HHS Public Access

Author manuscript

J Ment Health. Author manuscript; available in PMC 2020 October 01.

Published in final edited form as:

J Ment Health. 2019 October ; 28(5): 475–481. doi:10.1080/09638237.2017.1340600.

Qualitative analysis of social network influences on quitting smoking among individuals with serious mental illness

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Abstract

Objective—The prevalence of cigarette smoking among adults with serious mental illness (SMI) remains high in the United States despite the availability of effective smoking cessation treatment. Identifying social influences on smoking and smoking cessation may help enhance intervention strategies to help smokers with SMI quit. The objective of this qualitative study was to explore social network influences on efforts to quit smoking among adults with SMI enrolled in a cessation treatment program.

Methods—Participants were 41 individuals with SMI enrolled in a Medicaid Demonstration Project of smoking cessation at community mental health centers. A convenience sampling strategy was used to recruit participants for social network interviews exploring the influence of family, friends, peers, and significant others on quitting smoking. A team-based analysis of qualitative data involved descriptive coding, grouping coded data into categories, and identifying themes across the data.

Results—Social barriers to quitting smoking included pro-smoking social norms, attitudes, and behaviors of social network members, and negative interactions with network members, either specific to smoking or that triggered smoking. Social facilitators to quitting included quitting with network members, having cessation role models, and social support for quitting from network members.

Conclusions—Similar to the general population, social factors appear to influence efforts to quit smoking among individuals with SMI enrolled in cessation treatment. Interventions that leverage

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Declaration of interest

No potential conflict of interest was reported by the authors.

positive social influences on smoking cessation have the potential to enhance strategies to help individuals with SMI quit smoking.

Keywords

Smoking cessation; serious mental illness; social networks; social influences

Introduction

Despite significant decreases in rates of smoking in the United States over the past 50 years, an estimated 50–85% of adults with serious mental illness (SMI), such as schizophrenia and major mood disorders, smoke cigarettes (McClave et al., 2010) compared to only 18% of adults in the general population (CDC, 2014). Smoking is the leading cause of preventable mortality in the United States and a major contributor to the 10–30 year reduced life expectancy among people with SMI (De Hert et al., 2009; Walker et al., 2015). The efficacy of FDA-approved cessation medications in improving outcomes for smokers with SMI is well established (Evins et al., 2014; Tidey & Miller, 2015; Wu et al., 2016). The largest trial to date examining the safety and efficacy of three first line smoking cessation treatments – varenicline, bupropion, and nicotine replacement therapy – demonstrated the safety of these medications for persons with mental illness (Anthenelli et al., 2016). Many smokers with mental illness want to quit smoking (Aschbrenner et al., 2015a, 2017; Evins & Cather, 2015; Ferron et al., 2011; Nawaz et al., 2012), yet the prevalence of quitting is low. New interventions are needed to effectively engage and motivate smokers with SMI to participate in evidence-based smoking cessation treatments. Targeting social networks to support cessation efforts that include medication and counseling may be an effective intervention strategy to reduce smoking rates in this high-risk population.

Numerous studies have shown that social networks are associated with a variety of health behaviors, such as alcohol consumption, smoking, and physical activity (Christakis & Fowler, 2008; Darlow & Xu, 2011; Rosenquist et al., 2010). The mechanisms by which social networks have been found to influence health behaviors include social control, social norms, peer role modeling, and social support (Berkman & Glass, 2000). Social networks with a high prevalence of smoking, social acceptability of smoking, and a lack of social support for quitting smoking are barriers to smoking cessation (Twyman et al., 2014).

In contrast, social networks in which quitting smoking is a socially desirable behavior facilitate cessation (Dohnke et al., 2011). A large social network analysis of participants in the Framingham Heart study controlled for social selection (“homophily”) wherein people with the same trait or a desire to obtain a particular trait are drawn to social networks exhibiting that trait (O’Malley & Christakis, 2011) to isolate the independent effect of social influence on smoking (O’Malley et al., 2014). Controlling for social selection and other potential confounders, smoking behavior has been shown to spread through social networks with interconnected groups of people (e.g. spouses, siblings, and close friends) quitting smoking together (Christakis & Fowler, 2008).

Several studies have found that the social networks of people with SMI are typically small and primarily consist of family members (Macdonald et al., 2000; Meeks & Murrell, 1994;

Pernice-Duca, 2010). Despite having relatively small and restricted social networks, individuals with SMI report a high degree of contact with network members (Aschbrenner et al., 2013; Wong et al., 2011), suggesting the potential salience of these relationships. Few studies have examined the influence of social network members on smoking behaviors in this group. One recent study found that smokers with SMI who believed that social network members would approve of their use of medication to quit smoking were more likely to initiate cessation treatment (Aschbrenner et al., 2015b). In another study, former smokers with SMI identified social support as a key factor enabling them to quit smoking and remain abstinent from cigarettes (Dickerson et al., 2011). In contrast, a recent survey indicated that while the majority of people with SMI believed their family and friends would be supportive of them quitting, a significant proportion of participants also reported that such people would be unsupportive of a quit attempt or that they were uncertain of their support (Metse et al., 2016). The extent to which people with mental illness who are trying to quit smoking perceive support from social network members as helpful for quitting remains largely unexplored.

We conducted a pilot study using a social network interview to explore how social network members – defined as family members, friends, peers, and significant others – influenced efforts to quit smoking among individuals with SMI enrolled in supported smoking cessation treatment at community mental health centers. We first explored participants' preferences for cessation support from their social network members and found that participants wanted more practical and emotional support for quitting, and they wanted friends and family to refrain from smoking around them (Aschbrenner et al., 2017). This study expands our understanding of the influence of social networks on smoking cessation outcomes among people with SMI by focusing on participants' reports of how social network members influenced their efforts to quit smoking during cessation treatment.

Methods

Participants

Participants in this study were 41 individuals with SMI participating in a New Hampshire Medicaid Demonstration Project of smoking cessation treatments at community mental health centers. The goal of the larger project was to evaluate the effectiveness and long-term outcomes of health promotion programs designed to reduce cardiovascular disease risk among Medicaid beneficiaries receiving services at one of New Hampshire's ten regional community mental health centers by incentivizing and rewarding engagement in healthy lifestyle behaviors. After completing an online motivational smoking cessation decision support tool (Brunette et al., 2011), participants were randomized to one of three smoking cessation treatments: (1) referral to psychiatrist to discuss smoking cessation treatments; (2) referral to psychiatrist to discuss cessation treatments plus facilitated use of the NH tobacco help line; and (3) referral to psychiatrist to discuss cessation treatments plus 12 sessions of telephone cognitive behavioral therapy. Half of the participants who elected to participate in smoking cessation treatment were randomly assigned to receive monetary rewards for abstinence from smoking.

A convenience sampling strategy was used to recruit participants for this study involving one-time social network interviews once they completed their assigned smoking cessation treatment. Participants were eligible for this study if they were age 18 or older and had a chart diagnosis of SMI defined including schizophrenia, schizoaffective disorder, major depressive disorder, or bipolar disorder. For convenience, we targeted individuals who had received smoking cessation treatment at one of four community mental health centers located in southern New Hampshire where our research offices are located. A data analyst for the Medicaid Demonstration project provided our team with a list of 60 individuals who recently completed cessation treatment and met the psychiatric diagnostic criteria for this study. The study coordinator contacted participants by telephone to invite them to participate in the social network interviews. Among the 60 individuals who were eligible, 41 agreed to participate in a one-time social network interview. Two research interviewers who were trained and supervised by the first author conducted the semi-structured social network interviews. The Institutional Review Board of the State of New Hampshire Bureau of Behavioral Health and Dartmouth College approved this research. All subjects provided verbal consent to participate in the study.

Participants had a mean age of 47.0 years (SD¼13.0). The sample was 59% female, and 88% were Whites, 5% were African-American, 2% were American-Indian or Alaskan Native, and 5% identified with more than one race. Eighty-three percent had completed a high school education or GED. Forty-nine percent were separated or divorced, 46% were never married, and 5% were currently married. The majority of participants (59%) were living independently and 41% were residing in supervised or supported housing. Participants' psychiatric diagnoses were as follows: 32% major depression, 42% bipolar disorder, and 26% schizophrenia spectrum disorders. Ten participants (32%) interviewed in this study had quit smoking during the course of the cessation program (based on their self-report).

Measures

The qualitative data analyzed in this study were collected using a modified social network instrument adapted from methods utilized in a prior study of social network structure and health (O'Malley et al., 2012). The survey asked participants to name (up to) five adults with whom they spent the most free time with during a typical week in the past 12 months; participants then named (up to) five adults who had said or done anything to influence their smoking in the past 12 months. Participants were instructed to list only non-professionals in their social networks (e.g. rather than therapists and case managers, they listed family members, friends, significant others, etc.). A series of open-ended qualitative questions were used to explore the influence of social network members on participants' attempts to quit smoking. For each person named on their list, participants were asked the following questions: (1) "Has he/she ever helped you try to quit smoking?" and (2) "Has he/she ever gotten in your way of quitting smoking?" This qualitative study focuses on responses to these open-ended questions.

Procedure

The social network interviews lasted 45–60 min for which participants were compensated $20. A researcher conducted the interviews on site at the mental health center where the participant was enrolled in treatment services. All interviews were audio-recorded and transcribed verbatim.

Data analysis

Grounded theory was used as a general methodological orientation to guide the discovery of emerging patterns in the data with the primary research question as a starting point for the study (Strauss & Corbin, 1998). Our team-based approach to analyzing the qualitative data included generating an initial descriptive code list, grouping coded data into categories, and identifying themes representing patterns across the data (Braun & Clarke, 2006). The first author (KA) generated a preliminary code list based on a segment of coded transcripts. Then, all three members of the analytic team (KA, JN, and LG) independently coded the same initial set of four transcripts using the preliminary code list, while remaining open to adding new codes. The team members discussed these codes and made additions and revisions to the code list. This process was repeated by coding another set of five transcripts. After coding a set of nine interviews, the team reached consensus about the coding decisions. The team members then independently coded the remaining transcripts, meeting regularly to review and discuss the code list for coder agreement. Any disagreements were resolved through clarification and discussion. Once the data was coded, the descriptive codes were categorized based on shared characteristics (Miles & Huberman, 1994). As a final step, the team integrated the categories into themes that represented patterns in the data related to the exploratory research question.

Results

Tables 1 and 2 summarize the descriptive codes, categories, and themes identified in the dataset. As shown in Table 1, the categories of codes representing social barriers to quitting smoking included social network members who smoke, smoking with network members, and network members who enable smoking behaviors. These categories share the broader theme: pro-smoking norms, attitudes, and behaviors of social network members. Additional categories of social barriers to quitting included critical comments about smoking behaviors and interpersonal stress, which share the broader theme, negative interactions with social network members. Each of these themes is defined below and representative quotes are provided to illustrate each theme.

Pro-smoking norms, attitudes, and behaviors of social network members

Many participants reported that smoking was normative in many social contexts and socially acceptable among their peers and family members. The most commonly reported way network members got in the way of quitting smoking was by smoking cigarettes. As one participant said: “It’s difficult, because everyone I know smokes.” Another participant said: “She [my friend] supports it [quitting smoking], but no matter how many times I tell her, ‘I wish you wouldn’t smoke so much in front of me,’ she doesn’t listen. She does it anyway.” Participants described how smoking with a network member was a barrier to remaining

abstinent from smoking: “I hadn’t smoked in five days. He [my friend] came over and smoked and I took his cigarettes and smoked one.” Another participant said: “He’s [my friend] offered me cigarettes when I ran out. And when I’ve tried to quit, he’s offered me cigarettes.” On the topic of smoking with other clients at the mental health center, one participant said: “I would stand outside and smoke [outside the mental health center], and if someone came by often times they would bum a cigarette off me and we’d smoke together.”

Negative interactions with social network members

The theme of negative interactions with network members involved two categories: critical comments about smoking and quitting behaviors and interpersonal stress. Critical comments included comments made by friends or family members that were perceived as unhelpful and undermined participants’ efforts to quit smoking (e.g. blaming, criticism, or hurtful comments). One participant shared his father’s comments: “He says, ‘Why the hell do you still smoke? You should quit smoking. You don’t have to take after me in everything.’ He smoked growing up so he thinks it’s his fault.” Participants reported that stressful interactions with social network members (whether or not they pertained to smoking) were a common trigger for smoking. As one participant explained: “They [arguments with mother] stress me out. I just get stressed out a lot. I’ve learned how to cope with stress without smoking. Half of the time when I’m on the phone with her, I think about smoking.”

Table 2 presents findings on social facilitators to quitting smoking. As shown in Table 2, the first theme, pro-quitting norms, attitudes, and behaviors among social network members, includes the following categories of codes: quitting smoking with a network member, cessation role models, and negative attitudes toward smoking by network members. The categories for the second theme, social support for quitting smoking, include emotional, practical, and informational support by social network members for quitting smoking.

Pro-quitting norms, attitudes, and behaviors among social network members

Participants reported social norms, attitudes, and behaviors that supported smoking cessation. Social norms and attitudes toward smoking as an undesirable social behavior helped some participants in the quitting process. As one participant explained:

> My [Friend] doesn’t date smokers…and she encourages me to not want to smoke. She doesn’t like being around smokers. She’s a close friend, so it’s encouraging.

Many participants gave examples of quitting smoking or attempts to quit smoking with a social network member. As one participant explained: “We set it up so we quit at the same time…He doesn’t smoke in front of me if I’m trying to quit he supports me through it with advice and cheering me on and I do the same for him.” One participant described how her friend was a role model in the quit smoking process by sharing her personal experience using cessation medications and introducing the participant to her prescriber: “She quit herself so she talked to me about it. She took Chantix and she invited me to talk to her doctor about Chantix so I did.”

Social support for quitting smoking

Social support for quitting smoking was a theme characterized by emotional, informational, and practical support participants received from social network members for quitting smoking. Participants gave examples of praise and encouragement for quitting: “She [my friend] was trying to give positive reinforcement. I know that I can do it, that I’m strong. I guess she was that verbal support that I needed. Basically, the back bone from a distance.” Another participant shared how her friend encouraged her to quit: “You can do it… just take it one hour at a time if you have to. Don’t let other people get in your way of quitting.” Advice and guidance from network members was common. One participant shared how her friend helped her examine the financial cost of smoking: “He helped me figure out how much money I spend a year smoking. I find other things to spend money on besides cigarettes.”

Several participants described social network members’ concerns about the health consequences of smoking. One participant said: “I have grandchildren and she [my daughter] wanted me to quit so I can live long enough to see them grow.” Another participant shared how his father who is a smoker with emphysema wanted him to quit to prevent smoking-related diseases: “Even though he [my father] smokes, he tells me to try to quit because he is getting emphysema and he doesn’t want me going through the same thing he’s going through.”

Discussion

Among individuals with SMI enrolled in a Medicaid Demonstration Project of smoking cessation at community mental health centers, we found that social norms, attitudes, and behaviors of social network members had both positive and negative influences on efforts to quit smoking. Despite the common belief that people with SMI have smaller and more restricted social networks that lack social support (McCorkle et al., 2008), participants in this study experienced many of the same social facilitators to quitting smoking reported in the general population (Christakis & Fowler, 2008; Dohnke et al., 2011; Gerrard et al., 2005). We also identified social influences that may be more significant for individuals with SMI who are trying to quit smoking, including interpersonal stress and the perception that smoking is social acceptable in peer and family networks.

Findings from this study are consistent with a social norms perspective on health behavior change whereby individual choices are significantly affected by the behaviors and opinions of important others (Reid et al., 2010). Participants described how family members and friends became role models through their own efforts to quit smoking. Knowing former smokers and having friends and family members who are trying to quit may be particularly important for groups that experience a high prevalence of smoking (Goldade et al., 2013; Mitchell et al., 2015; Paul et al., 2010; Twyman et al., 2014). Social network interventions that identify and leverage former smokers as a resource for smokers who are trying to quit may be an effective strategy for supporting smoking cessation among individuals with SMI, especially if the former smokers are known to the person trying to quit.

This study also sheds new light on the specific role of social support in efforts to quit smoking among adults with SMI. In this study, participants specifically identified emotional support (e.g. motivational messages), practical support (e.g. help accessing providers), and informational support (e.g. advice and guidance) from social network members as helpful during cessation treatment. Prior qualitative research with individuals with SMI participating in lifestyle interventions has indicated that although many participants want more support from family and friends for their health goals, they rarely specify what type of support would be most helpful (Aschbrenner et al., 2012). Interventions that help smokers identify their specific needs and preferences for social support for quitting smoking and learn ways to communicate their needs effectively to family and friends have the potential to enhance cessation treatment for individuals with SMI. Additionally, providing support partners with the information and skills needed to promote and encourage smoker use of effective treatments has been successful in the general population (Patten et al., 2011), and has the potential to increase engagement in cessation treatment among individuals with SMI.

Social network characteristics associated with attempts to quit smoking and successful cessation among smokers in the general population include absence of smokers in the immediate social environment (Caponnetto & Polosa, 2008; Nonnemaker et al., 2011). It may be challenging for smokers with SMI who are embedded in social networks with a high prevalence of smoking to distance themselves from smokers and to find significant others who have successfully quit who they could turn to for support. Peer interventions whereby persons with mental illness draw on their own personal success with smoking cessation to motivate and support another smoker with mental illness to quit smoking may be an effective way to enhance evidence-based cessation treatments for people with SMI (McKay & Dickerson, 2012), particularly when such support is limited within their social networks.

Interpersonal stress is a common cause of relapse in addiction (Leach & Kranzler, 2013), and was identified by participants in this study as a barrier to quitting smoking. Many participants reported that stress caused by arguments with friends and family members triggered smoking. The prevalence of interpersonal trauma and trauma-related disorders are significantly higher among individuals with SMI than in the general population (Mauritz et al., 2013). In future tobacco cessation research for persons with SMI, greater attention should be paid to smoking and interpersonal processes because these factors may increase the risk of smoking and relapse and interfere with effectively facilitating social support for smoking cessation. Applying principles of evidence-based communication skills training for families and couples coping with mental illness (Mueser & Glynn, 1999), including ways to express both positive (e.g. recognizing success) and negative feelings (e.g. disappointment) related to changes in smoking behaviors could promote more positive interactions between network members and individuals with SMI who are trying to quit smoking.

Limitations

There are several limitations of this study that warrant consideration. First, we purposely chose to examine social barriers and facilitators among people with SMI enrolled in a smoking cessation intervention, so results may not represent those with SMI who are not motivated to stop smoking or individuals who are not engaged in a program designed to

support smoking cessation. Second, the qualitative nature of this study did not include a detailed examination of social network characteristics that could influence participants' efforts to quit smoking, such as the number of smokers, non-smokers, and former smokers in the network. A future quantitative analysis of the social network data collected during this study is planned in which we will describe the social networks of individuals with SMI and the associations of these networks with their smoking and smoking-related behavior (e.g. quit attempts). Finally, our sample was representative of the local population but was racially homogeneous. Prior research by our team found that African-Americans and Latinos with SMI tended to seek advice about smoking from a broad network of friends and family, whereas Whites mostly sought information and support from their clinicians (Nawaz et al., 2012). Future research should explore in more depth how social influences on smoking among individuals with SMI may differ by culture, race, and ethnicity.

Conclusions

Social factors appear to influence efforts to quit smoking among participants with SMI enrolled in cessation treatment. In particular, social norms, attitudes, and behaviors had both positive and negative influences on participants' efforts to quit smoking. Developing theoretically guided interventions that leverage positive social influences on smoking has the potential to enhance cessation treatment cessation outcomes among adult smokers with SMI. Smokers with SMI who are embedded in social networks with a high prevalence and social acceptability of smoking may benefit from peer interventions that facilitate emotional and informational support needed to quit smoking.

Acknowledgments

This study was supported by The Dartmouth Clinical and Translational Science Institute, under award number UL1TR001086 from the National Center for Advancing Translational Sciences (NCATS) of the National Institutes of Health (NIH). Partial support was received from the Dartmouth Health Promotion and Disease Prevention Research Center supported by Cooperative Agreement Number U48DP005018 from the Centers for Disease Control and Prevention. The content is solely the responsibility of the author(s) and does not necessarily represent the official views of the funders.

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Table 1

Social barriers to quitting smoking among participants with serious mental illness enrolled in supported smoking cessation treatment programs.

Themes	Categories	Descriptive codes
Pro-smoking social norms, attitudes, and behaviors of social network members	Social network members smoke	• Other network members smoke cigarettes • "Everyone" in the social network smokes • Social network members smoke around participant; "chain smoke" cigarettes • Participant lives with a smoker • Social cues or "temptation" to smoke at the mental health center • Smokes with a social network member(s)
	Smoking with social network members	• Smoking is a leisure activity shared with others (e.g. "enjoy smoking together")
	Social network members enable smoking behaviors	• Offered the participant cigarettes • Traded participant cigarettes for other items • Rolled the participant's cigarettes
Negative interactions with social network members	Stressful interactions with social network members	• Stressful interactions are cues for smoking; "arguments" with significant others
	Critical comments about smoking and quitting behaviors	• Critical of participant's ability to quit; "tells me I can't do it" • Expressed disappointment that participant continues to smoke after treatment • Criticized participants use of electronic cigarettes and nicotine gum to help reduce smoking • Tells participant "bad things" will happen if they do not quit

Table 2

Social facilitators to quitting smoking among participants with serious mental illness enrolled in smoking cessation treatment programs.

Themes	Categories	Descriptive codes
Pro-quitting social norms, attitudes, and behaviors among social network members	Quitting with a social network member	• Quit smoking (or attempting to quit) with a network member • Going through tobacco withdrawal together • Do activity together so they don't smoke
	Cessation role modeling	• Network member quit smoking • Shared information about how to quit smoking with medication • Shared personal health benefits from quitting • Shared health problems related to smoking
	Negative attitudes toward smoking by a social network member	• Expressed disapproval of smokers (e.g. "Won't date smokers") • Reaffirmed negative aspects of tobacco use • Participant stayed away from smokers
Social support for quitting smoking	Informational support	• Suggested tips and coping strategies for quitting • Gave advice on how to quit smoking • Reinforced benefits of smoking cessation treatment • Helped participant consider the cost of smoking • Concerns about smoking-related health problems • Gave participant an e-cigarette; told them about "vapor" as an alternative to smoking
	Emotional support	• Complemented participant on efforts to quit smoking • Encouraged participant to quit smoking • Made participant feel special; "gave her a dozen roses to quit" • Suggested participant "call her" for support when craving cigarettes • Non-smoking friend comes over so participant does not smoke
	Practical support	• Helped participant reduce amount of smoking • Reminded participant to "smoke outside" • Brought participant to their physician to learn about smoking cessation medication • Destroyed participant's cigarettes; puts cigarettes in garbage and hides lighter