IMPROVING THE PERCEIVED SELF-EFFICACY TO QUIT SMOKING IN LOW SOCIOECONOMIC ADULTS: A BRIEF SMOKING CESSATION INTERVENTION FOR USE IN A FREE CLINIC SETTING

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Abstract

The prevalence of cigarette smoking by persons of low socioeconomic status (SES) remains high despite the recent declines in smoking experienced by the rest of the population. Persons of low socioeconomic status are more prone to health disparities, have limited access to healthcare, and receive less assistance with smoking cessation when compared to persons of higher SES. Self-efficacy is frequently cited as a barrier to effective smoking cessation and sustenance in the low socioeconomic population. Evidence-based research demonstrates the effectiveness of using brief motivational interviewing interventions to improve smoker's self-efficacy. This Doctor of Nursing Practice improvement project sought to determine if a brief smoking cessation intervention carried out with adults of low SES who present to a free clinic can improve their perceived self-efficacy to quit smoking.

Key words: smoking cessation, free clinic, low income, low socioeconomic status, motivational interviewing, participatory dialogue, poverty, quit smoking, stop smoking, tobacco cessation, underserved populations, self-efficacy

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Chapter 1

1.0 Introduction to the Project

1.1 Problem

In the United States (U.S.), tobacco use is the leading cause of preventable morbidity and mortality (Centers for Disease Control and Prevention {CDC}, 2018b; Parks & Kim, 2018; U.S. Department of Health and Human Services {HHS}, 2014). Cigarettes are the most prevalent form of tobacco used, with an estimated 480,000 deaths annually attributed to cigarette smoking and exposure to secondhand smoke (HHS, 2014). Overall, the rate of cigarette smoking has declined from just over 20% of the population in 2005 to 15.5% in 2016 (CDC, 2018b). Although the prevalence of cigarette smoking has declined to 15.5%, this percentage is equivalent to 38 million America adults who are regular smokers, which is well above the targeted goal of </= 12% laid out by Healthy People 2020 (Healthy People 2020; Jamal et al., 2018). Despite the recent decreases in cigarette smoking across the U.S., the decline is not equal across all population groups (CDC, 2018b). Persons with a low socioeconomic status (SES) have been found to have disproportionately high rates of smoking compared to the general public and are less likely to have access to and utilize evidence-based smoking cessation interventions (CDC, 2018a; Fu et al., 2014). This contributes to a tobacco-related health disparity in the low socioeconomic population (CDC, 2018a; Parnes, Main, Holcomb, & Pace, 2002).

1.2 Significance

The detrimental health effects of tobacco use have been well documented. Cancers, cardiovascular diseases, respiratory diseases, and a host of other health issues have been directly attributed to tobacco use (CDC, 2014; HHS, 2014; Ford, Bergmann, Boeing, Li, & Capewell, 2012; Verbiest et al., 2017). The Surgeon General has identified tobacco use as a causative agent

in twelve cancers (HHS, 2014). Nearly one-third of cancer deaths (28.7%) are attributed to smoking (Jacobs et al., 2015). Tobacco use has been directly linked to the development of coronary artery disease, cerebrovascular disease, and atherosclerosis (HHS, 2014). Smoking is a well-known cause of respiratory diseases such as chronic obstructive pulmonary disorder (COPD), pneumonia, and chronic airway obstruction (HHS, 2014). Tobacco use has also been attributed to reproductive problems, pregnancy and birth complications, sudden infant death syndrome (SIDS), cataracts, macular degeneration, periodontitis, low bone density, hip fractures, poor wound healing, and adverse surgical outcomes (HHS, 2014).

Smokers categorized as low-SES are more affected by the detrimental effects of tobacco (CDC, 2018a; Helms, King, & Ashley, 2017), and bear the burden of increased morbidity and mortality from cigarette smoking (Fu et al., 2014; Jha et al., 2006). In the U.S., tobacco accounts for at least 1/3 of the disparity in life expectancy between those who smoke and those who do not (Jha et al., 2013). Low SES smokers also have a higher lung cancer incidence than their higher SES counterparts (CDC, 2018a). These disparities have been at least partially attributed to lack of access to care (CDC, 2014; CDC, 2018a). Helms, King, and Ashley (2017) note that low SES adults are more likely to report being in fair to poor health, with higher rates of COPD, asthma, and more than one emergency room visit in the past 12 months. Homeless smokers, who may identify as low SES and are more likely to utilize the services of a free clinic for medical care, experience a tobacco-related mortality rate that is 3-5 times higher than the general public (Baggett et al., 2015).

Tobacco use cessation has the potential to improve life expectancy and reduce both the actual and relative risk of disease burden and mortality for all populations (Courtney et al., 2017;

Verbiest et al., 2017). Quitting has proven to be advantageous for all smokers and can increase their longevity, yet quitting tobacco use is difficult (Ford et al., 2012; HHS, 2014).

Tobacco dependence has been recognized as a chronic condition, rather than merely a habit, and due to its chronicity may require repeated interventions for complete cessation to be achieved (Anderson, Jorenby, Scoot, & Fiore, 2002). However, for clients of low SES who utilize the services of a free clinic, repeated visits are not often realistic or feasible. Studies have shown low SES smokers want to quit and in fact attempt to do so frequently; however, they are less successful at quit attempts (Babb, Malarcher, Schauer, Asman, & Jamal, 2017; Caleyachetty, Lewis, McNeill, & Leonardi-Bee, 2012; Christiansen, Brooks, Keller, Theobald, & Fiore, 2010). This is in part due to the fact that low SES smokers have less access to healthcare and are less likely to receive effective tobacco cessation treatments and information regarding the benefits of quitting (Babb et al., 2017; Christiansen et al., 2010). Furthermore, the more socioeconomically disadvantaged an individual is, the less likely they are to be offered assistance (Browning, Ferketich, Salsberry, & Wewers, 2008). To reduce the economic and health burden from smoking-related diseases and to continue the decline in smoking prevalence, population-based interventions must be specifically aimed at the low SES population (Boudreaux, Carmack, Scarinci, & Brantley, 1998; Jamal et al., 2018). Thus, it is crucial to continue to develop and implement evidence-based, population-specific interventions aimed at smoking cessation in the low SES population.

Specific populations have been identified as having higher smoking rates than the general public: adults with a low socioeconomic status (SES), those who have a General Education Development (GED) certificate, are homeless, part of a minority/ethnic group, are uninsured or are a recipient of Medicaid (CDC, 2018a; Jamal et al., 2018; Siddiqi et al., 2015; HHS, 2014).

Those with the lowest SES have the highest rates of smoking (Hiscock, Bauld, Amos, Fidler, & Munafo, 2012). Low socioeconomic status is generally considered to include adults who are unemployed, who live at, near or below the national poverty level, or those who have low educational achievement (CDC, 2018a; Wetter et al., 2005). The percentage of adults who smoke and are living below the poverty level is 27.9%, whereas 17% of adults who live at or above the poverty level smoke. Medicaid recipients and the uninsured have higher smoking rates of approximately 25% and 12% respectively (CDC, 2009; Jamal et al., 2018). The prevalence of smoking in the U.S. homeless population has been estimated to be as high as 68%-78% (Baggett & Rigotti, 2010). Persons of low SES have not benefitted from the public health efforts to decrease smoking rates, thus, their tobacco usage rates remain high (Siddiqi et al., 2015). The highest risk for tobacco-related morbidity and mortality occurs in adults with the lowest SES (Vidrine, Reitzel, & Wetter, 2009; CDC, 2014). The reasons behind this health risk disparity are multi-factorial.

1.3 Purpose and Aims

The purpose of this practice inquiry project was therefore to determine if a brief, evidence-based, smoking cessation intervention delivered by an advanced practice registered nurse (APRN) to adult patients of low SES presenting to a free clinic increased their perceived self-efficacy and/or readiness to quit smoking. The aim was to make brief contact with clients who reported being a current smoker and provide a motivational interviewing smoking cessation intervention based on their willingness or reluctance to quit. Given the multiple factors impacting smoking cessation success in the low SES population and the evidence-based support for a multi-modal approach to quitting, the multi-theory model (MTM) of health (Sharma, Khubchandani, & Nahar, 2017b) was chosen to serve as the foundational framework for this project. It is the

author's hope that the findings from this project may improve the health outcomes of low SES patients who smoke by initiating and sustaining abstinence from smoking. The results may also serve to improve the interventional strategies used by practitioners for smoking cessation in persons of low SES by providing a reproducible framework for a smoking cessation intervention.

1.4 Operational Definitions

The concepts of low socioeconomic status, self-efficacy, motivational interviewing, and the multi-theory model will be defined as such for the purposes of this project.

1.4.1 Socioeconomic status. SES is determined by income, social class, and education (Hiscock, Judge, & Bauld, 2010). Individuals with low income, low education status, low occupational status (Businelle et al., 2010), or those living in poverty (Brunette et al., 2015), are considered to have low socioeconomic status (CDC, 2018a). In relation to health status, low socioeconomic status is determined by an individual or group's access to the basic elements required to attain adequate health and maintain a healthy status (Shavers, 2007).

1.4.2 Self-efficacy. Self-efficacy is an individual's confidence or belief in their ability to successfully accomplish a goal, perform a task, or change a behavior. In the context of smoking cessation, it's a person's confidence or belief in their ability to quit smoking (Clyde, Pipe, Reid, Els, & Tulloch, 2018). This self-confidence is an essential component of their motivation to quit, associated with abstinence, and is an effective indication of relapse and treatment outcome (Bandura 1997; Burke, Arkowitz, & Menchola, 2003; Clyde et al., 2018; Gwaltney, Metrik, Kahler, & Shiffman, 2009).

1.4.3 Motivational interviewing (MI). MI is a client-centered intervention that consists of reflective listening and expressing empathy by the clinician, while increasing an individual's motivation and their perceived self-efficacy to change a behavior (Burke et al., 2003).

1.4.4 The **multi-theory model (MTM).** MTM incorporates successful, evidence-based, proven ideas from existing theories and applies them to a health promotion problem, in this case, smoking, addressing both immediate and long-term changes in the context of smoking cessation (Sharma et al., 2017).

1.5 Background

Multiple barriers to smoking cessation have been identified specific to the low socioeconomic population, ranging from lack of self-efficacy to limited access to resources and minimal social support. While there are various evidence-based techniques available for smoking cessation, there is strong evidence in the literature supporting brief interventions that focus on improving self-efficacy using motivational interviewing. These brief interventions are ideal for the setting of a free clinic.

1.5.1 Barriers to quitting. Smokers of low SES may not seek regular medical care due to financial constraints, lack of health insurance, and lack of access to healthcare, among other factors. They may not respond as strongly to evidence-based smoking cessation treatments (Hiscock et al., 2013), nor do they receive tobacco cessation advice as often as those of higher SES (Babb et al., 2017; Parnes et al., 2002). Low SES smokers have lower rates of smoking cessation success, even though they make just as many attempts to quit as their higher socioeconomic counterparts (Babb et al., 2017; Caleyachetty et al., 2012; Hiscock et al., 2015; Hiscock et al., 2012; Kalkhoran, Berkowitz, Rigotti, & Baggett, 2018; Kotz & West, 2009; Reid, Hammond, & Boudreau, 2010). Smoking is intimately integrated into every aspect of daily life, contributing to the difficulty in quitting (Singer, 2012). The potential barriers to cessation are numerous and complex. Social influences, such as social environments that do not support quitting, a lack of social support with quitting (Twyman, Bonevski, Paul, & Bryant, 2014), and

higher rates of smoking in their social circle (Hiscock et al., 2012), are often cited as barriers to quitting. Lack of self-efficacy that quitting is possible, an inability to recognize the future personal harm from tobacco, increased rates of noncompliance with treatment, material hardship inducing high stress, and targeted media marketing have also been identified as barriers for smoking cessation in the low SES population (Hiscock et al., 2012).

1.5.2 Smoking cessation techniques. There are a variety of smoking cessation techniques for clinicians to utilize to assist clients with quitting, and many have been proven to be effective at decreasing smoking rates and premature mortality (PHS, 2008). The U.S. Public Health Service (PHS) updated the Clinical Practice Guidelines for Treating Tobacco Dependence in 2008 and noted the effectiveness of pharmacological treatments, as well as strong support for counseling, quit lines, and motivational interventions. They concluded that if effective interventions are delivered in a timely and efficient manner to current users, they can significantly reduce the risk of suffering from a smoking-related disease (PHS, 2008). These, in combinations with in-person support groups (Verbiest et al., 2017), individual and telephone counseling (PHS, 2008), nicotine replacement therapy (Sharma et al., 2017), and pharmacological therapy, such as bupropion and varenicline (PHS, 2008), are the mainstays of smoking cessation treatment in persons who are ready to quit. For smokers who are not ready to quit, motivational interviewing has been used successfully (PHS, 2008). This client-centered technique uses reflective listening and empathy to address the individual's ambivalence or hesitancy regarding quitting smoking, without being confrontational. The client is encouraged to verbalize personal motivations for change. The clinician fosters the client's confidence in their ability to change their behavior (Burke et al., 2003).

While there are numerous smoking cessation interventions targeted at specific ethnic minority groups (Liu et al., 2013), evidence-based, tobacco cessation interventions are not often tailored to the needs of vulnerable populations (Siddiqi et al., 2015). Indeed, there is a glaring lack of methodological rigorous research available on tobacco cessation in low SES adults (Bonevski et al., 2011). What little research has been conducted on identifying efficacious smoking cessation interventions among the low SES population has been inconclusive in their findings (Bakker et al., 2006; Doolan & Froelicher, 2006; Ranney et al., 2006). In the literature review by Murray, Bauld, Hackshaw, and McNeill (2009), the effectiveness of making cessation interventions client-centered, providing services at accessible locations, and using evidence-based cessation methods is noted, though the overall results of the studies included in the review were limited and require further investigation.

Previous research has focused on public policies and community-wide interventions, such as increasing the cost of tobacco products, placing restrictions on tobacco retailers, and addressing media campaigns that are aimed the low SES population (CDC, 2015; CDC 2018a). It is imperative to address smoking cessation on the individual level by developing strategies and interventions that are personalized, client-centered, and can be done in a one-to-one setting, such as a free clinic.

Based on the USPHS Guidelines (2008), the most effective therapies for quitting smoking are a combination of counseling and pharmacotherapy. In line with the results of other studies, including the 2000 USPHS Guidelines, they conclude that brief interventions are effective and should focus on a patient's willingness to quit (Anderson et al., 2002; Hays, Ebbert, & Sood, 2009; PHS, 2008; Pockey et al., 2012). While these are proven interventions for smoking cessation, their implementation in the setting of a free clinic proves problematic due to

the lack of consistent follow-up. However, as brief interventions have been shown to be effective, there is an opportunity to provide smoking cessation interventions to smokers of low SES with success.

Studies indicate increased odds of quitting are associated with provider advice to quit (Anderson et al., 2002; Hays et al., 2009; PHS, 2008). In the low SES population, healthcare visits may not be consistent, making it imperative for clinicians in free clinics to address tobacco dependence and willingness to quit during each client interaction. In clients who are motivated, the clinician should facilitate the development of a quit plan, including a quit date, and recommend effective medications and interventions to assist with quitting. The gold standard, evidence-based intervention for tobacco cessation counseling in patients who are motivated to quit includes the "5As" model developed by the U.S. Public Health Service, which can be incorporated into the brief intervention. These include *asking* if the patient smokes cigarettes, *advising* them to quit smoking, *assessing* their willingness to make a quit attempt, *assisting* the patient with quitting using evidence-based interventions, and *arranging* for follow-up contact with the patient (PHS, 2008). Research supports the efficacy of the 5A's intervention in smokers who are motivated to quit. In a 2016 study, following the delivery of the full 5A's intervention, smokers were 15 times more likely to report using cessation treatments as those who received one or none of the 5A's (Kruger, O'Halloran, Rosenthal, Babb, & Fiore, 2016).

For clients who are unmotivated to make a quit attempt, motivational interviewing incorporating the "5R's" can be utilized. The "5R's" consist of: relevance, risks, rewards, roadblocks, and repetition (Anderson et al., 2002; PHS, 2008). Key points include: viewing a patients ambivalence or resistance to change as normal, not explicitly advocating for change, and increasing the importance of change from the client's perspective so that they are ultimately the

one who present the motivators for change (Burke et al., 2003). There is evidence that motivational interventions increase quit attempts and abstinence among smokers currently uninterested in making a quit attempt (Heckman, Egleston, & Hofmann, 2010; Hettema & Hendricks, 2010; Klemperer, Hughes, Solomon, Callas, & Fingar, 2016; Lindson-Hawley, Thompson, & Begh, 2015; PHS, 2008) and are most effective for those who are initially the most resistant to change (Reniscow et al., 2002). Studies report a high patient satisfaction with this approach (Reniscow et al., 2002), and in the context of a brief intervention, MI has been shown to be efficacious, even when delivered in a variety of diverse settings by non-specialists (source in Reniscow et al., 2002). In terms of self-efficacy, motivational interviewing has the ability to foster intrinsic motivation to quit smoking (Miller & Rollnick, 2013 as cited in Bakker et al., 2015). Specific to low SES smokers, Neumann, Rasmussen, Ghith, Heitmann, and Tonnesen (2012) recommend individual counseling, which includes motivational interviewing, as opposed to group counseling, in addition to nicotine replacement therapy. Similarly, Glasgow and colleagues (2000) noted the effectiveness of a brief intervention based on motivational interviewing in women of low SES.

1.5.3 Role of self-efficacy and MI in smoking cessation success. Perhaps more importantly, few studies have addressed the low SES population's self-efficacy to quit. Self-efficacy is a reliable predictor of treatment outcome, a vitally essential component of motivation, and quitting success and integral to motivational interviewing (Bandura, 1997; Burke et al., 2003). Evidence suggests that interventions aimed at increasing an individual's self-efficacy can effectively change addictive behavior, though to what degree remains unclear (Hyde, Hankins, Deale, & Marteau, 2008). Motivational interviewing is a valuable and effective technique that can be used to educate and reassure the client (Anderson et al., 2002; PHS, 2008) and has been

shown to be effective when used in the context of smoking cessation (Christiansen, Reeder, Fiore, & Baker, 2014; Heckman et al., 2010; Lindson-Hawley, Thompson, & Begh, 2015). Motivational interviewing is client-centered and relies upon a clinician or educator's ability to utilize reflective listening and express empathy. This technique is designed to increase an individual's motivation to change and their belief that they can change their habits and behaviors.

Self-efficacy was originally defined and described by Bandura (1997) as a construct of the Social Cognitive Theory and remains a relevant and reliable concept in models of health behavior change today. Self-efficacy is defined as an individual's personal belief or confidence in their ability to accomplish a goal and is viewed as a causal factor in behavior change (Clyde et al., 2009; Perkins, Parzynski, Mercincavage, Conklin, & Fonte, 2012). In the context of smoking cessation, self-efficacy refers to an individual's confidence in their ability to quit smoking (Clyde et al., 2018). This confidence has been noted to have a significant effect on an individual's ability to refrain from smoking. Studies have shown that self-efficacy is a reliable indicator of treatment and abstinence outcomes (Blevins, Farris, Brown, Strong, & Abrantes, 2016; Burke et al., 2003; Gwaltney et al., 2009; Smit et al., 2014), making it a valid target for smoking cessation interventions (Gwaltney et al., 2009). Previous studies have clearly demonstrated the association between self-efficacy and smoking cessation (Blevins et al., 2016; Smit et al., 2014); however, these studies have also demonstrated a variance in self-efficacy's ability to predict abstinence. Research indicates that individuals with a low SES have been found to have low self-efficacy to quit, which may be due in part to social factors. The findings of Siapush, McNeill, Borland, and Fong (2006) indicate that low self-efficacy accounts for part of the reason that smoking cessation rates are lower in low SES groups. Gwaltney and colleagues (2009) conducted the most robust

study to date with a meta-analysis on self-efficacy and smoking cessation. The results demonstrate that while self-efficacy scores are initially high, they tend to wane over time. The findings also suggest that self-efficacy is influenced by, rather than a cause of, smoking behavior (Perkins et al., 2012; Gwaltney et al., 2009). Regardless of this, they note a significant association between self-efficacy and smoking abstinence. Blevins and colleagues (2016) found increases in smoking cessation self-efficacy were associated with reductions in number of cigarettes smoked over time. Most importantly, they noted the positive impact of self-efficacy on smoking cessation over long-term follow-up. Initial gains in self-efficacy resulted in long-lasting gains over time.

Several studies have also revealed the surprisingly bidirectional relationship between cessation self-efficacy and current smoking behavior. Smokers who express the highest self-efficacy are more likely to be smoke free, while those who experience a smoking relapse or negative events during their cessation journey demonstrate low self-efficacy (Bakker, Nijkamp, Sloot, Berndt, & Bolman, 2015; Clyde et al., 2018; Gwaltney et al., 2005; Gwaltney et al., 2009; Perkins et al., 2012; Phua, 2013; Shiffman et al., 2005). Thus, self-efficacy is both a causal agent for behavior change in smoking and can also reflect recent behavioral change.

In the study by Bakker et al. (2015), they found that only individuals who have quit smoking show a positive relationship between self-efficacy and intention to stay quit, while self-efficacy was not related to smoker's intention to quit. Perkins and colleagues (2012) demonstrate that over short durations, self-efficacy can predict abstinence, while abstinence can predict self-efficacy. In the study by Clyde et al. (2018), they determined that self-efficacy is both a causal and reciprocal factor in the context of smoking cessation, similar to what Bandura (1997) and other models for abstinence and relapse have found (Witkiewitz & Marlatt, 2005). An

individual's self-efficacy plays an important role in smoking quit attempts. Increasing an individual's self-efficacy leads to better treatment outcomes (Clyde et al., 2018), especially when self-efficacy measures are taken in close approximation to the outcome (Clyde et al., 2018; Gwaltney et al., 2005; Gwaltney et al., 2009; Shiffman et al., 2005).

In regards to smoking relapse, low self-efficacy levels can predict relapse (Elfeddali, Bolman, Candel, Wiers, & de Vries, 2012). Periods of abstinence from smoking and positive experiences empower patients, lead to higher self-efficacy levels and a greater chance of smoking cessation, while set-backs early on negatively impact the individual's self-efficacy, their intention to quit, and their chances of a successful quit attempt (Bakker et al., 2015; Clyde et al., 2018). There is evidence that self-efficacy may be an indicator of lapsing or failure to stay quit (Bakker et al., 2015, Gwaltney et al., 2009). Clinicians can bolster client's self-efficacy by assisting them with identifying their triggers for relapse and developing strategies to combat those triggers (Bakker et al., 2015).

1.5.4 Brief interventional methods for smoking cessation. Interventions for smoking cessation as short as three minutes have been found to be effective (PHS, 2008; Wu et al., 2015). In two Cochrane reviews, quit rates following a brief intervention of less than 20 minutes were found to be significantly higher than no advice or usual care. Stead and colleagues (2013) conducted a meta-analysis of 28 trials and found that advice to quit given during a brief intervention increased the quit rate by 1-3 percentage points. Lancaster and Stead (2017) conducted an analysis of 27 trials and found that quit rates following an individual counseling session were significant. Based on these two intensive reviews, brief interventions are recommended to address the need for timesaving, cost-efficient, and effective tobacco cessation interventions (Lancaster & Stead, 2017; Stead et al., 2013). Thus, conducting a project to assess

if increasing low SES adults' self-efficacy to quit is possible through a brief, targeted intervention using a motivational interviewing technique is warranted.

Persons of low SES often utilize the services of free clinics. These clinics do not accept reimbursement from third-party payers, do not charge for services, and rely on health care professionals to staff voluntarily (Foley & Sutfin, 2008). They serve as a medical safety net for the uninsured, underserved, and working poor. Satisfaction with services provided by these clinics has been reported as being high (Gertz, Frank, & Blixen, 2011). Research supports the use of brief interventions for smoking cessation delivered by a free or community agency (Bryant, Bonevski, Paul, O'Brien, & Oakes, 2010; Christiansen et al., 2010). These clinics may not provide the opportunity for extended visits or even repeat visits, so continuity of care is an issue. Thus, it is important for clinicians in these environments to optimize the time spent with all patients who smoke.

1.6 Clinical Questions

Based on the need for effective smoking cessation strategies for patients of low SES, this project posed two clinical questions. The first and primary clinical question concerns clients who are currently willing to quit smoking. A second exploratory question pertains to clients who are currently unwilling to consider quitting smoking.

Primary Clinical Question: *Does the delivery of a brief, one-time, smoking cessation intervention to low socioeconomic adults in a free clinic who are motivated to quit smoking change their perceived self-efficacy to make behavioral, physical, social, and psychological changes to quit smoking?*

Exploratory Clinical Question: *Does the delivery of a brief, one-time, smoking cessation intervention to low socioeconomic adults in a free clinic who are unmotivated to quit smoking change their perceived readiness to quit smoking?*

1.7 Summary

Tobacco use is a significant public health issue, especially for the low SES population. The recent declines in national smoking rates have not been manifested in this population, who continue to experience higher tobacco-related morbidities and health disparities. The factors affecting tobacco cessation success are varied, indicating a need for a multi-modal approach to interventions. One factor that research has identified as crucially important is a person's perceived self-efficacy in regards to tobacco cessation and the success of motivational interviewing techniques to increase it. Yet, there is a lack of focus on this indicator in the low SES population. Studies have also verified the effectiveness of brief smoking cessation interventions that are a good fit for delivery to persons of low SES who utilize free clinics for their health care needs. This project explored the use of motivational interviewing in a brief smoking cessation intervention with persons of low SES for its effect on their perceived self-efficacy to quit. In addition, the use of motivational interviewing as a method to improve perceived readiness to quit smoking was explored.

Chapter 2

2.0 Literature Review

2.1 Introduction

Significant progress has been made in decreasing the rates of smoking in the general public, yet rates remain high in the low SES population who use free clinics for their health care needs and often have only brief, sporadic encounters with health care providers. Traditional smoking cessation interventions are difficult to implement under such conditions, and best practice standards for addressing smoking cessation behavior change in persons of low SES have not been defined. Research on smoking cessation interventions specific to the low SES population is also sparse, but some themes have emerged as potentially impactful in addressing this issue, namely the applicability of motivational interviewing as an effective strategy, the effectiveness of brief interventions, and the importance of building perceived self-efficacy for behavior change. A decision was therefore made to explore the existing evidence on smoking cessation interventions effective in delivering brief, motivational interviews to patients of low SES presenting to a free clinic aimed at increasing perceived smoking cessation self-efficacy.

2.2 Methodology

A literature search was undertaken using multiple databases, including: PubMed, CINAHL, PsychINFO, MEDLINE, OVID, The Cochrane Library, and Google Scholar. The following search terms were used either alone, or in combination: “smoking OR tobacco cessation”, “self-efficacy”, “low- socioeconomic status OR poverty OR poor OR low-SES”, “free clinic”, “motivational interviewing”, “health promotion”, “brief intervention”, and “quit smoking”. Search limits included English language and human subjects. Initially, the search was limited to articles published between 2008-2018 for currency; however, due to the paucity of

information on smoking cessation in the low socioeconomic population, the parameters were extended to include articles from 1990-2018. In addition to a comprehensive-computer assisted search of databases, bibliographic mining was also conducted. These techniques produced a large, diverse body of research totaling 794 articles. After applying the inclusion criteria detailed below, there were 234 studies remaining for review. All duplicates were eliminated.

Inclusion criteria included random controlled trials, evidence-based treatment guidelines, meta-analyses, systematic reviews, literature reviews, qualitative studies, prospective studies, cross sectional designs, Cochrane Library reviews, quasi-experimental studies and retrospective analyses. Exclusion criteria included: editorial or opinion pieces, specific population, gender or ethnic focus, and studies that utilized long-term interventions.

Articles were assessed for quality prior to inclusion utilizing The Johns Hopkins Nursing Evidence-based Practice Rating Scale of: A High quality, B Good quality, and C Low quality (Newhouse, Dearholt, Poe, Pugh, & White, 2005). Those that demonstrated low quality or major flaws were not included. There were a total of 89 rated A articles and 50 B rated articles. Articles with a level of evidence I-IV were included.

One hundred and forty eight studies were eliminated, leaving 86 studies that were included. Of these 86 studies, there were: three Cochrane Library reviews, 16 systematic reviews, 35 random controlled trials, 13 qualitative studies, three cross sectional designs, four meta analyses, three longitudinal quasi-experimental studies, three clinical practice guidelines, four surveys, and two retrospective analyses.

2.3 Findings

Three major themes and three subthemes emerged from the literature review. Major themes include the importance of self-efficacy, success of motivational interviewing, and brief

interventions for smoking cessation. Subthemes included low-socioeconomic status, free clinics, and barriers to quitting.

2.3.1 Self-efficacy. Self-efficacy has been included as a concept in the study of behavior change since its introduction by Bandura in 1977. He posited that performance outcomes and a person's self-efficacy were interrelated. Performance outcomes affected one's self-efficacy and, when self-efficacy increased, performance levels also increased (1986). Since its inception, self-efficacy has been applied to research of a diverse body of behavioral functioning and health behaviors, including smoking cessation.

Several of the studies reviewed contained findings to support self-efficacy as a reliable predictor of successful smoking cessation outcomes. In 2011, Kadden and Litt conducted a thorough, systematic review on the concept of self-efficacy and its use as a mediator of treatment outcomes in substance use disorders, including smoking addiction. While noting that many of their reviewed studies found self-efficacy to be a predictor of treatment outcome, Kadden and Litt found relatively few treatments having been purposely designed to change or address an individual's self-efficacy, and measurements of self-efficacy were inconsistent. Their review expressed the need for future studies to determine if there is an optimal level of self-efficacy for desired outcomes.

Smit et al. (2014) studied smokers who had successfully quit smoking and discovered that they had higher baseline levels of self-efficacy when compared to those who eventually relapsed and to smokers who never made a quit attempt. These findings support the suggestion that self-efficacy is a main factor when predicting the success of quit attempts. Other literature supports this finding as well, that smokers with high levels of self-efficacy are more likely to quit and achieve abstinence (Bakker et al., 2015; Gwaltney et al., 2009; Mansyur, Pavlik, Hyman,

Taylor, & Goodrick, 2013; Schnoll et al., 2011; Shiffman et al., 2000) and that low levels of self-efficacy predict relapse (Elfeddali et al., 2012; Gwaltney et al., 2005; Gwaltney et al., 2009). Interestingly, Schnoll and colleagues (2011) not only demonstrated a positive, predictive association between self-efficacy and smoking cessation, but also indicated that the link is greatest during the first two weeks following cessation. This finding suggests that promoting a smokers self-efficacy early on enhances the likelihood that they will quit.

Other studies of self-efficacy and smoking cessation demonstrated similar correlations, but rather than self-efficacy being predictive of outcomes, their results demonstrated outcomes to be predictive of self-efficacy. For example, Chouinard and Robichaud-Ekstrand (2007) noted the importance of self-efficacy to the smoking cessation process, but that in cases of negative outcomes and an inability to quit smoking, self-efficacy decreased. Their research findings were limited by a high attrition rate (33%) of participants however. This relationship between self-efficacy and treatment success or failure was also highlighted by Boardman, Catley, Mayo, & Ahluwalia (2005) and Bakker et al. (2015). Both research teams found that when treatment was ineffective, in other words, when the individual was unable to quit or stay quit, the individual's perceived self-efficacy decreased. Conversely, when abstinence was achieved, self-efficacy scores were higher. These findings were also in line with those by Shiffman et al. (2000) in which self-efficacy levels decreased after a lapse and were also predictive of future relapses. Wong et al. (2004) and Romanowich, Mintz, and Lamb (2009) also found that smoking abstinence improved self-efficacy, but did not find that the inverse was true. In other words, they found that increased self-efficacy was a reflection of smoking cessation, and not the direct cause of the cessation. Martinez et al. (2010) reported similar results after conducting a randomized controlled trial with a large sample size of 642 smokers. Their findings were unique in that

participants who reported higher perceived control over potential withdrawal symptoms reported higher self-efficacy levels. Participants with low perceived control over withdrawal symptoms reported lower self-efficacy scores. This has interesting clinical significance in that interventions to increase self-efficacy to quit smoking may benefit from incorporating ways to mitigate the potential withdrawal symptoms that occur after smoking cessation.

Support for the benefit of increasing self-efficacy for both initiation as well as continuance of smoking cessation was also noted in other studies. In 2005, Gwaltney, Shiffman, Balabanis, and Paty assessed self-efficacy in 305 smokers and found that while abstinence was maintained, a client's self-efficacy increased, suggesting that cessation outcome influenced self-efficacy. However, their findings also indicated that an individual's lower self-efficacy level predicted a relapse indicating a possible bidirectional influence of self-efficacy. This bidirectional theme was also noted by Clyde et al. (2018) who conducted a large randomized controlled trial with 737 participants utilizing pharmacological therapies for smoking cessation. Their results indicated a reciprocal relationship between smoking cessation self-efficacy and current smoking status. Whereas self-efficacy was found to be predictive of outcome success, it was also noted that individuals who experienced a relapse had lower self-efficacy scores, while those who had high self-efficacy scores were more likely to be smoke free. These results were similar to findings of earlier studies (Gwaltney et al., 2005; Shiffman et al., 2005; Perkins et al., 2012; Phua, 2013). Of particular note are the findings of Perkins and colleagues (2012) who not only noted the bidirectional relationship between self-efficacy and smoking abstinence, but also that the strength of the prediction was the same in either direction; in other words, abstinence predicted self-efficacy just as strongly as self-efficacy predicted abstinence.

In the majority of the reviewed research literature, self-efficacy was shown to be a consistent moderator of cessation outcomes. An actual causal relationship between self-efficacy and smoking cessation is yet to be defined however (Clyde et al., 2018; Gwaltney et al., 2009; Hyde et al., 2008). In an attempt to address this gap and identify if self-efficacy influences initial smoking cessation, Shadel, Martino, Setodji, Cervone, and Witkiewitz (2017), conducted a randomized controlled trial utilizing a brief smoking cessation intervention aimed at changing self-efficacy. While initial smoking cessation was affected, these effects were attributed to smoking outcome expectancies, rather than self-efficacy. These expectancies were defined as an individual's beliefs about the consequences of smoking behavior and have been previously shown in the literature to predict smoking cessation outcomes (Gwaltney et al., 2005). Yet, Shadel and colleagues (2017) noted that while this may seem like a negative finding for self-efficacy, it actually makes sense from a theoretical context. In Bandura's social cognitive theory, outcome expectancy is a construct related to self-efficacy, and while each are distinct concepts, they work together to moderate behavior (Bandura 1977, 1997; Shadel et al., 2017). Although the research findings of Gwaltney et al. (2005) confirm the importance of self-efficacy to smoking cessation, defining the causal role of self-efficacy in smoking cessation outcomes may not be possible due to its interplay with other factors such as outcome expectancies (Shadel et al., 2017). A multimodal approach to smoking cessation focusing on self-efficacy, but also incorporating other affective constructs may therefore improve smoking cessation intervention success.

2.3.2 Brief Interventions. As previously noted in the discussion of research findings from Shadel and colleagues (2017), brief interventions for smoking cessation have demonstrated success. This is supported by the most recent update to clinical practice guidelines for treating

tobacco use (HHS, 2008) which offers compelling evidence that brief motivational counseling is effective for smoking cessation, even in as little time as 3 minutes when compared to no intervention. The *5A's* model for treating tobacco use and dependence is recommended in this HHS practice.

In 2013, Riesco-Miranda, Jimenez-Ruiz, and Serrano-Rebollo published a review of the current smoking cessation treatments, which included an emphasis on brief interventions. They specified the three types of patients who most benefit from brief smoking cessation interventions: smokers who are willing to make a quit attempt, smokers who are unwilling to make a quit attempt on the date of service, and former smokers who have recently made a successful quit attempt. For those who are willing to quit, a brief intervention utilizing the *5A's* can be employed. For smokers who are unwilling to quit at the time, a brief intervention based on motivational interviewing can be utilized to identify and increase the smoker's motivation to quit. For former smokers who have recently quit, relapse is common, thus motivational techniques may prove beneficial for preventing relapse. These recommendations, which are in line with the PHS 2008 update of the smoking cessation clinical practice guidelines, were found to be successful utilizing brief intervention.

Several other studies have also demonstrated the efficacy of brief interventions for smoking cessation. For example, Prochaska and colleagues (2004) conducted a randomized controlled trial with a large cohort of 4653 smokers, providing brief interventions based on, and progressing, through each stage of the transtheoretical model (TTM) with positive results. Christiansen et al. (2010) conducted a randomized controlled trial of 295 smokers utilizing a brief intervention that was provided by the Salvation Army. The brief intervention demonstrated immediate effects, including increasing smoker's willingness to seek help with quitting. In a

subsequent study, Christiansen and colleagues (2015) provided a brief, 20-minute intervention to smokers who were willing to quit. The intervention significantly increased quit attempts and motivational outcomes. In smokers who were initially unwilling to quit, the intervention increased the promotion of positive quit beliefs, as well as the likelihood that they would seek help with a quit attempt.

A systematic review and meta-analysis of relevant Cochrane reviews conducted by Aveyard and colleagues (2011) also revealed strong evidence for the brief smoking cessation interventions of either advising to quit or offering assistance with quitting. They noted three trials with statistically significant evidence that offering assistance with quitting motivated an additional 40-60% of participants to attempt to quit. In another Cochrane review, brief advice to quit from medical practitioners was confirmed to be effective for promoting smoking cessation (Stead et al., 2013). Similar results were also found in a small randomized control trial of a one-time web based intervention, in which most of the participants initiated a quit attempt and 39% initiated cessation treatment. The group demonstrated an 11% abstinence rate at 2-month follow-up and 100% of the participants rated the intervention as highly satisfactory (Brunette et al., 2015).

The application of the *5A's* model and use of counseling/motivational interviewing were also found to be effective in combination with brief smoking cessation interventions. Kruger et al. (2016) conducted a large-scale review of 10,801 smokers to determine if the application of a brief smoking cessation intervention utilizing the *5A's* was effective. Smokers who received all *5A's* as an interventional method for smoking cessation were fifteen times as likely to use methods for smoking cessation recommended by their healthcare provider than those who only received one or none of the *5A's* treatment approaches. This suggests that the *5A's* method can

be delivered effectively as a brief intervention and is highly associated with increased engagement and compliance with recommended cessation treatments. These results are significant, as research has demonstrated a low compliance rate by providers in the implementation of all five components of the *5A's*, particularly in smokers who were male, young, uninsured, and those with low or no income (King, Dube, Babb, & McAfee, 2013).

2.3.3 Motivational interviewing. Motivational interviewing is a client-centered technique (Miller & Rollnick, 2002) that works on the assumption that clients have an inherent motivation and an internal ability to engage in positive behavior changes (Rollnick & Miller, 1995). Thus, MI interventions avoid unsolicited advice or attempts of persuasion. Instead, the four basic principles of MI are *empathy, discrepancy, resistance, and self-efficacy* (Miller & Rollnick, 2002). During MI, the clinician expresses *empathy* by utilizing reflective listening and accepting the client's reluctance or even ambivalence to changing their negative behavior. Emphasizing the importance of change from the client's perspective creates *discrepancy*. The clinician assists the client to identify negative consequences of their continued behavior, which creates a discrepancy in continuing their current behavior. MI is unique in that the clinician does not advocate for behavior change, instead assisting the client with presenting his or her own personal reasons for changing. Reflective listening skills are again employed when *resistance* to change is met (Burke et al., 2003). The fourth and final concept of MI is client *self-efficacy*, which embraces the concept that a client's confidence in their ability to change is an essential component of behavior change (Burke et al., 2003).

Colby et al. first applied MI to smoking cessation in 1998. Although results from this and other early studies (Dunn, Deroo, & Rivara, 2001; Reniscow et al., 2002) were mixed regarding

the effectiveness of MI on smoking cessation, a large body of more recent studies have consistently demonstrated the effectiveness of MI on smoking cessation.

In fact, four comprehensive Cochrane Library systematic reviews support the use of MI for smoking cessation. In one such review (Lai, Cahill, Qin, & Tang, 2010) of 14 controlled trials, modest evidence for MI use for smoking cessation was noted. In a meta-analysis of 23 controlled trials (Hettema & Hendricks, 2010), MI was also found to have a modest effect on smoking cessation, having outperformed or matching other recommended smoking cessation techniques. Interestingly, this review found MI to be particularly effective when applied for less than one hour and for those smokers who displayed low motivation to quit. Similarly, Lindson-Hawley, Thompson, and Begh (2015), in their review of 28 studies, noted that shorter MI sessions, those lasting less than 20 minutes, had a greater effect on quitting when compared to longer sessions. Heckman, Egleston, & Hofmann conducted a systematic review and meta-analysis in 2010, which included 31 trials. Their findings also supported the use of MI for smoking cessation utilizing brief interventions.

Similarly, in a random controlled trial by Mansyur et al. (2013), MI was shown to be an effective technique for increasing client's self-efficacy and Schuck, Otten, Kleinjan, Bricker, and Engles (2014) noted the importance of increasing self-efficacy during MI sessions. In other studies, the effect of a brief, single MI session (Ferron et al., 2016; Kelly, 2008) significantly increased the number of participant quit attempts and improved their abstinence. Also in support of brief MI effectiveness was a large meta-analysis by Hettema and colleagues (2005), which actually noted better effects from short term, rather than long term, motivational interviewing interventions.

In contrast, a few studies reflected only a short-lived MI effect on smoking cessation. Harris and colleagues (2010) studied the effectiveness of MI for increasing smoking cessation attempts in a college student population, which noted the effect did not appear to be completely maintained over time. Similarly, Glasgow and colleagues (2000) utilized a brief intervention based on advice to quit, motivational interviewing, and counseling, with results demonstrating a statistically significant effect at the six week follow-up on self-reported abstinence, but no statistical effect at the six month follow-up. Manuel, Lum, Hengle, and Sorensen (2013) found that a single MI session decreased the number of cigarettes smoked per day, though the overall abstinence rates did not vary at one month follow-up. However, the validity of these findings are restricted by their limitations. In the study by Harris and colleagues (2010), the participants were all white college students, which limits the generalizability of their findings and in particular to this planned study sample. Glasgow et al. (2000) noted that it is not uncommon for short-term differences to diminish over time in regards to smoking cessation. They acknowledged internal problems with implementing the follow-up intervention, which likely skewed their results. Only 43% of participants received a follow-up call. Lastly, Manuel and colleagues (2013) were limited by a very small sample size (n=30), the use of a single MI therapist, and self-report of abstinence by participants.

The concepts of self-efficacy, brief interventions, and motivational interviewing are interrelated in the context of smoking cessation. For example, based on the current smoking cessation practices of primary care clinicians and the efficacy of MI, Werner, Lawson, Panaite, Step, and Flocke (2013) recommended the use of brief MI techniques to address smoking cessation during a single 15-minute visit. In another study, a brief MI intervention was extremely effective in eliciting sustained smoking abstinence for at least six months (Louwagie, Okuyemi,

& Ayo-Yusuf, 2014). In a 2005 systematic review and meta-analysis, Rubak, Sandbaek, Lauritzen and Christensen reported the effectiveness of a brief, 15 minute MI session in 64% of the studies reviewed.

The evidence for the use of MI as an effective means of smoking cessation counseling is compelling. Also important is the literature support for the notion that MI can be implemented effectively within a brief time frame in a variety of settings. Therefore, a brief MI intervention is ideal for application in a free clinic.

2.3.4 Low socioeconomic status and smoking. Critical socioeconomic differences in smoking cessation treatment outcomes have been identified by a multitude of studies (Hiscock et al., 2013; Neumann et al., 2012; PHS, 2008; Sheffer et al., 2009; Sheffer et al., 2012; Wetter et al., 2005). Early studies reported smokers of low SES had lower intentions to quit smoking when compared to their higher SES counterparts (Siapush et al., 2006). More recent reviews have determined that there is strong evidence to suggest that low SES smokers are just as likely to attempt to quit smoking as other persons, but are less likely to be successful (Hiscock et al., 2012; Kotz & West, 2009; Reid et al., 2010). There is also evidence that lower SES smokers are less likely to use smoking cessation treatments, especially the comprehensive, gold standard recommendation of pharmacotherapy and counseling (Fu et al., 2014). When smoking cessation interventions are implemented on both low SES and high SES smokers, high SES smokers consistently experience greater odds of success with long-term abstinence (Sheffer et al., 2013).

In a large study by Varghese and colleagues (2014), significant socioeconomic disparities were noted in tobacco treatment outcomes. Smokers from the lowest socioeconomic group were less likely to complete treatment, more likely to never have attempted to quit, less likely to seek assistance with quitting, and reported less social support with quitting than their higher SES

counterparts. The lower SES group was also more likely to be more dependent, more stressed, and smoke more cigarettes per day, yet also more motivated to quit and confident about quitting. In regards to treatment outcomes, higher SES smokers had higher rates of long-term abstinence. In a similar large-scale study by Sheffer and colleagues (2012), discrepancies between lower SES and higher SES smokers in regards to treatment outcomes was noted. Smokers with the lowest SES were the least likely to achieve abstinence, they received the least amount of treatment content, and were the least likely to complete treatment. Similar to the results noted above, lower SES smokers were noted to be more dependent on tobacco, smoke more cigarettes per day, report a lack of social support with quitting, and were least likely to have sought professional assistance with quitting. However, as previously noted in other studies, individuals with the lowest SES were more motivated to quit and more confident about quitting than their higher SES counterparts (Sheffer et al., 2012). In regards to long-term outcomes, smokers who were more confident about quitting had increased odds of abstinence. Individual counseling sessions were more effective than group sessions. Overall, it was determined that low SES smokers experienced a greater number of clinical, health, social, and environmental challenges, yet received the least amount of treatment and had access to fewer resources than smokers with a higher SES (Sheffer et al., 2012).

Strong evidence for smoking cessation interventions that consistently work in the low SES population is scarce (Brown et al., 2014; Bryant, Bonevski, Paul, McElduff, & Attia, 2011; Cox, Okuyemi, Choi & Ahluwalia, 2011; Hiscock et al., 2012), although short-term abstinence from in-person counseling sessions have been proven successful for smokers with a low SES (Berndt et al., 2017; Sheffer et al., 2012). Results from a systematic review attempting to identify strategies to improve support for low SES smokers were mixed, with limited supporting evidence

for any one strategy. Barriers to accessing health services were found to be an important factor for smokers attempting to quit. Identifying low SES smokers in primary care settings appeared beneficial, though the effect on overall quit rates was unknown. Tailoring interventions to make them more client-centered was suggested to be more effective, although supporting evidence was limited (Murray et al., 2009).

Lower SES populations may have differing motives to quit and reasons for relapse. A large population based study found that smokers with a low SES most often cited the high cost of cigarettes and negative health consequences as reasons for wanting to quit. Prior negative experiences and withdrawal symptoms were reasons given for relapse (Pisinger, Aadahl, Toft & Jorgensen, 2011). These findings are similar to those of Vangeli and West (2008) as well as Hiscock and colleagues (2012) who found that low SES smokers most often cited cost and current health concerns as triggers to quit smoking, while their higher SES counterparts reported future health concerns as their motivation to quit. Dube and colleagues (2009) also that found that low SES smokers had the highest odds of reporting psychological stress from smoking cessation attempts.

As stated above, low SES smokers consider the financial ramifications of continuing to smoke when considering a quit attempt (Pisinger et al., 2011). They also focus on the here and now instead of future consequences of their current behavior (Vangeli & West, 2008). In a randomized controlled trial focused on the financial aspect of quitting for low SES smokers, Sindelar & O'Malley (2014) posited that low SES smokers who participated in their study considered the health benefits achieved from quitting too far into the future and the possibility of developing a tobacco-related disease uncertain. Instead, the financial gains from not purchasing cigarettes are an immediate, obvious, and certain benefit of quitting. These results suggest that

financial messages may generate more interest and quit attempts in the low SES population than health messages due to their immediacy.

2.3.5 Barriers to quitting. Every population faces barriers to quitting smoking, however, barriers specific to the low SES population have been identified in the literature and noted during this review. As mentioned previously, unequal distribution of resources and limited access to evidence-based tobacco cessation treatments and health care services are key barriers to smoking cessation in the low SES population (Garrett et al., 2015). Yet, additional barriers are specific to this population as well.

Qualitative research findings from a study by Christensen and colleagues (2012) suggest that low SES smokers rarely use evidence-based smoking cessation interventions, even reporting skepticism of their effectiveness and safety. Quit attempts in this population are low, with many associating the behavior as normal. It has also been demonstrated that past quit attempts and future intentions to quit are relative to the smoker's beliefs regarding intention, motivation and willpower. In this study, the majority of smokers believed that smoking was normal and acceptable behavior. Participants also demonstrated the belief that quitting is merely a matter of willpower and utilizing one's own willpower is the most effective way to quit. These beliefs may act as barriers to effective smoking cessation treatment in some low SES smokers. They may also discourage the use of evidence-based treatments and interfere with their ability to ask for assistance with quitting (Christiansen et al, 2012).

A low level of social support has also been identified as a specific barrier for smoking cessation for the low SES population. Having less support from family and friends is seen as a significant obstacle for smoking cessation (Hiscock et al., 2012; Pisinger et al., 2011). Additional

notable barriers identified in a systematic review by Hiscock and colleagues (2012) were targeted marketing by tobacco companies and a strong addiction to nicotine.

In relation to self-efficacy, those with low SES have been found to have lower levels of self-efficacy than those of higher SES (Hiscock et al., 2012; Reid et al., 2010; Siapush et al., 2006), which can also be a barrier to quitting if they lack the confidence in their ability to quit. Findings from a large international survey report similar barriers, but also included lower levels of knowledge, lower concern for the negative health consequences of smoking, differing social norms and attitudes towards smoking, and greater levels of stress (Reid et al., 2010).

In a random controlled study on smoking cessation in low SES smokers by Wagner and colleagues (2016), participant retention was noted to be a daunting obstacle to treatment, as half of the participants did not complete treatment. Various factors for lack of retention were cited: lack of transportation, unmet expectations, trust issues, and belief and misconceptions concerning nicotine replacement therapy (NRT).

It is precisely due to these obstacles that a brief, one-time motivational intervention was chosen for this project. Consistency, transportation issues, and lack of participant follow-up can be addressed by instituting a one-time intervention. Follow-up for this project was done via telephone, in an attempt to avoid transportation issues. Lack of self-efficacy has been listed as a barrier, thus motivational interviewing techniques to improve participant's self-efficacy were utilized. To address the lack of social support, participants were encouraged to identify potential sources of support and given tips on how to approach them.

2.3.6 Free clinics and smoking cessation. Free clinics are nonprofit organizations that serve a critical role as a safety net in the care of the underserved, uninsured, and the working poor (Gertz, Frank, & Blixen, 2011). As such, the task of smoking cessation counseling often

falls to the free clinics or community organizations who are providing primary healthcare services to persons of low SES and those without healthcare insurance. Yet, the uninsured population is three times less likely to receive smoking cessation advice from a healthcare provider than their insured counterparts (Parnes et al., 2002).

In a 2012 survey of free clinic patients, 53% were current tobacco users with high rates of chronic disease. Screening and intervention rates for these clients were well below the USPHS recommendations (Pockey et al., 2012). In another study, the availability of smoking cessation services in free clinics was assessed. Only 33% of the clinics surveyed (n=51) offered at least 9 of the 13 USPHS guideline recommended strategies for tobacco cessation, indicating a need and an opportunity for providing tobacco cessation interventions for this population. Lack of external pressure from government oversight and entities, lack of knowledge of the available services, and misconception related to the importance of such services were postulated as possible reasons for the USPHS guideline not being fully adopted and integrated in free clinics (Foley & Sutfin, 2008). In a large review (n= 136,314) of client characteristics and tobacco cessation interventions in safety-net clinics, insurance coverage was predictive of tobacco cessation advice and interventions. Patients who are uninsured were less likely to receive comprehensive assistance than smokers with insurance coverage (Bailey et al., 2018). In that these population groups have demonstrated a high prevalence of smoking (Flocke et al., 2017; Lebrun-Harris, Fiore, Tomoyasu, & Ngo-Metzger, 2015; Pockey et al., 2012; Silfen et al., 2015), clinicians at these facilities can serve to fill the gap in their access to smoking cessation interventions (Pockey et al., 2012).

Free clinics aren’t the only organizations that may have the opportunity to address tobacco cessation with smokers of low SES. In a 2010 study of smoking cessation interventions

offered by the Salvation Army, Christiansen and colleagues determined that a brief tobacco cessation intervention could effectively be implemented without detriment to either the clients or the organization. Christiansen et al. (2014) also studied participant beliefs regarding smoking cessation treatments offered by the Salvation Army and found that beliefs regarding smoking cessation treatments were influenced by interventions, particularly those providing education on the resources available to them. These results demonstrate the effectiveness of a brief tobacco cessation intervention, even when administered in a variety of community settings.

2.4 Theoretical Framework

Multiple models of behavior change have been applied to smoking cessation. These include the transtheoretical model (Prochaska & Norcross, 2001), the social cognitive theory (SCT) (Bandura, 1977), Ajzen's perceived theory of planned behavior (TPB), Freire's (1970) model of adult education (MAE), and Goleman's (1998) emotional intelligence theory (EIT).

The TTM (Prochaska & Norcross, 2001) has often been applied to smoking cessation efforts. Also known as the stages of change model, the TTM proposes that individuals achieve behavior change in a process of five stages: precontemplation, contemplation and preparation, action, and ending with maintenance. While this model has proven to be applicable to smoking cessation, its use is not feasible in a free clinic environment where continuity of care is not guaranteed. Use of this model would require individuals to progress through five stages of behavior change, which requires a significant time commitment as well.

Bandura's (1977) SCT has also been applied to smoking cessation efforts. This theory assumes that an individual's expectations, thoughts, beliefs, and social environment influence their behavior. Self-efficacy has been identified as the most important construct of this theory, and the strongest predictor of change, due to its direct influence on behavior (Bandura, 2004). As

an individual's self-efficacy increases, their expectations of positive outcomes increases, and subsequently, they are more capable of overcoming barriers to change and their motivation increases (Bandura, 1998). The SCT provides a solid framework for addressing behavior change, yet it doesn't take into account future behavior, or the value of participatory dialogue with the client.

Ajzen developed the TPB in the late 1980s and it has evolved into a commonly used conceptual framework for the study of human behavior. According to this theory, human behavior is guided by behavioral beliefs, normative beliefs, and control beliefs. Behavioral beliefs consist of those that consider the likely consequences of a behavior and produce favorable or unfavorable attitudes toward the behavior. Beliefs about the expectations of other people create a subjective norm and are considered normative beliefs. Control beliefs are those that consider factors which further or hinder performance of the behavior and give rise to perceived behavioral control. These three behaviors, in combination, lead to an intention to make or not make a behavior change. Concepts within this theory also rely on the work of Bandura's concept of perceived self-efficacy (Ajzen, 2002).

The main concept in Freire's MAE is the main concept of reflective dialogue, which is a two-way communication (Freire, 1973) facilitated by a professional, and focusing on the empowerment of the participant using critical reflection (Freire, 1970). This dialogical method involves participants reflecting upon their own reality, looking for root causes to their problems, examining the consequences of these problems, and developing an action plan to deal with the problems. This type of dialogue is also the basis of motivational interviewing. Essentially, the basis of this theory proposes that humans are capable of taking their perceived reality and making choices that affect their actual reality (Freire, 1970).

Goleman's 2001 version of his emotional intelligence theory outlines four competencies that impact behavior change: self-awareness, self-management, social awareness, and relationship management (Goleman, 2001). The concept of self-awareness, or how a person identifies his or her own strengths and weaknesses, includes the concept of self-confidence. Along with the concept of self-management (one's ability to regulate one's emotions and reactions to distress) one can see the potential connection to self-efficacy. Yet, Goleman's theory does not adequately support all components of a multimodal approach to smoking cessation.

In 2015, Sharma devised a new theory for health behavior change based on the most successful components of the TTM, SCT, TPB, MAE, and EIT and proposed its applicability to smoking cessation interventions in 2017. Although there are as yet no studies which have utilized this theory for smoking cessation research, this multi-theory model (MTM) of behavioral change has been successfully applied to other behavior change interventions such as predicting physical activity behavior (Hayes, Nahar, & Sharma, 2018; Nahar et al., 2016), predicting sleep behavior (Knowlden, Sharma, & Nahar, 2017), predicting water consumption (Sharma et al., 2017a), predicting the consumption of healthy portion sizes (Sharma et al., 2016), and predicting fruit and vegetable consumption (Brown, Hagger, Morrissey, & Hamilton, 2018). It is also heavily reliant on the use of motivational interviewing and focuses on increasing patient perceived self-efficacy, two of the most important components of successful smoking cessation programs as noted in this literature review.

MTM theory places health behavior change into two categories, which address both the immediate: the initiation of the health behavior change and long-term aspects of change: the continuation of the health behavior change. The motivators of change in the initiation category differ from the sustaining forces of behavior change, necessitating the two components of this

theory. Initiation and sustenance are further divided into constructs. This theory is applicable to smoking cessation in that the initiation component begins with the decision to quit smoking and the sustenance component ends with abstinence from smoking.

The first construct of the initiation component of this theory is participatory dialogue. Participatory dialogue is derived from Freire's MAE (Freire, 1973) and is similar to motivational interviewing in that it is a client-centered intervention involving two-way communication between the client and the clinician. During this dialogue, the clinician attempts to highlight the advantages of smoking cessation over the disadvantages. This can be conducted one-on-one or in a group setting (Sharma et al., 2017b). This counseling is in line with the recommended gold-standard treatment for smoking cessation put forth by the U.S. Preventative Health Service's update on treatment for tobacco cessation (PHS, 2008).

The second construct of the initiation objective focuses on the client's behavioral confidence. This construct draws from Bandura's concept of self-efficacy (1977), yet differs in that it takes a futuristic approach, rather than only focusing on the present. Clients are asked about their confidence in their ability to quit smoking this week, not just today, and their ability to cope when facing withdrawal symptoms without getting anxious. The steps of this process include setting a quit date, quitting in small steps, and discussing the personal motivators for change (Sharma et al., 2017b).

The third and final construct of the initiation objective involves changing the client's physical environment. This construct also pulls from Bandura's social cognitive theory. Clients are asked how confident they are in their ability to change their environment, including removing all smoking paraphernalia, refraining from buying cigarettes, and substituting their smoking time with other activities (Sharma et al., 2017b).

The sustenance of smoking cessation is also divided into three constructs, beginning with an emotional transformation. This construct is derived from the emotional intelligence theory (Goleman, 1998). Clients who want to quit smoking must be able to direct their feelings and emotions towards their goal of being smoke free, motivate themselves to become and remain smoke free, and overcome any self-doubt in their ability to accomplish their goal (Sharma et al., 2017b).

The second construct of sustenance is practice for change. This draws from Freire's adult education model (Freire, 1970) and focuses on active reflection and reflective action. This reflection can be accomplished by keeping a diary to monitor the details contributing to or leading to the urge to smoke, potential barriers to cessation, and plans for facing difficulties with quitting (Sharma et al., 2017b).

The final construct of the sustenance objective involves modifying the client's social environment, which is derived from Prochaska's transtheoretical model (1979) and Bandura's social cognitive theory (1977). This step recommends eliciting help from the client's social support system, which can include family, friends, co-workers, and health care professionals (Sharma et al., 2017b). This might also include informing their social circle of their quit date and avoiding social situations in which smoking will be present.

In 2010, Cahill, Lancaster, and Green conducted a meta-analysis on the efficaciousness of stage-based interventions, such as those that utilize the transtheoretical model, and non-stage based interventions. Their analysis concluded that one was not more effective than the other, highlighting the need for a more comprehensive and robust theory that can guide future smoking cessation interventions.

The MTM is a good fit for framing a smoking cessation project. It has been successful in its application to other health promotion issues, it takes the needed multi-modal approach to smoking cessation, and includes the concept of self-efficacy. It also utilizes brief motivational interventions, which can be applied to the selected patient population of low SES adults in a free clinic. Sharma and colleagues (2017b) have also developed and provided permission to use their MTM Instrument for Measuring Change in Smoking tool, which facilitates in-person and telephone surveying, includes participant demographics, and has the potential to determine a smoker's perceived self-efficacy to quit smoking.

2.5 Summary

In sum, the literature clearly demonstrates that building smoking cessation self-efficacy through motivational interviewing is crucially important to success. The research evidence also supports brief, motivational interventions as efficacious for smoking cessation. While smokers of low SES face population specific barriers to quitting, these barriers may potentially be addressed by utilizing the multi-theory model (MTM) of behavioral change and devising a brief, motivational interview method for delivering smoking cessation interventions to persons of low SES who smoke when they present at a free healthcare clinic.

Chapter 3

3.0 Methodology

3.1 Introduction

Smoking rates and tobacco-related health disparities in the low SES population are disproportionately high, with a multitude of population specific barriers cited as potential causes. Brief, motivational interventions targeting self-efficacy have proven efficacious for smoking cessation. Thus, this project sought to determine if a targeted, brief intervention based on motivational interviewing techniques and the MTM would improve low SES adult's perceived self-efficacy to quit smoking in the setting of a free clinic.

3.2 Project Design

The proposed study was a pre-post-test/time series design with a survey administered to participants prior to the implementation of a brief, motivational intervention, immediately following the intervention, and then again three to eight weeks post-intervention. This before-after design was selected as appropriate to a study in which the "focus of intervention is on change" (Polit & Beck, p. 213, 2012). In addition, this method allowed for evaluation of the effect of an intervention on an intended population (Salkind, 2010).

Data was analyzed via SPSS and included examination of descriptive data and correlations, as well as mean differences on MTM and RR tools at three points in time: baseline pre-intervention, immediately post-intervention, and three to eight weeks post intervention. A one-way repeated measures analysis of covariance (RM-ANOVA) was used to determine within-group variance of scores.

3.3 Setting and Sample

This study was conducted at a small free clinic located within a county health department in a suburban area 45 minutes outside of a major metropolitan city in Florida. The clinic is a fully approved, non-profit, volunteer clinic that provides medical and preventative care to clients in the community. Volunteer physicians, nurse practitioners, physician assistants, registered nurses, pharmacists, and medical assistants, as well as administrative personnel, staff the clinic. The clinic is open four days a week, Monday through Thursday, from 0900-1500 by appointment only. Stakeholders of this project included the clinic director, the medical director, and the support staff. During the clinical site assessment, the researcher met with the key stakeholders to discuss the logistics of the project. The medical director approved the project and agreed with the need for such improvement. The clinic director granted the researcher computer access and arranged the schedule, allowing the researcher both clinic and administrative time. Support staff were brought in and informed of the project and the need for assistance with recruiting participants. All were in agreement with the project and the collaborative process.

This study included a purposive sample of cigarette smokers who presented to the free health clinic for health services and self-reported a current smoking status on their intake forms. This non-probability, homogenous sample design (Etikan, Musa, & Alkassim, 2016) was chosen based on the objective of this project and the need for a specific population of clients with a specific characteristic (smoking). Inclusion criteria included: self-report of current smoking status, i.e., having smoked at least one cigarette in the last seven days, ability to speak and read English, and acceptance as a client to the free clinic. Exclusion criteria included: active pregnancy, currently enrolled in a smoking cessation program, or currently utilizing smoking cessation aids. The researcher determined if a potential participant met the inclusion criteria prior

to the intervention appointment. Sampling continued until the end of May 2019. The initial targeted goal was n=80, however, the final sample size was half that at n=40.

Clients of the free clinic include those of low SES without insurance. Clients must apply and meet eligibility standards prior to acceptance into the clinic, which includes being between the ages of 19-64. New clients who apply to the clinic complete new patient paperwork, which includes medical history and tobacco use. When a client confirmed a current smoking status, they were referred by support staff to see the researcher for a 20-minute appointment to discuss tobacco cessation prior to their appointment with a provider for primary medical care.

3.3.1 Protection of human subjects. This project was reviewed and approved by the Hawaii Pacific University Institutional Review Board (IRB). Informed consent (Appendix A) was obtained from each participant prior to any intervention. Participation in the project was completely voluntary and it was made clear to participants that they were under no obligation to participate in the study, were free to withdraw at any time, and would not incur any effect on their use of the healthcare services at the clinic whether or not they participate, withdraw from the study, or decide not to participate. Participants in this project maintained the right to refuse the counseling session and proceed directly to an appointment with a provider in the clinic. Incentives, such as compensation, were not offered.

All data was collected by the researcher, logged on an excel spreadsheet, and kept in a secure location. Data was only kept on the researchers personal computer, protected by two passwords. Participant names were not used in the data collection or final results; they were only utilized for contact purposes pre- and post-intervention. All data was then destroyed following the completion of the project.

3.4 Instrumentation

3.4.1. The multi-theory model (MTM) instrument for measuring change in smoking.

The MTM tool was developed by the authors of the multi-theory model of behavior change (Sharma et al., 2017b) (Appendix B) and was used for demographic data collection, as well as dependent variable measurement in this study. According to its authors, the instrument can be used for predictive modeling and for evaluation of the interventions performed. It can be utilized in an individual, group, or community setting and takes approximately five minutes to complete. The tool is based on self-efficacy, or the smoker's confidence in their ability to make the changes necessary to stop smoking, and covers behavioral, environmental, and emotional confidence. Participatory dialogue is incorporated, covering both the advantages and disadvantages of quitting smoking (Sharma et al., 2017b).

While the MTM measurement tool has not previously been used specifically for smoking cessation, it has demonstrated reliability in at least five other studies in which the MTM was utilized (Hayes, Nahar, Sharma, 2018; Knowlden, Sharma, & Nahar, 2017; Nahar et al., 2016; Sharma et al., 2016; Sharma et al., 2017a). In these studies, the tool was adapted for specific populations. Cronbach's alpha ranges from 0.72-0.90, thus, confidence in the tool is high. Face and content validity of the tool was sought out by the researcher and affirmed by three content experts in the areas of smoking cessation: one an expert in pulmonary health, one from public health, and another in health promotion. Face validity from these content experts assisted with the determination of the tools appropriateness and relevance to the proposed intervention and project (Holden, 2010).

The tool consists of nine demographic questions on page one followed by 29 survey style questions divided into two constructs: initiation and sustenance and measured with a five-point

Likert interval scale. The initiation construct score ranges between 0-52 and the sustenance construct scores ranges between 0-36, with higher scores associated with higher perceived self-efficacy. The Flesch Reading Ease score is estimated at 89.8 with a Flesch-Kincaid grade level of two, indicating that it is easily readable and appropriate for the target population. Within the first construct of initiation, three concepts are addressed: participatory dialogue, behavioral confidence, and physical environment. The second construct of sustenance covers: emotional transformation, practice for change, and social environment. According to the literature, motivational interviewing utilizing the *5As* has proven efficacious for smoking cessation, making the assumption that this tool is best suited for the people who express a readiness to quit.

3.4.2. The readiness ruler (RR). The RR (Appendix C) was developed by Stephen Rollnick (CSAT, 1999) and was used for determining participant's readiness to change their smoking behavior by asking them to rate their readiness on an interval scale of 1 to 10. The ruler is a simple tool that takes less than 1 minute to administer and if a participant selects 1-4, it indicates a current unwillingness to quit smoking. If they select 5-10, it indicates a current willingness to consider quitting smoking (CSAT, 1999). In a study by Hesse (2006), the RR was found to measure a construct related to actual readiness to change, which supports its use in this study. The RR is simple to use, demonstrates face validity, and is relevant to a clinical setting such as being used in this study (Hesse, 2006).

3.5 Procedures

First, IRB approval was obtained. Next, recruiting of project participants was sought from new patients applying to the free clinic, who, upon intake, identified as a current cigarette smoker. Participants were also garnered from reviewing the clinic schedule, assessing the smoking status of every patient scheduled with a provider for future visits during the study

timeframe. The researcher then spoke to clients who were identified as smokers to determine their desire to attend an appointment concerning smoking cessation, noting that this is for the purposes of a doctoral nursing practice improvement project and that participation is entirely voluntary.

The intervention took place in a private, comfortable, and well-lit room in the clinic. The researcher explained the project and provided the participant with the informed consent form and gave them the opportunity to ask questions. Once informed consent was obtained, the RR was administered to the participant to determine their readiness to quit smoking and establish a baseline. This was followed by administration of the demographic survey included on page one of the MTM.

For participants who selected 5-10 on the RR indicating a readiness to quit, the remaining pages of the MTM were then administered. Next, a brief, 10-15 minute intervention based on motivational interviewing utilizing the MTM and the U.S. Public Health Service *5As* guidelines (2008) to increase self-efficacy to quit was implemented. During the intervention, participants were encouraged to select a quit date. Utilizing motivational interviewing techniques, the researcher was empathetic to the participant's desire to quit and the difficulty in doing so. The researcher utilized participatory dialogue to discuss the importance of changing smoking behavior with the participants, encouraging the participants to identify consequences of their continued behavior to create discrepancy. The participants were encouraged to work on quitting in small steps, to identify social support, and to eliminate all elements of smoking from their environment. Strategies to achieve this were discussed. Self-efficacy was addressed by discussing the motivators to quit, the participant's confidence in quitting and staying quit, and their ability to deal with potential barriers to quitting, such as withdrawal symptoms.

Immediately following the completion of the counseling session, the MTM measurement tool was again administered. The participants were thanked for their participation and reminded that the researcher would be contacting them by phone again in three weeks' time.

For participants who selected 1-4 on the RR indicating a non-readiness to quit, the remaining pages of the MTM tool were not administered. However, the researcher provided smoking cessation counseling to these participants. Instead of a *5As* approach, a brief, 10-minute motivational interviewing intervention based on the U.S. Public Health Service *5Rs* guidelines (2008) was conducted to attempt to increase the participant's motivation to quit smoking. The RR was administered again immediately following the intervention. The participants were then thanked for their participation and reminded that the researcher would be contacting them by phone again in three weeks' time.

The researcher contacted all participants via telephone three weeks after their initial appointment. If the participant did not answer, calls were placed 1-2 times per week until either the participant was reached, or the study ended. The MTM tool and the RR ruler were again administered to participants who initially scored 5-10 on the RR tool and completed the MTM as a pre-intervention measurement. For those participants who scored < 5 on the RR tool and were not administered the MTM as a pre-intervention measurement, only another measure on the RR tool was obtained. Participants were also asked how many cigarettes per day they were currently smoking at the time of follow-up.

3.6 Data Analysis Procedures

Demographic data was analyzed and used to describe the gender, age, ethnicity, educational level, employment status, income, number of years smoking, and number of cigarettes smoked daily. T-tests were performed on key background characteristics and used to

test for selection bias. Measures of central tendencies were reviewed for all instruments. IBM SPSS was used to analyze quantitative data and appropriate descriptive statistics provided to summarize participant characteristics and indicators of central tendency and variability. The three measurements of MTM and RR data were explored using a one-way within group repeated measures analysis of variance (RM-ANOVA). Mauchly's Test of sphericity was used to test the RM-ANOVA assumptions of sphericity and compound symmetry. When violated, a Greenhouse-Geisser correction was employed. With an alpha of 0.05, power of 0.80, and medium effect size (n^2) of .06, the total recommended sample size was 80 (Polit, 2010), however, the final total sample size was 40.

3.7 Resources and Budgetary Concerns

Appointments took place in the clinic between February 2019-May 2019. Resources required were minimal and included a private desk with a telephone, along with access to a clinic computer. A private treatment room was utilized for the intervention appointments. These resources were secured with the clinic director prior to the start of the project. The researcher conducted appointments on varying days of the week, Monday-Thursday, during the mornings when the highest volume of patients was scheduled. Follow-up phone calls were administered while the researcher was in clinic.

Since the project was implemented in a free clinic, lost revenue was not a concern. The clinic is completely non-profit, with unpaid providers and staff. The researcher did not utilize clinic equipment or supplies, other than the computer in the exam room.

3.8 Project Timeline

Component	Projected Completion Date
Project Proposal Defense	January 2019

Institutional Review Board Approval	January 2019
Recruitment	February 2019
Appointments	February-May 2019
Follow-up Phone Interviews	February-May 2019
Data Analysis	May-June 2019
Write-up of Results and Discussions	June-August 2019
Project Presentation/Defense	August 2019

3.9 Limitations

Potential limitations of this study include firstly, the subjective nature of the results as participants are asked to rate their perceived self-efficacy to quit smoking. It is assumed that participants were honest in their answers in that no incentives will be offered to participants for their participation in the study. However, there is a possibility that a Hawthorne effect may impact participant's self-reports. Secondly, attrition was an issue. In the setting of free clinics, continuity of care is uncertain, thus, some attrition will be expected. In general, the attrition rates of longitudinal studies are reported to be between 30-70% (Gustavson, von Soest, Karevold, & Roysamb, 2012). Studies have also reported high rates of attrition in smokers (Nilsen et al., 2009; Thygesen et al., 2008; Torvik, Rognmo, & Tambs, 2012; Weuve et al., 2012); yet, in a 2017 study by Courtney and colleagues, a high retention rate was achieved in low SES smokers using telephone surveys for follow-up. In addition to reducing the sample size, attrition can also compromise the generalizability and internal validity of the findings, and reduce the statistical power (Leon, Demirtas, & Hedeker, 2007; Szklo & Nieto, 2012). Also, when participant demographics differ from those lost to attrition, the study results may be biased (Robinson,

Dennison, Wayman, Pronovost, & Needham, 2007). The restriction of the study to only one clinic limits the generalizability of the study and project findings. Lastly, there are inherent limitations when utilizing a pre-test/post-test design that include threats to internal validity (Salkind, 2010).

3.10 Summary

In summary, based on current literature recommendations, a time-series longitudinal design was selected for this project. To increase the validity of the project, data from the MTM and RR tools were assessed at three points in time. The use of a one-way repeated measures analysis of covariance (RM-ANOVA) to determine within-group variance of scores was used. Research supports the implementation of brief interventions for smoking cessation in free clinics; thus, a local, small free clinic was selected for the project site. Studies have supported the use of the multi-theory model for measuring change for a variety of health promotion activities with a high validity, thus confidence in the tool as applied to smoking cessation is high. Potential limitations of this study were considered and steps to mitigate these limitations were taken.

Chapter 4

4.0 Results

4.1 Introduction

The project was conducted at a free clinic serving adults of low SES over a 3-month time period, beginning on 2/11/2019 and ending on 5/31/2019. The project sought to determine if the delivery of a brief, one-time, smoking cessation intervention delivered to clients of the free clinic who were motivated to quit changed their perceived self-efficacy to make behavioral, physical, social and psychological changes. Also explored was the effect of the same intervention delivered to those clients of the clinic who were unmotivated to quit on their perceived readiness to quit smoking. Additionally, participant's change in number of cigarettes pre and post-intervention were examined. Quantitative data analysis of participant measures of perceived self-efficacy (Multi-theory model [MTM] instrument), readiness to quit (Readiness Ruler [RR]), as well as the number of cigarettes smoked per day, was conducted using IBM SPSS 26.

4.2 Participant Demographics

A total of 40 participants agreed to take part in the study. All were identified as current smokers with the majority (68%) reporting that they had smoked for over twenty years and smoked 10 or more cigarettes per day (73%). The majority of the participants were female (63%), between the ages of 46-64 (75%), and self-identified as White (73%). Approximately one-third of participants completed high school (33%), while most had attended some or completed college (53%). Most were unemployed (63%), with an overwhelming majority reporting an annual income of less than $50,000/year (95%). No significant correlations between demographic characteristics of participants were found, except for a positive correlation between age and years smoked which was expected.

4.3 Flow of Participants

All 40 participants completed the RR as well as demographic questions, including number of cigarettes smoked daily at the start of the study and prior to a motivational interview (Time 1). Thirty participants scored 5 or higher on the RR tool, indicating their readiness to quit smoking, whereas ten participants had a RR score of <5 and were not ready to quit. Those who were ready to quit (n=30) also completed the MTM assessment of perceived self-efficacy at Time 1. Immediately following the motivational interview (Time 2), all participants (n=40) again completed the RR and the MTM was administered to those motivated to quit (n=30). In follow-up sessions taking place 15-59 days post-intervention (Time 3), participants again completed the RR and those in the motivated to quit group completed the MTM for a third time.

Although 40 participants completed the intervention, nine were lost to attrition due to non-completion of Time 3 follow-up measurements, leaving a total of 31 who completed the entire project. Of those who were motivated to quit, seven were in the attrition group, while the other two lost to attrition were from the non-motivated to quit participant group. Demographics were similar to those who completed the study with one notable difference. Over half of those who did not complete the study worked (56%) in comparison to those who did complete the study being mostly unemployed (63%). This flow of participants is outlined in Figure 1.

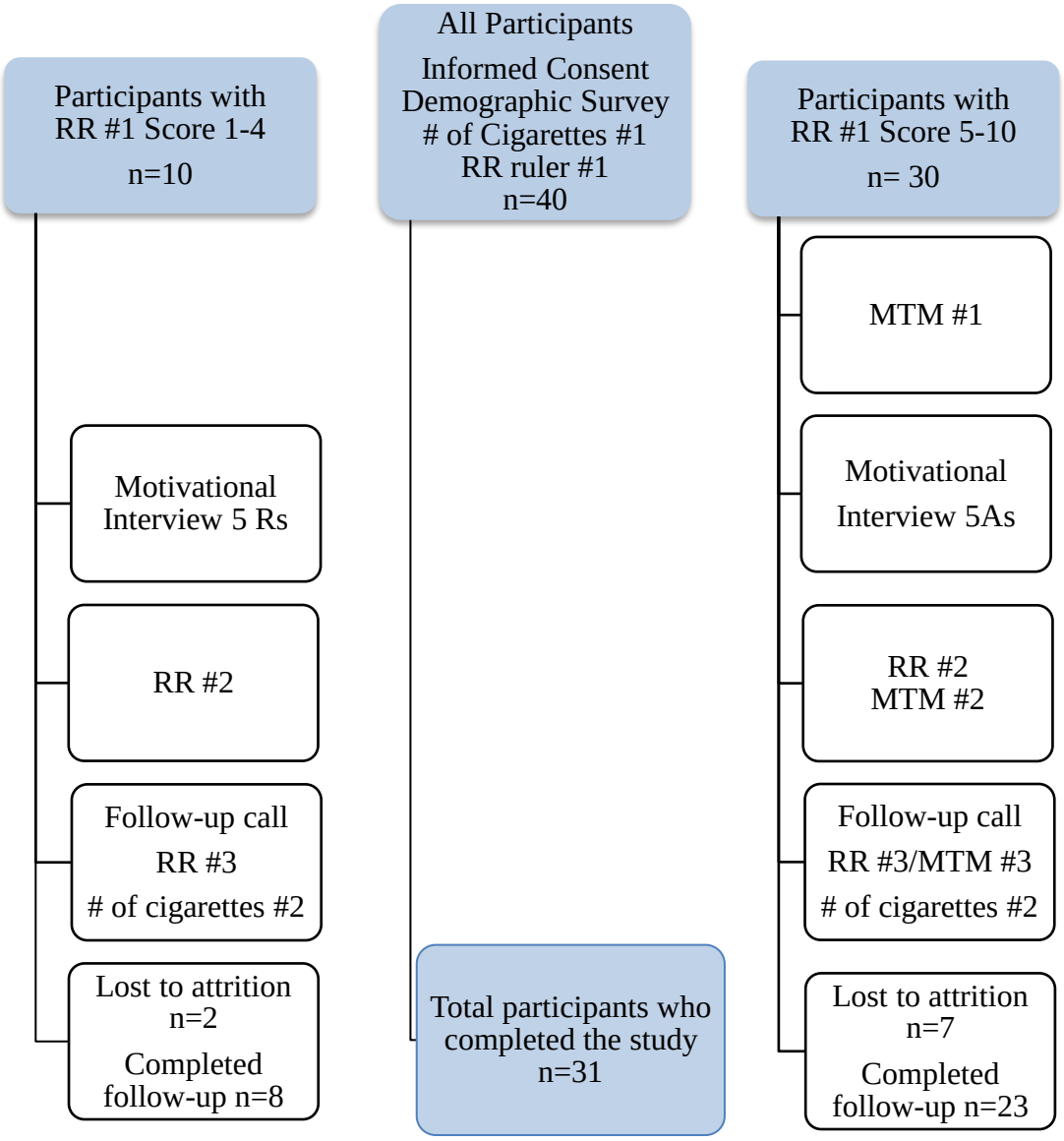

Figure 1. Flow of participants

4.4 Findings: Perceived Self-Efficacy to Quit Smoking

MTM results of those smokers who had indicated a readiness to quit and who completed the study (n=23) demonstrated no effect of the intervention on their perceived self-efficacy over time as measured by the MTM tool. Results from a repeated measures analysis of variance (RM-ANOVA) found participant's perceived self-efficacy to initiate a behavior change to quit smoking was non-significant at p=.232. The same was true for the MTM results on perceived

self-efficacy to sustain a behavior change to remain smoke free (p=.850). The MTM likelihood to quit score was also non-significant (p=.216), as well as the MTM likelihood to stay quit score (p=.308). Although all of the analyses for the MTM assessment scores were non-significant and showed no changes over time, the MTM assessment tool itself demonstrated high reliability with a Cronbach's alpha score of .899.

4.5 Findings: Readiness to Quit Smoking

RM-ANOVA analysis of participant's readiness to quit smoking as measured by the RR at Time 1, 2, and 3 produced mixed results dependent on whether or not a participant had initially identified as being ready to quit (n=23) or not ready to quit (n=8). Interestingly, the 23 participants who were initially ready to quit had a decrease in their mean RR scores from Time 1 (8.48) to Time 3 (7.70), although this change was not statistically significant F (1.22) =3.17, p = .086. In contrast, those not initially motivated to quit increased their mean RR scores from 2.88 to 4.88 from Time 1 to Time 3. The RM-ANOVA analysis of those not motivated to quit, as adjusted by Greenhouse-Geisser, was significant F = 10.93 (1, 7), p = .013 and demonstrated a moderate effect size n^2 = .61 with power = .81. This suggests that although eight participants initially believed they were not ready to quit, their readiness increased over time. These results are further detailed in Table 4.1.

Table 4.1
Changes in Readiness Ruler (RR) Mean Scores over Time: RM-ANOVA

Participants	RR Time 1 Mean(SD) Pre-Intervention	RR Time 2 Mean(SD) Post-Intervention	RR Time 3 Mean(SD) 3-week Follow-up	*F*	*p*	n^2
Ready to Quit n=23	8.48 (1.33)	8.61 (1.12)	7.70 (2.65)	3.172	.086	.126
Not Ready to Quit n=8	2.88 (1.58)	2.88 (1.58)	4.88 (2.80)	10.927	.013*	.610

*Significant at alpha level p = .05

4.6 Findings: Number of Cigarettes Smoked Per Day

The total number of cigarettes smoked per day decreased over time in both those who were ready to quit smoking and those who were not. In a paired samples t-test for those participants who were not ready to quit (n=8), the number of reported cigarettes smoked per day decreased from Time 1 to Time 3, but no significance was noted with a mean change = 4.75 (SD 11.3) and t = 1.19 (7), p = .272. Those who demonstrated a readiness to quit (n=23), also demonstrated a decrease in the number of cigarettes smoked per day between Time 1 and Time 3, yet in this case t-test results were significant with a mean change = 6.26 (SD 9.63), and t = 3.12 (22), p = .005 with a 95% CI (2.09 -3.12). This difference was representative of a medium effect size with Cohen's d = .65. Of these participants, two reported to have quit smoking completely at Time 3.

4.7 Correlations

There were no significant correlations between sample demographics and the measurements of self-efficacy to quit smoking (MTM) or readiness to quit smoking (RR). There were also no notable correlations between the readiness to quit RR scores of those participants not motivated to quit (n=8) and their number of cigarettes smoked per day.

However, participants who were motivated to quit (n=23) had some significant correlations between measurements of readiness to quit (RR), perceived self-efficacy to initiate a behavior change to quit, perceived self-efficacy to sustain quitting, and the number of cigarettes smoked per day. As MTM scores at Time 3 for initiation and sustenance increased, the number of reported cigarettes per day at Time 3 decreased. Also, higher RR scores at Times 1 and 2 were positively correlated to higher MTM sustenance scores at Time 3 and MTM initiation scores at Times 1, 2, and 3.

4.8 Summary

In summary, study findings from this project reflected some positive outcomes as well as some contradictory results. The intervention of a brief motivational interview on the 23 participants who were initially ready to quit did not have a significant effect on either their perceived readiness to quit or their perceived self-efficacy to initiate and sustain the behavior change necessary to quit smoking. Yet, in contrast, these same participants had a statistically significant reduction in the number of cigarettes smoked per day over time, creating a puzzling contradiction between subjective and objective measures of smoking cessation success. For the eight participants who were initially unmotivated to quit smoking, the motivational interview did have a positive and significant effect on their perceived readiness to quit over time. In addition to these mixed results, it is also notable that two participants were able to completely quit smoking, and the majority of participants reported a decrease in the number of cigarettes smoked.

Chapter Five

5.0 Discussion

5.1 Introduction

Given the extant supporting literature, it was hypothesized that the implementation of a brief motivational interview would increase the perceived self-efficacy and readiness to stop smoking in those participants who demonstrated a higher motivation to quit (n=23). However, the results of this study did not reflect that. In contrast, the participants who initially were unmotivated to quit smoking (n=8) demonstrated a significant increase in their perceived readiness to quit over time. Despite these mixed results, the majority of participants in both groups (motivated and unmotivated to quit) did reduce the number of cigarettes smoked per day following the intervention, with two participants quitting entirely. These findings, as well as discussion of implications for practice, research, dissemination, and a summary of how this project connects to the AACN DNP Essentials, will be addressed in this chapter.

5.2 Implication of Findings

Measurements of perceived self-efficacy to quit smoking, readiness to quit smoking, and a reduction in number of cigarettes were gathered over time following the delivery of a brief motivational interview with low SES clients presenting to a free clinic in Florida. The results were both expected and surprising, reinforcing previous research findings of smoking cessation interventions for the low SES population, and revealing promising unexpected results.

5.2.1. Self-efficacy. For participants who initially expressed a readiness to quit smoking, their perceived self-efficacy as measured by the MTM tool did not change significantly over time. Yet, they did demonstrate a statistically significant mean reduction in number of cigarettes smoked per day of 6.26. Their perceived self-efficacy to quit smoking was low, despite objective

progress towards quitting. This disparity in outcomes was an interesting finding that prompted further investigation into the possible causes.

During the motivational interview, participants were encouraged to acknowledge their progress with quitting and celebrate the small gains. The researcher suggested slowly reducing the number of cigarettes smoked each week by 1-2 per day. Every week if that milestone was accomplished, they were encouraged to acknowledge that progress, congratulate themselves, and reward themselves in some small way. This strategy was found in the MTM theory construct of initiation, which focuses on behavioral confidence. Quitting in small steps, focusing on a quit date, and attributing the source of success to self are interventional steps within this construct (Sharma et al., 2017). However, it is unknown if the participants partook in this self-acknowledgment and celebration of their progress, and as such, they may not have realized the significance of their progress. Their perceived self-efficacy may not have increased along with their progress in reducing the number of cigarettes smoked per day simply because they did not recognize their improvement. Although several studies from this project's literature review supported the choice of a single motivational session (Ferron et al., 2016; Kelly, 2008), a recently published Cochrane review (Matkin, Ordonez-Mena, & Hartmann-Boyce, 2019) revealed that quit rates were higher for smokers who receive multiple proactive counseling sessions as opposed to those who only receive a single session. Such periodic motivational interviews would offer the clinician opportunity to emphasize a client's progressive achievements.

Another possibility for the disparity between perceived self-efficacy and reduction in number of cigarettes smoked is that although objective progress was made towards quitting, the participant's failure to fully quit smoking stood in the way of acknowledging and celebrating

their progress. If their ultimate goal was total abstinence rather than a mere reduction in number of cigarettes smoked, this might have been viewed as a failure from their perspective. Therefore, their lower self-efficacy scores may be a result of their failure to fully quit rather than a predictor of their future ability to quit. This notion is supported in the literature in other studies of smoking cessation self-efficacy (Bakker et al., 2015; Gwaltney et al., 2009). For all but the two participants who achieved complete cessation, the inability to totally quit smoking, despite advances towards that goal, may unfortunately have been perceived as yet another failure.

MTM theory acknowledges that quitting smoking is more than the mere cessation of a bad habit, but rather a health behavior change that is dependent in part on a person's behavioral confidence and emotional transformation. The disparity between the subjective and objective measures of smoking cessation success in this study underscores the importance of these affective MTM constructs. In a recent study (Nahar et al., 2019), the MTM model was used to predict the initiation and sustenance of smoking cessation behavior change in a sample of smokers in rural Kentucky. Two constructs for initiation (participatory dialogue and behavioral confidence) and one from sustenance (emotional transformation) demonstrated a moderate effect on smoking as a health behavior change, supporting their importance to effective smoking cessation interventions.

5.2.2. Readiness to quit. Similar to the negative results on their perceived self-efficacy, the participants who were motivated to quit prior to the intervention had a decrease in their perceived readiness to quit from Time 1 to Time 3. It is likely that the above explanations for lack of improvement in self-efficacy also impacted their readiness scores. Lack of self-acknowledgement and the inability to completely quit smoking may have resulted in a decrease in these participant's readiness to quit.

Yet, interestingly, for those who initially reported they were not ready to quit smoking on the RR, the brief intervention appeared to have more effect on their readiness to quit. These participants demonstrated a statistically significant increase in their mean RR scores, which rose from 2.88 pre-intervention to 4.88 post-intervention, indicating an increase in their perceived readiness to quit over time. They also reduced the number of cigarettes smoked per day (mean change 4.75), although this change was not statistically significant. This increase in perceived readiness to quit over time, combined with the reduction in cigarettes smoked per day, is indicative of promising improvement following the brief motivational intervention. Perhaps with continued encouragement and follow-up from their healthcare provider, the perception of an unmotivated smoker's readiness to quit would continue to improve with a corresponding decrease in the number of cigarettes smoked. The results of a 2017 study by Koma, Donohue, Barry, Huskamp, & Jarlenski suggest that low SES smokers may be motivated to quit simply by engaging with the health care system. Therefore, this improvement may, at least in part, be attributed to the one-on-one time spent with a health care professional.

5.2.3. Reduction in number of cigarettes smoked per day. The fact that almost all the participants in this study reduced the number of cigarettes smoked per day following a one-time motivational interview is a promising finding that has also been demonstrated in the literature as a valid form of quitting (Lindson-Hawley, Aveyard, & Hughes, 2012; Manuel et al., 2013; Tan, Zhao, & Chen, 2019). This measured success has the potential to positively affect smokers by increasing their eventual likelihood of totally quitting. Those who begin the quitting process by reducing the number of cigarettes smoked may achieve complete cessation and remain engaged in the quitting process over time (Robinson, McEwen, Heah, & Papadakis, 2019). It has also

been noted that when gradual reduction, as opposed to abrupt cessation, is used in conjunction with NRT, smoking cessation rates increase (Tan, Zhao, & Chen, 2019).

There is also evidence of a clear dosage-response relationship between the amount of smoking and the risk of developing the top three health risks from smoking: heart disease, lung cancer, and chronic obstructive pulmonary disease (Begh et al., 2015). Thus, it would stand to reason that a reduction in the number of cigarettes smoked would reduce a smoker's morbidity and mortality even if they did not achieve total cessation.

5.3 Potential barriers

Other possible barriers to smoking cessation came to light during this study as taken from anecdotal comments made by participants during the motivational interview sessions. Participants discussed their perceptions about willpower, their social support and environments, as well as elements of stress. These, along with other researcher observations regarding attrition, may have impacted results.

5.3.1. Willpower. In a systematic review of qualitative evidence, smokers frequently cited willpower as a vital component of quitting, along with commitment and motivation (Smith, Carter, Dunlop, Freeman, & Chapman, 2015). In a 2012 study by Christiansen and colleagues, low SES smokers demonstrated a belief that quitting is merely a matter of willpower, and that utilizing one's own willpower is the most effective way to quit. The majority of participants in this current study agreed. During the motivational interviews with the researcher, they made comments such as, "It's a mind game. That's all it is" and "It's all in my head. I just have to want to quit to do it". These statements, and others similarly made, reflect the belief that quitting is dependent on the strength of one's willpower. This belief may have prevented some participants from accepting assistance with quitting due to their belief that they can accomplish quitting

themselves, and that it is a task or challenge to be taken on and completed alone. A strong belief that willpower is sufficient for quitting has been shown to impede quit attempts while making them less likely to occur (Hughes & Naud, 2016). Despite the availability of smoking cessation assistance, smokers may choose to quit unassisted. Consideration of this belief should be incorporated into smoking cessation interventions by communicating the benefits of assistance and outside support to smokers.

5.3.2. Social and environmental support. A low level of social support from family and friends, along with social environments that do not support quitting, have been identified as specific barriers for smoking cessation for the low SES population (Hiscock et al., 2012; Pisinger et al., 2011; Twyman et al., 2014). In a recent qualitative study by Hoover and colleagues (2019), low SES smokers noted the importance of social support during a quit attempt. In the current study, several participants noted the lack of friends, family, and/or a social support system during the motivational interviews. Many reported that while they had friends or family, those persons were also smokers. Since their social circle was heavily comprised of current smokers, they believed it would be much more difficult to fully quit smoking themselves, as being around the smoke made them crave a cigarette. Three subjects stated that they believed themselves to be "social smokers", only smoking, or smoking more, when they are around others who smoke. They felt that if they were to quit smoking completely, or to decline to smoke while around their friends and family who do smoke, they would be less socially accepted. These findings support the notion that one's social circle can have both a negative and positive influence on their smoking behavior and directly ties to the MTM theory construct of sustenance, which is dependent in part on a smoker's social environment and encourages the assistance of family member, friends, and health care professionals (Sharma et al., 2017).

To address this barrier, smoking cessation interventions should be expanded to include a smoker's family or members of their social circle to the interventional sessions. Including the smoker's social circle provides the clinician with the opportunity to stress the importance of social support and one's social environment during the cessation process.

5.3.3. Stress. It is well documented in the literature that low SES smokers have lower rates of smoking cessation success, even though they make just as many attempts to quit as higher SES smokers (Hiscock et al., 2012; Hiscock et al., 2010; Kalkhoran et al., 2018; Kotz & West, 2009; Reid et al., 2010). This could be due, at least in part, to the higher levels of stress in the low SES population. In a large international survey, a greater level of stress was identified as being a barrier for quitting smoking in the low SES population (Reid et al., 2010). The majority of participants in this current study had made at least one quit attempt prior to receiving the brief intervention. While some reported successful previous quit attempts, a stressful life event was cited as the impetus for resuming smoking. Over half of the participants who participated in this practice improvement project reported that they were currently experiencing or had recently experienced a significant amount of stress in their lives. Some cited stress as being the reason they smoked, the reason they hadn't quit, or the reason they had resumed smoking following a quit attempt. Stress and anxiety were often cited as the primary reason for continuing to smoke, despite wanting to quit, with participants noting that smoking helped to calm their nerves or soothe their anxiety. To assist smokers with overcoming this barrier, clinicians can offer alternative stress relieving measures during motivational interviewing and smoking cessation interventions. This is supported by the recent study by Hoover et al. (2019) in which participants recommended the incorporation of stress management in smoking cessation interventions. Providing the smoker with other ways to deal with stress may assist them with changing their

habits when a stressful situation occurs. According to the MTM theory, initiation of quitting attempts is strongly influenced by behavioral confidence in their ability to relax despite quitting, and their ability to quit without becoming anxious (Sharma et al., 2017). This confidence in self is an essential component of the health behavior change.

5.3.4. Attrition. As has been noted in previous studies, participant retention can be a considerable obstacle to treatment (Wagner et al., 2016). Low SES participants in particular have lower participation rates, higher attrition rates, and numerous barriers to follow-up (Bonevski et al., 2014; Courtney et al., 2017). This proved to be true for this study as well. Individuals who were identified as smokers frequently canceled or rescheduled their appointments, citing transportation issues, current illness, or other obligations as reasons. Some simply did not show up for their scheduled appointment without notifying the clinic of the reason. In an attempt to circumvent these attendance challenges, follow-up via telephone was chosen as the method of choice for this study. However, despite the use of this method and multiple attempts made, follow-up with participants was difficult and in some cases, impossible. For several participants, multiple phone calls were placed prior to successfully reaching them. Of the 40 participants that took part in the study, nine were unreachable for follow-up. The majority of those were employed, which could account for their inaccessibility. To circumvent this obstacle, clinicians may find it helpful to determine the best time to place the follow-up phone call with the participant during the initial intervention. Predetermining the date and time of the follow-up phone call may improve accessibility to clients for follow-up.

Based on these study findings, one must ask if a brief one-time intervention is enough to promote smoking cessation in the low socioeconomic population. Perhaps frequent follow-up with repeated motivation would better encourage participants to quit and stay quit. It is entirely

possible that while the one-time intervention aided participants in reducing their usage of cigarettes, it would not have the power to promote successful cessation consistently. Assessing participant's progress over a longer period of time would be helpful in determining the long-term impact of this intervention on smokers. Other barriers to smoking cessation success should also be addressed to help alleviate the impact of perceptions of willpower, stress, social and environmental factors, and attrition.

5.4 Limitations

This study demonstrated several limitations, most notably, it's small sample size. In several cases, clients who self-identified as smokers declined to participate for various self-stated reasons: being acutely ill, their lack of desire to participate in a research study, or their lack of motivation to quit smoking. In several instances, patients gave no reason for their refusal to participate. Oftentimes, clients who were identified as smokers canceled their appointments, rescheduled, or were no-shows for their appointment. Follow up was hindered by attrition. Nine participants were unable to be reached via telephone for a follow-up assessment despite multiple attempts.

Another limitation is that participants were from a single free clinic in a suburban area in Florida and clients were all persons of low SES. Although selection of this setting was purposeful for recruiting low SES participants in this geographic area, it may not be representative of the population surrounding other free clinics. Despite this limitation, findings from this study could reasonably be applied to other free clinics whose clients have a mostly low SES demographic.

A Hawthorne effect and possible test-retest bias must also be considered as potential limitations. The participants of this study were aware of their participation in a research study,

and as such, may have altered their answers to the researcher. This was occasionally made evident in this study when some participants apologized for low RR or MTM scores, stating that they did not want to be a disappointment. In addition, since the same tools were administered during each interaction with the participants, it is also possible test-retest bias occurred. This may be especially applicable to the scores from Time 2, as they were gathered during the same visit as scores from Time 1 in a pre-post testing method. However, it is less likely applicable to the scores from Time 3 since that data was gathered 3-8 weeks following the initial intervention.

Given the nature of the study's longitudinal design, other unknown variances that could have occurred to participants must also be considered. For example, all participants were screened at Time 1 for current pharmacologic therapy use to assist with smoking cessation. While they all denied using any type of medication assistance at that time, two reported using varenicline and nicotine replacement therapy at Time 3.

5.5 Recommendations for Implementation

The findings of this study support the use of motivational interviewing as an effective component of smoking cessation interventional strategies. However, the lack of success in achieving statistically significant improvement to smoker's perceived self-efficacy to quit warrants modifications to the implementation plan used in this project. When translating this study's findings into practice, there is a need to ameliorate the barriers noted above and to add additional facilitating factors. Costs in relation to potential benefits would also need to be taken into consideration. The revised Iowa model (Iowa Model Collaborative, 2017) for evidence-based practice is proposed as a framework for this implementation plan.

5.5.1. Addressing barriers. When considering this intervention for implementation in other free clinics, the barriers must be considered and solutions contemplated and investigated.

Improving low SES smoker's access to smoking cessation interventions requires a multi-pronged approach that takes all barriers to care into consideration (van Wijk, Landais, & Harting, 2019). Since the primary barriers for quitting smoking in the low SES population is lack of access to evidence-based tobacco cessation treatment and attrition, clinics need to assess smoking at every visit, as well as provide a brief motivational intervention to those who smoke at each and every visit. Developing a consistent and standardized process for identifying smokers who present to a free clinic would be a first step. Then, during a client's initial registration visit, staff could identify smokers and note it in the EMR. Upon presentation to the clinic for each visit thereafter, the patient's smoking status could be re-assessed and documented. This identification and re-identification of current smokers would be necessary to assure them the opportunity to receive smoking cessation interventions.

5.5.1.1. ***Attrition.*** The issue of attrition from smoking cessation plans is a key barrier. It is well documented in the literature that the no-show for appointment rate for low socioeconomic patients is higher than the general population (Bonevski et al., 2014; Courtney et al., 2017), which also manifested to some degree in this project. While it is impossible to prevent the unforeseen reasons a client may miss an appointment, clinicians can take the opportunity to speak with smokers about cessation at every clinic visit, regardless of the reason for the visit. Since follow-up via telephone was difficult, and in some cases impossible in this study, clients who receive smoking cessation counseling should be scheduled for a follow-up appointment 3-6 weeks after their initial interventional appointment, and again 3-6 weeks after that to assess and evaluate their progress and current needs. This repetitious support has been shown to be efficacious in reducing rates of relapse (Blevins et al., 2016). While some smokers declined to speak to the researcher on a voluntary basis during this project, the insertion of scheduled repeat

clinic visits could provide a more pragmatic approach and opportunity for the healthcare provider to give brief smoking cessation advice during the patient's visit. This approach would reach more active smokers than simply hoping to meet patients amenable to discussing their smoking addiction.

5.5.1.2. ***Low perceived self-efficacy.*** A key finding of this study relates to the lack of perceived self-efficacy despite objective progress towards cessation, in this case, the reduction in number of cigarettes smoked per day. In line with this barrier, the results of the current study demonstrated a waning of perceived self-efficacy over time, a plateau that is to be expected when battling an addiction. This has been documented in previous studies (Glascow et al., 2000; Harris et al., 2010), which noted the reduced effect of motivational interventions over time. This could be addressed with the afore mentioned frequent interactions with the client to reinforce the initial teaching and provide additional encouragement. Progress can be assessed and the current quit plan can be reevaluated and adjusted if needed. Accomplishments, no matter how seemingly insignificant, can be celebrated with the patient and additional motivation can be provided to boost the client's perceived self-efficacy to quit. During these visits, the clinician can also discuss the benefits of smoking reduction, address the client's perceptions regarding willpower, and the validity of reduction in conjunction with NRT. It is important for providers to stress that progress is not failure and that any reduction is considered progress towards their ultimate goal. Complete cessation may take several quit attempts and can be a time-consuming progress.

5.5.1.3. Lack of social and/environmental support. As noted above, an ineffective, unsupportive, or even non-existent social support system has been identified as a specific barrier for smoking cessation in the low SES population. For those who lack a supportive environment or social support system, clinics can offer a smoker's support group meeting bi-monthly to

provide positive reinforcement from health care providers, as well as support from their peers. Clinicians can encourage the smoker's social circle, including family, to attend health care appointments and support group meetings to enhance the smoker's social support.

Environmental support is also needed to assist smoking cessation outcomes. Currently, all free clinics may not have access to, or the ability to provide, pharmacologic therapy such as varenicline or nicotine-replacement therapy. Providing patients with access to care, which includes medication to help them quit smoking, can improve their outcomes. As such, patient outcomes could potentially be improved if all free clinics had the financial resources to provide free pharmacologic therapies to assist patients with smoking cessation. This showcases the need for a healthcare policy to promote legislation and funding to address this barrier.

5.5.1.4. Stress. Behavior change is the main concept addressed by the MTM theory. It stands to reason that changing ones behavior, such as smoking as a response to stress, can positively impact their ability to quit. Significant life stressors can negatively impact a smoker's attempt to quit if they react to that stress by smoking. During the motivational interview, clinicians should assess the smoker's current stress level, discuss what measures are being taken to alleviate the stress, and determine if the measures are effective. Realistic, feasible alternatives for stress relief should be offered, keeping in mind the client's low SES status. Measures such as physical exercise, meditation, social activities where smoking isn't acceptable, and distraction techniques can provide stress relief.

5.5.2. Implementation with Iowa model. The Iowa model could serve as a framework for the implementation of this evidence-based practice project in free clinics. This model serves as a guide to clinical decision-making and the evidence-based process from the clinical and systems perspectives by utilizing research findings to improve patient outcomes (Titler et al.,

2001). The model starts by identifying a triggering issue. In this case, smoking cessation, which was deemed a priority due to its clinical significance for low SES smokers (Iowa Model Collaborative, 2017). After forming a project team and collecting evidence, a pilot for practice change was developed.

5.5.3. Integrate and Sustain Practice Change. As discussed above, findings from this project were deemed appropriate for adoption into practice. Therefore, development of a method for integrating and sustaining the practice changes is needed next. The first step in integrating the practice change is identifying the key personnel who will be involved in the practice change (Iowa Model Collaborative, 2017).

5.5.3.1. Identifying and engaging key personnel. To promote sustainment of a new practice change, personnel must be intrinsically involved with the process. This begins with getting the key personnel involved in implementing the practice change from the very beginning of the process. Clinic staff must be well informed of their role in the implementation of the intervention. The staff that conducts new patient registration should know to ask every patient of their current smoking status. Nurses and assistive personnel who check patients in for appointments should also assess current smoking status, making a note on the intake form for the healthcare provider to see. Perhaps most importantly, the healthcare providers must be on board with the implementation of this intervention for it to have a chance of success. Providers must be committed to assessing patient's current smoking status, implementing a brief intervention, and evaluating the effectiveness of the intervention. Providers and staff must be vested in patient outcomes regarding smoking. To enhance staff motivation and participation, Cullen and Adams (2012) recommend the use of education to build knowledge and commitment to the new practice. Brief educational sessions aimed at MI training, the health implications of smoking, the benefits

of quitting, and interventional options available should be provided to staff prior to the implementation of the intervention and reviewed twice a year. These sessions should emphasize the level of persistence and genuine support that is needed to assist a client with smoking cessation. In general, clinicians are receptive to smoking cessation training (Kerr et al., 2011; Parnell, Box, Bonevski, McHenry, & Pettigrew, 2019) and specialized training can improve the knowledge, attitudes, and practice of healthcare professionals (Bobak & Raupach, 2017; Kerr et al., 2011). By providing facilitators with knowledge and training, their confidence and effectiveness may increase, resulting in positive patient outcomes.

5.5.3.2 Hardwiring change. For sustainment of the practice change to be achieved, the techniques must be hardwired into the system going forward. This process of hardwiring change takes time to develop as staff accepts, integrates, and sustains the practice improvement. In a review by Willis and colleagues (2016), key principals were identified as necessary for sustainment of change, with the first principal aligning the vision and action of the change plan. In the context of this smoking cessation intervention, demonstrating the significance of the intervention on patient outcomes to the staff can deepen their investment in the change. This information should be communicated to the staff upon initiation of the practice change. Fostering a sense of shared leadership or governance may also promote sustainment of the practice change as staff become more involved in the process and evaluation of the intervention. Designating a rotating evaluator position and developing a task force comprised of key personnel to meet and discuss results quarterly can accomplish this. This also serves to promote staff engagement and collaborative relationships, essential components of hardwiring the change into practice. Lastly, for a new practice change to be sustained, it should be continuously assessed and evaluated (Willis et al., 2016), which will be further detailed below. After the initial implementation of this

smoking cessation intervention, limitations and barriers were identified and solutions proposed to improve its application to practice. This type of evaluation should be conducted regularly and adaptations made based on the results (Iowa Model Collaborative, 2017).

Cullen and Adams (2012) noted the benefit of using reminders or practice prompts when promoting a new practice change and encouraging the adoption into practice. Prompts in the EMR and on the intake forms regarding smoking cessation, as well as a sign in each examination room could serve as reminders for staff to ask about current smoking status. Cullen and Adams (2012) also reinforce the recommendation to share governance and results of the practice change with the staff.

5.5.3.3. Key indicators. Key indicators for practice change success must be monitored through quality improvement efforts (Iowa Model Collaborative, 2017). This includes periodic review of the process and evaluation of its outcomes. The evaluator should first determine if smoking status is being assessed during intake, then confirm it is being transcribed into the EMR. Further, determination must be made as to whether the motivational intervention is being implemented with all smokers. If deficits are found, reasons as to why the documentation is not occurring and/or the intervention is not being offered to all smokers should be investigated.

Another key point of evaluation involves the patients who received the smoking cessation intervention. Firstly, follow up appointments should be tracked to ensure they are taking place. Second, the following data should be collected during subsequent visits from the patients who received the motivational intervention: daily cigarettes smoked following the intervention, use of pharmacologic therapies, attendance of support groups or individualized counseling, celebration and acknowledgment or lack thereof, improvements and forward progress, missed follow-up appointments, and stress reduction techniques. This information can then be translated into

progress reports to be shared amongst the staff to determine effectiveness of the practice change and areas for improvement.

5.5.3.4. Reinfusion. Reinfusion involves pursuing the integration and sustainment of the new practice change (Iowa Model Collaborative, 2017). This includes recognizing and celebrating progress and success. Staff members who regularly assess smoking statuses and clinicians who consistently provide the motivational intervention should be recognized and praised for their efforts by the entire team. Regular feedback from members of the team should be encouraged, considered, and implemented when possible. Benefits of the intervention should be personalized to the staff based on the actual interventional results, such as a decrease in the number of sick visits by smokers, resulting in improved patient outcomes, workload reduction, and a reduction in exposure to potentially infectious diseases (Cullen & Adams, 2012). Measures such as these can facilitate the sustainment of the new smoking cessation practice improvement intervention in free clinics.

5.6 Recommendations for Future Practice, Education, Policy, and/or Research

It is entirely feasible that this project could be standardized and widely implemented in other free clinics in the nation. Perhaps one of the most appealing prospects of this project is that it has a very low cost to benefit ratio. Brief smoking cessation interventions are highly cost-effective and can be implemented in any free clinic (Kerr, Whyte, Watson, Tolson, & McFadyen, 2011). The potential health benefits to the patients who reduce or completely quit smoking are immeasurable. With adjustments for the limitations and barriers encountered in this project, this brief motivational intervention has the potential to be beneficial for both the providers and clients of free clinics.

Foley and Sutfin (2008) postulated that lack of external pressure from government oversight and entities, lack of knowledge of available services, and misconception related to the importance of such services were possible reasons for free clinics not fully adopting or integrating the USPHS guideline for smoking cessation. These theories can be addressed through the education of staff and providers. As previously mentioned, an informal staff education session should be conducted prior to the initial implementation of this intervention to educate the stakeholders on the details of the intervention plan and it's benefits, as well as the potential barriers, and suggestions to address those barriers. This informative session would alleviate concerns, identify potential challenges, prevent errors, and potentiate a more robust reach while improving patient outcomes.

While free clinics aren't held to the same government standards as for-profit clinics, healthcare policy can be developed to address deficits in smoking cessation efforts for persons of low SES presenting to a free clinic. With the supporting data on the morbidity and mortality from cigarette smoking, it isn't unreasonable to expect that any provider engaged with adults in smoking cessation should have access to pharmacologic therapies and the requisite training needed to assist clients with smoking cessation. These could be better supported if additional policy standards were developed to mandate adequate professional development opportunities for clinicians and delivery of necessary funding of smoking cessation resources within free clinic settings.

Further studies are needed to replicate and validate the findings from this study and the recommended intervention. Ideally, future studies will have a larger sample size, with a greater variety of demographic characteristics. While this study was specific to the low SES population, the intervention could be tailored to smokers of varied demographics. It has been previously

noted that low SES smokers are less likely to receive information regarding the benefits of quitting (Christiansen et al., 2010). This is a concept that wasn't explored during this current project, however, it might be beneficial for future projects to determine how consistently patients are receiving this information. In addition, while most participants in this study received written information regarding local support groups and free access to nicotine-replacement therapies, it is unknown whether any of these participants utilized these services. It would be an interesting point to follow-up on with research to determine if outside services are accessed when recommended, and if so, how they influenced smoker's progress towards cessation.

5.7 Summary

The results of this practice improvement project have important implications for the future treatment of smokers in the low socioeconomic population. As has been previously discussed, there is a paucity of studies on smoking cessation interventions in this specific population and this study adds valuable information to the body of knowledge and application to clinical settings. While the brief motivational interventions overall effect on perceived smoking cessation self-efficacy was statistically non-significant, it did result in a reduction of the number of cigarettes smoked daily for those who were ready to quit and for those who were not. The intervention encourages smokers to change their behavior, a crucial step in the process of quitting, and perhaps the most important implication discovered from the results of this study. This information can contribute to future studies on smoking cessation interventions in the low socioeconomic population by demonstrating the effectiveness of brief motivational interventions on smoking reduction and importance of gradual reduction in the process of quitting. Advanced practice registered nurses can make an impact on patient outcomes by implementing this brief, one-on-one intervention to smokers of low SES.

This DNP evidence-based practice project followed the AACN DNP Essentials (ANCC, 2006) with correlations noted in Appendix D. Its findings will be submitted as a manuscript to the Journal of Health Care for the Poor and Underserved whose focus and target demographic align with the topic and intended audience of this project. Results may also be shared via presentations to the Volunteers in Medicine Association and the Florida Association of Free and Charitable Clinics.

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Appendix A
Informed Consent

INFORMED CONSENT DOCUMENT

Project Title: Improving patient's success in quitting smoking
Investigator(s): Kendra Spaulding, MNS, APRN, ACNP-BC

PURPOSE

This study involves research. The purpose of the research is to determine if a brief, evidence-based, smoking cessation intervention delivered by an advanced practice registered nurse (APRN) to adult patients of low SES increases their success to quit smoking.

We are inviting people to participate in this research because they: 1. Are a current cigarette smoker. 2. Are utilizing the services of a health free clinic. The goal is to evaluate at least 80 participants.

This project will last for approximately three months, from February 2019-May 2019. The interview with each client will last for one clinic visit of approximately 15-20 minutes, with a follow up phone call of 5-10 minutes that will take place three weeks after the initial visit.

PROCEDURES

Those agreeing to participate can expect the following to occur:

- You will be taken to a private, comfortable examination room by the investigator.
- You will be asked to rate your readiness to quit smoking. If you indicate a willingness to quit, the investigator will then administer an assessment survey and spend between 15-20 minutes with you discussing ways to be successful with quitting smoking. The survey will again be given immediately following the discussion and three weeks later via phone call.
- If you do not indicate a readiness to quit smoking, you will not be required to fill out an additional assessment survey, but will be asked to fill out a brief form. Next, you will engage in discussion with the investigator for 15-20 minutes to discuss ways to increase your motivation to quit smoking. You will be asked to rate your readiness to quit immediately following the discussion and again three weeks later via phone call.

RISKS

Participation in this study poses no foreseeable risks to you.

BENEFITS

There may be personal benefit for participating in this study. It is hoped that the discussion utilized in this study will aid you in a successful quit attempt. In the future, society could benefit

from this study by serving to improve the interventional strategies used by practitioners for assisting persons to quit smoking.

COSTS AND COMPENSATION

There will not be any costs to you for participating in this research project.

Participants will not be compensated for their time and inconvenience for participating in this research project.

CONFIDENTIALITY

Records of participation in this research project will be maintained and kept confidential to the extent permitted by law. However, federal government regulatory agencies and the Hawai'i Pacific University IRB may inspect and copy a subject's records pertaining to the research, and these records may contain personal identifiers. Names and identifying data will not be used. All surveys will be kept in a secure location, within the investigators computer, which is double password protected. Interviews will not be recorded in any way. In the event of any report or publication from this study, the identity of subjects will not be disclosed. Results will be reported in a summarized manner in such a way that subjects cannot be identified.

VOLUNTARY PARTICIPATION

All participation is voluntary. There is no penalty to anyone who decides not to participate. Nor will anyone be penalized if he or she decides to stop participation at any time during the research project. Each interview with a client will be prefaced with a statement indicating that they may terminate the interview at any time, or rescind their participation. Participation in this study and any data gathered during the study will not affect the treatment provided to the participant by the clinic.

QUESTIONS

Questions are encouraged. Questions about this research project and questions about the rights of research subjects or research related injury may be addressed to the IRB Chair (Dr. Trish Ellerson at 566-2467 or irbchair@hpu.edu)

Subject's name (printed): _____

_____ _____

(Signature of Subject) (Date)

INVESTIGATOR STATEMENT

I have discussed the above points with the subject or the legally authorized representative, using a translator when necessary. It is my opinion that the subject understands the risks, benefits, and obligations involved in participation in this project.

_____ _____

(Signature of Investigator) (Date)

CERTIFICATE OF CONFIDENTIALITY

A. Certificate of Confidentiality has been issued for this project by the Department of Health and Human Services (HHS). This Certificate will protect the investigator(s) from being forced, even under a court order or subpoena, to release any research data in which subjects are identified. Subjects may receive a copy of this certificate upon request.

Appendix B
The Multi-theory Model Instrument for Measuring Change in Smoking

SUPPLEMENT 1. INSTRUMENT FOR MEASURING CHANGE IN SMOKING

Directions: This survey is voluntary, which means you may choose not to complete it or not to answer individual questions. There is no direct benefit of this survey to you. All data from this survey will be anonymous and kept secret. Your responses will help in developing effective smoking cessation programs. Please put an X mark by the response or fill the response that correctly describes your position. Thank you for your help!

1. During the past seven days, did you smoke one or more cigarettes?
   - ☐ No
   - ☐ Yes

If your answer is no, then you can stop taking this questionnaire. Thank you for your time

2. What is your gender?
   - ☐ Male
   - ☐ Female
   - ☐ Other, _____

3. How old are you today? _____ years

4. What is your race/ethnicity?
   - ☐ White or Caucasian American
   - ☐ Black or African American
   - ☐ Asian American
   - ☐ American Indian
   - ☐ Hispanic American
   - ☐ Other _____

5. What is your education?
   - ☐ Some schooling but not completed high school
   - ☐ Completed high school or GED
   - ☐ Some college
   - ☐ Completed college/ Graduate degree
   - ☐ Post graduate degree
   - ☐ Professional degree

6. Do you work?
   - ☐ No
   - ☐ Yes, _____ hours/week (put a single number not a range)

7. What is your yearly household income?
   - ☐ Less than $ 50,000
   - ☐ $ 50,000 to $ 100,000
   - ☐ $100,001 to $150,000
   - ☐ $150,001 to $200,000
   - ☐ More than $200,000

8. How long have you smoked? _____ (in years)

9. How many cigarettes a day do you smoke? _____

Appendix B (continued)
The Multi-theory Model Instrument for Measuring Change in Smoking

		Never	Hardly Ever	Sometimes	Almost Always	Always
Participatory dialogue: Advantages						
If you quit smoking you will…						
10.	… be healthy.	☐	☐	☐	☐	☐
11.	…save money.	☐	☐	☐	☐	☐
12.	… get sick less often.	☐	☐	☐	☐	☐
13.	…smell better.	☐	☐	☐	☐	☐
14.	… enjoy life more.	☐	☐	☐	☐	☐

		Never	Hardly Ever	Sometimes	Almost Always	Always
Participatory Dialogue: Disadvantages						
If you quit smoking you will…						
15.	… not be able to relax as well.	☐	☐	☐	☐	☐
16.	… not be able to socialize as well.	☐	☐	☐	☐	☐
17.	… miss it.	☐	☐	☐	☐	☐
18.	… not be able to overcome the urge.	☐	☐	☐	☐	☐
19.	… lose friends.	☐	☐	☐	☐	☐

		Not At All Sure	Slightly Sure	Moderately Sure	Very Sure	Completely Sure
Behavioral confidence						
How sure are you that you will be able to quit smoking …						
20.	… this week?	☐	☐	☐	☐	☐

Appendix B (continued)
The Multi-theory Model Instrument for Measuring Change in Smoking

		Not At All Sure	Slightly Sure	Moderately Sure	Very Sure	Completely Sure
Behavioral confidence						
How sure are you that you will be able to quit smoking …						
21.	… this week and complete all work-related tasks?	☐	☐	☐	☐	☐
22.	… this week and relax?	☐	☐	☐	☐	☐
23.	… this week without getting anxious?	☐	☐	☐	☐	☐
24.	… this week without getting withdrawal symptoms?	☐	☐	☐	☐	☐

		Not At All Sure	Slightly Sure	Moderately Sure	Very Sure	Completely Sure
Changes in physical environment						
How sure are you that you will…						
25.	… be able to get rid of all cigarettes from your environment this week?	☐	☐	☐	☐	☐
26.	… not buy any cigarettes this week?	☐	☐	☐	☐	☐
27.	… be able to substitute smoking time with something else this week?	☐	☐	☐	☐	☐
Emotional transformation						
How sure are you that you can…						
28.	… direct your emotions/feelings to the goal of being smoke free every week?	☐	☐	☐	☐	☐
29.	… motivate yourself to be smoke free every week?	☐	☐	☐	☐	☐
30.	… overcome self-doubt in accomplishing the goal of being smoke free every week?	☐	☐	☐	☐	☐

Appendix B (continued)
The Multi-theory Model Instrument for Measuring Change in Smoking

		Not At All Sure	Slightly Sure	Moderately Sure	Very Sure	Completely Sure
Practice for change **How sure are you that you can…**						
31.	… keep a self-diary to monitor your smoking urge every week?	☐	☐	☐	☐	☐
32.	… be smoke free every week if you encounter barriers?	☐	☐	☐	☐	☐
33.	… change your plan for being smoke free every week if you face difficulties?	☐	☐	☐	☐	☐
		Not At All Sure	**Slightly Sure**	**Moderately Sure**	**Very Sure**	**Completely Sure**
Changes in social environment **How sure are you that you can get the help of a…**						
34.	…family member to be smoke free every week?	☐	☐	☐	☐	☐
35.	…friend to be smoke free every week?	☐	☐	☐	☐	☐
36.	…health professional to be smoke free every week?	☐	☐	☐	☐	☐
		Not At All Likely	**Somewhat Likely**	**Moderately Likely**	**Very Likely**	**Completely Likely**
Behavior change: Initiation **How likely is it that you will…**						
37.	…quit smoking in the upcoming weeks.	☐	☐	☐	☐	☐
Behavior change: Sustenance **How likely is it that you will…**						
38.	… smoke free every week from now on.	☐	☐	☐	☐	☐

Thank you for your time!

Appendix B (continued)
The Multi-theory Model Instrument for Measuring Change in Smoking

SCORING

Construct of advantages: Scale: Never (0), Hardly ever (1), Sometimes (2), Almost always (3), Always (4). Summative score of Items 10-14. Possible range: 0- 20. High score associated with likelihood of initiation of behavior change.

Construct of disadvantages: Scale: Never (0), Hardly ever (1), Sometimes (2), Almost always (3), Always (4). Summative score of Items 15-19. Possible range: 0-20. Low score associated with likelihood of initiation of behavior change.

Subtract the score of disadvantages from advantages to come with a score for **participatory dialogue.**

Construct of behavioral confidence: Scale: Not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4). Summative score of Items 20-24. Possible range 0-20. High score associated with likelihood of initiation of behavior change.

Construct of changes in physical environment: Scale: Not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4). Summative score of Items 25-27. Possible range 0-12. High score associated with likelihood of initiation of behavior change.

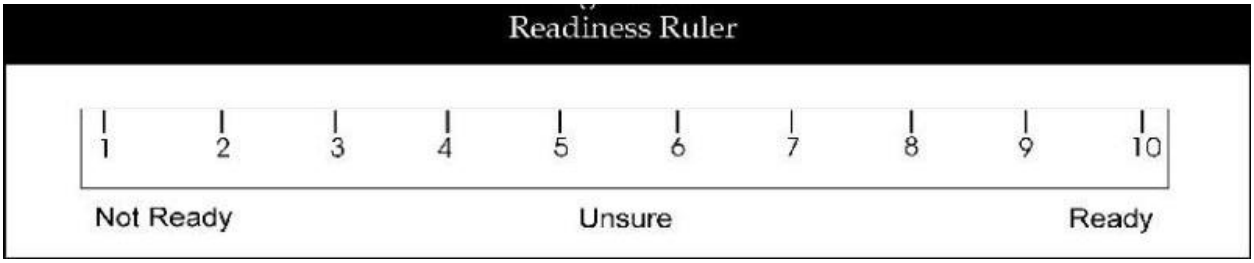
Construct of emotional transformation: Scale: Not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4). Summative score of Items 28-30. Possible range 0-12. High score associated with likelihood of sustenance of behavior change.

Construct of practice for change: Scale: Not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4). Summative score of Items 31-33. Possible range 0-12. High score associated with likelihood of sustenance of behavior change.

Construct of changes in social environment: Scale: Not at all sure (0), slightly sure (1), moderately sure (2), very sure (3), completely sure (4). Summative score of Items 34-36. Possible range 0-12. High score associated with likelihood of sustenance of behavior change.

Appendix C
The Readiness Ruler

Instructions: Circle the number on this scale that correlates to how motivated you are to quit smoking with 1 being not ready to quit, 5 being unsure, and 10 being ready to quit.



SCORING

Scores ranging from 1-4 indicate a person's current unwillingness to quit smoking.
Scores ranging from 5-10 indicate a person's current willingness to consider quitting smoking

Source: Center for Substance Abuse Treatment. (1999). Enhancing Motivation for Change in Substance Abuse Treatment. Rockville (MD): Substance Abuse and Mental Health Services Administration (US). (Treatment Improvement Protocol (TIP) Series, No. 35.). Retrieved on November 26, 2018 from: https://www.ncbi.nlm.nih.gov/books/NBK64959

Appendix D

AACN DNP Essentials in Relation to Practice Improvement Project

DNP Essential	Program Objective	Relation to Project
I. Scientific Underpinnings for Practice	1. Integrate nursing science with knowledge from ethics, the biophysical, psychosocial, analytical, and organizational sciences as the basis for the highest level of nursing practice. 2. Use science-based theories and concepts 3. Develop and evaluate new practice approaches based on nursing theories and theories from other disciplines.	1. Knowledge of nursing science and experience in the delivery of smoking cessation interventions was used to identify a practice-approach problem 2. Scientific studies were used to enhance understanding of the problem, its significance to health care outcomes, and strategies for addressing the problem. 3. A new practice approach based on scientific theory and concepts was developed and piloted to provide smoking cessation interventions to persons of low SES who present to free clinics.
II. Organizational and Systems Leadership for Quality Improvement and Systems Thinking	1. Develop and evaluate care delivery approaches that meet current and future needs of patient populations based on scientific findings in nursing and other clinical sciences, as well as organizational, political, and economic sciences. 2. Ensure accountability for quality of health care and patient safety for populations with whom they work. 3. Develop and/or evaluate effective strategies for managing the ethical dilemmas inherent in patient care, the health care organization and research.	1. A thorough, comprehensive literature review on the resources available to smokers of low socioeconomic status was conducted. 2. Evaluated potential risks of project prior to implementation, conducted a site assessment prior to intervention, and obtained IRB approval. 3. Considered potential ethical dilemmas prior to implementation of project and obtained IRB approval.
III. Clinical Scholarship and Analytical Methods for Evidence-Based Practice	1. Use analytic methods to critically appraise existing literature and other evidence to	1. Conducted thorough and comprehensive literature review and bibliographic mining to determine EBP for smoking cessation.

	determine and implement the best evidence for practice. 2. Design and implement processes to evaluate outcomes of practice, practice patterns, and systems of care within a practice setting, health care organization, or community against national benchmarks to determine variances in practice outcomes and population trends. 3. Design, direct, and evaluate quality improvement methodologies to promote safe, timely, effective, efficient, equitable, and patient-centered care. 4. Apply relevant findings to develop practice guidelines and improve practice and the practice environment. 5. Use information technology and research methods appropriately. 6. Function as a practice specialist/consultant in collaborative knowledge-generating research. 7. Disseminate findings from evidence-based practice and research to improve healthcare outcomes.	2. Evaluated clinical site for current practice patterns, systems of care prior to project start date. 3. Designed and implemented a quality improvement project in a clinical setting, based on best practice findings from thorough literature review to improve current practice standards. 4. Designed smoking cessation practice improvement project based on safe, cost-effective, efficient, and equitable patient-centered care for low SES clients presenting to a free clinic. 5. Utilized effective data analysis technology; EMR; and various research methods to obtain supporting literature. 6. Utilized interprofessional collaboration to discuss and review study findings with preceptor, content experts, and DNP project chairperson. 7. Dissemination of findings as manuscript submission to the Journal of Health Care for the Poor and Underserved.
IV. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	1. Design, select, use, and evaluate programs that evaluate and monitor outcomes of care, care systems, and quality improvement including consumer use of health care information systems. 2. Analyze and communicate critical elements necessary to the selection, use and evaluation of health care information systems and patient care technology. 3. Demonstrate the conceptual ability and technical skills to develop and execute an evaluation plan involving data extraction from practice information systems and databases.	1. Accessed and utilized clinic EMR and paper charting systems. 2. Identified areas for improvement in current clinic systems of care and communicated those to clinic director. 3. Obtained information from EMRs to determine client's appointments, smoking status and demographic information. 4. Maintained ethical standards of care throughout the course of the project. Names were not used and all records and data were kept confidential.

	4. Provide leadership in the evaluation and resolution of ethical and legal issues within healthcare systems relating to the use of information, information technology, communication networks, and patient care technology. 5. Evaluate consumer health information sources for accuracy, timeliness, and appropriateness.	5. Evaluated the health literature available for smokers at the client prior to distributing it.
V. Health Care Policy for Advocacy in Health Care	1. Critically analyze health policy proposals, health policies, and related issues from the perspective of consumers, nursing, other health professions, and other stakeholders in policy and public forums. 2. Demonstrate leadership in the development and implementation of institutional, local, state, federal, and/or international health policy. 3. Influence policy makers through active participation on committees, boards, or task forces at the institutional, local, state, regional, national, and/or international levels to improve health care delivery and outcomes. 4. Educate others, including policy makers at all levels, regarding nursing, health policy, and patient care outcomes. 5. Advocate for the nursing profession within the policy and healthcare communities. 6. Develop, evaluate, and provide leadership for health care policy that shapes health care financing, regulation, and delivery. 7. Advocate for social justice, equity, and ethical policies within all healthcare arenas.	1. Prior to implementation of project in clinic, health policies regarding free clinics were researched and discussed with preceptor. 2. Proposed new health policy following the conclusion of the project and evaluation of the findings. 4. Presented and discussed project findings with DNP project chairperson, content experts, and preceptor.
VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes	1. Employ effective communication and collaborative skills in the development and	1. Collaboration with healthcare team, to include the stakeholders, preceptor, DNP project chairperson, and content experts.

	implementation of practice models, peer review, practice guidelines, health policy, standards of care, and/or other scholarly products. 2. Lead interprofessional teams in the analysis of complex practice and organizational issues. 3. Employ consultative and leadership skills with intraprofessional and interprofessional teams to create change in health care and complex healthcare delivery systems.	2. Led and participated in analytical discussion of project results with project team. 3. Consulted with project team regularly on the findings of the project, discussing potential outcomes, barriers, and future implications.
VII. Clinical Prevention and Population Health for Improving the Nation's Health	1. Analyze epidemiological, biostatistical, environmental, and other appropriate scientific data related to individual, aggregate, and population health. 2. Synthesize concepts, including psychosocial dimensions and cultural diversity, related to clinical prevention and population health in developing, implementing, and evaluating interventions to address health promotion/disease prevention efforts, improve health status/access patterns, and/or address gaps in care of individuals, aggregates, or populations. 3. Evaluate care delivery models and/or strategies using concepts related to community, environmental, and occupational health, and cultural and socioeconomic dimensions of health.	1. Performed analysis of population data prior to implementation of project, obtained demographic data on all participants, and analyzed demographic data following completion of project. 2. Researched and evaluated best practice for population served by free clinics, including the low socioeconomic population, prior to the implementation of the intervention. 3. Evaluated current standards of care for low SES smokers in the free clinic. Considered low SES smokers, their needs and unique barriers when developing intervention.
VIII. Advanced Nursing Practice	1. Conduct a comprehensive and systematic assessment of health and illness parameters in complex situations, incorporating diverse and culturally sensitive approaches. 2. Design, implement, and evaluate therapeutic interventions based on nursing science and other sciences.	1. Assessed smoking patterns, barriers to quitting, and common quit methods in low SES smokers. 2. Tailored intervention based on assessment data and evidence-based practices, as well as previous research on low SES smokers. Performed a thorough and thoughtful evaluation of project results.

3. Develop and sustain therapeutic relationships and partnerships with patients (individual, family, or group) and other professionals to facilitate optimal care and patient outcomes. 4. Demonstrate advanced levels of clinical judgment, systems thinking, and accountability in designing, delivering, and evaluating evidence-based care to improve patient outcomes. 5. Guide, mentor, and support other nurses to achieve excellence in nursing practice. 6. Educate and guide individuals and groups through complex health and situational transitions. 7. Use conceptual and analytical skills in evaluating the links among practice, organizational, population, fiscal, and policy issues.	3. Developed therapeutic relationships with participants and staff. 4. Considered the barriers and struggles unique to the Low SES population when formatting intervention. Focused project on improving patient outcomes. Post-intervention, considered ways to improve the delivery of the intervention based on limitations and barriers to improve the delivery of care in other free clinics. 5. Discussed practice change and potential implications of intervention on low SES smokers with clinic staff, preceptor, and content experts. 6. Provided relevant patient education to participants on the benefits, dangers, and implications of smoking as part of motivational interview. Informed participants of pharmacotherapies available at the clinic, as well as local support groups.