: Compute required sample size		
Input:	Effect size f	=	.4
	α err prob	=	0.05
	Power (1-β err prob)	=	0.80
	Numerator df	=	1
	Number of groups	=	2
	Number of covariates	=	2
Output:	Noncentrality parameter λ	=	8.3200000
	Critical F	=	4.0426521
	Denominator df	=	48
	Total sample size	=	52
	Actual power	=	0.8068454