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Determining Smoking Cessation Related Information, Motivation, and Behavioral Skills among Opiate Dependent Smokers in Methadone Treatment

Nina A. Cooperman,

Division of Addiction Psychiatry, Rutgers Robert Wood Johnson Medical School

Kimber P. Richter,

Department of Preventive Medicine and Public Health, University of Kansas Medical Center

Steven L. Bernstein,

Department of Emergency Medicine, Yale School of Medicine

Marc L. Steinberg, and

Division of Addiction Psychiatry, Rutgers Robert Wood Johnson Medical School

Jill M. Williams

Division of Addiction Psychiatry, Rutgers Robert Wood Johnson Medical School

Abstract

Background—Over 80% of people in methadone treatment smoke cigarettes, and existing smoking cessation interventions have been minimally effective.

Objective—To develop an Information-Motivation-Behavioral Skills (IMB) Model of behavior change based smoking cessation intervention for methadone maintained smokers, we examined smoking cessation related information, motivation, and behavioral skills in this population.

Methods—Current or former smokers in methadone treatment (n=35) participated in focus groups. Ten methadone clinic counselors participated in an individual interview. A content analysis was conducted using deductive and inductive approaches.

Results—Commonly known information, motivation, and behavioral skills factors related to smoking cessation were described. These factors included: the health effects of smoking and treatment options for quitting (information); pregnancy and cost of cigarettes (motivators); and coping with emotions, finding social support, and pharmacotherapy adherence (behavioral skills). Information, motivation, and behavioral skills factors specific to methadone maintained smokers were also described. These factors included: the relationship between quitting smoking and drug relapse (information), the belief that smoking is the same as using drugs (motivator); and coping with methadone clinic culture and applying skills used to quit drugs to quitting smoking (behavioral skills). Information, motivation, and behavioral skills strengths and deficits varied by individual.

Conclusions—Methadone maintained smokers could benefit from research on an IMB Model based smoking cessation intervention that is individualized, addresses IMB factors common among all smokers, and also addresses IMB factors unique to this population.

Keywords

methadone; smoking cessation; opiate; cigarette; Information-Motivation-Behavioral Skills Model

Over 80% of people in methadone treatment for opiate dependence smoke cigarettes, few receive help quitting, and many will ultimately die from untreated tobacco dependence (Hurt et al., 1996; Nahvi, Richter, Li, Modali, & Arnsten, 2006; Richter, Ahluwalia, Mosier, Nazir, & Ahluwalia, 2002; Richter, Choi, McCool, Harris, & Ahluwalia, 2004). Studies of smoking cessation interventions among smokers in methadone treatment have found that, in most studies, the percentage of individuals who quit smoking was small and nearly all quickly returned to smoking (Campbell, Wander, Stark, & Holbert, 1995; Nahvi, Ning, Segal, Richter, & Arnsten, 2014; Reid et al., 2008; Richter & Arnsten, 2006; Richter, McCool, Catley, Hall, & Ahluwalia, 2005; Schmitz, Grabowski, & Rhoades, 1994; Shoptaw et al., 2002; Stein et al., 2013; Stein et al., 2006). However, most smoking cessation interventions investigated in methadone treatment do not account for the complex issues prevalent among people with opiate dependence. A new smoking cessation intervention based on the Information-Motivation-Behavioral Skills (IMB) Model of behavior change could better address these complex issues, allow for tailoring of the intervention to the unique needs of the individual, and be more effective than previously studied interventions among methadone maintained smokers. Therefore, as the first step in the development of an IMB Model based smoking cessation intervention for methadone maintained smokers, we utilized qualitative research methods to explore smoking cessation related information, motivation, and behavior skills among opiate dependent smokers in methadone treatment.

The IMB Model asserts that health-related information, motivation, and behavioral skills are all necessary for health behavior change (Fisher, Fisher, & Harman). While information and motivation primarily work through behavioral skills to affect behavior, both information and motivation can also directly influence behavior. When each of these pieces of the model is in place, desired health behavior changes are more likely to occur; however, when any component of the model is missing or inadequate in relation to a desired behavior change, the change will be less likely to happen. To date, smoking cessation intervention research among substance abusers, including among opiate dependent smokers in methadone treatment, have examined treatments that have focused on only one or two, if any, of the components of the IMB model, and an intervention based on all of the IMB model components could be better tailored to the individual and more effective.

IMB-inspired interventions have demonstrated efficacy in changing behavior among substance abusers and across a variety of health behaviors, but the IMB model has yet to be applied to smoking cessation intervention (Cooperman, Parsons, Chabon, Berg, & Arnsten, 2007; Fisher, et al., 2009). In the context of smoking cessation for any population, examples of information needed to quit would include knowledge about the negative impact of smoking on health, resources for smoking cessation support, and options for

pharmacotherapy (Bansal, Cummings, Hyland, & Giovino, 2004; Biener, Bogen, & Connolly, 2007; Hyland et al., 2006; Li et al., 2010; Li et al., 2011; Schauer, Malarcher, Zhang, Engstrom, & Zhu, 2013; Vogt, Hall, & Marteau, 2008; Zhu et al., 2002). Motivation to quit is influenced by factors such as experiencing the health consequences of smoking and confidence in ability to quit (Borland et al., 2010; McCaul et al., 2006). Many behavioral skills are necessary for smoking cessation to occur, and lack of skills are often the reason why motivated individuals are not able to quit (Kennett, Morris, & Bangs, 2006). To quit smoking one needs to be able to properly utilize pharmacotherapy, cope with stress, identify and avoid triggers, find support, deal with co-morbid conditions, and manage cravings (Axelrod, 1991; Catz et al., 2011; Cook et al., 2014; Ferguson & Shiffman, 2009; Lawhon, Humfleet, Hall, Munoz, & Reus, 2009; Tsourtos & O'Dwyer, 2008; Yong & Borland, 2008).

The first step in the IMB approach to developing health behavior interventions is to determine the specific information, motivation, and behavior skills that are relevant for a particular health behavior and population through elicitation research (Fisher, et al.). Therefore, we conducted focus groups with methadone maintained current and former smokers and individual interviews with methadone clinic counselors to determine the information deficits and strengths, levels of motivation, motivators and barriers to motivation, and behavioral skill deficits and strengths that could impact methadone maintained smokers ability to quit smoking and could be incorporated into an IMB based smoking cessation intervention for smokers in methadone treatment.

Methods

Procedures

Current and former smokers in methadone maintenance treatment (clients) were recruited in two urban methadone clinic waiting areas to participate in one of five focus groups (n=35 clients). To participate in the study, clients needed to be: (1) English speaking; (2) able to give informed consent; (3) not obviously under the influence of drugs or alcohol; (4) willing to be audio recorded; and, (5) have smoked 100 or more cigarettes during their lifetime. Since we were able to identify and recruit only three former smokers to participate in the study, they were integrated into the focus groups with current smokers. After informed consent, participants completed a demographic questionnaire. The group discussion was facilitated by two, trained facilitators with a discussion guide. Facilitators asked, with open ended questions, about smoking history and behavior, knowledge of and experiences with smoking cessation treatment and pharmacotherapy, skills and knowledge necessary for quitting, motivation to quit smoking, the relationships between drug use and methadone treatment and smoking, and potential smoking cessation treatment barriers. For example, focus group participants were instructed to, "Tell me about your smoking," and were asked open-ended questions, such as, "What makes it difficult to quit cigarette smoking?" and "How does smoking fit into your recovery?" Focus groups with participants who quit smoking or made a quit attempt were asked about motivating factors for quit attempts, quitting experiences, skills and knowledge necessary for quitting, reasons for relapse after quitting, and obstacles to long-term abstinence after quitting. For example, participants who

made a quit attempts were asked, “How is quitting smoking similar or different from quitting drugs?” Facilitators did not ask specifically about known or theorized barriers to smoking cessation. Groups were audio recorded and lasted for approximately 1.5 to 2 hours. Participants received a \$15 gift card for their time. Focus groups were conducted until theoretical saturation was reached--where no new domains, concepts, or dimensions were being discovered, and we began to record similar comments/themes in response to interview questions (Glaser & Strauss, 1967; Strauss & Corbin, 1998).

Substance abuse counselors were recruited from the same clinics as the clients, during staff meetings, to participate in an individual interview (n=10 counselors). A trained interviewer conducted individual interviews with counselors. To participate in the study, substance abuse counselors must have worked clinically with methadone maintained clients for six or more months and be willing to be audio recorded. Before the interview, the counselors provided informed consent and completed a demographic questionnaire. The interview was facilitated with an interview guide. Counselors were asked about their perceptions of clients’ smoking habits, motivation to quit smoking, knowledge about quitting and smoking risks, skills needed for quitting, obstacles to quitting, and barriers to long-term abstinence. Interviews were audio recorded and lasted for approximately 60 to 90 minutes. Counselor interviews were conducted until theoretical saturation was reached. This study protocol was approved by the Rutgers Health Sciences Institutional Review Board.

Analyses

Demographic data were analyzed quantitatively with SPSS Version 21. We conducted a content analysis, using deductive and inductive approaches, to analyze qualitative data (Elo & Kyngas, 2008). Audio recordings were transcribed, and transcribed audio recordings were coded and analyzed using Atlas ti 6.2, qualitative data analysis software. We developed a categorization matrix (including strengths and deficits in information/knowledge, levels of motivation, motivators and barriers to motivation, and behavioral skill strengths and deficits) and used a deductive approach to code data according to the IMB Model of behavior change. Matrix subthemes and categories of information, motivation, and behavioral skills that were not in the initial matrix were analyzed inductively. Data analyzed inductively was “open coded:” identifying within the text key words, themes, and descriptions of behavior (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Subsequently, these themes were grouped into coding categories and a code map was developed which allowed us to categorize and retrieve participant comments. Two observers coded 10% of data, and had excellent inter-observer agreement (Landis & Koch, 1977). Percentage agreement among all codes was 81%, with a kappa score of 0.80. A finalized codebook was determined, based on agreement between the two observers, and the remaining data was coded, by one observer, with the finalized codebook.

Results

Participants

The clients (n=35) had a median age of 46 (IQR 39–51), and 54% were female. Sixty-five percent were White, 29% Black, and 9% Hispanic. Seventy-nine percent completed high

school. Among the substance abuse counselors (n=10), the median age was 46 (IQR 35–58). Seventy percent of the counselors were female; 70% were White, 20% were Hispanic, and 20% were Black. Ninety percent of the counselors worked with methadone maintained clients for 2 or more years.

Information strengths and deficits

The clients and counselors described strengths and deficits in knowledge among clients that fit into three basic categories: 1) health, 2) treatment, and 3) drug relapse risk (Table 1).

Health—Five clients knew that smoking is bad for their health and about the toxins in cigarette smoke; however, 6 clients expressed a lack of knowledge or had questions about the health effects of smoking and toxins in cigarettes. Although a couple of counselors reported that clients had an awareness of the health effects of smoking, five reported that their clients had deficits in knowledge about the health risks of smoking and toxins in cigarettes.

Treatment—More clients and counselors reported an awareness of pharmacotherapy or counseling options for quitting smoking among clients than reported knowledge deficits. However, 11 clients did express lack of knowledge or misconceptions about smoking cessation pharmacotherapy or counseling options, and this lack of knowledge was supported by several counselors. For example, some clients wondered about how long nicotine replacement therapy is taken or feared that if they smoked on the patch they “might have a heart attack.”

Drug relapse risk—Five clients believed that quitting smoking could lead to a drug relapse due to previous experiences quitting smoking, relapsing to smoking, and then relapsing to drug use. In other words, they believed that quitting smoking as opposed to relapsing back to smoking was related to drug use; therefore, they should not quit smoking. Three clients believed that that smoking cigarettes is “better than using drugs” because “it’s legal” or because “I don’t do anything else.”

Motivation

Six clients made statements indicating readiness to quit smoking, and 2 clients expressed confidence in their ability to quit; however, 11 clients made statements that reflected lack of motivation or ambivalence about quitting and 4 clients made statements about low confidence in ability to quit. A client that was clearly not ready to quit smoking said, “I don’t care if it is going to cause me cancer.” An ambivalent client stated, “I want it, but I don’t want it.” A client who lacked confidence in his ability to quit smoking stated, “I’m afraid to quit because I am afraid I won’t succeed.” The counselor comments echoed the client’s statements that a few clients are ready to quit smoking, some are not ready to quit smoking, and many are ambivalent. Also, 3 counselors spoke about clients’ lack of confidence in their ability to quit smoking, while none of the counselors mentioned high levels of client confidence in ability to quit smoking.

Motivators

The clients and counselors described five factors that could act as motivators for clients to quit smoking: 1) pregnancy or children, 2) the cost of smoking, 3) physical health, 4) the smell of cigarette smoke, and 5) the belief that smoking is the same as using drugs (Table 2). Clients and counselors described how each factor acted as a motivator for some clients, and for other clients, either the factor wasn't present or, when the factor was present, did not act as a motivator.

Pregnancy or children—Reducing fetal harm when pregnant, protecting their children from secondhand smoke, and living to see their children grow is an important reason to quit smoking for some clients, according to 3 clients and 2 counselors. However, 4 clients reported continuing to smoke or lacking motivation to quit despite being pregnant or having children.

Cost of smoking—Two clients and 3 counselors reported that the expense of smoking acts as a motivator for cutting down, changing smoking habits, or quitting for some clients; however, 10 clients spoke about how they are aware of and disturbed by how much money they are spending on cigarettes, but continue to smoke despite the cost burden. To most clients who spoke about the cost of smoking, the craving for cigarettes overrode any concerns about cost.

Physical health—Physical health was the most common potential motivator for quitting smoking mentioned by both the clients and the counselors. Seven clients spoke about experiencing or anticipating the negative health effects of smoking which is positively impacting their desire to quit smoking. However, 8 clients and 6 counselors stated that many clients continue to smoke despite experiencing or knowledge about the negative health effects of smoking. Clients in the focus groups reported having heart disease, lung cancer, difficulty breathing, chest tightness, increased mucus, asthma, cough, and dizziness and continued smoking.

Smell of smoke—One counselor and 3 clients mentioned that the smell of cigarette smoke is aversive and a motivator for quitting, while 3 clients stated that they either like the smell of cigarettes or, despite not liking the smell, continue to smoke.

Belief that smoking is the same as using drugs—For 3 clients, the belief that smoking is as bad as using drugs is a motivator for quitting and they want to be “clean from everything,” including tobacco. However, according to most of the counselors and 3 clients, clients “see or perceive cigarette smoking as much less harmful than the drugs,” negatively impacting their motivation to quit smoking.

Barriers to Motivation

The clients and counselors also described five factors that could negatively influence clients' motivation to quit smoking: 1) smoking enjoyment, 2) concern about weight gain, 3) the cost of smoking cessation treatment, 4) the feeling that it is too much to quit smoking and drugs at the same time, and 5) social pressure to smoke (Table 2). Clients and counselors

also described how each factor acted as a barrier to motivation for some clients, and for other clients either the factor wasn't present or, when the factor was present, did not negatively impact motivation.

Smoking enjoyment—A few clients and 2 counselors spoke about how they or their clients love smoking cigarettes; however, 8 clients stated that enjoyment is not a barrier to quitting motivation for them and that they “hate” or “can't stand” smoking.

Concern about weight gain—Seven clients spoke about the potential for weight gain as a barrier to smoking cessation motivation. Although 2 clients stated that the idea of weight gain was not a deterrent to quitting smoking for them, five felt that concern about weight gain prevented them from wanting to quit smoking.

Cost of smoking cessation treatment—Both counselors and clients reported that lack of financial resources, lack of or inadequate health insurance, and the expense of smoking cessation pharmacotherapy and counseling negatively influenced motivation to quit among clients. Strengths and deficits in clients' ability to manage finances to obtain pharmacotherapy are discussed in the “behavioral skills strengths and deficits” section.

The feeling that it is too much to quit smoking and drugs at the same time—The majority of counselors and 4 clients felt that quitting drugs and smoking at the same time is “too much” or “detrimental” for clients; yet, 4 clients and 2 counselors indicated that the process of quitting drugs is not a barrier to motivation and that “smoking is attached to the drugs...so anything that gives you a chance to relapse, a reason to use drugs, should be addressed.”

Social pressure to smoke—Three clients and 5 counselors spoke about how social pressure, either within the clinic or in clients' other social networks, negatively impacts clients' motivation to quit smoking. However, 3 clients described situations where social pressure to quit positively influenced their desire to stop smoking. Strengths and deficits in clients' ability to negotiate clinic culture and develop social networks supportive of quitting are discussed in the “behavioral skills strengths and deficits” section.

Behavioral skills strengths and deficits

The clients and counselors described behavioral skills that impact clients' ability to quit smoking that fall into five categories (Table 3). The categories are: 1) coping skills (i.e., replacing smoking, coping with emotions/stress, coping with cravings, and coping with fatigue), 2) social skills (i.e., negotiating clinic culture, developing supportive social networks, and saying “no” to offered cigarettes), 3) breaking links (with alcohol, coffee, methadone dosing, and drugs) and changing routine, 4) taking and obtaining pharmacotherapy, and 5) applying existing skills.

Replacing smoking—Eight of the clients and almost all of the counselors spoke about clients' need to have a replacement for smoking to feel “good” or “calm” and cope with daily life, generally. Clients reported feeling reluctant to give up cigarettes due to the feeling that “I am already giving up everything else that made me feel good. “

Coping with stress/emotions—Although 4 clients stated that their smoking decreases when anxious or depressed, 13 clients and almost all of the counselors spoke about clients' reliance on cigarettes to help cope with specific emotions and stress.

Coping with cravings—While only 2 counselors spoke about clients' ability to cope with cravings (as a deficit), 10 clients described ways in which they have been or are able to cope with cravings to smoke. Clients spoke about resisting cravings by using methods such as going for a walk, exercising, reading, eating a piece of candy, chewing gum, waiting until the urge to smoke passes, and putting cigarettes where they are not easily accessible. In contrast, however, 11 clients talked about their difficulties resisting cravings.

Coping with fatigue—Eleven clients and 2 counselors spoke about clients smoking to help them stay awake or to cope with fatigue, sometimes setting fires when they fall asleep smoking a cigarette.

Negotiating clinic culture—Thirteen clients and 8 counselors described a culture in the methadone clinic that supports smoking and makes smoking abstinence difficult. Clients and counselors reported that socialization among the clients is focused on smoking. In fact, one client described another who came to the clinic on days she wasn't required to attend just to acquire cigarettes from other clients. However, 11 clients, while acknowledging the smoking culture in the methadone clinic, were able to resist or avoid clinic influences.

Developing supportive social networks—Ten clients spoke about having social contacts supportive of their quitting smoking or an understanding of how to develop social relationships supportive of smoking abstinence. However, 18 clients and 9 counselors described limited social networks among clients that support continued smoking and not smoking abstinence. For example, in one of the client focus groups, when asked if they know of anyone in methadone treatment that quit smoking, all participants said, "No."

Saying "no."—A couple of clients and counselors stated that some clients have difficulty "saying no" when offered cigarettes by others, even when they don't desire a cigarette.

Breaking links with alcohol and coffee—Thirteen clients and 2 counselors stated that smoking is linked with drinking alcohol and coffee. One client stated that "They go one hand on the drink and one hand on a cigarette."

Breaking link with methadone dosing—Many clients and counselors spoke about the ritual of smoking cigarettes soon after methadone dosing. Clients also reported increased craving after methadone dosing. For example, one client said, "The methadone makes me, like, want to chain smoke, especially right after my dose."

Breaking link with drug use—One client stated that smoking is not related to his drug use. However, 13 clients and 6 counselors spoke about how smoking and drug use are intimately related. One client who had quit smoking, when asked about what made him start smoking again, said, "Drugs. I just came home and started using again...that [drugs and smoking] goes hand in glove."

Changing routine—Almost all clients and counselors who spoke about clients’ routines talked about how smoking is integrated into clients’ daily activities, and changing their long standing routines is difficult. One client stated that smoking, to her, is “like getting up and brushing your teeth every morning.”

Obtaining and taking pharmacotherapy—Nine clients spoke about successfully obtaining and using at least one smoking cessation medication; however, six reported that clients have difficulty obtaining smoking cessation pharmacotherapy due to lack of financial resources or difficulty budgeting their money. All of the counselors expressed concerns about clients’ ability to afford and obtain medications to help them stop smoking, and 4 counselors believed that clients may have difficulty taking the medication correctly, if they are able to obtain it. The counselors stated that clients may have difficulty taking smoking cessation pharmacotherapy because they may 1) not understand dosing directions, 2) have trouble obtaining prescription renewals, 3) lose the medication, 4) forget doses, and 5) struggle with side effects.

Applying existing skills—Six clients and 2 counselors described how clients are able to apply skills acquired when quitting drugs, to quitting smoking. For example, clients learned to identify and avoid “people, places, and things” associated with drug use, and, when quitting smoking need to identify and avoid “people, places, and things” associated with smoking.

Discussion

This study explored the information, motivation, and behavioral skills that are relevant for treating tobacco dependence among smokers in methadone treatment. Information, motivation, and behavioral skills factors known to impact smokers trying to quit in the general population were described as also relevant for methadone maintained smokers (Table 4; Bansal, et al., 2004; Biener, et al., 2007; Hyland, et al., 2006; Li, et al., 2010; Li, et al., 2011; Schauer, et al., 2013; Vogt, et al., 2008; Zhu, et al., 2002). However, information, motivation, and behavioral skills factors specific to methadone maintained smokers were also described (Table 4), and specific information, motivation, and behavioral skills strengths and deficits varied by individual clients.

The information topics noted to be relevant for methadone maintained smokers included health, treatment, and drug relapse risk. Knowledge about how smoking impacts health, pharmacotherapy options, and resources for smoking cessation counseling are known to facilitate quitting among smokers in the general population (Bansal, et al., 2004; Biener, et al., 2007; Hyland, et al., 2006; Li, et al., 2010; Li, et al., 2011; Schauer, et al., 2013; Vogt, et al., 2008; Zhu, et al., 2002). Although some clients in methadone treatment fear that quitting smoking may lead to drug relapse, research shows that quitting smoking while in drug treatment supports abstinence from drugs (Lemon, Friedmann, & Stein, 2003; Prochaska, Delucchi, & Hall, 2004). Educating smokers in methadone treatment who lack awareness about the health effects of smoking, toxins in cigarettes, smoking cessation treatment, or the relationship between smoking cessation and drug relapse could motivate some of those smokers to make a quit attempt.

Some clients expressed motivation or confidence in ability to quit smoking; however, more expressed lack of motivation, ambivalence, or low confidence in ability to quit smoking, a finding that is supported by previous research (Bowman et al., 2012; Clemmey, Brooner, Chutuape, Kidorf, & Stitzer, 1997; Nahvi, et al., 2006). Motivation and self-efficacy for smoking cessation are known to be related to quit attempts (Borland, et al., 2010), and self-efficacy for quitting has been found to be related to smoking abstinence duration in a smoking cessation treatment clinical trial among methadone maintained smokers, specifically (Stein, Anderson, & Niaura, 2007). Although motivation and self-efficacy clearly need to be addressed to increase smoking abstinence among methadone maintained smokers, a clinical trial of a tailored motivational intervention among smokers in methadone treatment found that the motivational intervention was minimally effective (Stein, Weinstock, et al., 2006). Barriers to smoking cessation motivation and confidence need to be further researched among methadone maintained smokers to develop better interventions for increasing motivation and self-efficacy in this population.

Participants described specific smoking cessation motivators and barriers to motivation, some of which have been found to apply to the general population, such as pregnancy or children, cost of smoking, health, the smell of smoke, enjoyment of smoking, concern about weight gain, and cost of treatment (Aubin, Berlin, Smadja, & West, 2009; Baha & Le Faou, 2010; Berg, Park, Chang, & Rigotti, 2008; Borland, et al., 2010; Fidler & West, 2009, 2011; Gallus et al., 2013; Gross et al., 2008; Krist et al., 2010; Li, et al., 2010; Li, et al., 2011; Luostarinen et al., 2013; Pletsch & Kratz, 2004; Roddy, Antoniak, Britton, Molyneux, & Lewis, 2006; Rosenthal et al., 2013; Yong & Borland, 2008). Some clients were motivated to quit by the belief that smoking is the same as other drug use; however, participants also described the feeling that it is too much to quit smoking and drugs at the same time. Studies of methadone maintained smokers and substance abuse treatment staff have previously reported concerns that quitting smoking and drugs at the same time could be “too much” to focus on at one time (Richter, Hunt, Cupertino, Garrett, & Friedmann, 2012; Richter, McCool, Okuyemi, Mayo, & Ahluwalia, 2002). Participants also described social pressures that negatively impact clients’ motivation to quit smoking. These findings replicate previous studies that have found that individuals in methadone treatment have social networks and a clinic environment that make smoking cessation difficult (McCool, Richter, & Choi, 2005; Richter, McCool, et al., 2002). Given these findings, methadone maintained smokers may benefit from an intervention that incorporates: 1) discussion about the relative importance of smoking enjoyment versus other potential motivators, 2) education about weight gain potential and strategies for minimizing weight gain, 3) education about treatment cost, insurance coverage, and access to low cost treatment, 4) financial management to decrease treatment cost burden, 5) education about the association between quitting smoking and drug abstinence, 6) discussion of smoking cessation timing relative to drug abstinence stability, and 7) resources for smoking cessation support. Further, individually tailoring a smoking cessation intervention to identify and discuss the motivators and barriers to motivation that are most important relative to smoking for the individual smoker in methadone treatment could also improve treatment outcomes. Further research on how addressing these motivators and barriers to motivation impacts quit attempts among smokers in methadone treatment is necessary.

Five categories of behavioral skills were described as applicable to smoking cessation in methadone maintained smokers: 1) coping skills, 2) social skills, 3) breaking links and changing routine, 4) taking and obtaining pharmacotherapy, and 5) applying existing skills. In this study, smoking was described as the only or primary means of coping with stress, emotions, and daily life for many smokers in methadone treatment. However, studies have found that smoking can increase anxiety and stress levels and that quitting smoking can decrease negative emotions and stress (Taylor et al., 2014). Also, clients and counselors reported that individuals in methadone treatment use smoking to cope with fatigue, often leading to burning furniture or themselves, and this finding is supported by other research among methadone maintained smokers (Richter, McCool, et al., 2002). Many clients reported difficulty coping with nicotine cravings; however, almost as many clients spoke about using effective and healthy methods for coping with cravings and resisting the urge to smoke. These findings suggest that research is needed on an IMB smoking cessation intervention for smokers in methadone treatment that 1) helps clients develop healthy coping skills to deal with emotions and stress, 2) educates clients about the relationship between negative emotions and smoking, 3) helps clients develop healthy sleep patterns to avoid fatigue, 4) incorporate harm reductions strategies for clients who continue to smoke (to avoid fires and burns when fatigued), 5) teaches clients, who need them, skills to deal with cravings, and 6) facilitates healthy coping skill implementation among the many clients who have them..

A large number of clients and a few counselors noted social skill strengths among clients. However, the majority of participants described social networks and clinical environments that are supportive of continued smoking. Further, participants stated that clients have difficulty saying “no” to offered cigarettes. People with opiate dependence are known to have difficulties with interpersonal skills that could better help them to resist the temptations of their social and treatment environments (Lindquist, Lindsay, & White, 1979). Therefore, an intervention that includes options for helping clients develop skills to better negotiate social interactions and social triggers could help support smoking abstinence in methadone maintained smokers. Smoking cessation treatment that includes discussion of relying on existing social relationships supportive of smoking abstinence and utilizing existing social skills to negotiate social triggers, among the smokers who have such networks and skills, could also help smokers in this population quit.

Smokers in our study, similar to smokers in the general population, paired cigarette smoking with coffee or alcohol, and integrated smoking into numerous aspects of their daily routines (Perkins, Fonte, Ashcom, Broge, & Wilson, 2001; Swanson, Lee, & Hopp, 1994). Participants also reported links between methadone dosing and smoking behavior and illicit drug use and smoking behavior. Previous studies have found a significant positive associations between methadone dose level/timing and smoking behavior and illicit drug use and smoking (Richter et al., 2007; Stein & Anderson, 2003). Further, laboratory studies have found that nicotine increases methadone self-administration, and the pleasurable effects of methadone are enhanced when nicotine is administered (Elkader, Brands, Selby, & Sproule, 2009; Spiga, Schmitz, & Day, 1998). More research on the interactions between opiates and nicotine are necessary to better understand their simultaneous use and to better tailor interventions for smokers in methadone treatment. Smoking cessation treatment for

methadone maintained smokers could support smoking abstinence by incorporating skill building options for breaking the links between smoking and other behaviors that the clients may not be ready to change, changing daily routines or routines associated with methadone dosing or drug use, or coping with increased tobacco craving related to methadone dosing.

Clients and counselors also described skill strengths and deficits related to obtaining and correctly taking smoking cessation pharmacotherapy and applying skills used to quit drugs. Proper adherence to smoking cessation pharmacotherapy is known to be low, even in general population samples of smokers, due to issues such as difficulty remembering to take the medication, managing side-effects, and following dosing instructions (Balmford, Borland, Hammond, & Cummings, 2011; Catz, et al., 2011; de Dios, Anderson, Stanton, Audet, & Stein, 2012; Etter & Schneider, 2013; Grassi et al., 2011; Hays, Leischow, Lawrence, & Lee, 2010; Lee et al., 2012; Liberman et al., 2013; Swan et al., 2010). Smoking cessation treatment clinical trials among methadone maintained smokers, specifically, have shown poor adherence to smoking cessation pharmacotherapy, and that pharmacotherapy adherence is related to smoking cessation outcomes (Richter, et al., 2005; Stein, Anderson, & Niaura, 2006; Stein, et al., 2013). Also, smokers in methadone treatment who have successfully quit using drugs have skills that can be applied to quitting smoking. Therefore, research is needed on an IMB-based smoking cessation intervention that includes skill building options for 1) managing finances to obtain pharmacotherapy, 2) communicating with physicians to obtain prescriptions, 3) remembering to take smoking cessation pharmacotherapy, as instructed, 4) managing side-effects, and 5) applying skills already obtained when quitting drugs to quitting smoking.

This study has some limitations. The sample only included English-speaking clients and counselors who volunteered to participate at two methadone clinics in New Jersey, limiting generalizability. We also did not have information on the tobacco or drug use history of the counselors, and this history could have influenced their responses. Further, given this was a qualitative study, the results are only participants' perceptions of the information, motivation, and behavioral skills related to smoking cessation among clients in methadone treatment. Future quantitative research is needed to determine if the information, motivation, and behavior skills noted to be relevant in this study is significantly related to smoking cessation in methadone maintained smokers.

This study provides a foundation for developing an intervention that addresses the unique issues of methadone maintained smokers and also incorporates attention to the issues that are relevant to smokers, in general. To address the information, motivation, and behavioral skills deficits found to be relevant in this study, a newly developed intervention may include a combination of or options for counselors to use education, motivational interviewing, and cognitive behavioral skills training to address the issues unique to each individual smoker in methadone treatment.

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Table 1

Information strengths and deficits

Category	Strength/ Deficit	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
Health						
Health effects of smoking	Strength	7	5	“If you smoke you have a higher risk of breast cancer, lung cancer...all kinds of cancers and heart attack... but you still smoke. It’s like we know the dangers and we know we are killing ourselves.”	2	“I think they have some knowledge of it [the health effects of smoking], and they choose to ignore that.”
	Deficit	11	6	“...I did not know anything about smoking. It made me feel good and that was it. I never knew about all of the hidden dangers which I am trying to learn now.”	5	“They don’t see it as a cigarette is a drug. It’s like water. It’s acceptable. ‘I can drink water. It’s not going to kill me.’”
Toxins in cigarettes	Strength	1	1	“Like rat poisoning...all that kind of stuff. I mean, there is everything in cigarettes.”	0	
	Deficit	4	3	“I have a question...there is still enough hazardous...what is the word I am looking for...leftovers? The toxins on the clothes...that could affect a child or baby?”	1	Clients need “more education, I guess, on how it [smoking] affects the body. Or what really makes up a cigarette.”
Treatment						
Pharmacotherapy	Strength	22	15	“I know that there is a nicotine patch and that there is a gum.”	7	“I know a few of them have said they tried the patch or the gum.”
	Deficit	16	11	“I didn’t even know Chantix existed. Does that contain nicotine?”	5	“A lot of them really do not want to take any medications because they are misinformed.”
Smoking cessation counseling resources	Strength	8	6	“I know that there is a help for quitting hotline.” (Client)	2	“I have had a couple of people say that they have gone to a quit center.”
	Deficit	3	2	“I don’t know [about any options for getting help to quit smoking].”	1	“I think there is a lack of awareness about it. Not everybody knows about the quit center that was there.”
Drug relapse risk						
The relationship between quitting smoking and drug relapse	Strength	0	0		0	
	Deficit	5	5	“I think, in some peoples’ cases, smoking and drinking helps them stay clean.”	0	

^aNumber of participants who provided comments.

Table 2

Motivators and barriers to motivation

Category	Motivator (Barrier)/ Not Motivator (Barrier)	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
Motivators						
Pregnancy/ Children	Motivator	5	3	"I have a daughter, so, you know, it is important that I do quit. I want to be around to see her grow up and become a teenager and get married."	2	"Some of them have families and maybe want to be around more for their families. They're just motivated better. They're more motivated."
	Not Motivator	4	4	"I smoked more, for some reason, when I was pregnant."	0	
Cost of smoking	Motivator	5	2	"The only reason why I try to cut down is because they are so expensive."	3	"My client...she rolls her own cigarettes to cut down the cost, but she is really trying to quit."
	Not Motivator	8	10	"I would scrounge every penny I had in my house to buy a pack of cigarettes if I was in need of it. I have done it before. Or borrow money off of somebody if you don't have it... You do anything to buy that pack of cigarettes. Just like we would have done anything to buy our drugs."	2	"They feel like it is a lesser of the evils. Before I was doing this, now I am smoking cigarettes. Like, 'Yeah, I don't have a lot of money, but that is better than me popping ten bags at \$100. I am not robbing or stealing for it.'"
Health	Motivator	12	7	"You wake up in the morning with a lot of phlegm, and it is getting to the point where I am sick and tired of it."	5	"They have health repercussions, and the fact that there is this co-occurring addiction going on, I think that is really upsetting to them."
	Not Motivator	14	8	"I had two heart attacks. I had a heart attack in 2008 and another one in 2010, this year, and I still smoke."	6	"Right now it is not bothering me, and I feel fine."
Smell of smoke	Motivator	3	3	"I hate the smell in my in my house, in my hair, in the car. I just hate it all around."	1	"I had a client here who tried to stop and then we made a rule. At the house, people cannot smoke in the house... Then we talked about other things, like, it makes the house stinky."
	Not Motivator	3	3	"I love the smell of smoke. I really do."	0	
Belief that smoking is the same as using drugs	Motivator	5	3	"I am trying to stay clean... I want to be clean from everything."	2	"They feel like they are trying to give up an addiction, trying to give up heroin use or whatever, and yet they are still addicted... it is upsetting to them... they still feel bad that they are addicted to something."
	Not Motivator	10	3	"I don't smoke pot anymore. I really don't drink. I don't do any drugs."	8	"I think for some people, it is seen as less of a drug because it is legal, you can

Category	Motivator (Barrier)/ Not Motivator (Barrier)	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
				So like my cigarettes is like the only thing that I really have. You know and I would rather go out and smoke a cigarette than, you know, smoke weed or, you know, smoke something else."		go buy it. It is dangerous, but you do not feel the effects right away."
Motivation Barriers						
Enjoyment of smoking	Motivation Barrier	6	4	"The problem with me is that I love to smoke. I love the taste of it. I love holding it. I love the feel of the smoke, how it goes and fills up your lungs and blowing it out. I love the whole process."	2	"They love to smoke, and they smoke often."
	Not Motivation Barrier	9	8	"I think it is disgusting. I am even kind of embarrassed sometimes, smoking."	1	"He was just tired of smoking...He had mentioned in his treatment plan one of his goals was to quit smoking."
Concern about weight gain	Motivation Barrier	5	5	"Methadone makes you gain weight and so does stopping smoking. People would be scared to gain weight on top of that."	0	
	Not Motivation Barrier	2	2	"I'd rather be fat than dead."	0	
Cost of treatment	Motivation Barrier	15	5	"When you are smoking and you want to quit, and you have to buy all that stuff. It is, like, two. You are spending money on both at the same time...you are spending double the money...It's like I am spending so much...you're like 'it's not worth it'."	10	"They know about the gum and the patches, but they really cannot afford it."
	Not Motivation Barrier	2	1	"If the doctor wrote a prescription, you could get it for free."	0	
Feeling that it is too much to quit smoking and drugs at the same time	Motivation Barrier	11	4	"I would think that trying to quit everything all at once is detrimental."	7	"They will tell you, 'Yeah, I gotta quit, but let me get through this methadone treatment, you know. I gotta get other things in my life together first."
	Not Motivation Barrier	6	4	"I would love to quit everything all at once."	2	There are "the people who are trying to tackle it all at once."
Social pressure to smoke	Motivation Barrier	10	5	"You are around people in the clinic, and you are doing groups with people in the clinic, they smoke, you smoke. I think a little bit of it is peer pressure and group dynamics"	5	"I think it is really hard for them to comprehend [quitting smoking]...I mean most of them come from families where everybody smokes cigarettes."

Category	Motivator (Barrier)/ Not Motivator (Barrier)	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
	Not Motivation Barrier	3	3	"I was living with my boyfriend for a little bit, and his mom was very anti-smoking...I didn't really like smoking around her, so I really couldn't smoke."	0	

^aNumber of participants who provided comments.

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Table 3

Behavioral skills strengths and deficits

Definition/ Code	Strength/ Deficit	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
Coping skills						
Replacing smoking ("smoking is all I have")	Strength	4	4	"It seems like I can pick it up...I can do without. I can take it or leave it."	0	
	Deficit	16	8	"I feel like if I quit smoking, what am I going to replace that [with]? I don't want to replace it with eating because I don't want to get fat. I don't know what else I would replace it with."	8	"...if you are going to take something away, you have to give something in its place."
Coping with emotions/ stress	Strength	4	4	"It's always weirded me out that when people are nervous, they chain smoke. I cannot do that because if I am nervous and I start chain smoking, I get more nervous."	0	
	Deficit	21	13	"When I am stressed out or emotional, or something is upsetting me, I tend to smoke a lot more. A whole lot more."	8	"Smoking may just be another coping method and another way to deal with the stress, anxiety, unpleasant feelings..."
Coping with cravings	Strength	10	10	"I went for a walk. I exercised to get my endorphins going that way and eventually the cravings went away."	0	
	Deficit	13	11	"The craving. The tobacco companies are geniuses. Like a mixture that they have is so addictive and it is so strong and you do not even have power over it. It controls you."	2	"They have to know what to do with the cravings."
Coping with fatigue	Strength	0	0		0	
	Deficit	13	11	"I have to chain smoke to keep myself awake."	2	"[They think] 'it [the methadone] makes me sleepy, so I'll just smoke.'"
Social skills						
Developing supportive social networks	Strength	13	10	"You find ways to get away from people that smoke. The more you want it, the more you'll find people on your level."	3	"...his wife bugged him enough and he [the client] quit."
	Deficit	27	18	"Well, everybody, my boyfriend smokes, my brother smokes, my mom, my dad, like everybody smokes. I feel like smokers cling together."	9	"I think that most of the people in their lives probably smoke as well."
Saying "no" to offered cigarettes	Strength	0	0		0	
	Deficit	4	2	"Sometimes, somebody is like, 'Oh, you want to come and smoke a cigarette?' Even if, like, I just went out and smoked a cigarette 20 minutes ago, 'Alright, let's go smoke a cigarette again.'"	2	"...the more you are around it, the more acceptable, the less likely you will say 'no'."

Definition/ Code	Strength/ Deficit	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
Negotiating clinic culture	Strength	11	11	"It [clinic culture] doesn't affect me because I come in, get my dose, get back in my car, and I split."	0	
	Deficit	21	13	"Instead of saying we're taking a 5-minute break, the counselor would be like 'We're taking a 10-minute smoke break. Basically because everybody except maybe one person gets up and smokes.'"	8	"I think among the patients it is a big culture. The second there is a break for group they all rush out and smoke cigarettes."
Breaking links and changing routine						
Breaking smoking links with alcohol and coffee	Strength	1	1	"Some people smoke a lot when they go to a bar or drink. If I ever drink, I would, like, have 18 cigarettes left in my pack."	0	
	Deficit	15	13	"Coffee and cigarettes is, like, the best match...I smoke another cigarette when the coffee is still hot and then I will warm my coffee up and smoke another cigarette. At least five cigarettes with my one coffee."	2	"...she relapsed on alcohol and the relapse to alcohol led her back to cigarette smoking."
Breaking link with methadone dosing	Strength	9	6	"When I take methadone, I can go with or without the cigarette afterwards."	3	"I have heard, you know, people saying that once they started methadone they just don't have a taste for cigarettes."
	Deficit	21	17	"I think it is more of a Pavlovian response that, okay, I got my meth, now I am having a cigarette."	4	"Methadone clients smoke a cigarette after taking a dose."
Breaking link with drug use	Strength	1	1	"When I did drugs, I definitely didn't smoke...cigarettes definitely weren't in the picture."	0	
	Deficit	19	13	"Every time I go back to using, I start smoking again."	6	"I just believe that tobacco is just part of the whole culture of drug use. We know we have removed the drugs, the culture remains and tobacco continues."
Changing routine	Strength	2	2	"I found out what worked for me is by me not having that cigarette to take the dogs out or the minute I wake up. I smoke less."	0	
	Deficit	13	8	"It's like routine...you're so used to eating something then smoking a cigarette...you get your dose and then you smoke a cigarette... You're just so used to doing the same thing every day...it takes a while to break a routine that you have had for so long."	5	"I find that in speaking with smokers, I find that they do it at certain times. It is habitual in that way, and I think it is the same for clients. 'I smoke when I get up in the morning, or I smoke when I do this. If I take a break from work, I will do this.'"
Pharmacotherapy						

Definition/ Code	Strength/ Deficit	Total n ^a	Clients n ^a	Client Examples	Counselors n ^a	Counselor Examples
Obtaining pharmacotherapy and taking correctly	Strength	15	9	"I tried the inhaler and that works good. And even now, I still have some more, and if I do not have cigarettes, and I need nicotine, I'll do the inhaler."	6	"I think once they have it [pharmacotherapy], they will take it properly."
	Deficit	16	6	"It's easier to get \$20 a day to get a pack of cigarettes...it is not so secure in a lot of people's heads that 'I can put \$100 aside for the quit smoking things.'"	10	"...some of them will have difficulty following through and taking the medications as prescribed."
Existing skills						
Skills used to quit drugs	Strength	8	6	"It's the same thing with drugs. You've got to change people, places, and things. If you don't want to smoke anymore, you are not going to hang out at bars. You are not going to hang out with people that smoke. You've got to separate yourself. It is just like, if you want to quit getting high, you are not going to hang out with people that are getting high."	2	"They have to develop a concrete plan with people, places, and things."
	Deficit	1	0		1	"It's a little different [from quitting drugs], they change their phone numbers so the dealers cannot call them anymore."

^aNumber of participants who provided comments.

Table 4

Summary of IMB factors relevant to smoking cessation among methadone maintained smokers

	Factors Relevant to the General Population	Factors Specific to Methadone Maintained Smokers
Information	Health effects of smoking	The relationship between quitting smoking and drug relapse
	Toxins in cigarettes	
	Pharmacotherapy	
	Smoking cessation counseling resources	
Motivators/Barriers to Motivation	Pregnancy/Children	Belief that smoking is the same as using drugs
	Cost of smoking	Feeling that it is too much to quit smoking and drugs at the same time
	Health	
	Smell of smoke	
	Enjoyment of smoking	
	Concern about weight gain	
	Cost of treatment	
Behavioral Skills	Replacing smoking	Negotiating clinic culture
	Coping with emotions/stress	Breaking link with methadone dosing
	Coping with fatigue	Breaking link with drug use
	Developing supportive social networks	Skills used to quit drugs
	Saying "no" to offered cigarettes	
	Breaking links with alcohol and coffee	
	Changing routine	
	Obtaining pharmacotherapy and taking correctly	