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ENHANCING EVIDENCE-BASED TOBACCO TREATMENT SERVICES FOR CLIENTS WITH MENTAL ILLNESSES

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ENHANCING EVIDENCE-BASED TOBACCO TREATMENT SERVICES FOR
CLIENTS WITH MENTAL ILLNESSES

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DISSERTATION
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A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
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ABSTRACT OF DISSERTATION

ENHANCING EVIDENCE-BASED TOBACCO TREATMENT SERVICES FOR
CLIENTS WITH MENTAL ILLNESSES

Tobacco users with mental illnesses (MI) have continued to experience disparate rates of tobacco use, related illnesses and mortality. Despite higher rates of tobacco use among clients with MI, few providers in mental health settings deliver evidence based tobacco treatment. If tobacco use is not addressed, clients with MI will continue to experience disproportionate rates of tobacco use and related burden. Utilizing the theory of planned behavior (TPB), this study examined factors associated with provider intentions to deliver tobacco treatment, and their tobacco treatment delivery practices. Based on the main constructs of the TPB, providers' attitudes about tobacco treatment delivery, beliefs about how influential others and/or their peers view tobacco treatment delivery in their practice settings, and perceived facilitators and barriers to deliver tobacco treatment influence their intentions to deliver tobacco treatment, and subsequently their delivery of tobacco treatment.

Data were derived from a cross-sectional survey of 219 mental health providers (MHPs) in an inpatient state psychiatric facility in Kentucky. The study found that attitudes, subjective norms and perceived behavioral control significantly influenced MHPs' intentions to deliver tobacco treatment, supporting the TPB model. Additionally, intentions partially mediated the association between attitudes and brief interventions, as well as between subjective norms and MHPs' delivery of brief interventions for tobacco treatment, and fully mediated the association between perceived behavioral control and MHPs' delivery of brief interventions for tobacco treatment. Subjective norms was the strongest predictor of both intentions and the delivery of brief interventions for tobacco treatment highlighting the importance of putting more emphasis on subjective norms when designing interventions to enhance MHPs' delivery of tobacco treatment in this sample of MHPs. Marital status and disciplinary group were also found to significantly predict MHPs' intentions to deliver tobacco treatment.

Findings from this study provide useful information to guide the development of better strategies to enhance MHPs' delivery of tobacco treatment in mental health settings.

The study results also expand knowledge on current implementation of evidence-based tobacco treatment interventions in mental health settings, the nature of those interventions, and factors that facilitate or hinder MHPs' delivery of tobacco treatment to clients with MI. This knowledge may be useful in guiding tobacco treatment interventions in mental health settings to reduce the disparity in tobacco use and related burden in this vulnerable population, and to facilitate further research in this area.

KEYWORDS: Evidence-based Tobacco Treatment, Mental Health Providers, Smoking Cessation, Tobacco Cessation, Mental and Behavioral Health Settings.

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ENHANCING EVIDENCE-BASED TOBACCO TREATMENT SERVICES FOR
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DEDICATION

      To my family and friends who have walked with me throughout my academic journey and have been my strength. To my beloved son Justin who has motivated me to be the best version of me that I could ever be. To my professors UK college of Social Work, my dissertation committee, and most importantly, my dissertation chair, Dr. Melanie Otis, who has been patient with me throughout this process and has pointed the compass and maps to get me to this point. To my mentor, Dr. Chizimuzo Okoli, who has always believed in me even in times when I have doubted myself. To my late parents, Joel Otachi Momanyi and Ruth Chepkurui Otachi, who sacrificed a lot to ensure that I pursued my education wholeheartedly and motivated me to work hard.

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CHAPTER 1. RESEARCH PROBLEM

1.1 Overview

People with mental illnesses (MI) continue to experience disproportionate rates of tobacco use, related illnesses and mortality (Bandiera et al., 2015; Prochaska et al., 2017; Smith et al., 2014). Despite higher rates of tobacco use among clients with MI, provider delivery of evidence-based tobacco treatment interventions in mental health settings is still very low (Wye et al., 2017). Opportunities for encouraging mental health providers (MHPs) to engage clients with MI in tobacco cessation in mental health settings are also currently underused (Blankers et al., 2016). If tobacco use is not addressed, clients with MI will continue to be affected by disproportionate rates of tobacco use and related burden.

This study utilized the theory of planned behavior (TPB) to examine the extent to which its primary constructs *(attitudes, subjective norms and perceived behavioral control)* predict MHPs' *intentions* to deliver tobacco treatment to clients with MI, and their subsequent delivery of brief interventions for tobacco cessation *(behavior)* (Ajzen, 1991). Underlying its main constructs is the assumption that MHPs' intentions to deliver tobacco treatment to clients with MI is a result of their attitudes about tobacco treatment delivery, beliefs about how influential others and/or their peers in their practice settings view tobacco treatment delivery, and their perceived barriers and facilitators to deliver tobacco treatment. Research has supported the utility of the TPB in predicting MHPs' delivery of evidence-based tobacco treatment in mental health settings. Findings from this study will add to the understanding of factors that influence providers' decisions to deliver tobacco treatment in mental health settings.

1.2   Tobacco Use in the United States

Tobacco use is the leading cause of preventable death in the United States (US) (Das & Prochaska, 2017; Williams et al., 2016), resulting in more than 480,000 deaths annually (US Department of Health and Human Services, 2014). Evidence has linked tobacco use to adverse health effects, including heart diseases, lung diseases such as chronic obstructive pulmonary disease (COPD), stroke and various types of cancers (US Department of Health and Human Services, 2014). In the US, the cost attributable to tobacco-related burden is over $300 billion per year -$170 billion from direct medical care and $156 billion from loss of productivity (Doweiko, 2015; US Department of Health and Human Services, 2014; Xu et al., 2015). Therefore, it is critical to understand ways in which to enhance evidence-based tobacco treatment interventions in the US.

Though there has been a recent decline in smoking rates among adults in the US general population, use of other combustible, noncombustible and electronic tobacco products has significantly increased (Centers for Disease Control and Prevention, 2018; US Department of Health and Human Services, 2014, 2016). Additionally, tobacco use prevalence is reported to be higher among certain US demographics and vulnerable populations including, males, adults aged 65 years and below, non-Hispanic American Indian/ Alaska Natives, whites, blacks or multiracial adults, adults from the South and Midwest US regions, adults with general educational development certificate (GED) as their highest education, adults earning $ 35,000 and below, lesbians, gay men or bisexual adults, adults who were divorced/ separated/ widowed or single/ never married, adults with Medicaid or other publicly funded health insurance, and those with MI (Wang et al., 2018). Persons with MI have particularly been found to have higher rates of tobacco use due to

the comorbid nature of tobacco use and MI (Smith et al., 2014), higher rates of nicotine dependence (Grant et al., 2004; Lasser et al., 2000), greater nicotine withdrawal symptoms when quitting, and greater difficulty in quitting (McClave et al., 2010; Prochaska et al., 2017). However, findings from clinical trials suggest that if people with MI or severe MI are provided with evidence-based tobacco treatment interventions, they are able to successfully quit their tobacco use (Banham & Gilbody, 2010). Thus, there is a need to encourage MHPs to engage clients with MI in tobacco cessation.

1.3   Tobacco Use and Mental Illness

Despite rates of smoking decreasing in the US general population, people with MI have continued to experience disparate rates of tobacco use as compared to those without MI (Cook, 2014; Prochaska et al., 2017). Approximately one in four adults in the US has some form of MI and on average these individuals consume 40% of all cigarettes smoked by adults (Substance Abuse and Mental Health Services Administration, 2013). Rates of tobacco use are projected to be even higher (74%) among clinical samples with severe mental illnesses (SMI), including those diagnosed with schizophrenia, bipolar disorder, post-traumatic stress disorder (PTSD), and alcohol/illicit drug use disorders (Annamalai et al., 2015; Das & Prochaska, 2017; Diaz et al., 2009; Prochaska et al., 2017), as well as among hospitalized clients with MI (63%) in inpatient psychiatric settings (Okoli & Seng, 2019). Among a sample of inpatients with MI, rates of tobacco use were approximately 77% among those with an externalizing disorder such as substance use and personality disorders, 61.6% among those with a psychotic disorder such as schizophrenia or

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schizoaffective disorders, and 60% among those with an internalizing disorder such as anxiety and depressive disorders (Okoli & Seng, 2019).

Effects of tobacco use are devastating among adults with MI due to tobacco-related lung diseases, heart diseases and some cancers (Druss et al., 2011; Pratt, 2015). On average, people with MI and SMI die approximately 25 years prematurely due to tobacco-related illnesses (Prochaska et al., 2017). Thus, understanding ways to enhance tobacco cessation for this vulnerable population is a critical aspect of evidence-based care in social work.

1.4   Tobacco Use in Kentucky

Kentucky is among US states with a high rate of tobacco use with an estimated adult prevalence of approximately 23%, a rate higher than the US national average (17%) (Centers for Disease Control and Prevention, 2020; Cornelius et al., 2020). Approximately 87% of tobacco-related deaths occurring every year in Kentucky are mainly due to lung cancer (Kentucky Cabinet for Health and Family Services, 2010). Higher rates of tobacco use in Kentucky result in approximately $1.92 billion spent in health care costs (Campaign for Tobacco Free Kids, 2021a), and approximately $ 2.79 billion in losses projected to occur every year due to reduced productivity (Campaign for Tobacco-Free Kids, 2020). Therefore, enhancing evidence-based tobacco control strategies in Kentucky is critical in addressing the disparate rates of tobacco use and related health and economic burden in the state, and more importantly, may have profound health impacts on disparate populations such as persons with MI. These strategies include adoption of public and private smoke-free policies, strengthening comprehensive statewide tobacco control programs, increasing the unit price of tobacco products, expanding insurance coverage for tobacco cessation

products and limiting access of tobacco products to minors (Centers for Disease Control and Prevention, 2014).

Though tobacco use is the leading public health threat in Kentucky, the state still lags behind in implementation of tobacco prevention and cessation programs (Kentucky Cabinet for Health and Family Services, 2010). Compared to the national average (\$ 1.73), the state of Kentucky ranks about 37th in collection of cigarette taxes (\$ 1.10 per pack) (Campaign for Tobacco-Free Kids, 2021 b; Truth Initiative, 2020). Kentucky received approximately \$503 million in tobacco settlement payments and taxes in fiscal year 2020/ 2021 however, only \$2.0 million in state funds were allocated to tobacco prevention, which is below the \$ 56.4 million spending recommended by the Centers for Disease Control and Prevention's (Campaign for Tobacco-Free Kids, 2021 a). Additionally, despite smoking restrictions in state government buildings and schools, there are still no smoking restrictions in many private workplaces, childcare facilities, restaurants, bars, casinos/ gaming establishments, retail stores and recreational facilities in Kentucky (Truth Initiative, 2020). Consequently, if evidence-based tobacco control initiatives are not implemented in Kentucky, the state will continue experiencing disparate rates of tobacco use and related burden, thus significantly impacting persons with MI.

1.5   Statement of the Problem

Despite higher rates of tobacco use among clients with MI and its devastating effects, delivery of evidence-based tobacco treatment by mental health providers (MHPs) is still very low (Wye et al., 2017). MHPs are trained to deliver services that seek to improve mental health outcomes of their clients (e.g., clinical social workers, clinical psychologists,

psychiatrists and psychiatric nurses) (Ziedonis et al., 2008). Current clinical practice guidelines recommend that MHPs routinely engage clients with MI in tobacco treatment through brief interventions (Fiore et al., 2008), however, few providers in mental and behavioral health settings deliver this recommended treatment (Wye et al., 2017). In fact, evidence suggests that clients with MI are less likely to receive advice to quit tobacco use from their MHPs (Hitsman et al., 2009; Mitchell et al., 2015; Wye et al., 2017). This may have led to high rates of tobacco use and its negative health effects on clients with MI (Callaghan et al., 2014; Saiyad & El-Mallakh, 2012), and more so among those with severe MI (Cook, 2014). Increasing opportunities for enhancing MHPs' delivery of tobacco treatment for clients with MI is crucial in addressing the disparate rates of tobacco use and related burden in this vulnerable population.

1.6   Study Significance

Providing tobacco cessation interventions to clients with MI is an important aspect of evidence-based care in social work. Study findings will highlight factors associated with MHPs' behavioral intentions to deliver tobacco treatment and their current practice behaviors related to provision of brief interventions for tobacco cessation to clients with MI. This can facilitate development of tailored interventions to increase MHPs' delivery of tobacco treatment to clients with MI, hence, addressing the disparity of tobacco use and related negative consequences in this vulnerable population.

1.7   Relevance in Social Work Practice

Although tobacco use is a public health problem, it is also considered an issue of social justice due to its disproportionate effects on certain vulnerable groups (Campbell et al., 2016; Healton & Nelson, 2004) such as clients with MI (Prochaska et al., 2017; Williams et al., 2013). Clients with MI have higher risks of tobacco-related burden and lower life expectancy due to tobacco-related illnesses (Prochaska et al., 2017), and disparity in receipt of evidence-based tobacco treatment interventions (Wye et al., 2017). Ideally, tobacco users with MI should receive more cessation advice/guidance than the general population due to higher rates of tobacco use and related negative consequences; however, evidence suggests that MHPs do not adequately engage clients with MI in tobacco treatment (Himelhoch et al., 2014; McClave et al., 2010).

In the US, social workers are among the largest professional groups in mental and substance abuse treatment (Clark, 2002). As mental and behavioral health needs of Americans continue to increase, it is projected that there will be an increase of approximately 23% in the demand for social workers in mental and behavioral health settings by 2022 as compared to other professions (Clark, 2002; Council on Social Work Education, 2014). Clients with MI are able to quit tobacco use if they are provided with evidence-based tobacco cessation interventions and resources to increase their chances of quitting (Banham & Gilbody, 2010). Social workers are strategically positioned in mental and behavioral health settings to provide the required evidence-based tobacco cessation interventions to clients with MI (Council on Social Work Education, 2014). Techniques widely used in social work practice, such as motivational interviewing (Banham & Gilbody, 2010; Compton et al., 2006; Fiore et al., 2008; Roberts et al., 2016), brief

interventions (Das & Prochaska, 2017; Dixon et al., 2009; Fiore et al., 2008; Stead et al., 2016), and cognitive-behavioral therapy (Martínez-Vispo et al., 2019), have been shown to be effective in promoting tobacco cessation. This highlights the critical role social workers can play in enhancing evidence-based tobacco treatment interventions in mental and behavioral health settings. Thus, opportunities to encourage social workers to engage clients with MI in tobacco treatment should be encouraged as an integral part of social work practice in mental and behavioral health treatment.

1.8   Research Questions

Mental health providers (MHPs) can play a critical role in reducing the tobacco burden among people with MI through provision of recommended brief interventions i.e., the 5 As approach (Ask, Advise, Assess, Assist and Arrange) (Fiore et al., 2008). However, although most providers ask and advise their clients about tobacco use, evidence suggests that few assess, assist and arrange or refer their clients for evidence-based tobacco treatment services (Okoli et al., 2017). Such existing gaps are even more prominent among providers in mental health settings (Himelhoch et al., 2014; Wye et al., 2017). Therefore, it is crucial to examine and enhance MHPs' tobacco treatment delivery within mental health settings. Utilizing the TPB, this study examined factors influencing MHPs' delivery of evidence-based tobacco treatment in an inpatient psychiatric setting. The research questions that guided this study include:

1. Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?

2. Whether MHPs' attitudes, subjective norms, perceived behavioral control and

intentions influenced their delivery of brief interventions for tobacco cessation to clients MI?

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The focus of this literature review is on the application of the TPB in examining MHPs' intentions to deliver tobacco treatment, and/ or their practice behaviors related to delivery of evidence-based tobacco cessation interventions.

2.1 Brief overview of tobacco treatment delivery in mental and behavioral health settings

Evidence suggests that MHPs can play a critical role in reducing tobacco use and related burden among people with MI (Sharma et al., 2018; Wells et al., 2013) through brief interventions for tobacco cessation (Fiore et al., 2008). Higher cessation attempts in the US general population have been linked with providers' advising their clients to quit tobacco use (Stead et al., 2013); therefore, tobacco users with MI should receive more cessation advice than the general population due to higher rates of tobacco use and related burden in this population. Despite existence of effective and safe evidence-based tobacco cessation interventions along with evidence that people with MI are motivated and able to quit successfully (Annamalai et al., 2015; Banham & Gilbody, 2010; Fiore et al., 2008), few MHPs engage clients with MI in tobacco treatment (Himelhoch et al., 2014). Therefore, understanding factors that influence tobacco treatment delivery in mental and behavioral health settings is critical in addressing the disproportionate rates of tobacco use, related illnesses and mortality in this vulnerable population.

Studies have shown that MHPs may fail to deliver tobacco treatment for clients with MI due to attitudes and beliefs about tobacco use and tobacco cessation for people with MI (Sheals et al., 2016). For instance, some providers believe that quitting tobacco use may

aggravate psychiatric symptoms among clients with MI (Johnson et al., 2017; McNally et al., 2006; Ratschen et al., 2009), or that clients with MI are unable to quit and/or unmotivated to quit tobacco use (Sheals et al., 2016). These attitudes and beliefs may undermine tobacco treatment delivery for clients with MI. Other provider-related barriers may include lack of time, more focus on treating psychiatric diagnoses rather than providing addiction treatment, lack of training in tobacco treatment, and having low self-efficacy in delivering tailored tobacco treatment to clients with MI (Himelhoch et al., 2014; Hitsman et al., 2009; Sheals et al., 2016). Patient barriers (e.g., poor confidence in quitting) and organizational barriers (e.g., lack of resources and policies for tobacco treatment) may also hinder MHPs' delivery of tobacco treatment (Sharma et al., 2018).

Engaging tobacco users with MI in tobacco treatment is a critical aspect of evidence-based practice in social work. Therefore, understanding factors that influence MHPs' behavioral intentions to deliver evidence-based tobacco treatment to clients with MI and their tobacco treatment delivery practice behaviors is critical in addressing gaps in evidence-based tobacco treatment provision in mental and behavioral health settings.

2.2   Theoretical Framework

Theory provides a conceptual framework for illustrating causal processes or key constructs hypothesized to influence or change a target behavior (Glanz et al., 2008). The health belief model (HBM) (Bandura, 1977; Becker, 1974), theory of planned behavior (TPB), transtheoretical model and social cognitive theory (SCT) (Bandura, 1977; DiClemente, Crosby, & Kegler, 2009; Glanz et al., 2008) are four widely used theories that help to inform interventions for people with MI. These theories have been used to address

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targeted behaviors such as lifestyle habits, chronic disease self-management, coping with mental health symptoms and health service utilization (Glanz et al., 2008; Naslund et al., 2017); however, the theory of planned behavior (TPB) is the most prominent theory in health literature attempting to predict behavioral intentions (Ajzen, 1991; Casper, 2007; DiClemente et al., 2009; Perkins et al., 2007).

A conceptual framework derived from the TPB and relevant empirical literature guided this study to facilitate understanding of MHPs' behavioral intentions to provide tobacco treatment to clients with MI, and their current practice behaviors related to delivery of evidence- based tobacco treatment (brief interventions for tobacco cessation) to clients with MI. Underlying the TPB's main constructs is the belief that a person's intentions to engage in a certain behavior are a result of their attitudes (the extent to which a person has favorable or unfavorable judgments), subjective norms (the perceived social pressure to execute or not execute the behavior), and perceived behavioral control (the perceived ease or challenge of performing the behavior) (Ajzen, 1991).

In application to the problem of tobacco treatment delivery for clients with MI, underlying the key constructs of the TPB is the belief that a MHPs' intentions to deliver tobacco treatment and eventually their actual delivery of tobacco treatment is influenced by their attitudes (the extent to which a MHP has favorable or unfavorable judgments towards delivery of tobacco treatment), subjective norms (the perceived social pressure to deliver or not deliver tobacco treatment in mental and behavioral health settings), and perceived behavioral control (the perceived ease or challenge of delivery of tobacco treatment) (Ajzen, 1991). Figure 2.1 provides a summary of the primary TPB constructs applied to MHPs' tobacco treatment delivery to clients with MI.
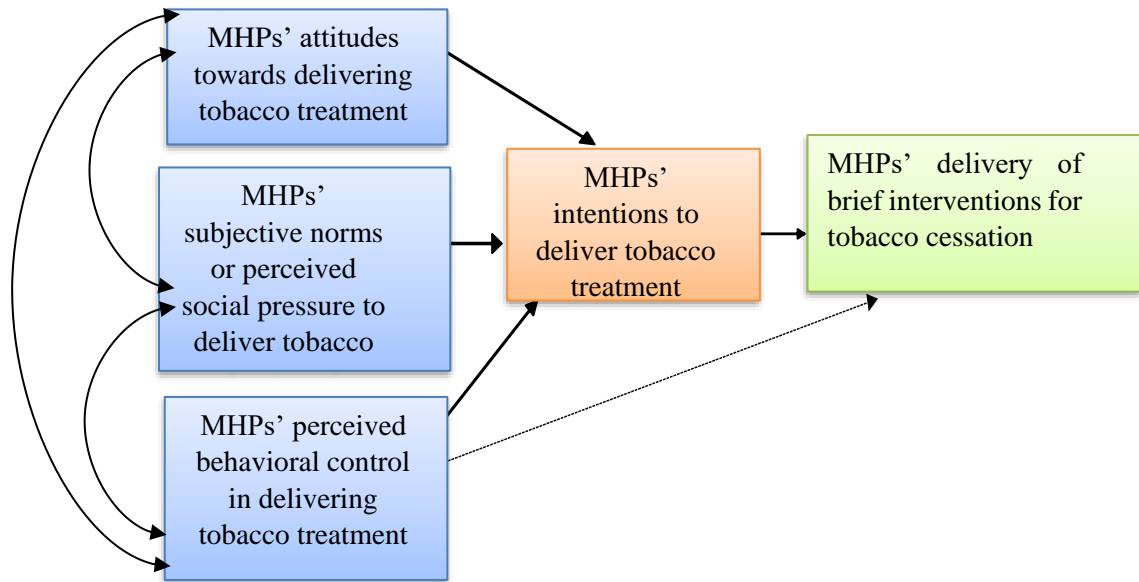
Figure 2-1. Primary constructs of the TPB applied to MHPs' delivery of tobacco treatment (Ajzen, 1991, 2006; Kortteisto et al., 2010).

According to the TPB model, the three main predictor variables of MHPs' intentions and subsequently their practice behaviors include: 1) Whether MHPs' favor delivery of tobacco treatment (*attitude*), 2) How much MHPs' feel social pressure to deliver or not deliver tobacco treatment (*subjective norm*), and 3) Whether MHPs' feel in control of factors that would make delivery of tobacco treatment easy or difficult (*perceived behavioral control*) (Ajzen, 1991; Francis et al., 2004). Based on these key assumptions, if MHPs have more positive attitudes towards tobacco treatment delivery, stronger subjective norms or perceived social pressure to deliver tobacco treatment, and stronger perceived behavioral control in the delivery of tobacco treatment to clients with MI, they will have a higher behavioral intent to deliver tobacco treatment to their clients with MI, and eventually MHPs will engage them in brief interventions for tobacco cessation. It is also

important to note that though intention is assumed as the immediate antecedent of MHPs'
engaging clients with MI in brief interventions for tobacco cessation, perceived behavioral
control towards provision of tobacco cessation to clients with MI may also directly
influence their tobacco treatment delivery practice behavior (Ajzen, 2006) as shown in
Figure 2.1. Knowledge of these factors among MHPs is useful in informing the
development of tailored interventions that target increasing MHPs delivery of evidence-
based tobacco treatment to clients with MI, hence, reducing the tobacco-related disparity
in this population.

2.3   Review of studies supporting the TPB Model for Substance Use Behavior
Change

Several studies and meta-analyses have supported the utility of the TPB in predicting
various health behaviors. A meta-analysis of more than 200 studies found that on average
attitudes, subjective norms, and perceived behavior control accounted for 44% of the
variance in intentions and perceived behavioral control, with intentions accounting for 19%
of the variance in behavior across a range of health or health-related risk behaviors,
including physical activity, diet, drug use, safer sex, abstinence and screening (McEachan
et al., 2011). In addition, studies that have applied the TPB to examine intentions and
behaviors related to binge drinking found the TPB as a robust theoretical framework for
predicting and understanding alcohol-related behaviors (Cooke et al., 2007; Norman et al.,
2007). A study by Booth and colleagues (2014) also supported the TPB as a relevant model
for understanding perceived need for treatment among African American cocaine users
(Booth et al., 2014).

Several studies have utilized the TPB to understand clients' intentions towards engaging in tobacco cessation in the US general population (Macy et al., 2012), among peri-operative patients in the US (Shi et al., 2014), in Korean American men and women (Kim, 2008; Kim et al., 2013), and in lesbian, gay men, bisexual and transgendered (LGBT) persons in the US (Burkhalter et al., 2009). Additionally, the TPB has been used to predict the provision of tobacco treatment among health care providers in community health settings in Vietnam (Shelley et al., 2014) and in mental health settings in the Netherlands and in the US, respectively (Blankers et al., 2016; Okoli et al., 2017).

2.4   Review of studies supporting the TPB model in predicting and modifying providers' behaviors.

Application of the TPB to predict and modify providers behavior has been demonstrated in several studies seeking to examine and apply new practice techniques and information among providers in medical (Cassista et al., 2014; Edwards et al., 2001; Jenner et al., 2002; Kortteisto et al., 2010; Liabsuetrakul et al., 2003; McCarty et al., 2003; Roelands et al., 2006; Shelley et al., 2014; Thompson et al., 2015; Walker et al., 2001), behavioral (Breslin et al., 2001; Ingersoll et al., 2018; Kelly et al., 2012) and mental health settings (Blankers et al., 2016; Burgess et al., 2017; Klaybor, 1999; Okoli et al., 2017; Sprenger et al., 2017). See Table 2.1 for a summary of these studies.

Though these studies support the utility of the TPB model in predicting providers' intentions and behaviors, they have utilized different scale items for measuring the TPB constructs and found different constructs of the TPB to significantly influence providers' intentions and/ or behaviors. Thus, there is a need for more studies to test the TPB

model/constructs in predicting and modifying providers' behaviors to inform the development of context-specific interventions for providers in various settings.

The reviewed studies were critical in informing the current study's conceptualization, analysis and application of the results to design a TPB informed intervention. The studies supported the utility of using the TPB model in examining and influencing provider behavior in medical, behavioral and mental health settings. The findings from the reviewed studies also highlighted gaps in utilization of the TPB in examining MHPs' intentions and/or behaviors in mental health settings, justifying the need for more studies utilizing the TPB in mental health settings to determine best-tailored approaches for increasing tobacco treatment in these settings.

Kortteisto (2010) and Okoli et al. (2017) each used the TPB in multiple linear regressions to assess the determinants of providers' intentions to use clinical practice guidelines in general patient care decision-making and in delivery of evidence-based tobacco treatment in a mental health setting, respectively. The results from these two studies showed that all three constructs of the TPB (attitudes, subjective norms and perceived behavioral control) influenced provider intentions and/or practice behaviors in relation to use of clinical practice guidelines. Kortteisto (2010) highlighted differences in intentions among different provider groups with higher intentions reported among nurse and physician groups compared to other professionals. Similarly, Okoli and colleagues (2017) found differences in delivery of brief interventions for tobacco cessation among different provider groups with higher rates of reported delivery of brief interventions among medical and nursing staff compared to other provider groups. For the current study,

these studies were key in influencing the selection of control variables such as disciplinary group in examining the differences in intentions and delivery of evidence-based practices.

It is worth noting that the reviewed studies used different scale measures to examine provider behavior and found different constructs of the TPB to predict provider intentions and/or behaviors. These findings suggest the importance of evaluating the reliability and validity of the TPB measures in examining MHPs' intentions and their practice behaviors in relation to provision of tobacco treatment in mental health settings.

Cassista et al., (2014) utilized the TPB to examine nurses' intention to adhere to treatment guidelines of using filter needles after an educational and information dissemination intervention. The study found that nurses' intentions improved slightly post-intervention. Burgess et al., (2017) highlighted a gap in disseminating and implementing evidence-based practices and utilized the TPB to inform the development of a TPB informed intervention to bridge the gap between evidence and practice. These two studies were instrumental in providing a conceptual framework for designing a TPB informed intervention to encourage MHPs to adhere to the clinical practice guidelines for addressing tobacco dependence by engaging clients with MI in tobacco treatment as a way of addressing gaps in research and evidence-based practice.

2.5   Application of the TPB model in mental health settings

While the TPB has been widely used to examine intentions and/or behavior in medical, behavioral and public health settings, few studies have applied the TPB in mental health settings, particularly in mental health social work. This may be due to the TPB's focus on individual motivational factors as determinants of behavior (Glanz et al., 2008).

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Though discipline of social work targets individual empowerment under the strengths-based perspective, much of health services research and evidence-based practice in social work has relied heavily on person-in-environment framework (Steketee et al., 2017). However, with the recent focus on public health social work (Ruth, 2017), use of popular public health individual-level behavior change models such as the TPB have become widespread in social work as well. Recent studies in social work utilizing the TPB include a qualitative study that applied the TPB to understand child welfare caseworkers' decisions to refer their clients for evidence-based practices (Myers et al., 2019), and a survey that utilized the TPB constructs to examine whether caseworkers' demographics, attitudes towards evidence-based practices, and/or organizational factors predicted their client referrals to an evidence-based parental program (Myers et al., 2020). A dissertation by Laster (2018) also utilized the TPB to examine social workers' beliefs about reporting suspected elder abuse to Adult Protective Services (APS). The study supported the utility of the TPB particularly in organizing a set of constructs for data collection, and highlighted the complexity involved in decision-making regarding reporting suspected elder abuse in a sample of social workers.

Among the few studies that have applied the TPB model in understanding and predicting provider intentions and/ or behaviors in mental health settings is a dissertation by Klaybor (1999) which utilized the TPB to examine predictors of social workers' intentions to use DSM-IV and their actual use of DSM-IV in client assessment and treatment. The results indicated a strong support for the framework with 1) attitudes related to increased competence and credibility; (2) ability or self-efficacy to apply DSM-IV due to confidence, training, and facility related factors; and (3) peer influence from other mental

health providers, predicting social workers' intentions to use DSM-IV, and their use of DSM-IV in client assessment and treatment. The findings further suggested that social workers' attitudes towards use of the DSM-IV (believe that it advances their professional competence and credibility) motivates them to use it in client assessment and treatment. In addition, training and confidence in their abilities to use the DSM-IV accurately influenced the likelihood of social workers using the DSM-IV even when they felt that their professional environment was less supportive. Most recently, a study by Burgess et al. (2017) conducted in-depth semi-structured interviews using the TPB framework to examine MHPs' (clinical supervisors, case managers, administrators at the departments of health and education, and direct service providers in clinic- based, school-based, and intensive in-home settings) views about implementing evidence-based practices in community-based mental health programs targeting youth. The study results suggested the TPB as a useful framework in conceptualizing dissemination and implementation of youth mental health treatments. Sprenger et al. (2017) utilized the TPB to assess MHPs' intentions to use and recommend e-mental health applications. The study examined health providers' intentions to use and recommend e-mental health applications for maternal depression among different provider groups. The study found differences in provider attitudes towards e-mental health applications, with lower levels of support from psychologists as compared to other provider groups. The study also highlighted provider support for use of e-mental health applications for screening, prevention and follow-up rather than for treatment, assessment or diagnosis of maternal depression (Sprenger et al., 2017).

Only two studies have applied the TPB model in examining MHPs' delivery of evidence-based tobacco treatment interventions in mental health settings (Blankers et al., 2016; Okoli et al., 2017). Blankers et al.'s (2016) study included 506 MHPs recruited from three mental health settings in Netherlands (an integrated mental health care facility with both in-patient and outpatient clinics, substance abuse treatment centers and regional institutes for sheltered housing). A majority of the respondents were female (70%), approximately 42.5 years of age (SD=12 years), had a college degree (75%), with highest discipline represented being nursing (38.2%), followed by social work (15.6%), psychology (8.0%), medicine (6.1%) and therapists (2.4%). About 30% of the respondents did not have a background in mental health. Okoli et al.'s (2017) study included 195 MHPs working in an inpatient psychiatric facility in the United States. The respondents were predominantly females (79.5%), white (79.5%), with a college degree (71.3%), aged approximately 35.3 years (SD=12.4), were either single or separated/ divorced (34.5%) and approximately 18% were tobacco users. Additionally, a majority of the sample were mental health associates/state registered nursing assistants (43.1%) and on average had worked for about 35.2 months (SD=63.9).

The results from these studies regarding the TPB constructs predicting MHPs' intentions to deliver tobacco treatment and their actual implementation of tobacco treatment interventions to clients with MI differed. The two studies identified different constructs of the TPB were predictive of MHPs' intentions and/or behaviors related to provision of evidence-based tobacco treatment to clients with MI. According to Blankers et al. (2016), staff attitudes and perceived behavioral control predicted MHPs' intentions to deliver tobacco treatment, while subjective norms was not a significant predictor. On the

other hand, Okoli et al. (2017) found that attitudes, subjective norms, and perceived behavioral control were associated with MHPs' intentions to deliver tobacco treatment when controlling for demographics. However, only subjective norms and perceived behavioral control were associated with their reported provision of evidence-based tobacco treatment. The differences may have been a result of unaccounted differences in countries, population groups, policy environments, and/or the way the TPB variables were measured. Therefore, there is need for more studies to test the applicability of the TPB constructs in influencing MHPs' tobacco treatment delivery in mental health settings. Findings from the current study will be instrumental in testing the applicability of the TPB model in examining provider intentions and their practice behaviors in relation to the delivery of evidence-based tobacco treatment in mental health settings. The findings will also guide the development of effective tailored interventions targeted to increase MHPs delivery of evidence-based tobacco treatment interventions to clients with MI among different provider groups.

Table 2-1. Summary of Studies on the TPB and provider behaviors

Study	Country	Sample Size included in analysis (n) RR=Response Rate	Setting	Study Design	Outcome Variable/s	Analysis	TPB Scale Items (Attitude= ATT; Subjective Norms= SN; Perceived Behavioral Control= PBC); Cronbach's alpha= α	Main Outcomes	Adjustment Factors
					Medical settings				
Edwards et al., 2001	Australia	446 (RR=55.8%)	Registered Nurses nationwide from both public and private sector; Surgical/ peri-operative 29.4%; Medical 19.5%; Critical care/ accident and emergency 13.0%; midwifery 11.9%; mental health 6.7%; oncology 5.6%; gerontology 4.9%; pediatrics 3.6%; general nursing 5.4%.	Cross-Sectional survey	Nurses intention to administer opioids to patients for pain relief	Standard Multiple Regression	Direct ATT (28 items) α= 0.78; Belief based attitude (6 Items) α=0.61; SN (2 items) α=0.67; Indirect Control (effects of Ward on self-efficacy) (5 items) α=0.53; Direct Control/ PBC/ self-efficacy (3 items) α=0.68; Intentions (3 items) α=0.79.	The model explained 39% of the variance in nurses' intention to administer opioids for pain relief, $F_{(5, 440)}=56.7$, $p<0.01$. Perceived control, positive attitudes and subjective norms were significant predictors of nurses' intentions, with perceived control as the strongest predictor.	Not indicated
McCarty et al., 2001.	United States	397 staff nurses (RR=68%)	Staff nurses at 4 Hospitals. Nursing unit included; cardiology (83); medical/ surgical combined (46); medical only (48);	Cross-Sectional survey	Nurses attitudes and beliefs toward their role in providing brief cessation advice to hospitalized smokers.	Multiple Linear Regression Model	Behavioral beliefs (5 items) α=0.78; ATT (7 items) α=0.78; SN (6 items) α =0.82; PBC (8 items) α=0.83.	ATT, PBC and unit worked were significant predictors of nurses' self-reported delivery of tobacco	Demographic and employment characteristics

								cessation. SN was not significant.	
			oncology (32); orthopedics (63); surgery (42); other (53).						
Walker et al., 2001	Britain/ UK	185 GPs (RR= 68%)	Outpatient clinics	Cross-sectional survey	GPs intentions to prescribe antibiotics to patients with sore throat and to identify salient beliefs associated with this intention (to minimize overprescribing).	Standard multiple regression	Indirect ATT i.e. behavioral beliefs and outcome evaluations (12 items) α=0.57; Indirect SN i.e. normative beliefs and motivation to comply (6 items) α=0.58; direct PBC (2 items) α=0.62.and Indirect PBC i.e., control beliefs α=0.77; Intention (1item).	TPB predicted 48% in the variance of GPs intention to prescribe antibiotics. Past behavior added 15%. ATT and PBC were the strongest predictors.	Past prescribing behavior
Jenner et al., 2002	Britain/ UK	304 hospital health care workers (RR=34.2%)	In patient teaching hospital (RNs=73%; therapists 16%; health care assistants 4%; doctors 3%).	Cross-sectional survey	Intentions of health care workers to practice hand washing hygiene (not practicing proper hand hygiene results to 8% of hospital acquired infections)	Hierarchical logistic regression	ATT (4 items) α=0.77; SN (2 items) α=0.71; PBC (2 items) α=0.83); Intentions (4 items) α=0.78.	The model predicted 79% of the variance in intentions towards appropriate hand hygiene and 87% of self-reported hand hygiene behavior. ATT and personal responsibility were significant predictors of intention, while PBC and intention	Personal responsibility and barriers e.g., time.

								were significant predictors of hand washing behavior.	
Liabsuetrakul et al., 2003.	Thailand	50 Obstetricians	University hospital= 32; Regional hospital=13; General hospital=5	Mixed methods (self-administered surveys and in-depth interviews)	Obstetricians' intentions to prescribe antibiotic prophylaxis in C-section births to prevent infections.	Multiple linear regression; Qualitative Analysis included transcription of scripts verbatim; recorded by ethnograph and content analyzed by code mapping.	ATT (4 items); SN (5 items); PBC (8 items). Range of α = 0.64 to 0.85.	Findings highlighted low intentions by obstetricians to use antibiotics to prevent infections especially a single-dose regimen. SN was a significant predictor of overall intention to use antibiotic prophylaxis (β 0.28. p<0:01; R^2=0:56).	Residency-training school, age of obstetrician, and status of working hospital
Roelands et al., 2006.	Belgium	64 Home health nurses	Government funded home Nursing	Cross-Sectional Survey	Home health nurses' intentions and current practices regarding introducing assistive devices to their patients.	Multiple Linear Regression	ATT α=0.79; SN α =0.76 and PBC α=0.87 were each measured by 6 items and composite score referred to as socio-cognitive determinants/ scale α=0.78; Current practices (12 items) α=0.90.	ATT and PBC predicted 47% of home nurses' intentions to introduce assistive devices; intentions predicted 8% of their current practices. SN was not a significant predictor of intention.	Not indicated

Kortteisto et al., 2010.	Finland	806 (RR=36%)	26 public funded health care Organizations within 3 hospital districts; Respondents included physicians (135), nurses (552) and other health care professionals with at least nursing level education (112)	Cross-Sectional Survey	Factors affecting health care professionals' intention to use clinical guidelines in their general patient care decision-making.	Multiple Linear Regression	ATT (3 items); SN (3 items); PBC (6 items). α >0.8 for all items. Intention (1 item).	ATT, SN and PBC predicted health care professionals' intentions to use clinical guidelines in patient care. Nurses' model explained 34% of the variation in the intention to use clinical guidelines; professional model explained 32% of the variation in the intention to use clinical guidelines and physician model explained 48% of the variation in the intention to use clinical guidelines.	Individual and organizational characteristics
Cassista et al., 2014	Canada	Pre-interventions 242 (RR=66.5%) Post-Intervention 169 (62.6%	Nurses from 5 care units from ICU, PICU, NICU, pediatrics.	Cross-Sectional Survey (pre and post-test)	Nurses intention to adhere to treatment guidelines of using filter needles after an educational and Information Dissemination intervention.	Logistic Regression	Intention (1 item) dichotomized high = 7; moderate <7; ATT (6 Items); PBC 3 items. Used single scale items in the analysis and not a composite scale.	From Wilcoxon rank test, ATT and PBC were significant predictors of intentions post intervention, but in the logistic regression only PBC remained a significant predictor of intentions; odds ratio 3.60 (95% CI: 1.54–8.46; P = 0.0032). The final logistic regression model explained	Not indicated

							32.5% (Nagelkerke R^2) of the variance in the intention score.	
Shelley et al., 2014	Vietnam	134	Community health centers; Physicians (10%), nurses (37%), midwives (13%), Physician Assistants (37%) and pharmacists (2%) working in 23 community health centers in Vietnam	Cross-Sectional Survey	Factors influencing health workers adherence to Guideline recommended tobacco use screening and Cessation Interventions	Multiple Logistic Regression	ATT (5 items) α=0.32; SN (2 items) α=0.27; PBC (3 items)= 0.42.	SN was the only factor predicting providers' adherence to tobacco treatment guidelines.

Demographics; smoking status; tobacco treatment training; smoking policy in the CHC

Thompson-Leduc et al., 2015	Canada, USA, Netherlands, UK, Australia	20 studies	Studies published in French or English; No study design excluded	Systematic Review	Shared decision making (SDM)	Narrative Summary. Used Mixed Methods Appraisal Tool (Version 2011) to assess for quality.	Studies that assessed health professionals' intention and/or performance of SDM using the TPB, the TRA or explicit extensions of These models as theoretical frameworks were included in the analysis	SN was the strongest predictor of intentions for SDM.	N/A
Behavioral Health Settings									
Breslin et al., 2001	Canada	98 addiction counselors (RR at baseline= 65%; Follow-up RR= 86%)	Outpatient treatment center for young substance abusers	Prospective cohort	Predict dissemination of an addiction program	Hierarchical regression to test the utility of the TPB and to predict use of the First Contact (FC) Program for addiction treatment	ATT (3 items) α=0.90; SN (4 items) α= 0.75; PBC (10 items) α= 0.76; Intention (3 items) α =0.85.	At baseline, ATTs and SNs predicted 56% in counselors' intentions to adopt the program. At 6 months, intention to adopt and PBC predicted 19% of variance in level of actual program used.	Earlier use of draft materials, years of clinical work, alternative strategies and therapeutic orientation.
Kelly et al., 2012	Australia	106 (RR=68%)	Salvation Army residential substance abuse workers	Cross-Sectional Survey	Clinicians intentions to use EBPs	Linear regression	ATT (4 items) α= 0.87; SN (4 items) α= 0.79; PBC (4 items) α= 0.71; Intention (3 items α= 0.90.	Model accounted for 41% of the variance in intentions to use EBPs. ATT, SN and PBC were significant predictors of EBPs; however,	Demographics (e.g., age)

								SN was the strongest predictor.	
Ingersoll et al., 2018	USA	125 (RR=41%)	Community providers; Social workers (12.3%), speech Language Pathologist (28.1%), speech education teacher (5.3%), early Intervention provider (12.3%), Psychologist (7.0%), Occupational therapist (14.0%), other (19.3%).	Intervention (Training)	Provider intentions to utilize an evidence-based parent-mediated intervention (project IMPACT) for children with autism spectrum disorder (ASD) post-training.	Hierarchical regression to test the TPB model; Logistic regression to determine if Intentions Influenced use of Intervention after 6 months.	ATT, SN and PB (I item each).	Study 1: ATT, PBC and Provider education, predicted intentions to use project IMPACT 6 months post-training. Study 2: ATT and PBC predicted intentions, and significantly improved post-training.	Demographics (workshop type, age, gender, ethnicity, education, occupation, years of experience working with children with ASD).
			Mental Health Settings						
Klaybor, 1999.	USA	249 (RR=26.4%)	Social Workers registered with NASW as MHPs (primary practice= mental health).	Exploratory cross-Sectional Study	Predictors of social workers intentions to use DSM-IV and use of DSM-IV in client assessment and Treatment	Path analyses Using Hierarchical Multiple Regressions to assess Social workers' intention to use the DSM-IV and use of the DSM in assessment and treatment.	ATT(3 factors); SN (3 factors); PBC (1 factor).	ATT related to increased competence and credibility; ability or self-efficacy to apply DSM-IV due to confidence, training, and facility related factors; and SNs/ peer influence from other MHPs, predicted intention to use DSM-IV.	Demographics (age, gender, year in social work practice, race/ ethnicity and practice setting).
Burgess et al, 2017.	USA	25	Youth mental health (school-Based counseling, clinic-	Qualitative	Provider intentions to implement evidence-based practices (EBPs) in	Semi-structured in-Depth Interviews	ATT= MHPs attitude towards EBPs (5 direct measures);	The TPB is a useful framework for conceptualizing dissemination and	Indirect measures (behavioral beliefs; outcome

			based outpatient, community-based outpatient, in-home services) settings with 10 Direct Service Providers, 8 Community based stakeholders and 7 Expert stakeholders included in the Study		community based mental health programs targeting the youth		SNs= Colleague attitude towards EBPs (3 direct measures); PBC= agency support, implementation barriers and quality of training (4 Direct measures); Intentions (4 direct measures).	implementation of EBPs for youth mental health treatments.	evaluation; normative belief; motivation to comply; control belief; influence of control belief).
Provider delivery of tobacco cessation in mental health settings									
Blankers et al., 2016	Netherlands	506 (RR=65.7%)	Integrated mental health care (in-patient and out-patient), substance abuse treatment centers & regional institutes for sheltered housing; Nursing (38.2%), Social Workers (15.6%), Psychologists (8.0%), Medicine (6.1%), therapists (2.4%), no mental health background (29.7%).	Cross-Sectional Survey	MHPs' intentions to deliver tobacco treatment	Structural Equation Modeling	Intentions to deliver tobacco treatment (4 items) α=0.80; ATT (12 items)α =0.90); SN (4 items) α=0.71; PBC (4 items) α=0.65). SN Measure: presence of a smoking policy clearly written in the wards.	ATT, PBC and past delivery of tobacco treatment were strongest predictors of MHPs' intention toward providing tobacco treatment to clients while SN and staff smoking were not significant predictors.	Covariates (Tobacco treatment is an important theme to discuss; Mental health care involvement importance; No smoking near patients; Ban in clinic; Possibility of incorporating tobacco treatment in routine mental health care and I lack skills). Latent variables that were not significant (SN and Current Smoking) were removed from

									the SEM.
Okoli et al., 2017	USA	195 (RR=76.3%)	In-patient psychiatric hospital. Medical staff e.g., psychiatrists (17), Nursing (50), Social Work and Psychology (23), Mental health associates (84), Therapists (11), Other (10).	Cross-Sectional Survey	MHPs' intentions to deliver tobacco treatment and their current tobacco treatment delivery practices	Hierarchical regression to test the TPB framework and Multivariate Regression to assess MHPs' current tobacco treatment delivery practices	Intention (4 items) α=0 .90); ATTs (4 items) α =0.80), SNs (4 items) α =0.79; PBC (4 items) α =0.50.	ATTs, SNs, and PBC were associated with MHPs' intentions to deliver tobacco treatment. SN, PBC, age, work tenure and disciplinary background predicted MHPs' reported provision of tobacco treatment. SN strongest predictor of intentions and behavior.	Demographics (age, gender, marital status, work tenure, job role, education, ethnicity, tobacco use status).

2.6 A TPB Conceptual Model for predicting and modifying MHPs' Delivery of Tobacco Treatment

Gaps exist in the translation of effective mental health services into routine practice (Drake et al., 2001; Ganju, 2003). Evidence suggests that though there are existing evidence-based treatments for individuals with MI, these strategies have limited penetration into the public mental health system (Bruns et al., 2016). This also applies to current provision of evidence-based tobacco treatment by MHPs in mental and behavioral health settings. Despite the existence of effective and safe evidence-based tobacco treatment interventions (Fiore et al., 2008), as well as evidence that people with MI are motivated and able to successfully quit their tobacco use (Annamalai et al., 2015), few MHPs engage tobacco users with MI in evidence-based tobacco treatment (Blankers et al., 2016; Fiore et al., 2008; Himelhoch et al., 2014; Okoli et al., 2017). Therefore, there is need for more studies to understand and modify MHPs' evidence-based tobacco treatment delivery intentions and practice behaviors.

Given the current emphasis on adoption of evidence-based care in social work practice (Royse, 2017) and the relative lack of success in most efforts in modifying MHPs' behavior regarding tobacco treatment provision (Blankers et al., 2016; Fiore et al., 2008; Himelhoch et al., 2014; Okoli et al., 2017), the TPB model provides a robust framework for understanding and modifying MHPs' intentions to provide tobacco treatment and their delivery of tobacco treatment interventions to clients with MI (Casper, 2007; Perkins et al., 2007). Despite its limited application in predicting and modifying MHPs behaviors in mental health settings (Blankers et al., 2016; Burgess et al., 2017; Klaybor, 1999; Okoli et

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al., 2017), these studies support the applicability of the TPB model in understanding and modifying MHPs' tobacco treatment delivery intentions and behaviors. More so, the TPB framework has been used widely to help understand and modify the behaviors of clients with MI (Bohon et al., 2016; Damghanian & Alijanzadeh, 2018; Mangurian et al., 2017; Okoli et al., 2018). Given its solid empirical underpinnings in predicting and modifying behavioral intentions and behavior (Ajzen, 1991), there is reason to be optimistic and to assume that strategies based on the TPB may yield similar results with MHPs.

According to the TPB, MHPs' intentions to deliver tobacco treatment for clients with MI is a proxy measure for their actual delivery of brief interventions for tobacco cessation to clients with MI (Ajzen, 1991). The three main constructs of the TPB, namely attitudes, subjective norms and perceived behavioral control, predict MHPs intentions to deliver tobacco treatment and subsequently their actual delivery of tobacco treatment to clients with MI (Ajzen, 1991; DiClemente et al., 2009). Whether MHPs have positive attitudes toward provision of tobacco cessation is dependent on the extent to which they perceive the benefits and disadvantages of engaging clients with MI in tobacco cessation. With regard to subjective norms or social influence, the support experienced from peers (other MHPs in the same discipline or department or the supervisors) and the normative culture of tobacco treatment delivery in mental and behavioral health settings will influence whether MHPs see the support needed to implement tobacco treatment to clients with MI. In relation to perceived behavioral control in delivering tobacco treatment to clients with MI, MHPs' who view themselves as having confidence in their ability to deliver treatment to clients with MI, despite existing barriers, are more likely to have the behavioral intent to deliver tobacco treatment and subsequently engage clients with MI in tobacco treatment.

Other predisposing factors that may influence MHPs' intentions to deliver tobacco treatment include their demographics and work characteristics, such as age, job role and work tenure (Okoli et al., 2017). Okoli et al. (2017) found that being older, being a medical or nursing staff, and having a shorter work tenure were significantly associated with increased delivery of brief interventions for tobacco cessation.

Additionally, MHPs' and clients' beliefs e.g., tobacco treatment is of lesser concern for clients with MI (Schroeder & Morris, 2010), or that using tobacco is useful in reducing symptoms of MI (Dome et al., 2010; Sharma et al., 2018), may undermine MHPs' tobacco treatment delivery. Studies have also shown that MHP's own tobacco use status (Sarna et al., 2009; Sharma et al., 2018), receipt of tobacco treatment training, having skills and prior experience in delivery of tobacco treatment to clients with MI (Himelhoch et al., 2014; Sharma et al., 2018; Sheals et al., 2016), and availability of resources that support implementation of evidence-based tobacco cessation interventions in mental health settings such as tobacco control/smoke free policies (Schroeder & Morris, 2010), may also influence their intentions to deliver tobacco treatment and their actual delivery of tobacco treatment. Figure 2.2 provides a conceptual framework for predicting and modifying MHPs' delivery of tobacco treatment to clients with MI based on the TPB.

PREDISPOSING FACTORS

Provider Factors

- Demographics e.g. age and gender, educational background, job role.
- Tobacco use status
- Training and skills in providing tailored tobacco treatment to clients with MI
- The TPB Factors:
  - ✓ *Attitudes*
  - ✓ *Subjective norms*
  - ✓ *Perceived behavioral control*

OUTCOMES

- MHPs' Intentions to Deliver Tobacco Treatment to Clients with MI
- MHPs' Delivery of Brief Interventions for Tobacco Treatment
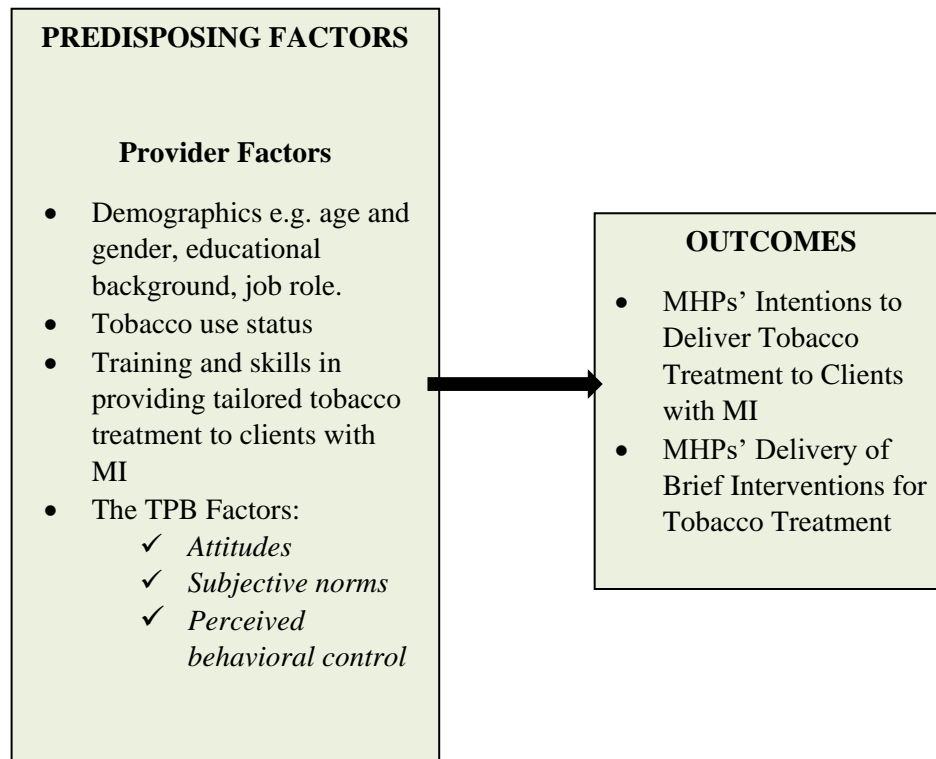
Figure 2-2. A conceptual framework for predicting and modifying MHPs' delivery of tobacco treatment for clients with MI based on the TPB

The conceptual framework in Figure 2.2 guided this study in answering the research questions: 1) Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?, and 2) Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influenced their delivery of brief interventions for tobacco cessation to clients MI? This study specifically examined the association between attitudes, subjective norms, and perceived behavioral control, and the following main outcomes: 1) MHPs' intentions to deliver tobacco treatment to clients with MI, and 2) MHPs' delivery of brief interventions for tobacco treatment to clients with MI. Other predisposing factors that influence MHPs' intentions to deliver tobacco treatment and their practice behaviors related to delivery of

evidence-based tobacco treatment interventions (brief interventions for tobacco treatment), such as MHPs' personal/ demographic characteristics, professional characteristics and tobacco use status were also examined.

Shelley and colleagues (2014) examined correlates of providers' practice patterns (i.e., tobacco use screening and advising to quit) and provider characteristics, smoke-free policies and the TPB constructs. The study found older age, self-efficacy, attitudes, and subjective norms to be significantly associated with providers' engagement in routinely screening half or more of their patients, while normative beliefs were associated with providers routinely advising their clients to quit (Shelley et al., 2014). Sharma and colleagues (2016) implicitly used components of the TPB (i.e., attitudes, beliefs and barriers) to examine provider delivery of brief interventions in community mental health settings. The study found that the MHPs were less likely to engage in delivery of brief interventions for tobacco cessation routinely as compared to medical practitioners. This suggests the importance of considering disciplinary background or job role in designing interventions targeting providers.

Evidence suggests that though MHPs screen their clients for tobacco use, they are less likely to engage and refer them for tobacco treatment (Rogers & Sherman, 2014). This highlights the need to identify and address gaps in tobacco treatment in mental health settings. Some of the barriers to MHPs' delivery of tobacco treatment may include the vulnerability of tobacco users with MI to tobacco dependence leading to difficulty in quitting, and requiring specialized support (Lasser et al., 2000). Additionally, providers in mental health settings may have limited experience and knowledge on providing cessation support to clients with MI to aide their quitting (Pbert et al., 2007; Ziedonis et al., 2006).

More so, providers in mental health settings may be resistant to smoke-free policies or may hold beliefs that may undermine tobacco treatment, such as the belief that tobacco use can be therapeutic to their clients with MI (Johnson et al., 2010).

Based on the TPB, this study assumed that if MHPs have positive attitudes towards the provision of tobacco treatment, stronger subjective norms, and perceived behavioral control, their intentions to deliver tobacco treatment to clients with MI and their engagement in evidence-based interventions for tobacco treatment would be higher (Ajzen, 1991). Consistent with existing literature (Fiore et al., 2008; Rogers & Sherman, 2014), this study assumed that there will be gaps in routine engagement of clients with MI in tobacco treatment. Additionally, this study assumed that provider tobacco use status (Sharma et al., 2018), training in evidence-based treatment (Himelhoch, 2014), and demographics (Okoli et al., 2017) would influence their intentions to deliver tobacco treatment and subsequently their tobacco treatment practice behaviors. More so, the current study assumed that there would be significant differences in MHPs' intentions to deliver tobacco treatment and in tobacco-treatment practice behaviors among different provider groups (Kortteisto, 2010; Okoli et al., (2017).

CHAPTER 3. METHODOLOGY

This section provides a discussion of the methods applied in this study. A description of the sample, inclusion and exclusion criteria, study procedures and ethical considerations, sample size estimation, study measures and data analysis are detailed.

3.1 The Current Study

The University's Institutional Review Board (IRB) approved the study (# 15-1096-P6K). Information on the study was presented at a hospital managers and administrators meeting, and the study principal investigator (PI), research staff and nurse managers informed the participants (MHPs) about the study. Hard copies of surveys were provided to the MHPs with a cover letter attached providing information about the study and these were strategically placed in staff breakrooms and mailboxes. The survey contained questions about past and current tobacco use and exposure, as well as questions regarding the TPB constructs (intentions, attitudes, perceptions and behavioral control) in engaging in and providing tobacco treatment (see Appendix 1). Taking part in the study was voluntary and submission of completed surveys implied consent. Surveys were returned by staff after completion to the PI's office at Eastern State Hospital. All complete surveys were locked in a dedicated drawer with keys accessible only to the PI. The surveys took approximately 15 to 20 minutes to complete and MHPs' who completed the survey were entered into a drawing to win one of five $20 gift cards. To ensure that contact information was not linked to survey responses, MHPs' interested in participating in the drawing completed a contact sheet separate from the survey to provide their name, phone number,

and email address. The contact sheet was placed in a separate drawer from the surveys so that complete surveys could not be linked to participants on the contact sheet.

3.2   Research Design

Data for this study were derived from a cross-sectional survey administered to MHPs working in an inpatient state psychiatric facility in Kentucky between March 1st to July 31st, 2017. The facility provides acute psychiatric care for adults aged 18 years and above with severe mental illnesses and receives clients from 50 of 120 Kentucky counties. The 300,000-square foot facility includes three-story patient care towers and seven acute care units of 27-28 beds each in a mix of private and semi-private rooms. The facility admits approximately 2700 clients with MI per year for an average length of stay of about 14 days.

3.3   Study Sample

The study participants were MHPs trained to offer services geared towards improving a clients' mental wellbeing and are best placed to encourage and support clients with MI to quit using tobacco products. Therefore, a MHP included any staff working at the facility as medical staff, nursing staff, social work, psychology, mental health associates/ state registered nursing assistants, counseling/ therapists, and others, including unit clerks, risk/ quality management staff and security. To be eligible for the study a MHP had to be 18 years of age and above and currently employed at the facility on a part-time

or full-time basis. MHPs (n=303) included staff providing direct care to clients with MI and were targeted according to job roles (see Table 3.1).

Table 3-1. MHPs target sample from March 1st to July 31st 2017

Clinicians	Total
Psychiatrists/Physicians/Advanced Practice Nurses	33
Nurses (License Practical Nurses, Registered Nurses)	70
Psychologists/Counselors/Recreational & Occupational Therapists	21
Social Workers	22
Mental Health Associates	120
Dietary & Nutrition Staff/Food services	12
Security staff	18
Pharmacists & Pharmacy technicians	7
Total	**303**

Though the study targeted 303 MHPs, 224 submitted the survey for a response rate of 73.9% (224/ 303). Of the 224 MHPs who submitted a survey, five were excluded from the analysis either because they did not respond to questions on TPB constructs (n=4) or because they did not provide any demographic responses (n = 1). The remaining 219 MHPs were included in the analysis.

3.4 Sample Size Estimation

A systematic review by Rashidan et al., (2010) utilized two different approaches, namely reported values of regression models 'goodness-of-fit and zero-order correlations (the variance inflation factor or VIF method), to determine the sample size requirements from eight TPB studies in health services research. The study suggested the VIF as a more sensitive method to the requirements of a TPB study and proposed a sample size of 148 for a correlation of 0.25 between intention and behavior, and of 0.4 between intention and perceived behavioral control. As per Cohen's estimation (Cohen, 1988, 1992), a sample size of 148 is adequate to identify an anticipated medium size effect ($f2 = 1.15$), based on an alpha of 0.05 and a statistical power of 80. Norman and Streiner (2000) recommends multiplying a sample size equal to 5-10 by number of study variables and based on this strategy, the sample size (10 x 12 variables) required for this study = 120 to achieve an adequate statistical power. Based on these three estimates, the current study (n=219) met the minimum required sample size to achieve adequate statistical power for the examination of the association between MHPs' attitudes, subjective norms and perceived behavioral control, and their intentions to provide or their delivery of evidence-based tobacco treatment. Utilizing the TPB model to examine the effect of MHPs' attitudes, subjective norms and perceived behavioral control on providers' intentions and subsequently their behavior, the current study sought to address the following research questions:

1.	Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?

2.	Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influenced their delivery of brief interventions for tobacco cessation?

3.5   Study Measures

The TPB measure in this study included a 15–item scale adapted from Ajzen, (2011). Several studies and meta-analyses have shown the utility of the TPB in predicting various health behaviors (Booth et al., 2014; McEachan et al, 2011), including alcohol-related behaviors (Cooke et al, 2007; Norman et al, 2007), cocaine treatment (Booth et al, 2014), tobacco cessation among clients (Burkhalter et al, 2009; Kim et al, 2013; Shi et al, 2014), and provider delivery of tobacco cessation (Blankers et al, 2016; Okoli et al, 2017; Shelley et al., 2014). The scale was examined in a previously published study of MHPs from the same setting and demonstrated an adequate internal consistency for intentions (α=0.92), attitudes (α=0.80), and subjective norms (α=0.79), however, the perceived behavioral control scale did not demonstrate an adequate internal consistency (0.50) (Okoli et al, 2017).

MHPs delivery of brief interventions for tobacco cessation was an investigator-developed measure that utilized the 5 As (Ask, Advise, Assess, Assist and Arrange) Approach (Fiore et al., 2008) in the development of the brief interventions scale and operationalization of its key constructs. The scale measure for brief interventions in a

previously published study by Okoli et al., 2017 also demonstrated an adequate internal consistency for the measure ($\alpha=0.87$).

3.6   The TPB Scale Reliability and Validity Testing

The reliability of the TPB and brief interventions scales were measured for their internal consistency, or the degree to which the items that make up the scales measure the same underlying attribute or the extent to which the items 'hang together' (Pallant, 2013). Cronbach's alpha assessed the internal consistency/reliability of the TPB and brief interventions scales. Cronbach's alpha is one of the most important and widely used statistics in research involving test construction and use of multiple-items measurements, especially in the development of scales intended to measure attitudes and other affective constructs (Cortina, 1993; Pallant, 2013; Schmitt, 1996; Taber, 2018). Confirmatory factor analysis to examine the construct validity of the TPB scale using principal components analysis (PCA) revealed the presence of four components with eigenvalues exceeding 1, explaining 39.9%, 14.2%, 8.8% and 6.7% of the variance. Based on the TPB, the expectation from factor analysis was four different factor loadings, however, the results showed two factor loadings indicating that the way MHPs responded to the TPB survey might have been in two different clusters. Though the factor analysis showed two main factors for this analysis, I proceeded to use the theory-derived factors that still worked according to the TPB.

3.7   Outcome/ Dependent Variables

The two primary outcome measures for this study were MHPs' *Intentions to provide tobacco treatment* and *their delivery of brief interventions for tobacco cessation.*

MHPs' Intentions: Based on the TPB, MHPs' intentions were assessed by three statements: 1) I expect to provide smoking/tobacco use cessation to clients who smoke in the next six months, 2) I want to provide smoking/tobacco use cessation to clients who smoke in the next six months, and 3) I intend to provide smoking/tobacco use cessation to clients who smoke in the next six months. Responses were based on a 7-point Likert scale with 1 being 'strongly disagree' and 7 being 'strongly agree'. For analyses, total scale scores for intentions were obtained by summing the three scale items and dividing by the number of items in the scale, with the final scale having a mean score range from 1 (Strongly Disagree) to 7 (Strongly Agree). The scale demonstrated strong internal consistency (α=0.95).

MHPs delivery of brief interventions for tobacco cessation: This was measured through self-reports from MHPs regarding their provision of brief interventions for tobacco cessation based on the 5A's approach (Ask, Advise, Assess, Assist and Arrange) (Fiore et al., 2008). Specifically, respondents indicated the following: if in their practice role they *asked* clients about their tobacco use status, if they *advised* them to quit tobacco use, if they *assessed* their readiness to quit, if they *assisted* them to quit tobacco use by providing medications and/or counseling, and if they *arranged* for their referral for tobacco cessation services or follow-up on their abstinence in their practice role. The responses were based

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on a 4-point Likert Scale with response options including 1 (never), 2 (seldom, 3 (occasionally), and 4 (very often). For analyses, the brief interventions score was adjusted from 0 (never) to 3 (very often) and total scores were obtained by summing the five scale items and dividing by the number of items in the scale. The brief interventions scale demonstrated an acceptable internal consistency ($\alpha=0.89$).

3.8 Predictors/ Independent Variables

The TPB Factors: To measure the TPB scale factors the current study examined MHPs' *attitudes* towards delivery of tobacco cessation interventions, s*ubjective norms*/social pressures that make MHPs deliver tobacco cessation interventions for clients with MI, and MHPs' *perceived behavioral control* in providing tobacco cessation interventions for clients with MI. The study measures were developed and operationalized based on the proposed model by the TPB's proponent (Ajzen, 1991), and a previously published study by (Okoli, et al 2017). The specific scale items for measuring attitudes, subjective norms and perceived behavioral control are described below.

Attitudes towards provision of tobacco treatment: This was assessed by four questions: 1) on a scale of 1 being 'harmful' and 7 being 'beneficial' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco; 2) on a scale of 1 being 'good' and 7 being 'bad' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco; 3) on a scale of 1 being 'pleasant for you' and 7 being 'unpleasant for you' how would you rate providing smoking/tobacco use cessation to

clients who smoke/use tobacco; and 4) on a scale of 1 being 'worthless' and 7 being 'useful' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco. (Items 2 and 3 were reverse coded). For analyses, the four items were summed and divided by the number of items in the scale, with the final scale having a mean score between 1 and 7. The attitudes scale items demonstrated acceptable internal consistency of α=0.72.

Subjective norms towards providing tobacco treatment: This was assessed by four items with response options on a 7-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (7). The four items were: 1) People who are important to me want me to provide smoking/tobacco use cessation to my clients who smoke/use tobacco, 2) It is expected of me that I provide smoking/tobacco use cessation to clients who smoke/use tobacco, 3) I feel under social pressure to provide smoking/tobacco use cessation to clients who smoke/use tobacco, and 4) Most of my peers think it is important to provide smoking/tobacco use cessation to clients who smoke/use tobacco. For analyses, responses for the four items were summed and divided by the number of items in the scale, with the final scale mean score ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The scale items for subjective norms demonstrated an acceptable internal consistency of α =0.84.

Perceived behavioral control in providing tobacco treatment: This was assessed by four items based on the TPB. The statements were as follows: 1) 'on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'I am confident that I could provide smoking/tobacco use cessation to clients who smoke/use tobacco,' 2) on a scale of 1 being 'easy' and 7 being 'difficult' please rate your

response to the following statement: 'For me to provide smoking/tobacco use cessation to clients who smoke/use tobacco is…', 3) on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'The decision to provide smoking/tobacco use cessation to clients who smoke/use tobacco is beyond my control,' and 4) on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'Whether I provide smoking/tobacco use cessation to clients who smoke/use tobacco is entirely up to me' . Items 2 and 3 were reverse coded. For analyses, total scores for perceived behavioral control scale were computed by summing the four scale items and dividing by the number of items in the scale, with the final mean score ranging from 1 to 7. However, the perceived behavioral control scale did not demonstrate an adequate internal consistency (α =0.39). The scale's internal consistency improved after deletion of two scale items (α=0.50) leaving only two scale items to be included in the analysis: Item 1, "I am confident that I could provide smoking/ tobacco use cessation to clients who smoke/ use tobacco products" and item 3, "the decision to provide tobacco cessation was beyond my control." The low internal consistency for perceived behavioral control scale is consistent with similar studies examining provider behavior in medical (Edwards et al., 2001; Walker et al., 2001) and mental health (Blankers et al., 2006; Shelley et al., 2014) who found α = 0.68, α = 0.62, α = 0.65 and α = 0.42, respectively.

3.9 Control Variables

Demographic/Personal Characteristics: To examine MHPs' personal characteristics, gender (being 1=male or 2=female), age (in years), ethnicity (1=White non-Hispanic; 2=Black non-Hispanic; 3= Hispanic; 4= Asian Pacific Islander; or 5= Other), marital status (1= married/widowed, 2= unmarried couple, 3= separated/divorced, or 4= single/never married) and highest education (1= Less than high school or high school graduate/ GED, 2= some college/ vocational/ trade school degree, or 3= college graduate) were included. For the analysis, ethnicity was transformed to white vs non-white due so smaller sample sizes in some of the demographic groups as summarized: White non-Hispanic= 185, Black non-Hispanic= 21, Hispanic=2, Asian Pacific Islander=10 and Other=1). For regression analyses the variables were dummy coded as follows: gender (0=male or 1=female), ethnicity (0= White non-Hispanic or 1=non-White (Black non-Hispanic/ Hispanic/ Asian Pacific Islander/ Other), marital status (0= single/ never married or 1= Married/ widowed, unmarried couple and separated/ divorced) and highest education (0=college graduate or 1= non-college graduate (High school/ GED, some college/ trade/vocational training).

Professional Characteristics: To assess MHPs' professional characteristics, work tenure (in months), and primary discipline or job role including Medical Staff [physicians (MD, DO and MD) /advance practice nurses (APRN) and pharmacy], nursing staff (RNs and LPNs), social work (LSW and LCSW) and psychology (PhD, Psy D and MSC), mental health associates (MHA) and state registered nursing assistants (SRNAs), counseling/ therapists [recreational, occupational, music), and other [unit clerks, risk/ quality

management and security] were included. Disciplinary group was transformed and coded as 1= Medical Staff [physicians /advance practice nurses and pharmacy], 2= nursing staff [RNs and LPN], 3= counseling and rehabilitation [social work/ psychology/ recreational therapy/ occupational therapy/ music therapy], 4= mental health associates/ state registered nursing assistants, and 5=other [unit clerks/ risk/ quality management and security], due to smaller sample groups in some of the job roles (e.g., counseling, social work, psychology and therapists). In addition, MHPs' work tenure in months and receipt of tobacco treatment training (0=YES/ 1=NO) were also assessed. For regression analyses, disciplinary group was dummy coded as 0= counseling / therapists (psychology, social workers, occupational and recreational therapists) and 1=non -counseling/ therapists (medical staff/ nursing, mental health associates and other). Receipt of tobacco treatment training was dummy coded as 0=Yes and 1=No.

Tobacco use status: Tobacco use status [Information on current tobacco use include having used part or all of a tobacco product in the past month] (Centers for Disease Control and Prevention, 2013) was obtained. 'Tobacco users' or 'Ever tobacco users' were those endorsing tobacco use of any tobacco products [Cigarettes, Cigars, Cigarillos (little cigars), pipes, chew tobacco/loose leaf, hookahs, electronic cigarettes and/ or menthol] in the past month and 'non-tobacco users' or 'never tobacco users' were those that did not. For regression analyses, tobacco use was dummy coded as 0= Yes tobacco/ ever tobacco users vs 1= No / never tobacco user, with "0" as the referent category and "1" as the comparison group.

3.10 Data Analysis Plan

Findings for this study are based on responses from 219 MHPs working in an inpatient psychiatric facility on either part-time or full-time basis. The study sought to address the following research questions: 1) Whether MHPs' attitudes, subjective norms and perceived behavioral control influence their intentions to engage clients with MI in tobacco treatment? and 2) Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influence their delivery of brief interventions for tobacco cessation to clients MI? Data were collected to assess the providers' intentions to deliver tobacco treatment and their practice behaviors related to provision of evidence-based tobacco treatment for clients with MI, based on the TPB. Of the 224 MHPs who participated in the survey (from March 1, 2017 to July 31, 2017), four did not respond to measures of the TPB and one did not provide any demographic responses. The responses from these individuals were deleted from further analysis. In addition, six did not give their age, 2 did not provide ethnicity, and 8 had missing responses on at least one of the scales of the TPB or use of evidence-based tobacco treatment variables. Because of the low percentage of missing values, for all missing responses, a mean replacement or neutral response (e.g., a 4 on a scale of 0-7) was used as a substitution. No other substitution was required. To meet the assumptions of regression analysis, categorical variables were dummy coded.

Descriptive statistics were analyzed by computing means (with standard deviations) and/or frequencies (with percentages) for personal characteristics (gender, age, ethnicity,

marital status and highest education); professional characteristics (disciplinary role, work tenure, receipt of tobacco training); tobacco use status (yes vs no if an MHP uses any tobacco product); and individual scale items and composite (Mean, SD) for the TPB factors (attitudes, subjective norms, perceived behavioral control and intentions to deliver tobacco treatment) and practice of 5A's or MHPs' current delivery of brief interventions for tobacco cessation. Bivariate analysis using Pearson's correlation examined the correlation between the personal, professional, tobacco use, the TPB variables (attitudes, subjective norms and perceived behavioral control), intentions and delivery of brief interventions. Ethnicity, marital status, highest education and disciplinary group were dummy coded.

Multivariate regression analyses examined: 1) the association between the TPB constructs (attitudes, subjective norm, and perceived behavioral control) and MHPs' behavioral intentions to provide tobacco cessation interventions for clients with MI, and 2) the association between the TPB constructs (attitudes, subjective norms, perceived behavioral control and intentions) and MHPs' current delivery of brief interventions for tobacco cessation. The specific components of the multivariate analyses included:

1. To answer the first research question, a hierarchical multiple linear regression analysis was used to test the TPB model. The predictor variables included personal characteristics, professional characteristics, tobacco use status, MHPs' attitudes, subjective norms and perceived behavioral control, while the outcome variable included MHPs' intentions to deliver tobacco treatment. The correlations between MHPs' intention to provide tobacco treatment and their attitudes, subjective norms and perceived behavioral control were tested while controlling for potential

confounders including personal, professional and tobacco use characteristics. Demographic (gender, age, ethnicity, marital status, highest education), work (primary discipline, work tenure, receipt of tobacco treatment training) and tobacco use (ever tobacco user) variables were entered first in Step 1, followed by the TPB factors (attitudes, subjective norms and perceived behavioral control) in Step 2.

2. Research question two was assessed through a simple mediational analysis to test whether:

   i. The effect of attitudes on a MHP's delivery of brief interventions is mediated by intentions, while adjusting for subjective norms, perceived behavioral control, marital status, disciplinary group and highest education as covariates.

   ii. The effect of subjective norms on a MHPs' delivery of brief interventions is mediated by intentions while adjusting for attitudes, perceived behavioral control, marital status, disciplinary group and highest education as covariates.

   iii. The effect of perceived behavioral control on a MHP's delivery of brief interventions is mediated by intentions while adjusting for attitudes, subjective norms, marital status, disciplinary group and highest education as covariates

All analyses were conducted using IBM SPSS Statistics version 25. Adjusted R^2 was used to determine the amount of variance in the dependent variables accounted for by the model. Total scale scores of the TPB and brief interventions scales were used in the regression analyses. To test for statistical significance, an alpha level of 0.05 was utilized and to test

for multicollinearity, a tolerance index of ≤ 0.01 and a Variance Index Factor (VIF) >5 indicated multicollinearity.

CHAPTER 4.STUDY RESULTS

This chapter presents all study findings that address the following research questions:

1. Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?

2. Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influenced their delivery of brief interventions for tobacco cessation to clients MI?

4.1   Sample Description

The surveyed participants were mostly female (75.3%), predominantly White (84.5%), with a mean age of 36 years (SD= 12.6), had completed a college degree (68.9%) and were single/ never married (43.8%). The most prevalent disciplinary group was mental health associates (43.4%) followed by nursing (25.1%), counseling and rehabilitation (16.9%), medical staff (10.0%) and lastly, other (4.6%). Majority of the MHPs had not received tobacco treatment training (88.6%) and had worked at the facility for about 38 (SD=60.1) months. About half of the MHPs' reported ever using tobacco products (49.3%). Participants had moderate scores on attitudes (M=4.9, SD=1.5), subjective norms (M=3.7, SD=1.7), perceived behavioral control (M=4.5, SD=1.5) and intentions to deliver tobacco treatment (M=4.2, SD=2.2). Overall, the MHPs had low scores on providing all components of the brief interventions (M=2.3, SD=0.9). See Table 4.1 for a summary of demographic characteristics.

Table 4-1. Demographic Characteristics of Participants (n=219)

Characteristic		n (%)
Gender:	Female	165 (75.3%)
Education:	College Graduate	151 (68.9%)
Ethnicity:	White	185 (84.5%)
Marital Status:	Married/ Widowed	71 (32.4%)
	Unmarried Couple	22 (10.0%)
Separated/ Divorced		30 (13.7%)
Single/ Never Married		96 (43.8%)
Age:	mean (SD)	35.7 (12.6)
Disciplinary Background:	Medical Staff	22 (10.0 %)
	Nursing	55 (25.1 %)
	Counseling and Rehabilitation	37 (16.9 %)
	Mental Health Associates	95 (43.4 %)
	Other	10 (4.6%)
Tobacco Treatment Training:	No	194 (88.6%)
Work tenure in months:	mean (SD)	38.2 (60.1)
Ever Tobacco User:	Yes	108 (49.3%)
The TPB Scale Items:		
Attitudes Total Score	mean (SD)	4.9 (1.5)
Subjective Norms Total Score	mean (SD)	3.7 (1.7)
Perceived Behavioral Control Total Score	mean (SD)	4.5 (1.5)
Intentions Total Score	mean (SD)	4.2 (2.2)
Brief Interventions Scale Total Score	mean (SD)	4.3 (0.9)

Results of the Pearson's correlation showed significant weak negative correlations between highest education (r=-0.219, n=219, p <0.01) and intentions, and ethnicity (r=-0.158, n=219, p<0.05) and intentions, while marital status (r=0.192, n=219, p< 0.01) and disciplinary group (r=0.187, n=219, p<0.01) each had a significant weak positive correlation with intentions. Among the TPB factors, attitudes (r=0.438, n=219, p<0.01) and perceived behavioral control (r=0.568, n=219, p<0.01) each had a moderate positive correlation with intentions, while subjective norms (0.624, n=219, p<0.01) had a significant strong positive correlation with intentions. On the other hand, highest education (r=-0.264, n=219, p<0.01) and marital status (r=-0.158, n=210, p<0.05) each had a significant weak negative correlation with brief interventions for tobacco treatment, while age (r=0.200, n=219, p<0.01) had a significant weak positive correlation with brief interventions for tobacco treatment. Among the TPB factors, subjective norms (r=0.474, n=219, p<0.01 and intentions (r=0.461, n=219, p<0.01) each had a significant moderate positive correlation with brief interventions for tobacco treatment, while perceived behavioral control (r=0.318, n=219, p<0.01) had a weak positive correlation (see Table 4.2).

Table 4-2. Intercorrelations between personal, professional, tobacco use, the TPB, intentions and brief interventions for tobacco cessation.

	Gender	Highest education	Ethnicity	Marital status	Age	Discipline	Tobacco treatment training	Work tenure	Attitude	Subjective Norms	Perceived behavioral control	Intentions
Gender	1											
Highest education	-0.051	1										
Ethnicity	-0.077	0.121	1									
Marital status	0.007	-0.0183**	0.023	1								
Age	-0.001	-0.274**	0.057	0.492**	1							
Disciplinary group	-0.060	0.276**	0.059	-0.005	0.016	1						
Tobacco treatment training	-0.039	0.024	0.075	0.059	-0.050	-0.085	1					
Work tenure in months	0.048	-0.209**	0.006	0.226**	0.498**	-0.091	-0.043	1				
Attitude	-0.042	-0.220**	-0.148*	-0.001	0.061	0.039	-0.043	0.001	1			
Subjective Norms	-0.004	-0.153*	-0.087	0.093	0.115	0.204**	-0.058	-0.071	0.337**	1		
Perceived Behavioral Control	-0.175**	-0.296**	-0.063	0.113	0.059	0.061	-0.054	-0.010	0.513**	0.462**	1	

Intentions	0.005	-0.219[**]	-0.158[*]	0.192[**]	0.122	0.187[**]	-0.067	0.004	0.438[**]	0.624[**]	0.568[**]	1
Brief Interventions	0.044	-0.264[**]	-0.025	0.158[*]	0.200[**]	0.048	-0.076	-0.014	0.119	0.476[**]	0.318[**]	0.461[**]

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

4.2   Summary of Findings Related to the Research Questions (RQs)

RQ1: Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?

A hierarchical linear regression analysis was conducted to test the TPB model. Demographic (gender, age, ethnicity, marital status, highest education), work (primary discipline, work tenure, receipt of tobacco treatment training) and tobacco use (ever tobacco user) variables were entered in Step 1, explaining 12.5% of MHPs' intentions to deliver tobacco treatment to clients with MI, $p<0.0001$. Ethnicity, marital status, highest education and disciplinary group significantly influenced MHPs' intentions to deliver tobacco treatment to clients with MI. Based on these results, a MHP was likely to have intent to deliver tobacco treatment if they were White as compared to non-White ($\boldsymbol{\beta}$=-0.14; p=0.036), married/ widowed or a member of an unmarried couple as compared to being single ($\boldsymbol{\beta}$=0.165; p=0.025), had a college degree as compared to those without a college degree ($\boldsymbol{\beta}$=-0.257; $p<0.0001$), and were in medical, mental health associate or another field other than counseling or rehabilitation ($\boldsymbol{\beta}$=0.259; $P<0.0001$). After entry of the TPB factors in Step 2, the total variance explained by the model was 51.0 % F (12, 206) = 19.92, $p<0.0001$. The TPB measures explained an additional 37.6% of the variance in intentions after controlling for demographic, work-related and tobacco use variables, R squared change=0.376, F change (3, 206)=55.775, $p<0.0001$. In the final model, marital status, disciplinary background and the TPB factors (attitudes, subjective norms, and perceived behavioral control) remained statistically significant in predicting provider intentions to deliver tobacco treatment to clients with MI. A MHP was more likely to have the intent to

deliver tobacco treatment if they were married/widowed or a member of an unmarried couple as compared to being single (β=0.129; P=0.020), were in medical, mental health associate or another field other than counseling, social work, psychology or rehabilitation (β=0.102; p=0.051), had favorable attitudes towards provision of tobacco treatment (β=0.135; p=<0.019), greater subjective norms (β=0.406; p=<0.0001), and stronger perceived behavioral control in their ability to provide tobacco treatment (β=0.286; p<0.0001). Among the TPB factors, subjective norms recorded the highest beta value (β=0.406; p=<0.0001) indicating that it was the strongest predictor of intentions to deliver tobacco treatment in this sample of MHPs (see Table 4.3 and Figure 4.1).

Table 4-3. Summary of Hierarchical Regression Analysis Predicting MHPs Intentions to Deliver Tobacco Treatment while controlling for demographics, professional and tobacco use variables

Variable	Step 1			Step 2		
	B	Std. Error SE B	β	B	Std. Error SE B	β
Gender *Female*	-0.002	0.322	-0.0001	0.286	0.247	0.057
Male (referent)	-	-	-	-	-	-
Age	0.001	0.014	0.004	-0.006	0.011	-0.033
Ethnicity *Non-white*	-0.830	0.393	-0.140*	-0.490	0.296	-0.082
White (referent)	-	-	-	-	-	-
Marital status *Married/ widowed/ unmarried couple*	0.717	0.318	0.165*	0.562	0.240	0.129*
Single/ never married (referent)	-	-	-	-	-	-
Highest education *Without a college degree (Some college/ trade school and high school)*	-1.195	0.328	-0.257***	- 0.179	0.260	-0.038
College graduate (referent)	-	-	-	-	-	-
Disciplinary group *Non-counseling and rehabilitation (Medical/Nursing/ MHA/ Other)*	1.490	0.386	0.259***	0.585	0.298	0.102*
Counseling and rehabilitation (referent)	-	-	-	-	-	-
Work tenure in months	-0.002	0.003	-0.064	0.001	0.002	0.022

Tobacco treatment training No	-0.236	0.437	-0.035	-0.097	0.327	-0.014
Yes (referent)	-	-	-	-	-	-
Ever tobacco user No	-0.088	0.284	-0.020	0.006	0.213	0.001
Yes (referent)	-	-	-	-	-	-
Attitudes	-	-	**-**	0.197	0.083	0.135*
Subjective Norms	-	-	**-**	0.510	0.071	0.406***
Perceived behavioral control	-	-	**-**	0.411	0.090	0.286***
R^2		0.161			0.537	
Adjusted R^2		0.125			0.510	
R^2 change		0.161			0.376	
F change		4.461****			55.755****	

****$p\leq0.0001$ ***$p\leq0.001$ **$=p\leq0.01$ *$=p\leq0.05$
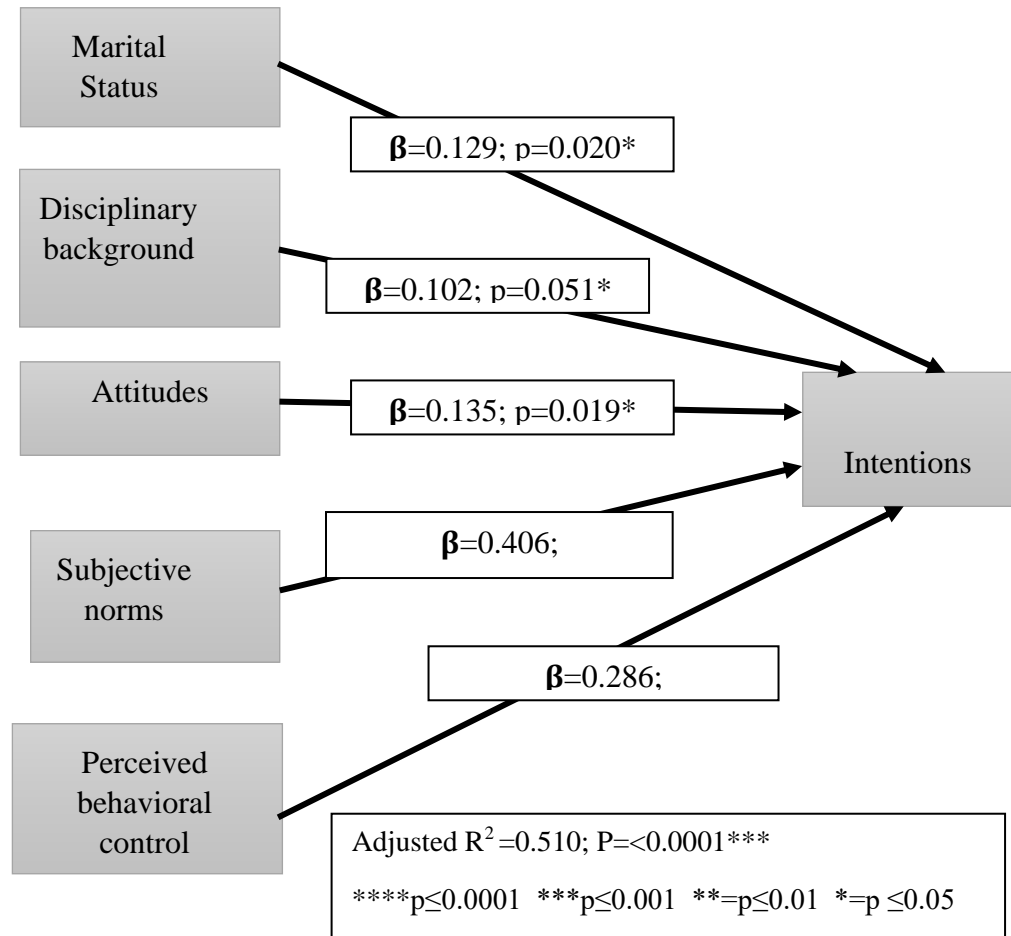
Figure 4-1. Hierarchical regression model results for examining MHPs' intentions to deliver tobacco treatment while controlling for demographics, professional and tobacco use variables.

RQ 2: Whether MHPs' intentions mediates the association between attitudes, subjective norms, perceived behavioral control and their delivery of brief interventions?

As a background analysis for the mediational analysis, a hierarchical linear regression was conducted to examine the effect of the TPB factors (attitudes, subjective norms, perceived behavioral control and intentions) on MHPs' delivery of brief interventions while controlling for marital status, primary discipline and highest education. Marital status, primary discipline and highest education were entered in Step 1, explaining 8.4 % $[F (3, 215) = 7.664, p<0.0001]$ of MHPs' delivery of brief interventions for tobacco

cessation to clients with MI. Highest education significantly influenced MHPs' delivery

of brief interventions for tobacco cessation to clients with MI, with a MHP being less likely

to deliver brief interventions for tobacco cessation if they had a college degree as compared

to those without a college degree (β=-0.279; p<0.0001).

After entry of the TPB factors (attitudes, subjective norms and perceived behavioral

control) in Step 2, the total variance explained by the model was 26.6 % F (6, 212) =

14.179, p<0.0001, with MHPs' highest education (β=-0.179; p=0.006) and subjective

norms (β=0.426; p<0.0001) significantly influencing their delivery of brief interventions.

Model 2 explained an additional 19.0 % of MHPs' variance in the delivery of brief

interventions for tobacco treatment after controlling for marital status, primary discipline

and highest education, R squared change=0.190, F change (3, 212)=18.791, p<0.0001.

Intentions was added to the model in step 3, explaining an additional 3.2 % of the

variance in the delivery of brief interventions for tobacco cessation after controlling for

marital status, primary discipline, highest education and the TPB measures (attitudes,

subjective norms and perceived behavioral control), R squared change=0.033, F change

(1,211)=10.386, p=0.001. In the final model, highest education, attitudes, subjective

norms, and intentions were significant predictors of providers' delivery of brief

interventions for tobacco cessation to clients with MI, while perceived behavioral control

was not. A MHP was more likely to deliver brief interventions for tobacco cessation they

had stronger subjective norms (β=0.317; p<0.0001) and higher intentions (β=0.266;

p=0.001). On the other hand, a MHP without a college degree was less likely to deliver

brief interventions for tobacco cessation as compared to those having a college degree (β=-

0.166; p=0.010). Additionally, MHPs having positive attitudes towards delivery of tobacco treatment did not necessarily mean they would engage their clients with MIs in evidence-based tobacco treatment (brief interventions) (β=-0.167; p=0.015). Among the TPB factors, subjective norms recorded the highest beta value (β=0.317; p<0.0001) indicating that it was the strongest predictor of MHPs' delivery of brief interventions for tobacco cessation to clients with MIs in this sample of MHPs (see Table 4.4 and Figure 4.2).

Table 4-4. Summary of Hierarchical Regression Analysis Predicting MHPs Delivery of Brief Interventions while controlling for demographics, professional and tobacco use variables

Variable	Step 1			Step 2			Step 3		
	B	Std. Error SE B	β	B	Std. Error SE B	β	B	Std. Error SE B	β
Marital status *Married/ widowed/ unmarried couple*	0.199	0.122	0.107	0.131	0.110	0.071	0.075	0.109	0.040
Single/ never married (referent)	-	-	-	-	-	-	-	-	-
Disciplinary group *Non-counseling and rehabilitation (Medical/Nursing/ MHA/ Other)*	0.308	0.166	0.125	0.020	0.154	0.008	-0.042	0.151	-0.017
Counseling and rehabilitation (referent)	-	-	-	-	-	-	-	-	-
Highest Education *Without a college degree (Some college/ trade school and high school)*	-0.554	0.136	-0.279****	-0.356	0.129	-0.179**	-0.331	0.127	-0.166**
College graduate (referent)	-	-	-	-	-	-	-	-	-
Attitudes	-	-	-	-0.080	0.043	-0.128	-0.104	0.043	-0.167*

Subjective Norms	-	-	-	0.229	0.036	0.426****	0.170	0.040	0.317****
Perceived behavioral control	-	-	-	0.076	0.046	0.124	0.033	0.047	0.053
Intentions	-	-	-	-	-	-	0.113	0.035	0.266***
R^2		0.097			0.286			0.320	
Adjusted R^2		0.084			0.266			0.297	
R^2 change		0.097			0.190			0.033	
F change		7.664****			18.791****			10.386***	
****$p \leq 0.0001$ ***$p \leq 0.001$ **=$p \leq 0.01$ *=$p \leq 0.05$									
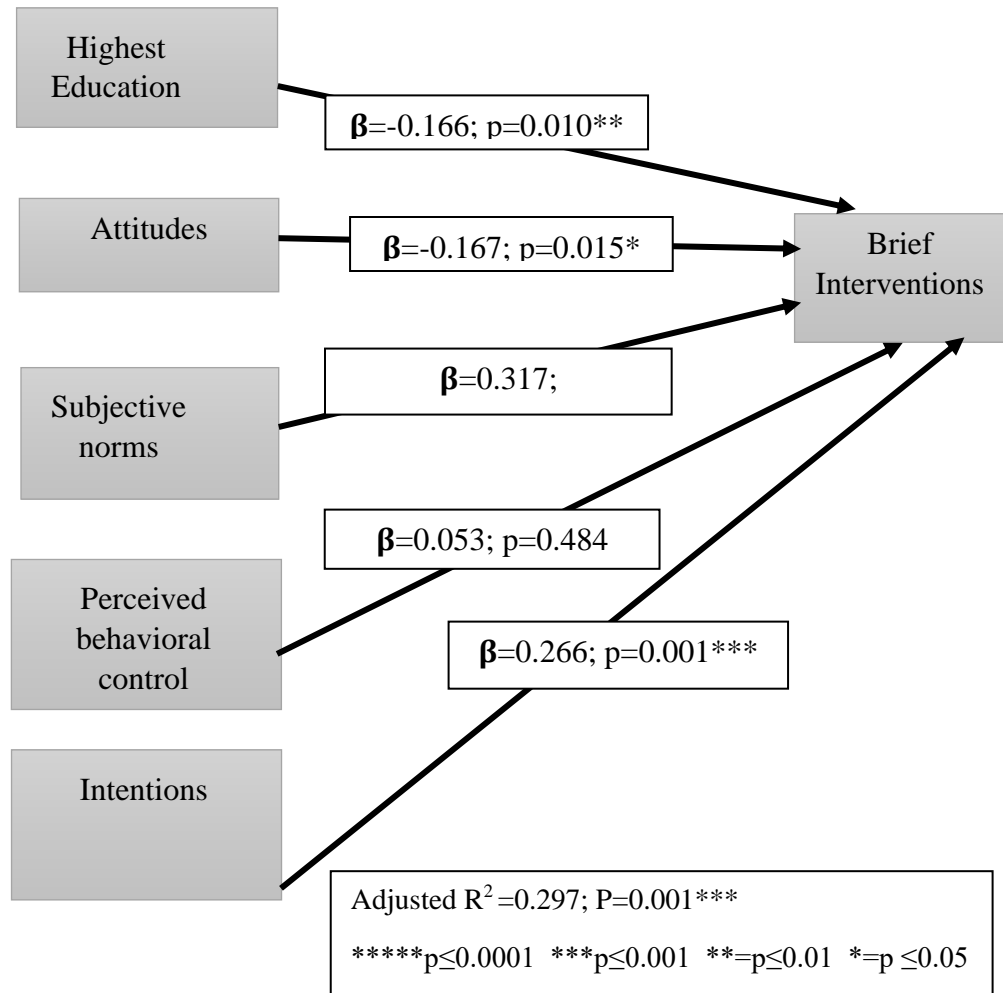
Figure 4-2. Hierarchical regression model results for examining MHPs' delivery of brief interventions while controlling for demographics, professional and the TPB measures.

Underlying the key constructs of the TPB is the belief that a MHPs' attitudes (the extent to which an MHP has favorable or unfavorable judgments towards delivery of tobacco treatment), subjective norms (the perceived social pressure to deliver or not deliver tobacco treatment in mental and behavioral health settings), and perceived behavioral control (the perceived ease or challenge of delivery of tobacco treatment) affect their

intentions to deliver tobacco treatment and subsequently their actual delivery of brief interventions for tobacco treatment (Ajzen, 1991). Based on this proposition, MHPs' attitudes, subjective norms and perceived behavioral control affect their delivery of brief interventions of tobacco cessation through intentions.

A simple mediational model using Hayes macro process version 3.5 with SPSS was used to test whether MHPs' intentions mediate the association between each of the key constructs of the TPB (attitudes, subjective norms and perceive behavioral control) and the delivery of brief interventions for tobacco cessation. The first mediational model tested the effect of attitudes on a MHP's delivery of brief interventions. Based on bootstrapping procedures, the standardized coefficients showed a positive direct effect of a MHP's attitudes on intentions (0.147; p=0.009) and of a MHP's intentions on the delivery of brief interventions for tobacco cessation (0.266; p=0.001). The standardized indirect effect of X on Y (0.039; CI = 0.004, 0.091) was statistically significant and positive indicating that a MHP with more positive attitudes towards the delivery of tobacco treatment was more likely to have stronger intentions to deliver tobacco treatment and subsequently engage their clients with MI in brief interventions for tobacco cessation. However, the total effect was not statistically significant X on Y (-0.080; CI = -0.164, 0.005), indicating that intentions partially mediates the association between MHPs' attitudes and their delivery of brief interventions for tobacco cessation (see Figure 4.3)
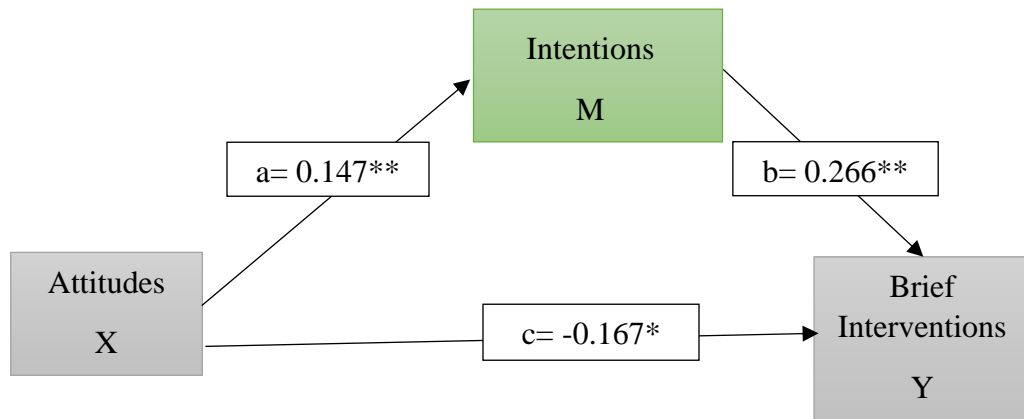
Figure 4-3. Model 1: Simple mediation model for the effect of attitude on MHP's delivery of brief interventions while adjusting for subjective norms, perceived behavioral control, marital status, disciplinary group and highest education as covariates

The standardized direct effect of MHPs' attitudes towards the delivery of brief interventions for tobacco cessation was statistically significant but negative (-0.167; p=0.015), indicating that a MHP with positive attitudes towards the delivery of tobacco treatment was still 0.167 times less likely to engage clients with MI in brief interventions for tobacco cessation. The standardized total effect of attitudes on brief interventions for tobacco cessation was negative indicating that a MHP with stronger attitudes and intentions was still less likely to deliver brief interventions for tobacco cessation. However, this association was not statistically significant (-0.080; p=0.064).

It is worth noting that in the correlation analysis, the association between attitudes and brief interventions was positive and the p value approached the borderline of significance 0.119 (p value= 0.078). However, once intentions was added to the model as

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a mediator, the association between attitudes and brief interventions became negative. Further analysis showed that intentions moderates the association between MHP' attitudes and their delivery of brief interventions for tobacco cessation.

The second mediational model tested whether intentions mediated the effect of subjective norms on a MHP's delivery of brief interventions (see Figure 4.4). Based on bootstrapping procedures, the standardized coefficients showed a positive direct effect of a MHP's subjective norms on intentions (0.413; $p<0.0001$) and of a MHP's intentions on their delivery of brief interventions for tobacco cessation (0.266; $p=0.001$). The standardized indirect effect of X on Y (0.110, CI $=0.026$; 0.215) was also statistically significant. Furthermore, this association was positive indicating that MHPs with stronger subjective norms towards the delivery of tobacco treatment were more likely to have higher intentions to deliver tobacco treatment and subsequently deliver brief interventions for tobacco cessation to their clients with MI. The standardized direct effect of MHPs' subjective norms towards the delivery of brief interventions for tobacco cessation was positive and statistically significant (0.317; $p<0.0001$) indicating that a MHP with stronger subjective norms was 0.317 times more likely to deliver brief interventions for tobacco cessation to their clients with MI. Since subjective norms still had a significant direct effect on brief interventions, the model shows that intentions partially mediates the association between MHPs' subjective norms and their delivery of brief interventions for tobacco cessation. The standardized total effect was also statistically significant (0.229, $p<0.0001$), indicating that a MHP with stronger subjective norms and stronger intentions was more likely to engage their clients with MI in brief interventions for tobacco cessation.
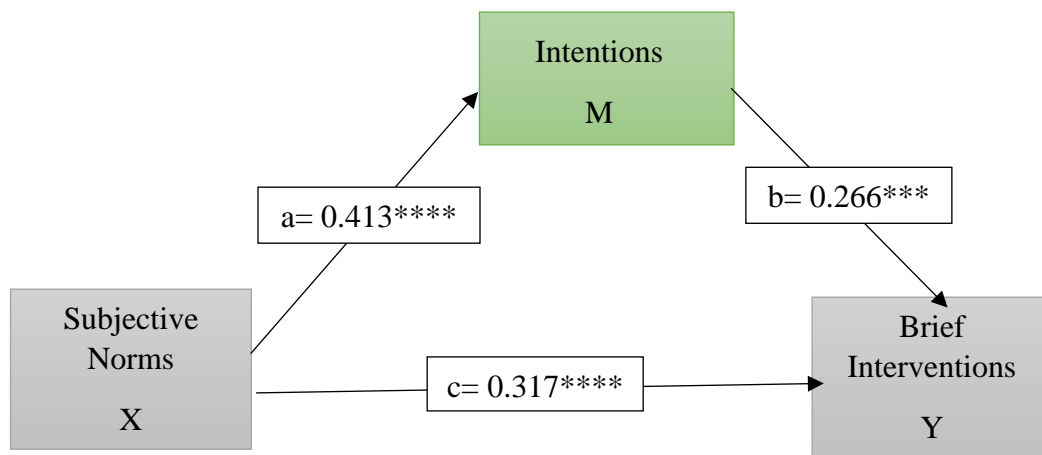
Figure 4-4. Model 2: Simple mediation model for the effect of subjective norms on MHP's delivery of brief interventions while adjusting for attitudes, perceived behavioral control, marital status, disciplinary group and highest education as covariates.

The final mediational model tested whether intentions mediated the effect of perceived behavioral control on a MHP's delivery of brief interventions (see Figure 6). Based on bootstrapping procedures, the standardized coefficients showed a positive direct effect of a MHP's perceived behavioral control on intentions (0.268; $p < 0.0001$), and of a MHP's intentions on the delivery of brief interventions for tobacco cessation (0.266; $p = 0.001$). The standardized indirect effect of perceived behavioral control on brief interventions for tobacco cessation (0.071, CI = 0.016, 0.140) was statistically significant. This indicated that MHPs with stronger perceived behavioral control towards the delivery of tobacco treatment were more likely to have stronger intentions to deliver tobacco treatment and subsequently engage their clients with MI in brief interventions for tobacco cessation to their clients with MI. Though the direct effect of MHPs' perceived behavioral

control towards the delivery of brief interventions for tobacco cessation was positive (0.053; p=0.484) indicating that MHPs with stronger perceived behavioral control were 0.053 times more likely to engage their clients with MI in brief interventions for tobacco cessation, the association was not statistically significant (see Figure 4.5). The standardized total effect was also not statistically significant (0.076; P=0.095). The model showed that intentions fully mediates the association between MHPs' perceived behavioral control and their delivery of brief interventions for tobacco cessation.
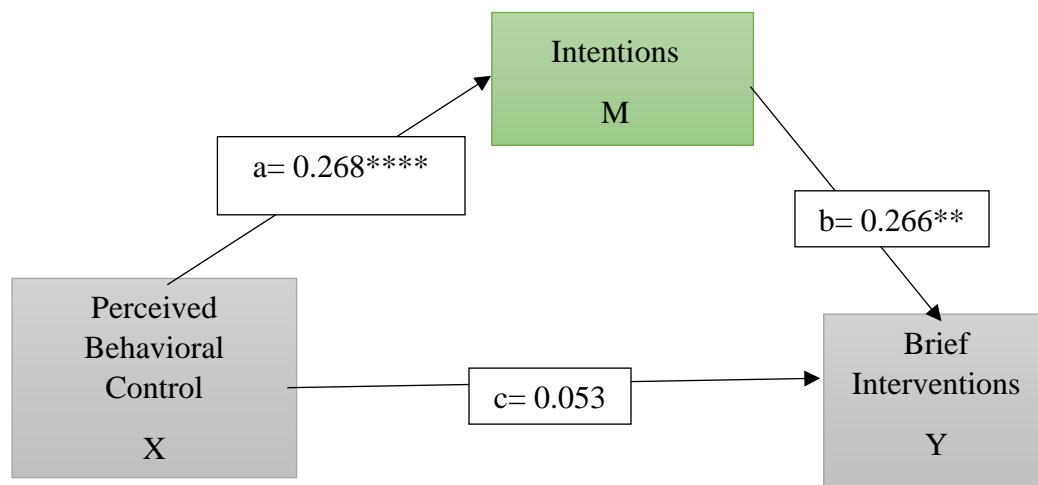
Figure 4-5. Model 3: Simple mediation model for the effect of perceived behavioral control on MHP's delivery of brief interventions while adjusting for attitudes and subjective norms as covariates

Overall, the study results also showed that in this sample of MHPs, subjective norms was the strongest predictor of MHPs' intentions to deliver tobacco treatment (0.442, p<0.0001) and subsequently their delivery of brief interventions for tobacco cessation (0.308, p<0.0001) to their clients with MI see Table 4.5.

Table 4-5. Mediational Effect of Intentions on the TPB factors (attitudes, subjective norms and perceived behavioral control) and MHPs' delivery of Brief Interventions

	Consequent					
	INTENTIONS (Mediator)			BRIEF INTERVENTIONS (Outcome)		
Predictor	Coeff.	SE	p	Coeff.	SE	p
ATTITUDE	0.147	0.082	0.009**	-0.167	0.043	0.015*
SUBJECTIVE NORMS	0.413	0.069	<0.0001****	0.317	0.040	<0.0001****
PERCEIVED BEHAVIORAL CONTROL	0.268	0.087	<0.0001****	0.053	0.047	0.484
Mediator						
INTENTIONS	-	-	-	0.266	0.035	0.001***
Constant	-1.179	0.472	0.013	1.623	0.245	<0.0001****
R^2=0.525; F(6,212)=39.101, p=<0.0001****				R^2=0.320;F(7,211)=14.175,p=<0.0001****		

CHAPTER 5. DISCUSSION

This study utilized the TPB, to examine factors influencing MHPs' delivery of evidence-based tobacco treatment in an inpatient psychiatric setting. The study specifically examined to what extent the primary constructs of the TPB (attitudes, subjective norms and perceived behavioral control) predicted MHPs' intentions to deliver tobacco treatment to clients with MI, and their subsequent delivery of brief interventions for tobacco cessation (behavior). The research questions guiding this study were:

1. Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?

2. Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influenced their delivery of brief interventions for tobacco cessation to clients MI?

This chapter is presented in two sections. Section I provides a discussion of the study findings in relation to other studies that have applied the TPB model in examining behavior change among providers. Section II highlights the application of the study findings in designing a TPB informed informational and educational intervention to increase MHPs' delivery of evidence-based tobacco cessation interventions in mental and behavioral health settings. This chapter also highlights the study limitations, implications of the study findings for social work practice, and provides recommendations for future research.

Section I: Discussion of study findings

5.1   Demographic and Professional Predictors of MHPs' delivery of Tobacco Treatment

For analysis, this study considered demographic/ personal characteristics as gender, age, ethnicity, marital status and highest education. Professional characteristics included work tenure in months, disciplinary group and receipt of tobacco treatment training. Those endorsing tobacco use of any tobacco products [Cigarettes, Cigars, Cigarillos (little cigars), pipes, chew tobacco/loose leaf, hookahs, electronic cigarettes and/ or menthol] in the past month were defined as 'tobacco users' while those that did not as 'non-tobacco users'.

The findings of the current study indicated that among demographic factors, marital status was a significant predictor of MHPs intentions to deliver tobacco treatment especially among married, widowed or members of an unmarried couple as compared to those that were single. No prior known study has examined the effect of marital status on MHPs delivery of tobacco treatment. However, a study examining factors affecting intentions to implement health literacy strategies in patient education among Iranian nurses based on the TPB found that single nurses were more likely to use health literacy strategies and techniques for patient education (Sharifirad et al., 2015). This study (Sharifad et al., 2015) did not control for demographics or professional variables thus the results may have been influenced by potential confounders (e.g., age, education level). According to Sharifirad and colleagues (2015), implementing health literacy in clinical settings is time

consuming and single nurses who have more time and less responsibilities may have a higher likelihood of engaging patients in education. Though marital status was a significant predictor of provider intentions in the current study, other factors such as the TPB factors (providers' attitudes, subjective norms and perceived behavioral control), may have significantly contributed to differences in provider intentions. Okoli and colleagues (2017) found that attitudes, subjective norms, and perceived behavioral control towards providing tobacco cessation interventions were associated with intentions to provide tobacco treatment when controlling for demographics. Nevertheless, providers' demographic factors such as age, gender and ethnicity have been shown to influence their clinical decisions and their interaction with clients (Bartley et al., 2015; Boissoneault et al., 2016), and therefore should be taken into consideration when assessing provider intentions and behavior.

Among professional factors, disciplinary group was a significant predictor of provider intentions to deliver tobacco treatment in this sample of MHPs, with counseling and rehabilitation staff including social workers, psychologists and therapists, having lower intentions to deliver tobacco treatment to clients with MI as compared to other disciplinary groups. A qualitative study examining barriers to provider delivery of tobacco treatment in Veterans Health Administration (VA) mental health clinics found the most common theme as competing clinical priorities such as dealing with psychiatric emergencies (e.g., psychosis) and other competing needs (e.g., homelessness or suicidality), making it less feasible or appropriate to spend time on addressing tobacco use (Rogers et al., 2018).

Rogers and colleagues (2018) also highlighted that organizations holding providers accountable for screening for mental health and suicide as compared to screening for tobacco may contribute to less focus on delivering tobacco treatment and more focus on addressing mental health emergencies.

Consistent with other studies, the current study found that few MHPs engaged their clients with MI in evidence-based tobacco treatment. A US national study of psychiatrists found that though 60% screened their clients for tobacco use, only 23% provided tobacco cessation counseling (Rogers & Sherman, 2014). The findings are similar to the current study findings in which about 64 % of physicians reported asking about tobacco use very often, and about 55% reported assisting with tobacco treatment. It is worth noting that while the percentage of participants who screened for tobacco use may be similar in the current study (64%) compared to previous research (60%), MHPs in the current study were approximately 2.5 times more likely to assist clients with MI in tobacco treatment (55% vs 23% in a previous study). Some studies have found provider tobacco use to significantly predict their engagement in tobacco cessation counseling (Sharma et al., 2018; Duaso et al., 2017; Harker & Cheeseman, 2016); however, this was not the case for the current study. Nevertheless, given higher rates of tobacco use in Kentucky with the state ranking as the highest in the prevalence of tobacco use among adults (Centers for Disease Control and Prevention, 2020), further examination of the role of provider tobacco use is still an important factor to take into consideration when tailoring interventions to enhance provider delivery of tobacco treatment.

5.2 The TPB and MHPs' Intentions to Deliver Tobacco Treatment

Among the TPB factors, attitudes, subjective norms and perceived behavioral control were significant predictors of greater intentions to deliver tobacco treatment in this sample of MHPs, supporting the TPB in predicting MHPs' intentions to deliver tobacco treatment. Similar studies in mental and behavioral health settings have supported the TPB framework (attitudes, subjective norms and perceived behavioral control) in predicting provider intentions to engage in evidence-based practice (Burgess et al., 2017; Kelly 2012; Ingersoll et al., 2018; Okoli et al., 2017). Among the TPB constructs, the current study found subjective norms as the strongest predictor of provider intentions to deliver tobacco treatment. Similarly, Kelly et al. (2012), Okoli et al. (2017), Shelley et al. (2014) and Thompson Leduc et al. (2015), found subjective norms as the strongest predictor of provider intentions to engage in evidence-based practice in mental and behavioral health settings. Thus, indicating the importance of targeting subjective norms in enhancing MHPs intentions to deliver tobacco treatment particularly in this sample of MHPs. Contrary to these studies, Blankers and colleagues found attitudes, perceived behavioral control and previous delivery of tobacco treatment to strongly predict providers delivery of tobacco treatment in a sample of 506 MHPs in the Netherlands, while subjective norms was not a significant predictor (Blankers et al., 2016). Notably, Blankers et al (2016) assessed subjective norms based on policy environment as evidenced by the presence of a clearly written smoking policy posted in the wards, while the other studies measured peer

expectations. Future studies need to examine relevant aspects of subjective norms that may enhance MHPs' intentions and delivery of tobacco treatment to clients with MI.

5.3 The TPB and MHPs' Delivery of Brief Interventions for Tobacco Cessation

Results from the mediational analysis examining provider delivery of brief interventions for tobacco cessation found intentions to partially mediate the association between attitudes and brief interventions, partially mediate the association between subjective norms and brief interventions, and fully mediate the association between perceived behavioral control and brief interventions. This is consistent with other studies examining provider behavior using the TPB that found intentions as mediator between the TPB constructs and provider behavior as well (Ramsay et al., 2010).

The indirect effect of the mediational model that tested the effect of MHPs' attitudes on delivery of brief interventions showed that MHPs with more positive attitudes towards the delivery of tobacco treatment were more likely to have stronger intentions to deliver tobacco treatment and subsequently engaged their clients with MI in brief interventions for tobacco cessation (see Model 1 in Figure 4.3). However, though the direct effect of MHPs' attitudes towards the delivery of brief interventions for tobacco cessation was statistically significant, the association was negative indicating that a MHP with positive attitudes towards the delivery of tobacco treatment was still less likely to engage clients with MI in brief interventions for tobacco cessation. It is worth noting that in the correlation analysis, the association between attitudes and brief interventions was positive and the p value

approached the borderline of significance however, addition of intentions in the model as a mediator changed the association between attitudes and brief interventions to negative. This change in the direction of the association can be explained as either positive attitudes are associated with poor delivery of brief interventions, or that poor delivery of brief interventions are associated with positive attitudes. In other words, if a provider does not have the intent to deliver tobacco treatment, they may be less likely to engage clients with MI in tobacco treatment. Alternatively, even though providers engage clients with MI in tobacco treatment, they may not have positive attitudes towards delivery of such treatment.

Evidence suggests that despite providers having positive attitudes towards the provision of tobacco treatment (Gifford et al., 2015; Glover et al., 2014; Richter et al., 2012; Rojewski et al., 2019; Sheals et al., 2016) as a way of improving their clients' health outcomes (Ashton et al., 2010; Gifford et al., 2015; Richter et al., 2012), they may view delivery of tobacco treatment as less important, especially among clients with comorbidities (Ashton et al., 2010; Gifford et al., 2014; Richter et al., 2012; Rojewski et al., 2019). Although not part of the current study, other studies have also shown that some providers feel that tobacco cessation is up to the client showing an interest in quitting or feeling the need to quit tobacco use due to negative health consequences of smoking (Ashton et al., 2010; Gifford et al., 2014; Richter et al., 2012; Rojewski et al., 2019). Additionally, some providers in mental health settings have felt that providing tobacco treatment is not part of their job role (Glover et al., 2014). Ajzen (2020) suggests that having higher intentions to engage in a certain behavior may not necessarily mean actual

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engagement in that behavior due to other factors that may hinder behavior change such as lack of time, money or resources. More so, the degree to which someone has control over their behavior may affect their ability to overcome such barriers (Ajzen, 2020). Blankers et al., (2016) found that though a majority of MHPs wanted to provide tobacco treatment and felt capable of providing tobacco treatment, only a minority intended to engage their clients in tobacco treatment within the next 12 months due to lack of experience in helping a client quit smoking. Thus, addressing tobacco treatment barriers in mental health settings is critical in improving MHPs intentions to deliver tobacco treatment and their actual engagement of clients with MI in tobacco treatment.

Studies have highlighted the importance of focusing on the TPB factor/s that strongly correlate with intentions and/or practice behaviors when designing interventions to enhance provider delivery of evidence-based tobacco treatment. Ingersoll (2018) utilized the TPB to predict providers' intentions to use a manualized evidence-based parent-mediated intervention (project IMPACT) among children with autism spectrum disorder (ASD) following training. The study found provider intentions to predict their adoption of project IMPACT 6 months after training and suggested the importance of targeting intentions as an important training outcome in enhancing providers' adoption of an evidence based intervention for children with ASD. Though attitudes and perceived behavioral control were both significant predictors of provider intentions to engage in project IMPACT post training, perceived behavioral control significantly increased in response to training, highlighting the importance of also targeting perceived behavioral

control as an important training outcome (Ingersoll, 2018). Shelley (2014) found normative beliefs to influence provider delivery of tobacco cessation in a community health setting and suggested the importance of targeting norms at the organizational and system levels to enhance tobacco treatment. The current study found all the TPB components (attitudes, subjective norms and perceived behavioral control) as significant correlates of MHPs' intentions to deliver tobacco treatment however, subjective norms was the strongest predictor of provider intentions. Additionally, the current study found subjective norms as the strongest predictor of MHPs' behavior i.e., their delivery of brief interventions for tobacco cessation to clients with MI. Similarly, some studies have found subjective norms as the strongest predictor of providers' behavior (Kelly et al., 2012; Shelley et al., 2014; Okoli et al., 2017; Thompson Leduc, 2015), indicating the importance of targeting MHPs' subjective norms when designing interventions to enhance their delivery of brief interventions for tobacco cessation. Therefore, targeting subjective norms in designing an intervention to influence MHPs intentions to deliver tobacco treatment and their subsequent delivery of brief interventions for tobacco cessation is critical in this sample of MHPs. Additionally, due to the inconsistency between attitude and behavior (brief interventions), it may be critical to target the mediating and moderating effect of intentions on attitudes and brief interventions in designing interventions to enhance the delivery of evidence-based tobacco treatment in this sample of MHPs.

5.4   Study Limitations

This study provides useful information that will guide the development of better strategies to enhance tobacco treatment for clients with MI and address the disparate rates of tobacco use and related burden. However, the study has some limitations that need to be considered when interpreting the findings. The sample is from a single site, limiting generalizability to other behavioral health settings. Additionally, utilization of a cross-sectional design limits the ability to establish causality or examine potentially hidden confounders. Thus, future studies need to utilize a more robust study design such as a randomized controlled trial (RCT) to facilitate determination of causality, generalization to similar population/settings and to examine potentially hidden confounders. This study being a secondary data analysis recognizes the gaps in data such as lack of information on provider barriers towards delivery of tobacco treatment.

Other limitations include participants self-reporting personal, work-related and tobacco use variables posing a risk of biases such as over- or under-reporting, potentially threatening construct validity. The study also has a risk of social desirability by staff self-reporting favorable attitudes towards provision of tobacco treatment. The responses may therefore not be reflective of the true thoughts or attitudes of the providers, thus skewing the results in favor of delivery of tobacco treatment to clients with MI when in reality that is not what is practiced. Therefore, future studies should consider administering a social desirability scale to measure the responses from the MHPs and distinguish true responses from false ones (Larson, 2019). Future studies may also consider wording questions in a

way that reflects how other MHPs feel about delivering evidence-based tobacco treatment to clients with MI and ask providers responding to the survey to select the statement they identify with the most to reduce social desirability bias (Larson, 2019; Latkin et al., 2017; Rubin & Babbie, 2016). It is possible that some of the participants were exposed to the same measure twice but because it was an anonymous survey, it is not possible to know who participated in the initial and current survey. Exposing MHPs to the same tool multiple times may result to the likelihood of responding to questions favorably because of learning the tool (Berchtold, 2016). Additionally, it may be difficult to ascertain whether any differences in observations is associated with a change that occurred among the MHPs or to the characteristics of the TPB tool (Berchtold, 2016). Ways of addressing repeated measure limitations may include administering the TPB tool in a larger heterogeneous sample of MHPs working in a similar setting, collecting input from MHPs or experts on the stability of the TPB constructs to guide decisions about re-test interval, developing a set standard for accepting reliability coefficients and collecting follow-up data to test the consistency of the TPB scale over time (Polit, 2014). According to Polit (2014), exposing respondents to a very short interval such as 1 week increases the risk that respondents will remember the questions and answers. This may be unlikely in this study because data from an earlier published study of MHPs in the same setting using the same TPB tool was collected a year earlier from March 1st to June 30th 2016 (Okoli et al., 2017).

A lower internal reliability score for the perceived behavioral control measure ($\alpha = 0.50$) was similar to other studies that found an internal consistency of $\alpha = 0.65$ (Blankers

et al., 2016) and α = .50 (Okoli et al., 2017), highlighting the need for more research to further develop this measure to enhance its reliability. Results from factor analysis seemed to cluster around two factors however, when using the variables as recommended by the TPB model, it still worked according to the theory. Future studies should therefore consider developing questions that better conform with the TPB.

Despite these limitations, the current study adds to literature on MHPs delivery of tobacco treatment in mental health settings and provides useful information that may guide the development of tailored strategies to increase provider delivery of tobacco treatment to clients with MI, hence addressing the disparate rates of tobacco use and related burden in this vulnerable population. Though examining barriers towards delivery of tobacco treatment to clients with MI is a significant factor to take into consideration, this variable was not available for analysis in this study. Future studies need to examine patient, provider and system barriers hindering tobacco treatment interventions in mental health settings, to determine best tailored approaches to address these barriers and increase the delivery of evidence-based tobacco treatment in these settings. It is also critical to enhance MHPs' skills and knowledge in evidence-based tobacco treatment interventions for clients with MI through training and information dissemination (Casper, 2007; Grimshaw et al., 2001).

5.5   Summary and Conclusion

Providers in mental health settings can play a critical role in reducing the tobacco burden among clients with MI (Sharma et al., 2018; Wells et al., 2013) through brief

interventions (Fiore et al., 2008). Advising to quit smoking by health providers has been linked with higher cessation attempts in the general population (Stead et al., 2013). Due to higher rates of tobacco use among clients with MI and greater difficulty quitting, tobacco users with MI should ideally receive more cessation advisement than the general population, however, evidence suggests that they do not (Dixon et al., 2009; Himelhoch & Daumit, 2003; Leyro et al., 2013; Mitchell et al., 2015; Prochaska et al., 2004; Wye et al., 2017). Approximately half of MHPs in mental and behavioral health settings do not provide evidence-based tobacco treatment interventions to the clients with MI (Marynak et al., 2018). If tobacco use is not addressed, clients with MI will continue to face higher rates of tobacco-related burden. Given the underuse of routine delivery of tobacco treatment in clients with MI, exploring factors that influence providers' intentions to deliver tobacco treatment and their delivery of evidence-based tobacco treatment is critical in addressing gaps in tobacco treatment among this vulnerable population. The findings support the utility of the TPB in examining provider behavior and specifically subjective norms as the strongest predictor of provider intentions and behavior. Thus, suggesting the importance of targeting subjective norms when enhancing provider intentions to deliver tobacco treatment and subsequently their delivery of brief interventions for tobacco cessation.

5.6   Research Implications

This study supports the TPB model, suggesting that MHPs' attitudes, subjective norms, and perceived behavioral control influence their behavioral intentions to deliver evidence-based tobacco treatment to clients with MI. Since various constructs of the TPB have been shown to predict provider intentions and/or behaviors related to evidence-based tobacco treatment among different groups of providers, future studies need to test the reliability of the TPB constructs in relation to provision of tobacco cessation support in mental health settings using more robust research designs. A longitudinal study for example would allow for measurements of provider intentions and their practice of brief interventions at several time points to allow for the assessment of relationships among the TPB factors that provide stronger evidence of association, specifically temporality. Such studies can provide further directions in development of context specific interventions for providers to enhance tobacco treatment for patients with MI through development of treatment guidelines and policies to address the disparate rates of tobacco use and related burden among clients with MI.

5.7   Implications for Evidence Based Social Work Practice

Findings from this study expand knowledge on current implementation of tobacco treatment interventions for tobacco users with MI in mental health settings, the nature of those interventions, and factors that facilitate or hinder provider engagement in tobacco treatment. This knowledge may be useful in guiding tobacco treatment policies and

interventions in mental health settings to reduce the disparity in tobacco use and related burden in this population, and to facilitate further research in this area. Subjective norms was strongly correlated with MHPs' intentions to deliver tobacco treatment, and their delivery of brief interventions for tobacco treatment practices using the 5 As approach. These findings highlight the importance of putting more emphasis on subjective norms when designing interventions to enhance MHPs' delivery of tobacco treatment in this sample of MHPs.

Section II: Application of the TPB model

This section highlights how the application of a TPB model can enhance MHPs' delivery of evidence-based tobacco treatment in mental health settings. The TPB constructs target motivational factors that determine the likelihood of performing a certain behavior (Glanz et al., 2015). According to the TPB, provider intentions, determined by their attitudes, subjective norms and perceived behavioral control, is the best predictor of their evidence-based tobacco treatment practice behaviors. The constructs of the TPB model therefore explain the variation in intentions and the targeted behavior. Since the TPB framework has been shown to not only predict but also modify behavior (Ajzen, 1991), assessing MHPs' attitudes, subjective norms, and perceived behavioral control (i.e., factors that determine their intention to deliver tobacco treatment and subsequently their actual delivery of tobacco treatment), can reveal important information that may be useful in improving MHPs' delivery of tobacco treatment through targeting key elements of the TPB shown to influence MHPs' intentions and their practice behaviors.

The current study examined 1) Whether MHPs' attitudes, subjective norms and perceived behavioral control influenced their intentions to engage clients with MI in tobacco treatment?, and 2) Whether MHPs' attitudes, subjective norms, perceived behavioral control and intentions influenced their delivery of brief interventions for tobacco cessation to clients MI? Findings from the hierarchical regression analysis, showed that MHPs' *attitudes*, *subjective norms* and *perceived behavioral control* influenced their *intentions* to provide tobacco treatment as predicted by the TPB model, with *subjective norms* as the strongest predictor. In examining the TPB constructs and delivery of brief interventions using a simple mediational model, MHPs' *intentions* mediated the association between each of the TPB constructs i.e., *attitudes*, *subjective norms* and *perceived behavioral control,* and their delivery of brief interventions for tobacco treatment, with *subjective norms* as the strongest predictor.

The TPB has been used in designing continuing education for MHPs to bridge the gap between research and practice (Casper, 2007; Grimshaw et al., 2001), such as in influencing behavioral health providers' delivery of parent-mediated intervention for children with autism spectrum disorder (ASD) (Ingersoll et al., 2018). The gap between research evidence and practice is also evident in tobacco treatment delivery for clients with MI. Though currently there exists effective and safe evidence-based tobacco treatment interventions (Fiore et al., 2008) along with evidence that clients with MI are motivated and able to quit successfully (Annamalai et al., 2015), few providers engage clients with MI in tobacco treatment (Himelhoch et al., 2014). More so, opportunities to encourage

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MHPs to deliver tobacco treatment in mental and behavioral health settings are currently underutilized (Blankers et al., 2016).

Providing education to MHPs may enhance their intentions to deliver tobacco treatment and their actual delivery of evidence-based tobacco treatment interventions (Correa Fernandez et al., 2017; Samaha et al., 2017). Awareness creation through continued education and information dissemination (Casper, 2007; Grimshaw et al., 2001) may enhance MHPs' delivery of tobacco treatment to clients with MI, hence, reducing the disparity in tobacco-related burden in this vulnerable population (Brown et al., 2015; Himelhoch et al., 2014; Sheals at al., 2016). Utilizing the TPB in designing an information and educational intervention for MHPs may include targeting its constructs (attitudes, subjective norms and perceived behavioral control) to promote MHPs' delivery of evidence-based tobacco treatment interventions to their clients with MI. The key assumption of such a program is that through the educational and information dissemination intervention, more MHPs will have confidence in their delivery of evidence-based tobacco treatment to clients with MI, hence, their tobacco treatment practices will improve. The specific objectives of an informational and educational intervention based on the TPB may include:

1. Challenging MHPs' *attitudes* that may undermine tobacco treatment,

2. De-normalizing beliefs that may encourage tobacco use and undermine MHPs' delivery of tobacco treatment in mental health settings especially among the different provider groups through targeting *subjective norms*, and

3. Enhancing MHPs' *perceived behavioral control* in engaging clients with MI in tailored tobacco treatment.

5.8 Application of the TPB in designing an informational and educational intervention for MHPs.

MHPs' intentions to deliver evidence-based tobacco treatment are influenced by their attitudes (providers' beliefs about what will happen if they engage in tobacco treatment and whether the outcomes will be positive or negative), subjective norms (providers' beliefs about what their peers in the department or disciplinary group think about delivery evidence-based tobacco treatment), and perceived behavioral control (providers beliefs about factors that will make it easy or difficult to deliver evidence-based tobacco treatment), which predict their actual practice behavior of engaging clients with MI in evidence-based tobacco treatment. Therefore, to influence MHPs behavioral intentions to deliver tobacco treatment and their subsequent delivery of brief interventions for tobacco cessation through a TPB-informed informational and educational intervention in this sample of MHPs, the intervention needs to target MHPs' attitudes, subjective norms and perceived behavioral control, and most importantly subjective norms, which was the strongest predictor of intentions and behavior. Figure 5.1 provides a simple TPB model with key questions that can guide the design of an informational and educational program to influence MHPs intentions to deliver tobacco treatment and their evidence-based tobacco treatment behaviors.

Attitudes (favorable or unfavorable)	Subjective Norms (perceived peer/ social pressure)	Perceived behavioral control
• What are the outcomes of MHPs' delivery of tobacco treatment? Do MHPs see the outcomes as positive or negative? • What are the benefits or negative consequences of MHPs delivery of tobacco treatment?	• Do MHPs expect their peers to deliver tobacco treatment? • What are their expectations of their peers' tobacco treatment practice behavior? • Do they expect support or ridicule from their peers?	• Do MHPs have knowledge and skills to deliver tobacco treatment? • Are MHPs confident in tobacco treatment delivery? • Do MHPs have tools and resources to deliver tobacco treatment?

Intentions to deliver tobacco treatment → **Brief interventions**

Figure 5-1. A TPB model with key questions to consider in designing an informational and educational intervention for MHPs

Incorporating the questions in Figure 8 in designing the intervention may provide clues on how to affect behavior change among MHPs by influencing their attitudes, subjective norms and perceived behavioral control, to enhance their intentions to deliver tobacco treatment and subsequently their delivery of brief interventions for tobacco cessation. Specifically, application of the TPB in the design of an informational and educational program targeting to increase MHPs intentions to deliver tobacco treatment and their delivery of brief interventions may target:

1. Influencing MHPs *attitudes*, by targeting their behavioral beliefs and misconceptions that may undermine tobacco treatment delivery for clients with MI. A potential model for the intervention may include a focus on informational and educational materials that encourage positive attitudes towards delivery of tobacco treatment to clients with MI. For example, providing resources with testimonials from MHPs who have successfully engaged clients with MI in tobacco cessation and their clients are healthy and happy. This may highlight the importance of engaging clients with MI in tobacco treatment. On the other hand, providing MHPs' with informational and educational resources that show negative impact of not providing tobacco treatment to clients with MI for example, a flyer with recent statistics on increasing mortality rates among people with MI due to tobacco-related illnesses, may influence their support for client engagement in tobacco treatment in mental and behavioral health settings.

2. Influencing MHPs *subjective norms* may include the design and distribution of tailored educational and awareness materials such as brochures, flyers, informational packets or web-based resources for MHPs in different departments, disciplines, and job roles to encourage a normative culture that supports tobacco treatment delivery among different provider groups in mental and behavioral health settings. For social workers, the materials may be tailored to encompass and align with the discipline's key principles, such as the CSWE competencies. For example, the principle of "advancing human rights and socio-economic justice," (CSWE Commission on Accreditation, 2016), could be highlighted in educational resources targeting social workers who are

MHPs to encourage them to engage disparate populations (e.g. tobacco users with MI who face higher rates of tobacco use and related burden) in evidence-based brief interventions for tobacco cessation.

3. Influencing MHPs' ***perceived behavioral control*** may include provision of knowledge, informational materials and skill-based training (such as in motivational interviewing or brief interventions) to increase their confidence in providing tailored tobacco treatment to meet the needs of clients with MI. The specific components of the intervention may include provision of simplified versions of the tobacco treatment guidelines (Fiore et al., 2008), including information on client assessment, key elements of brief interventions for tobacco cessation, elements of practical counseling (e.g. coping skills and relapse prevention), counseling on FDA approved tobacco cessation medications, and on enhancing clients' motivation to quit tobacco use. Additionally, providing MHPs with easily accessible web-based tobacco treatment and referral resources for clients with MI may improve their self-efficacy in tobacco treatment delivery and subsequently their engagement of clients with MI in tobacco treatment.

5.9 A Model for Implementing and Evaluating the intervention: The RE-AIM Model

Clients' needs are met when providers who have received training and informational resources on evidence-based tobacco treatment implement these treatment strategies and integrate them into routine clinical practice (Manuel et al., 2011). However, practices for integrating evidence-based tobacco treatment into routine clinical practice remain unclear (Damschroder et al., 2009; Himelhoch et al., 2014). More so, implementation of evidence-based treatment interventions is still emerging in social work practice (Bellamy, Bledsoe, & Traube, 2006).

There is limited literature on best strategies for disseminating and implementing evidence-based tobacco treatment in mental health settings (Bighelli et al., 2016). Existing frameworks for implementing evidence-based practices are varied in their criteria and application (Luoto et al., 2013), with the majority being descriptive in nature and lacking any theoretical foundation to assist in implementation (Moullin et al., 2015). Lack of standardized protocols for implementing evidence-based tobacco treatment may prevent MHPs from effectively delivering tobacco treatment for their clients with MI (Duffy et al., 2016; Freund et al., 2008). The Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework can guide the implementation and evaluation of a TPB informed informational and educational intervention to influence MHPs' intentions to engage in tobacco treatment and subsequently their delivery of evidence-based tobacco

treatment to clients with MI. Based on RE-AIM, a standardized protocol for implementing and evaluating evidence-based tobacco treatment in mental health settings may include:

Reach: This is the number, percentage and representativeness of MHPs participating in an intervention (Forman et al., 2017). Assessment of reach will specifically examine the number and proportion of providers who have been trained and/or provided with informational and educational resources to enhance their evidence-based tobacco treatment practices (Jilcott et al., 2007).

Effectiveness: This is the effect of an intervention on targeted outcomes whether positive or negative (Forman et al., 2017; Jilcott et al., 2007). To measure effectiveness, both positive and negative outcomes of the training and informational intervention in influencing and enhancing MHPs' tobacco treatment delivery to clients with MI will be assessed (Glasgow et al., 2013; Jilcott et al., 2007).

Adoption: This is the extent to which those targeted to deliver an intervention are participating in the implementation through time (Forman et al., 2017). Adoption will be measured by assessing the absolute number and proportion of MHPs, disciplinary backgrounds/ job roles, and/or department levels provided with evidence-based tobacco treatment informational and educational resources and are engaging clients with MI in evidence-based tobacco treatment interventions post-intervention through time.

Implementation: The focus of implementation is on measuring fidelity by looking at the extent to which an intervention has been administered consistently through time (Forman

et al., 2017). To measure implementation, consistency of the informational and educational program to MHPs to enhance their tobacco treatment delivery practices, and their engagement of clients with MI in evidence-based tobacco treatment as intended through time will be assessed.

Maintenance: This is the extent to which an intervention becomes institutionalized as part of routine practices and policies within an organization (Forman et al., 2017; Jilcott et al., 2007). Maintenance will be analyzed through observation of trends in the implementation of the informational and educational intervention for MHPs to enhance their tobacco treatment delivery to clients with MI, and their actual delivery of tobacco treatment to clients with MI as per the tobacco treatment protocol post-intervention. Specific targets for the assessment may include analysis of whether there is a change in tobacco treatment norms or culture; whether there is change in staff attitudes and/or self-efficacy in tobacco treatment; whether there are clear tobacco treatment guidelines and policies within the institution or departments; whether tobacco treatment delivery is included in staff orientation; whether the educational and informational intervention for MHPs on tobacco treatment is on-going; whether MHPs' have continued access to tailored tobacco treatment resources to clients with MI; whether there is an improvement in MHPs' delivery of tobacco treatment to clients with MI; and whether there is a reduction in tobacco use prevalence among clients with MI. Table 5.1 provides a summary of a protocol for implementing and evaluating a TPB informed informational and educational intervention

for MHPs based on the RE-AIM framework and Figure 5.2, a model for implementing and

evaluating an intervention designed to enhance MHPs' tobacco treatment delivery.

Table 5-1. A protocol for implementing and evaluating a TPB informed
informational and educational intervention to enhance MHPs' tobacco treatment
delivery for clients with MI.

RE-AIM Construct	Operationalization	Evaluation Methods
Reach	Number or proportion of MHPs' reached with the informational and educational intervention to enhance their tobacco treatment delivery to clients with MI. This include number/ proportion of MHPs' trained in tobacco treatment; provided with information on tailored tobacco treatment for clients with MI; provided with referral lists with names of tobacco treatment services and providers; provided with a summarized version of the brief interventions for tobacco treatment etc.	-Baseline surveys - Progress reports -Mid-project and end-project/ intervention evaluations -Qualitative interviews of MHPs -Client surveys/ feedback regarding receipt of tobacco treatment interventions - Training attendance sheets -Audit of resources disseminated
Effectiveness	Positive and negative impacts of the informational and educational intervention, including its effects on MHPs' delivery of tobacco treatment to clients with MI.	-Review of tobacco control policies and standard operating procedures (SOPs) for tailored tobacco treatment delivery among different MI/ SMI diagnoses groups
Adoption	Number/ proportion of MHPs, job roles or disciplinary background and departments trained and provided with information on evidence-based tobacco treatment, delivering evidence-based tobacco treatment interventions to clients with MI.	-Review of organizational and/ or departmental tobacco treatment protocols/ guidelines - Budget tracking and cost-benefit analysis
Implementation	Adherence to the implementation of the informational and educational intervention for MHPs, and MHPs' adhering to tobacco treatment delivery protocols as intended over time.	- Assessment of client admission and discharge records to see how many have been referred for tobacco treatment services and what type of services/ interventions they are receiving, how many
Maintenance	Long term effects and sustainability of the informational and educational intervention for MHPs, and MHPs' delivery of evidence-based tobacco treatment to clients with MI through time.	have quit successfully -Review of MHPs' notes

Impact

1. Improved MHPs' intentions to deliver tobacco treatment to clients with MI.

2. Increased MHPs' delivery of brief interventions for tobacco treatment to clients with MI.

RE-AIM Implementation and Evaluation Framework

1. **Reach:** How many MHPs have been reached by the program?
2. **Effectiveness:** What are the positive and negative outcomes of the program?
3. **Adoption:** How many or what proportion of MHPs, disciplinary groups/ job roles and departments have been reached by the program and have implemented tobacco cessation in their routine clinical practice
4. **Implementation:** How is the adherence to the implementation guidelines and protocols for the program over time?
5. **Maintenance:** Sustainability of the program over time and MHPs' adoption of the culture of tobacco treatment.

TPB Informed Intervention

Design of an informational and educational program to enhance MHPs' delivery of tailored tobacco treatment to clients with MI.

TPB outcomes

1. Improved provider attitudes towards delivery of evidence-based tobacco treatment (EBTT).
2. Improved subjective norms towards provision of EBTT.
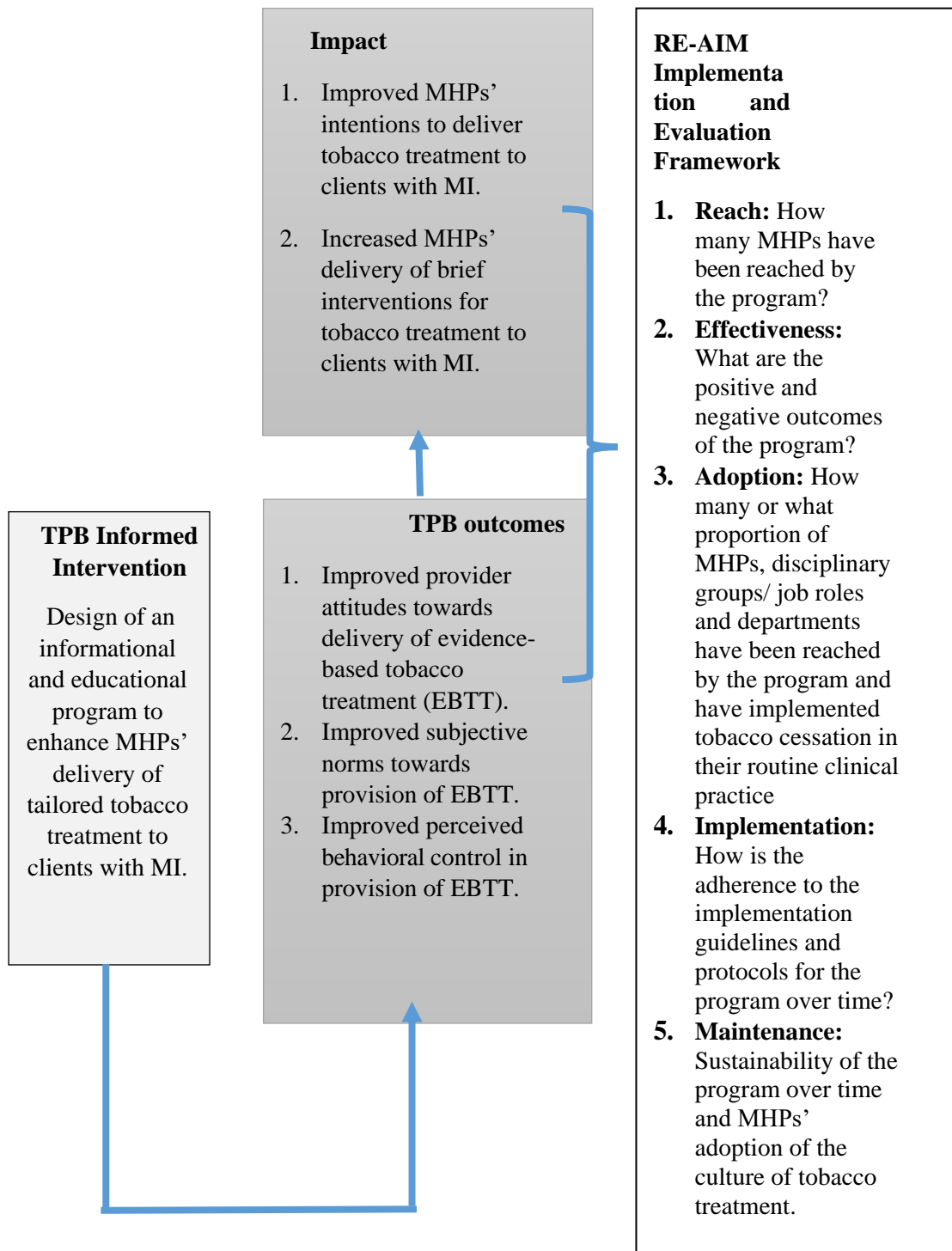3. Improved perceived behavioral control in provision of EBTT.

Figure 5-2. An implementation and evaluation model to enhance MHPs' tobacco delivery.

CHAPTER 6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary

This study utilized the TPB to examine factors associated with provider intentions to deliver tobacco treatment, and their delivery of evidence-based tobacco treatment to clients with MI. Data were obtained from a cross-sectional survey of 219 providers in a state psychiatric hospital in Kentucky. The study found that attitudes, subjective norms and perceived behavioral control were associated with providers' intentions to deliver tobacco treatment when controlling for the effect of personal, tobacco-use and work-related factors that may influence provider intentions and their practice behaviors related to delivery of evidence-based tobacco treatment to clients with MI. Among demographic and work-related factors, marital status and disciplinary group were associated with provider intentions to deliver tobacco treatment. The study also found that MHPs were less likely to engage their clients in brief interventions for tobacco cessation, suggesting the need to identify and address gaps in tobacco treatment in mental health settings. Additionally, intentions significantly mediated the association between each TPB construct and provider delivery of brief interventions.

Clients' needs are met when trained providers implement evidence-based treatment and integrate it into routine clinical practice. However, practices for integrating evidence-based tobacco treatment into clinical practice remain unclear. There is limited literature on best strategies for disseminating and implementing evidence-based tobacco treatment in mental health settings. Existing frameworks for implementing evidence-based practices

vary in their criteria and application, the majority being descriptive in nature and lacking theoretical foundations to assist in implementation. An integration of the TPB and the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework can guide the implementation and evaluation of interventions to influence MHPs' intentions to deliver tobacco treatment and subsequently their delivery of evidence-based tobacco treatment to clients with MI. The integrated model can also provide a standardized protocol for implementing interventions for MHPs to enhance favorable attitudes, subjective norms and stronger perceived behavioral control, leading to improvement in delivery of evidence-based tobacco treatment for clients with MI. This will facilitate addressing gaps in treatment provision and disparity experienced by clients with MI as related to tobacco use and related illnesses.

6.2   Conclusion

Clients with MI continue to experience disparate rates of tobacco use and related burden. In spite of current clinical practice guidelines recommending that MHPs routinely engage their clients with MI in tobacco treatment through brief interventions, few MHPs provide this recommended treatment in mental health settings. Understanding predictors of provider delivery of evidence-based tobacco treatment in mental health settings may provide an opportunity to address treatment disparity faced by this population.

6.3   Recommendations

This study recommends:

1. Further research to test the reliability of the TPB constructs in relation to provision of evidence-based tobacco treatment in mental health settings using more robust research designs, since various constructs of the TPB have been shown to predict provider intentions and/or behaviors related to evidence-based tobacco treatment among different groups of providers.

2. Development of standardized theory-guided behavior change protocols for tobacco treatment for clients with MI. Utilization of the TPB may provide the ideal model in targeted interventions that seek to enhance provider delivery of evidence-based tobacco treatment in mental health settings.

3. Development of a dedicated tracking and evaluation system to identify milestones in treatment interventions and to inform management decisions as a way of enhancing evidence based tobacco treatment (EBTT) for clients with MI. A system-wide adoption of an integrated model that utilizes both the TPB and RE-AIM framework may guide the implementation and evaluation of interventions targeting provider engagement of clients with MI in evidence-based tobacco treatment.

APPENDIX 1. SURVEY FOR MENTAL HEALTH PROVIDERS

SECTION A. DEMOGRAPHIC INFORMATION

A1. What year where you born? _____

A2. Are you?
1. ○ Male   **2.** ○ Female

A3. What is the highest grade or year of school you completed?
○ Less than high school
○ High school graduate or GED
○ Some college/ vocational/trade school degree
○ College graduate

A4. What is your ethnicity/race?
○ White, non-Hispanic
○ Black, non-Hispanic
○ Hispanic
○ Asian, Pacific Islander
○ Other_____(please specify)

A5. What is your marital status?
○ Married, living with spouse
○ Member of an unmarried couple
○ Divorced/separated
○ Single, never married
○ Other_____(please specify)

A6. What is your disciplinary background or job role? Are you a:
○ Physician (MD)
○ Physician (DO)
○ Psychiatrist (MD)
○ Nurse (RN)
○ Nurse (LPN)
○ Advanced Practice Nurse (APRN/CNS)
○ Psychologist (PsyD)
○ Psychologist (PhD)
○ Social Workers (LSW/LCSW)
. ○ Mental Health Associate

. ○ Pharmacist
. ○ Recreational Therapist
. ○ Occupational Therapist
. ○ Security
. ○ Other_____(please specify)

A7. Have you ever had tobacco treatment training
1. O No   2. O Yes
If yes, what type of training have you received:

_____

A8: Is ESH your primary place of employment?   1. O No   2. O Yes

A9:   For how many months/years have you worked at ESH?   ____Months
____Years

A10: In your opinion, does smoking/tobacco use cause ...

		Yes	**No**
a.	Cancer	O	O
b.	Heart disease	O	O
c.	Lung disease	O	O
d.	Mental illness	O	O
e.	Addiction to other drugs	O	O
f.	Premature death (dying earlier than normal)	O	O

SECTION B: SECONDHAND SMOKE AND SMOKING BEHAVIOR

In this section, we are interested in knowing about your exposure to Secondhand Smoke and tobacco use

B1: Do other smokers live in the same house / apartment as you?

O yes → How many? ☐☐   O no

B2: Excluding yourself, how many people smoke inside your home every day or almost every day?

O none   O 1   O 2   O 3 or more

B3: During the <u>past 7 days</u>, did someone smoke when you were ...

		Yes	No			Does not apply
a.	in a restaurant or cafe	O	O			O
b.	in a car	O	O			O
c.	in your house	O	O			O
d.	in someone else's house	O	O			O
e.	at work or school	O	O			O
f.	Other: Please specify	O	O			O

B4: **Do any of the following people in your life currently smoke cigarettes?**				
		Yes	**No**	**Does not apply**
a.	Spouse/ Partner/ Boyfriend or girlfriend	O	O	O
b.	Mother or Father/ Step-parent(s)/grandparents	O	O	O
c.	Brother (s)/ Sister (s)	O	O	O
d.	Children	O	O	O
e.	Best/Close friends	O	O	O

B16: On a scale of 0-10 with 0 being "not at all addicted" and 10 being "extremely addicted",

How <u>addicted </u> to cigarettes/tobacco are you? (Please circle one)

0   1   2   3   4   5   6   7   8   9

10

SECTION C. Intentions, Attitudes, Social Norms and Perceived Behavioral Control

We would like to know some of your thoughts about providing tobacco treatment.

Indicate to what extent you agree or disagree with the following questions on a scale of 1 to 7 with 1 being 'strongly disagree' and 7 being 'strongly agree':

	INTENTION	**1**	2	**3**	4	**5**	**6**	**7**
1	I expect to provide smoking/tobacco use cessation to patients who smoke in the next six months.	O	O	O	O	O	O	O
2	I want to provide smoking/tobacco use cessation to patients who smoke in the next six months.	O	O	O	O	O	O	O
3	I intend to provide smoking/tobacco use cessation to patients who smoke in the next six months.	O	O	O	O	O	O	O
	ATTITUDE							
		1	2	**3**	4	**5**	**6**	**7**
1	On a scale of 1 being **'harmful'** and 7 being **'beneficial'** how would you rate providing smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O

2	On a scale of 1 being '**good**' and 7 being '**bad**' how would you rate providing smoking/tobacco use cessation to patients who smokes/uses tobacco.	O	O	O	O	O	O	O
3	On a scale of 1 being '**pleasant for you**' and 7 being '**unpleasant for you**' how would you rate providing smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O
4	On a scale of 1 being '**worthless**' and 7 being '**useful**' how would you rate providing smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O
	SUBJECTIVE NORMS							
	On a scale of 1 being '**strongly disagree**' and 7 being '**strongly agree**' please respond to the following questions:	**1**	2	**3**	4	**5**	**6**	**7**
1	People who are important to me want me to provide soking/tobacco use cessation to my patients who smoke/use tobacco.	O	O	O	O	O	O	O
2	It is expected of me that I provide smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O
3	I feel under social pressure to provide smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O
4	Most of my peers think it is important to provide smoking/tobacco use cessation to patients who smoke/use tobacco.	O	O	O	O	O	O	O
	PERCEIVED BEHAVIORAL CONTROL	**1**	2	**3**	4	**5**	**6**	**7**
1	On a scale of 1 being '**strongly disagree**' and 7 being '**strongly agree**' please rate your response to the following statement: '**I am confident that I could provide smoking/tobacco use cessation to patients who smokes/uses tobacco.**'	O	O	O	O	O	O	O
2	On a scale of 1 being '**easy**' and 7 being '**difficult**' please rate your response to the following statement: '**For me to provide smoking/tobacco use cessation to patients who smoke/uses tobacco is….**'	O	O	O	O	O	O	O

3	On a scale of 1 being **'strongly disagree'** and 7 being **'strongly agree'** please rate your response to the following statement: **'The decision to provide smoking/tobacco use cessation to patients who smoke/uses tobacco is beyond my control.'**	O	O	O	O	O	O	O
4	On a scale of 1 being **'strongly disagree'** and 7 being **'strongly agree'** please rate your response to the following statement: **'Whether I provide smoking/tobacco use cessation to patients who smoke/use tobacco is entirely up to me.'**	O	O	O	O	O	O	O

SECTION D. 5 A's in practice/role

Please indicate how often you do the following activities based on the following scale:

1 = Never   **2** = Seldom   **3** = Occasionally   **4**= Very often

	In your practice/role, how <u>often</u> do you	**1**	**2**	**3**	**4**
1.	ASK patients whether they smoke cigarettes or use other tobacco products	O	O	O	O
2.	ADVISE patients who smoke or use other tobacco products to quit?	O	O	O	O
3	ASSESS the readiness of patients who smoke or use other tobacco products to quit or cut down?	O	O	O	O
4.	ASSIST patients in stopping smoking/tobacco use by providing medications and/or counseling	O	O	O	O
5.	ARRANGE for patients to be referred to smoking/tobacco use cessation services or follow up with them on their abstinence?	O	O	O	O
Please record the current time: ☐☐ : ☐☐ (For example, 10:30)					

APPENDIX 2. DATA ANALYSIS PLAN

Measures	Description	Level of Measurement	Analysis
CONTROL VARIABLES			
Personal Characteristics			
Gender	Being male vs female vs other	Nominal	Frequencies, Chi-square
Age	Age in years	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance
Ethnicity	White non-Hispanic; Black non-Hispanic or Hispanic or Asian or Pacific Islander or Other	Nominal	Frequencies, Chi-square
Marital status	Married/widowed, unmarried couple, separated/divorced and single/never married	Nominal	Frequencies, Chi-square
Highest education	High school graduate/ GED, some college/ trade/ vocational school degree, college graduate	Ordinal	Frequencies, Chi-square
Professional Characteristics			
Primary discipline or job role	Medical Staff [physicians /advance practice nurses and pharmacy], nursing staff (RNs and LPNs), social work and psychology, mental health associates and state registered nursing assistants, counseling/ therapists [recreational, occupational, music), and other [unit clerks, risk/ quality management and security]	Nominal	Frequencies, Chi-square
Work tenure	Work tenure in months	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance

Receipt of tobacco treatment training	Yes, No	Nominal	Frequencies, Chi-squares
Tobacco use or exposure factors			
Ever Tobacco User i.e., used any tobacco products [Cigarettes, Cigars, Cigarillos (little cigars), pipes, chew tobacco/loose leaf, hookahs, electronic cigarettes and/ or menthol] in the past month.	Yes, No	Nominal	Frequencies, Chi-squares
INDEPENDENT VARIABLES			
The TPB factors			
MHPs' attitudes towards providing tobacco cessation interventions for clients with MI	Assessed by four questions based on the TPB 1) on a scale of 1 being 'harmful' and 7 being 'beneficial' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco, 2) on a scale of 1 being 'good' and 7 being 'bad' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco, 3) on a scale of 1 being 'pleasant for you' and 7 being 'unpleasant for you' how would you rate providing smoking/tobacco use cessation to clients who smoke/use tobacco, and 4) on a scale of 1 being 'worthless' and 7 being 'useful' how would you rate providing smoking/tobacco use cessation to clients who	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance

	smoke/use tobacco. (Items 2 and 3 were reverse coded). A mean score (Range=1 to 7) was derived with 1 being "Strongly disagree" and 7 being "strongly agree".		
MHPs' subjective norms towards providing tobacco cessation interventions for clients with MI	Assessed by four questions based on the TPB on a 7-point Likert scale with 1 being 'strongly disagree' and 7 being 'strongly agree'). 1). People who are important to me want me to provide smoking/tobacco use cessation to my clients who smoke/use tobacco, 2) It is expected of me that I provide smoking/tobacco use cessation to patients who smoke/use tobacco, 3) I feel under social pressure to provide smoking/tobacco use cessation to clients who smoke/use tobacco, and 4) Most of my peers think it is important to provide smoking/tobacco use cessation to clients who smoke/use tobacco. A mean score (Range=1 to 7) was derived 1 being "Strongly disagree" and 7 being "strongly agree".	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance
MHPs' perceived behavioral control towards providing tobacco cessation interventions for clients with MI	Assessed by four questions based on the TPB. 1) on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'I am confident that I could provide smoking/tobacco use cessation to clients who smoke/use tobacco,' 2) on a scale of 1 being 'easy' and 7 being 'difficult' please rate your	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance

	response to the following statement: 'For me to provide smoking/tobacco use cessation to clients who smoke/use tobacco is…', 3) on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'The decision to provide smoking/tobacco use cessation to clients who smoke/use tobacco is beyond my control,' and 4) on a scale of 1 being 'strongly disagree' and 7 being 'strongly agree' please rate your response to the following statement: 'Whether I provide smoking/tobacco use cessation to clients who smoke/use tobacco is entirely up to me' (Items 2 and 3 were reverse coded). A mean score (Range= 1 to 7) was derived with 1 being "Strongly disagree" and 7 being "strongly agree".		
OUTCOME VARIABLES			
MHPs' intentions to deliver tobacco cessation interventions to clients with MI	Assessed by three questions based on the TPB. 1) I expect to provide smoking/tobacco use cessation to clients who smoke in the next six months, 2) I want to provide smoking/tobacco use cessation to clients who smoke in the next six months, and 3) I intend to provide smoking/tobacco use cessation to clients who smoke in the next six months. Responses are based on a 7-point Likert scale with 1 being 'strongly disagree' and 7 being 'strongly agree'. A mean	Continuous (Interval/ Ratio)	Mean (SD), Independent Sample T-test with Levine's test for equality of variance A hierarchical multiple linear regression analysis to test the TPB model. • Step 1: Demographic (gender, age, ethnicity, marital status, highest education), work (primary discipline, work tenure, receipt

	score of the scale (Range=1 to 7) was derived with 1 being "Strongly disagree" and 7 being "strongly agree".		of tobacco treatment training) and tobacco use (ever tobacco user) variables • Step 2: The TPB factors (attitudes, subjective norms and perceived behavioral control)
MHPs' current delivery of brief interventions for tobacco cessation	Assessed using five scale items from the 5A's approach (Ask, Advise, Assess, Assist and Arrange) by (Fiore et al., 2008) and was measured on a 4-point Likert scale. Specific questions include; if MHPs *asked* clients whether they smoked cigarettes or used other tobacco products, *advised* clients who smoke or use other tobacco products to quit, as*sessed* the readiness of clients who smoke/use other tobacco products to quit or cut down, a*ssisted* clients in stopping smoking/tobacco use by providing medications and/or counseling, and *arranged* for clients to be referred to smoking/tobacco use cessation services or follow up with them on their abstinence.	Continuous (Interval/ Ratio)	A simple mediational analysis to test: • The effect of attitudes on a MHP's delivery of brief interventions is mediated by intentions, while adjusting for subjective norms and perceived behavioral control as covariates • The effect of subjective norms on a MHPs' delivery of brief interventions is mediated by intentions while adjusting for attitudes and perceived behavioral control as covariates • The effect of perceived behavioral control on a MHP's delivery of brief interventions is mediated by intentions while adjusting for attitudes and subjective norms as covariates

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Janet K Otachi

VITA

EDUCATION

MSW	2021	University of Kentucky, College of Social Work
		Graduate Certificate: Clinical Social Work
MA	2010	University of Nairobi, College of Arts and Social Sciences
		Major: Medical Sociology
BSW	2004	Catholic University of Eastern Africa, Nairobi-Kenya

PROFESSIONAL LICENSURE AND CERTIFICATIONS

- Licensed Social Worker (LSW) State of Kentucky (#3823).
- BREATHE Tobacco Treatment Specialist, July 2019.
- GCP Social and Behavioral Research Best Practices for Clinical Research April 2018- April 2021.
- Biomedical Investigators and Key Personnel #2016-05-26 (19654670).

PROFESSIONAL SERVICE

- Reviewer Perspectives on Social Work Journal January 2019- May 2021

PROFESSIONAL EXPERIENCE

Program Coordinator II: Behavioral Health Wellness Environments for Living and Learning (BH WELL), UK College of Nursing (August 2019 to date).

Program Coordinator I: Tracking and Evaluation for UK Center for Clinical and Translational Science (CCTS), University of Kentucky Center for Health Services Research (September 2016 to August 2019).

Mental and Behavioral Health Associate, Acute Psychiatric Unit: Eastern State Hospital/ UK Health Care; Lexington Kentucky, USA (April 2014 to August 2016).

Program Officer, Tracking and Evaluation, Coalition on Violence Against Women (COVAW), Nairobi Kenya (May 2012 to June 2013).

Program Associate, Tracking and Evaluation, Leadership and Management Systems (LMS) USAID Program, Management Sciences for Health, Nairobi Kenya (May 2010 to May 2012).

Medical Social Worker, Nairobi Women's and Children's Hospital Gender Violence Recovery Center (GVRC) Nairobi Kenya (July 2006 to March 2008).

RESEARCH AND TEACHING INTERESTS

Social work research; Social Work Theory; Public Health Social work; Community Organization and Practice; Social policy; Health disparities and equity; Enhancing evidence-based interventions; Substance use and abuse among vulnerable populations; Mental/ behavioral health and wellness; Translational and collaborative science; Community engaged research and interventions.

RESEARCH EXPERIENCE

Research Associate, University of Kentucky College of Nursing BREATHE/Medicaid Partnership (July 2018 to June 2020), contribution (20%). Implementation of a behavioral health tobacco dependence treatment program for Kentucky Medicaid Recipients and evidence-based tobacco treatment interventions in mental and behavioral health settings.

Research Assistant, University of Kentucky (August 2017 to August 2019), contribution 30%. National Institute on Drug Abuse (NIDA)-funded study designed to reach vulnerable injection drug users in Clark, Knox, and Pike counties to understand the multi-level barriers to access syringe exchange programs and to identify priority intervention targets and strategies to increase uptake. Data collection, literature review, manuscripts and poster development.

Research Assistant, Info-Africa Research and Development Centre, Nairobi Kenya (January 2012 to January 2013), contribution 25%. Assisted in implementation research for a results-based monitoring and evaluation program for learning.

Research Assistant, Reproductive health fistula project Engender Health, Nairobi Kenya. (April to July 2011) contribution 25%. Data collection for a project on fistula corrective surgeries for women in rural Kenya.

Research Assistant, Africa 2.0, Nairobi Kenya (2011 to January 2012), contribution 20%. Literature review on regional disparity in social determinants of health in Africa.

Research Associate - Ideal Environmental Consultancy, Nairobi Kenya (November 2009-November 2010), contribution 100%. Implementation of HIV prevention programs and development of environmental and social monitoring plan (ESMP) in road construction.

Recruitment Manager, Kenyatta National Hospital, Nairobi Kenya (March 2008 to April 2010), contribution 100%. Community outreach and recruitment manager for a phase 3 partners PrEP study for HIV discordant couples.

Social Work Consultant, Urban Research and Development Center for Africa (URADCA), Nairobi Kenya (July 2005 to July 2006). Feasibility study on microbicides preparedness among female sex workers. Community engagement in preparedness for a HIV microbicides Trials for High-Risk Women

TEACHING EXPERIENCE

Eastern State Hospital (ESH) Work Learning Program, Peer Tutor. DSW and DNP students (Fall 2020 to Date).

Social Work 650: Research Methods in Social Work, Instructor. (Summer, 2019). College of Social Work, University of Kentucky

Social Work 422: Human Behavior and Social Environment II, Guest Lecture. (Spring, 2019). College of Social Work, University of Kentucky

Social Work 322: Intro to Social Work and Social Welfare, Guest Lecture. (Spring, 2019). College of Social Work, University of Kentucky

Part-Time Online Graduate Tutor; 2012-2014- Human Rights and Refugee Protection, Nairobi Kenya.

FUNDING

American Public Health Association (APHA) Philadelphia, November 2020, UK College of Nursing, $ 300.

Travel Funds, American Public Health Association (APHA) Philadelphia, November 2019, UK College of Nursing, $ 1,500.

Student Travel Funds, Council on Social Work Education (CSWE) Annual Program Meeting (APM), Denver, Colorado, October 2019. UK College of Social Work, $ 750.

BREATHE Tobacco Treatment Specialist Training, May-July 2019, UK College of Nursing, $800.

GRANT WRITING EXPERIENCE

Project Lead, Info-Africa Consultancy, Kenya: Contribution 25 %. Evaluation of Child Protection Program, Pendekezo Letu, Kenya. Funded by Caritas, Australia; $ 2,000. (November 2014).

Project Lead, Peace Initiative Kenya- Coalition on Violence Against Women (COVAW), Kenya: Contribution 15%. Development of information, education and communication (IEC) materials for community awareness to prevent electoral based gender violence; funded by USAID (August 2012- September 2013); $ 50,500.

Project Lead, Tracking and Evaluation- Coalition on Violence Against Women (COVAW), Kenya: Contribution 80%. Development of web-based monitoring and evaluation system for COVAW to improve data collection and for reporting. Funded by Trocaire (June 2012-December 2012); $ 3,500

Project Lead, Tracking and Evaluation- Coalition on Violence Against Women (COVAW), Kenya: Contribution 0.1% Supporting Community Based Advocacy for Maternal and Child Health. Funded by Christian Aid PPA- (FY 2012/ 2013); $ 19,980.

Project Lead, Tracking and Evaluation- Coalition on Violence Against Women (COVAW), Kenya: Contribution 0.4%. Advocacy against beading of girls, a form of sexual violence linked to unsafe abortions in rural Kenya. Funded by Planned Parenthood Federation of Africa (PPFA)-(FY 2012/2013); $ 12,028.

Project Lead, Tracking and Evaluation- Coalition on Violence Against Women (COVAW), Kenya: Contribution 10%. Increased Community Participation in Prevention of Intimate Partner Violence (IPV). Funded by Wellsprings Advisors- (FY 2012/2013); $ 100,000. 2012/2013.

Project Lead, Info-Africa Consultancy, Kenya: Contribution 25 %. Monitoring and Evaluation Systems Strengthening and Capacity Building for Pendekezo Letu, Kenya. Funded by Caritas Australia (February/ 2013); $ 2,000.

Project Lead, gender-based violence recovery center (GVRC) - Nairobi Women's and Children Hospital, Kenya: Contribution 5%. Awareness creation on sexual violence among school going children. 16 Days of Activism. Funded by ActionAid, (December 2006; $ 3,000).

PEER REVIEWED PUBLICATIONS

1. Okoli, C.T.C., Abufarsakh, B., **Otachi, J.** (2021). Quit and Win Contests in Community-Dwelling Mental and Behavioral Health Populations: A Systematic Review and Pilot Feasibility Findings. Public Health Nursing.

2. **Otachi, J.K.**, and Benner, K. (2020). Social work students' perspectives on understanding and addressing research anxiety. *Perspectives on Social Work Journal.*

3. **Otachi, J. K.**, Vundi, N., & Surratt, H. L. (2020). Examining Factors Associated with Non-Fatal Overdose among People Who Inject Drugs in Rural Appalachia. *Substance use & misuse*, *55*(12), 1935-1942.

4. Higgins, J.T., Okoli, C., **Otachi, J.K**, Lawrence, J., Bryant, E., Lykins, A., & Seng, S. (2020) Factors associated with burnout in nurses caring for traumatically injured patients. *Journal of Trauma Nursing*.

5. **Otachi, J.K**., Seng, S., and Okoli, C. T. C. (2020). Factors associated with tobacco cessation attempts among inpatients in a psychiatric hospital. *Journal of Smoking Cessation*. doi: https://doi.org/10.1017/jsc.2020.3

6. Okoli, C.T.C., Seng, S., **Otachi, J.K**., Higgins, JT., Lawrence, J., Lykins, A., and Bryant, E. (2019). A cross-sectional examination of factors associated with compassion satisfaction and compassion fatigue across health care workers in an Academic Medical Center. *International Journal of Mental Health Nursing*. doi:10.111/inm.12682.

7. Surratt, HL, **Otachi, J.K**, Gulley, J, Lockard, AS, Rains, R, and Williams, T. (2019). Motivation to change and treatment participation among syringe service program utilizers in rural Kentucky. *Journal of Rural Health.* doi: 10.1111/jrh.12388.

8. Surratt, HL, Cowley, A, Gulley, J, Lockard, AS, **Otachi, J.K**, Rains, R, and Williams, T. (In Press). Syringe service program uptake among people who inject drugs in Appalachian Kentucky, *American Journal of Public Health*.

9. Seng, S., **Otachi, J. K**., and Okoli, C. T. C. (2019). Reasons for tobacco use and perceived tobacco-related health risks in an inpatient psychiatric population. *Issues in Mental Health Nursing.* doi:10.1080/01612840.2019.1630533

10. Okoli, C.T.C, **Otachi, J.K**., and Seng, S. (2019). Assessing opinions and barriers to providing evidence-based tobacco treatment among health care providers within an in-patient psychiatric facility. *Journal of Mental Health*. 1-11. doi:10.1080/09638237.2019.1581328

11. Okoli, C.T.C., **Otachi, J.K**, Kaewbua, S., Woods, M., and Robertson, H. (2018). Factors associated with staff engagement in patients' tobacco treatment in a state psychiatric facility. *Journal of the American Psychiatric Nurses Association*. *23* (4), 268-278. Doi:10.1177%2F1078390317704045

12. Okoli, C.T.C., **Otachi, J.K**., Manuel, A., and Woods, M. (2017). Factors associated with the intention to engage in tobacco treatment among inpatients in a state psychiatric hospital. *Addictive Behaviors*.25(1), 14-25.doi:10.1111/jpm.12435.

UNDER REVIEW

1. Surratt, H.L, **Otachi, J.K**., Vundi, N., and McLouth, C. Submitted March, 2021. Healthcare stigma and HIV risk among rural people who inject drugs. *Drug and Alcohol Dependence. Revise and Re-submit*

2. Abufarsakh, B., **Otachi, J.**, Wang, T., Al-Mrayat, Y., Okoli, C.T.C. (submitted September 24th, 2020). The Impact of a Nurse-Led Services on Tobacco Treatment Provision within a psychiatric hospital: A Time Series Study. *International Journal of Mental Health Nursing*

3. **Otachi J.K**, Otis, M., Flaherty, C., and Okoli, C.T.C. (submitted December 17th, 2019). Enhancing Provider Delivery of Tobacco Treatment within the inpatient psychiatric setting. *Social Work in Public Health. Revise and Re-submit*

MANUSCRIPT IN PROGRESS

1. **Otachi, J.K**, Robertson H.E., Okoli, C.T.C. 2021. Factors associated with work-place violence among healthcare workers in an Academic Medical Center.

1. **Otachi, J.K**. and Okoli, C.T.C. (Submitted March 19, 2021). Leveraging strategies for improving provider delivery of evidence-based tobacco treatment in community mental health centers in Kentucky. American Public Health Association (APHA) Denver, Colorado and Online Oct. 24-27.

2. Okoli, C.T.C., Robertson, H.E., **Otachi, J.K**., Abu Farsakh, B., Pemberton, K.M., Williams, L.B. (Accepted April 14th, 2021). Enhancing behavioral health promotion through tailored comic books: When Nicotine Attacks-Fight the Crave. 35th American Psychiatric Nurses Association Conference, Louisville, KY, U.S.A

3. Robertson, H., Seng, Sarret, **Otachi, J.K**., Okoli, C.T.C. (Accepted April 14th, 2021). The Work Learning Program (WLP): Supporting career development in psychiatric-mental health nursing. 35th American Psychiatric Nurses Association Conference, Louisville, KY, U.S.A

4. Okoli, C.T.C., **Otachi, J.K**., Carmichael, A.A. (submitted February 25th, 2021). Supporting tobacco treatment delivery by mental healthcare providers through simulated substance use treatment scenario training. 35th American Psychiatric Nurses Association Conference, Louisville, KY, U.S.A

5. **Otachi, J.K** and Okoli, C.T.C. (2021, March).Enhancing Evidence Based Tobacco Treatment in Community Mental Health Centers. 3rd Annual Substance Use Research Event (SURE). University of Kentucky Office of the Vice President for Research, Lexington, Kentucky. March 3. Virtual.

6. **Otachi, J.K**., Lykins, A., Robertson, H., and Okoli, C.T.C. (2020, October). Correlates of work-place violence among healthcare workers in an academic medical center. American Public Health Association (APHA) San-Francisco, October 24-28. Virtual.

7. Okoli, C.T.C., Abu-Farsakh, B., **Otachi, J.**, Robertson, H. (2020, September). The Behavioral Health Quit and Win (BH Q&W) Contest: Promoting tobacco cessation in a community-based mental illness recovery program. 34th American Psychiatric Nurses Association Conference, Lake Buena Vista, Florida, U.S.A (Poster*).* September 30-October 4. Virtual.

8. Franchino, J. S., **Otachi, J.K**., and Okoli, C.T.C. (2020, April). How does workplace violence affect compassion satisfaction in nursing staff? 15th Annual UK Center for Clinical and Translational Science Conference, Lexington, KY, USA https://www.ccts.uky.edu/education-training-0/annual-ccts-conferences/15th-annual-spring-conference (Conference canceled)

9. Franchino, J., **Otachi, J.K**., and Okoli, C.T.C (2020, March). The effects of workplace violence on compassion satisfaction among nurses. Kentucky Chapter of the American

Psychiatric Nurses Association Conference, Lexington, KY (Poster) https://www.apna.org/i4a/pages/index.cfm?pageid=3393 (conference canceled)

10. **Otachi, J.K**, Giger, J.T and C. T. C, Okoli. (2019). Enhancing Evidence Based Tobacco Treatment in Mental Health Settings. American Public Health Association (APHA) Philadelphia, Nov. 2 - Nov. 6.

11. Surratt, Hilary L., and **Otachi, J.K**. (2019). Syringe service program utilization and treatment linkage among people who inject drugs in rural Kentucky. American Public Health Association (APHA) Philadelphia, Nov. 2 - Nov. 6.

12. **Otachi, J.K**., Latimer, A. and Pachner, T.M. (2019, October). Health Policy in Social Work Practice: An Elective Course. E-Poster for the Council on Social Work Education (CSWE) Annual Program Meeting (APM), Denver, Colorado.

13. Okoli, C.T.C., Seng, S., **Otachi, J.**, Higgins, J., Lawrence, J., Lykins, A., and Bryant, E. (2019). Secondary traumatic stress, burnout, and compassion fatigue among health care workers at an academic-medical center. 33rd American Psychiatric Nurses Association Conference, New Orleans, Oct 2- Oct 5.

14. Okoli, CTC., Seng, S., **Otachi, J.K**, Higgins, J., Lawrence, J., Lykins, A., Bryant, E. (2019, Sep). Behavioral and work-related factors associated with secondary traumatic stress, burnout, and compassion satisfaction among health care workers at an academic-medical center. Translational Research Forum on Secondary Traumatic Stress. Lexington, KY (Podium).

15. Surratt, Hilary L., Staton, M., Cowley, A. and **Otachi, J.K**. (2019). Syringe exchange uptake and HIV risk behaviors among rural people who inject drugs. Annual Meeting of the College on Problems of Drug Dependence, San Antonio, Texas, June 15-19, 2019.

16. Surratt, Hilary L., and **Otachi, J. K**. (2019). Syringe service program utilization in rural Kentucky. National Rural Health Association Health Equity Conference, Atlanta, Georgia, May 7, 2019.

17. Latimer A., Pachner T., and **Otachi J.K**. (2019). Social Media in the Classroom: Let us Tweet About it. KASWE Spring Conference, Morehead State University Kentucky, Apr 4.

18. Surratt H.L, Cowley A.M., **Otachi J.K**, Thompson R., Williams T., Lockard S., Gulley J., Rains. R, Li J and Staton M. (2018). Appalachian Translational Research Network. 8th Annual Summit. Structural HIV and HCV Prevention Efforts Among People Who Inject Drugs (PWID) in Rural Appalachian Kentucky, Sep 20- Sep 21.

VOLUNTEER EXPERIENCE/ COMMUNITY SERVICE

1. Intern, United Nations HIV/AIDS Workplace Program, Nairobi Kenya (July 2005 to July 2006).

2. Social Work Student Practicum, Homeless Children International Child Care and Development Program, Nairobi and Loitoktok, Kenya (April to August 2003). The program focused on rehabilitating street girls and girls from low-income families.

3. Medical Social Work Student Practicum, Kenyatta National Hospital, Medical Social Work Department, Nairobi, Kenya (April to August 2002).

4. Social Work Student Practicum, Kabiro Health Care Trust, Behavior Change Communication Program to promote sexual health and prevent drug and alcohol use/ abuse among youth from low income communities, Nairobi Kenya (April to August 2001).

PROFESSIONAL MEMBERSHIPS

- National Association of Social Workers (NASW)-2019

- Council on Social Work Education (CSWE)-2019

- American Public Health Association (APHA)- 2019

- Association for the Treatment of Tobacco Use and Dependence (ATTUD)-2019

- Kentucky Public Health Association (KPHA)-2013