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Smoking, Work Stress, and Barriers to Participation in HMO Smoking Cessation
Treatment among Transit Workers: Focus Group Results

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ABSTRACT

Elevated smoking prevalence among transit workers suggests that cessation services may not be appropriately tailored to this occupational group, resulting in treatment underutilization. We conducted 11 focus groups with employees (n=71) at a transit agency based in Oakland, California to explore workers' views and experiences regarding perceived barriers to participation in HMO smoking cessation treatment. Key themes that emerged from content analysis of the focus group transcripts included smoking for immediate relief from work stress, concerns about pharmacotherapy side effects, and structural barriers to treatment such as work shift schedules. This information can be used to tailor interventions aimed at effective tobacco cessation efforts with this workforce.

KEY WORDS: Smoking, work stress, HMO cessation treatment utilization, transit workers

INTRODUCTION

Despite steep declines in smoking prevalence in the 50 years following the 1964 publication of the Surgeon General's Report, there are significant tobacco-related health disparities across racial/ethnic and occupational groups (Barbeau, Leavy-Sperounis, & Balbach, 2004). For example, findings from the National Health Interview Survey (NHIS) for 2004-2010 show that overall prevalence of current smoking among working adults aged 18 and older is 19.6%. When analyzed by level of education, however, the highest rates are seen among those with less than a high school diploma (28.4%) and those with a high school diploma (27.1%); lowest prevalence (9.1%) is found among those with a bachelor's degree or higher (Syamlal, Mazurek, & Malarcher, 2011). Similarly, significant differences in current smoking rates are seen across occupational groups, with workers in blue-collar jobs more likely to be current smokers than those in white-collar occupations (Fagan, Shavers, Lawrence, Gibson, & O'Connell, 2007; Ham et al., 2011). The age-adjusted prevalence of current smoking is 28.7% for workers in the blue-collar occupational classification of transportation and material moving (Syamlal et al., 2011). This classification includes bus driver/transit operator, an occupation that often exposes the worker to an objectively stressful work environment due to traffic congestion, inflexible schedules, rotating shifts, and hostile or violent passengers (Bance et al., 2014; Cunradi, Chen, & Lipton, 2009; Tse, Flin, & Mearns, 2006). Regarding the continuum of workplace violence as described by Chechak and Csiernik (2014), transit operators are subject to a numerous behaviors ranging from disrespect to overt aggression. Most often these behaviors are perpetrated against them by passengers (Breckinridge, Nov. 25, 2012); however, transit operators have also

experienced gun violence when their bus is intentionally shot at, or is hit by bullets due to gang crossfire (Serna, October 21, 2014). Exposure to these types of aggression constitutes a unique stressor experienced by this occupational group.

Previous research among transit workers suggests that these and other stressful work conditions contribute to smoking behaviors. For example, prospective data from transit operators who participated in the San Francisco MUNI Health and Safety Study showed frequency of self-reported job problems, such as problems with supervisor, passengers, and traffic was associated with likelihood of being a smoker over the 10 year follow-up period (Cunradi, Lipton, & Banerjee, 2007). In a separate analysis, frequency of transit operator job problems and ergonomic problems, which include problems with seat, back support, and steering was significantly associated with job burnout (Cunradi et al., 2009). Moreover, the time required to unwind and relax after work was significantly related to smoking as a coping strategy such that the longer it took for an operator to unwind, the more likely he or she was to endorse smoking as a way to cope. Smoking to cope, in turn, was significantly associated with packs per day of cigarette smoking (Chen & Cunradi, 2008). A more recent study conducted among transit workers in Minneapolis found that 25.4% were current smokers (Escoto et al., 2010). In comparison, the adult smoking rate in Minnesota during the same time period was 18.3% (Centers for Disease Control and Prevention, 2006).

Work stress is positively associated with continuing to smoke among recent smokers (Ayyagari & Sindelar, 2010), and may therefore play an important role as a barrier to smoking cessation, especially among high-stress occupational groups such as transit workers. In major metropolitan areas, transit workers typically have access to

free or low-cost health maintenance organization (HMO)-based smoking cessation support programs and activities. For example, nicotine replacement therapy (NRT), cessation support groups and other quitting aids are made available to the workers as an employee benefit through their union-negotiated contract with the transit agency. The elevated smoking prevalence among this occupational group, however, suggests that these services may not be appropriately tailored and thus are not being successfully utilized. Little is known about the factors that hinder transit workers from participating in these smoking cessation support activities. Given that unaided quit attempts are less successful than aided quit attempts (Fiore et al., 2008; Song, Landau, Gorin, & Keithly, 2014; Zhu, Melcer, Sun, Rosbrook, & Pierce, 2000), it is important to identify the extent to which aspects of the workplace social environment and structural factors serve as barriers to transit worker participation in free or low-cost HMO-based smoking cessation support activities, and to determine how these barriers may be overcome.

This paper presents results from focus group discussions held with transit workers to elicit reactions to and awareness of the covered employee options for cessation, attitudes towards smoking, job strain, and other topics. The resulting information can be used to tailor interventions aimed at productive tobacco cessation efforts with these workers.

METHODS

Participants and Procedures

As a formative component of a mixed-methods study, we conducted focus groups among a sample of urban transit workers to qualitatively explore their

perceptions of work stress, smoking, and barriers to smoking cessation. Focus groups are particularly useful in providing rich descriptive data that may generate hypotheses in exploratory work (Miles & Huberman, 1994; Morgan, 1997). As a qualitative research methodology, focus group research is an excellent way to gather information and to address those research questions where an in-depth understanding of the phenomenon of interest is required and cannot be achieved with quantitative methods. Although focus group research may have limited generalizability, it is highly effective for rapidly assessing individuals' reactions to a particular concept (Greenbaum, 1998). Focus group research provides a powerful means to identifying themes, issues and concerns revealed through in-group discussions. Additionally, focus group research is effective for planning and evaluating interventions (Brotherson, 1994).

Data for this project were obtained from transit workers (bus operators and maintenance workers) at the Alameda-Contra Costa Transit District (AC Transit), a public transit agency based in Oakland, California. Serving 61.2 million riders annually, AC Transit is the third largest public bus agency in the state. Bus operators and maintenance workers at the agency are represented by the Amalgamated Transit Union (ATU). Approximately 1,570 transit workers are in the bargaining unit. At the outset of the project, the researchers established a Union-Management Advisory Group with transit agency managers and transit union officers in order to get feedback and practical suggestions on all aspects of the project. All research protocols were approved by the Institutional Review Boards of the Pacific Institute for Research and Evaluation and the University of California, San Francisco.

Project staff posted flyers advertising the focus groups around the bus garage and maintenance facility Gillie (break) rooms and conducted on-site recruitment of employees who met one of the three following inclusion criteria: (1) current smokers, (2) lapsed quitters (those who tried to quit but began smoking again in the last 6 months), or (3) those who had successfully quit while employed at the transit agency. Only employees who were members of the transit union representing bus operators and most maintenance workers were eligible to participate. Potential participants filled out a brief screening questionnaire that included questions about their current smoking status and previous quit attempts, and demographic characteristics. Eligible participants were scheduled for the next available focus group at their worksite. Eleven focus groups were held over a 4-month period (December 2012 - March 2013). Workers were offered a \$40 cash incentive fee for participating in a 90-minute moderated focus group discussion. Written informed consent was obtained from all participants. Focus group sessions were held on-site at each of four different bus garage or maintenance facility conference rooms. Healthy snacks and drinks were provided to participants. Discussions were digitally recorded. A total of 71 transit workers participated in the 11 focus groups. The group size ranged from 2 to 14 participants (mean 6.5).

Measures

Focus group interview guide. The semi-structured focus group interview guide explored views and perceptions of smoking in general and in relation to work, knowledge of HMO smoking cessation treatment, and barriers to participation in cessation activities. Questions about smoking in relation to work included, "What, if any, strategies, including smoking, are being used/have been used by the employees to

provide stress relief and help diffuse otherwise volatile situations in the workplace?”

Questions about knowledge of HMO smoking cessation treatment included, “What do you know about smoking cessation activities and programs?” Lastly, questions about barriers to participation in cessation activities included, “How might job strain interfere with tobacco cessation activities?”

Data Analysis

Digitally recorded focus group interviews were transcribed verbatim. Transcripts were reviewed by the first three authors. The research team developed the coding manual. Focus group data were first iteratively reviewed and discussed by members of the research team to identify key themes, recurrent patterns, and specific elements of the cessation programs that were identified as most and least helpful. Later, the relevant sections of the transcripts were labeled with codes consisting of words or short phrases to summarize the central points of each paragraph (Green et al., 2007). All transcripts were coded by the researchers using a thematic analysis approach with the *NVivo* software package (QSR International, Cambridge, MA). Comparing coded segments of text across all transcripts helped the team to identify recurring patterns. Findings were discussed in research team meetings, and the results were cross-validated to ensure reliability.

Descriptive statistics from the brief questionnaire collected during recruitment were calculated using IBM SPSS Statistics 20.0 (IBM Corporation, Armonk, NY).

RESULTS

Sample Characteristics

Demographic characteristics of focus group participants are shown in Table 1. Nearly half (45%) were female, and most (83%) described their race/ethnicity as African American. Mean participant age was 49.9 years (*SD* 9.06). In terms of job classification, most participants (83%) were bus operators; the remainder consisted of maintenance workers, clerks, and dispatchers. Smoking behaviors are shown in Table 2. Approximately 2/3 of the participants were current smokers; about 1/3 were former smokers. On average, current smokers had smoked for 22.9 years, and had made 4.7 quit attempts. For former smokers, average length of time smoked was 18.7 years, with 3.6 quit attempts.

Motivations for Smoking

Work Stress and Smoking. Transit operators encounter an array of stressful on-the-job conditions, including traffic congestion, tight running schedules, limited access to bathrooms, and lack of adequate break time (Chen & Cunradi, 2008; Greiner & Krause, 2006; Ragland, Greiner, Yen, & Fisher, 2000). Based on this literature, we elicited various explanations from the participants as to how smoking related to job stress. In this regard, many workers described smoking as a readily accessible and effective response to daily stressors encountered on the job. Time pressures and lack of flexibility associated with completing one's route within the allotted schedule were often referenced. For example, one male bus operator stated:

"It's a lot coming at you, and so when you finally get off, they don't give us enough running time, and you can feel your blood pressure go up or whatever, and so when you get off you only have time to go to the restroom. If you got something to eat, eat and you take a smoke." (P1)

Similarly, routine work stress (in the following quote, voiced by a male operator) was described as a nearly insurmountable obstacle to smoking cessation. For many of the participants, smoking is portrayed as a normative response to the stress. Some ‘reward’ themselves with a cigarette after completing their route:

“I never tried [to quit smoking]. Never tried. The job is a *major* factor. With all the stress. It’s like, get to the end of the line, have a cigarette, and you can deal with it going back.” (P2)

Perceived Calming Effect of Nicotine. Bus operators must also contend with violent or belligerent passengers and fare-evaders. Evocatively, one male operator stated, “We wear every jacket imaginable, from counselor, doctor, lawyer, therapist, shrink, instantly.” (P3) While not all encounters were perceived as hostile, some exchanges could result in potentially dangerous interactions that heightened stress. For smokers, nicotine is perceived as providing a needed calming effect to counteract the daily conflicts while operating the bus, as articulated by a male operator:

“And I’m more apt to literally have like a physical confrontation or something because I don’t have that little cushion that the nicotine gives me to allow stuff, certain things to kind of roll off my back.” (P4)

Underscoring the relationship between work stress and smoking as a ‘quick fix’ to temporarily alleviate this tension, a female operator observed:

“You don’t think about a cigarette when you’re not at work. And then when you come to work, you start thinking. You know, a cigarette relaxes you. That’s what it is.” (P5)

Barriers to the Utilization of Cessation Programs

Our *a priori* assumption was that a range of factors interfered with successful utilization of cessation programs among the transit workers. First, some, but not all workers were familiar with their HMO’s smoking cessation programs and offerings. Second, of those who knew about them, numerous factors impinged on their ability to avail themselves of the programs. For example, some workers expressed concerns about smoking cessation medication side effects. Others cited (work) scheduling as a barrier to participation. Fatigue at the end of the work day was also a topic of discussion. Finally, concerns that confidentiality might be breached by providing sensitive health-related information to HMO program staff was mentioned by some as an obstacle to engaging in work-sponsored cessation programs.

Concerns about Smoking Cessation Medication Side Effects.

Some participants reported favorable experiences with cessation medication, yet that experience was far from universal. Many of the participants who were interested in cessation raised concerns about pharmacotherapy side effects. For example, some smokers who had tried varenicline were frightened by adverse side effects, such as depression, that could occur with usage. In some cases, workers who had not necessarily experienced side effects were nevertheless convinced that they should

discontinue taking the drug after learning of side effect warnings and disclosures. A female bus operator described her decision to discontinue use of pharmacotherapy:

“Two years ago I tried Chantix. When I saw the commercial ‘You may have suicidal thoughts or committed suicide, call this number, call that number.’ And it scared the crap out of me and I stopped taking it.” (P6)

In other cases, workers who smoked said they refused to try pharmacotherapy after hearing about side effects. In the following quote, this female bus operator described obtaining cessation medication, presumably with the intent to follow the prescribed regimen, but changed her mind after learning of potential insomnia associated with the pharmacotherapy:

“I don’t know what the name of them pills is, but when they told me I may have nightmares...I didn’t open the box [of pills]. I don’t have a problem with sleep. And you telling me now you fixing to disturb my sleep? So, the pill is still sitting over there.” (P7)

Scheduling as a Barrier to HMO Smoking Cessation Activities.

In many jurisdictions, transit agencies run 24-hour service, with augmented trips offered during peak times (i.e., morning and evening rush hour). This requires non-standard work schedules for both operators and maintenance workers. Many bus operators identified their split-shift work schedules, which entails being on duty for the morning and afternoon/evening rush hours, with an hours-long mid-day break in between as a structural barrier to participating in HMO cessation activities. This male

bus operator described schedule-related difficulties in relation to attending smoking cessation class:

“But right now, because of my schedule, I couldn’t go to the class. And I was telling my doctor, “*Well you could still give me Wellbutrin,*” and he said “*No, they’re not going to give you Wellbutrin unless you go to the class.*” And I said “*Oh, well, forget it then.*” (P8)

Maintenance workers are not subject to the split-shift schedules that many bus operators work. Many of these workers, however, begin their shift early in the morning (between 6 and 7am), which may preclude attending an evening smoking cessation class. This male maintenance worker described how his early-start shift was an impediment to participating in nighttime activities:

“And they [the HMO] do have evening stuff, but then again that’s like at seven o’clock, after dinner for most people. Well seven o’clock I’m thinking about getting ready to go to bed. And it don’t get over till about nine o’clock, now I’m over my bedtime.” (P9)

Fatigue as a Barrier to HMO Smoking Cessation Activities.

Transit workers must contend with traffic, lack of break time, and staying within scheduled run times. These various environmental pressures can result in mental and physical fatigue, which could function as an additional obstacle to participation in cessation programs. Although this female bus operator expressed interest in cessation, she described feeling too exhausted at the end of the work day to participate.

“When I get off, dealing with people in traffic, I just don’t want to be bothered with people, period. I won’t answer my phone, I just want to close my door on the world and you know, try to recoup some of my brain cells that I lost during the day.” (P10)

Concerns about Confidentiality.

Focus group participants were very concerned that any health-related information that they shared, including smoking status, would ultimately be divulged to their insurer, the transit agency, or both with repercussions for their eligibility, or result in rising insurance costs. In fact, the issue of confidentiality was the very first topic of discussion in our inaugural focus group. Some participants related past experiences in which they believed their confidentiality was breeched by Employee Assistance Program (EAP) staff. The following quote illustrates this concern of a male worker, who also sees the merit in providing workers with a confidential process by which to share sensitive information.

“And that’s the baddest thing – when you go to EAP, the EAP turn that in to top management. And you go again, ‘Now, why this? That’s supposed to be confidential.’ It’s not. If they could have somebody they could talk to confidentially without it going back to management, it would help drivers, dispatchers, maintenance workers...” (P11)

DISCUSSION

To our knowledge, the current study is the first to examine qualitatively views and experiences of urban transit workers regarding work stress, smoking, and perceived barriers to participation in HMO-based smoking cessation treatment. This is important for several reasons. First, a large body of international research consistently demonstrates that urban transit operators are at risk for various unhealthful physical, psychological, and behavioral outcomes (Evans, 1994; Evans & Johansson, 1998; Tse et al., 2006). As an occupational group, these workers are confronted with numerous structural job stressors, such as poor cabin ergonomics, irregular shift work, rigid operating schedules, lack of scheduled meal or bathroom breaks, and traffic congestion. Transit operators in large urban areas are also faced with increasing on-the-job interpersonal demands, such as interacting with substance-abusing or violent passengers (Cunradi, Greiner, Ragland, & Fisher, 2003). These job characteristics embody a high-strain occupation with high demands and low control (Karasek, 1979; Karasek & Theorell, 1990). Moreover, objective (observer-based) measurement of transit operators' occupational stress factors, such as monotonous conditions and time pressure, are linked with psychosomatic complaints, difficulty unwinding after work, musculoskeletal problems, smoking to cope, and other deleterious outcomes among these workers (Greiner & Krause, 2006; Greiner, Krause, Ragland, & Fisher, 2004; Greiner, Ragland, Krause, Syme, & Fisher, 1997). Ensuring the health of this workforce is directly linked with public safety. In turn, the health of public transit systems affects the health of communities and cities (Ragland, Krause, Greiner, & Fisher, 1998). Additionally, unlike manufacturing jobs, which can be outsourced to workers in other countries, public transit jobs will remain within U.S. locales; transit workers will continue

to be a key public sector, blue-collar workforce. Identifying the factors that are associated with elevated smoking prevalence among these workers, as well as the barriers they face in order to participate in HMO smoking cessation programs, are necessary to address effectively the smoking-related health disparities among this occupational group.

A key theme that emerged during the focus group discussions was the perception among transit workers that smoking is a way to obtain immediate relief from job stress and other stressors. In this regard, it is instructive to compare the smoking-work stress connection with other blue-collar occupational groups that have elevated smoking prevalence. For example, in a sample of building trades union apprentices (N=1,877), 42.7% were current smokers (Chin, Hong, Gillen, Bates, & Okechukwu, 2012). Similarly, among a sample of motor freight workers (N=542), 40% were tobacco users (Sorensen, Quintiliani, Pereira, Yang, & Stoddard, 2009). Greater exposure to certain occupational hazards (dust, chemicals) was associated with greater likelihood of smoking; interestingly, concern about exposure to occupational hazards was inversely associated with current smoking (Chin et al., 2012). Tobacco users who were less concerned about occupational exposures and those not working the day shift were less likely to participate in a health promotion intervention that included smoking cessation (Sorensen et al., 2009). These findings suggest that work stress and occupational exposures to which transit workers and other blue-collar occupational groups are subject to should be addressed in order to aid cessation efforts among these workers.

The results showed that transit workers identified numerous factors that serve as barriers to their participation in HMO-based smoking cessation programs. Some

perceived barriers, such as concerns about use of pharmacotherapy and its attendant side effects, may be more prevalent in ethnic minority communities (Fu et al., 2007; Yerger, Wertz, McGruder, Froelicher, & Malone, 2008). Likewise, in an analysis of 1606 male smokers sampled from 18 Veterans Affairs (VA) medical centers, African Americans were significantly less likely to have used NRT during a serious past-year quit attempt than whites (Fu et al., 2005). Given that African Americans comprise a significant proportion of the workforce at many public transit agencies (U.S. Census, 2010), concerns about pharmacotherapy need to be addressed since use of such therapies are associated with greater likelihood of successful cessation (Hughes, Stead, Hartmann-Boyce, Cahill, & Lancaster, 2014; Stead et al., 2012).

Fatigue caused by work stress, coupled with the split-shift schedules of many transit operators, suggest that a one-size-fits all approach to cessation that requires the smoker to attend an after-work program at the HMO facility may not be adequate to address the barriers to treatment participation faced by these workers. For example, given that many transit operators remain onsite at the Gillie room to congregate and socialize with other workers, it may be effective to bring cessation classes and opportunities for treatment to the bus garages. Providing onsite cessation treatment for hard-to-reach workers who smoke has been suggested for other occupational groups, such as construction laborers (Sherriff & Coleman, 2013). Focus group participants repeatedly expressed a desire for tobacco cessation services that would accommodate their occupationally-specific circumstances.

A key limitation of this study is that the sample was obtained from one public transit agency. The findings may therefore not be generalizable to workers at other

transit agencies around the U.S. Further research is needed at other urban transit agencies to replicate the findings. An additional limitation concerns the non-random recruitment of focus group participants. Because the gender ratio and racial/ethnic composition of smokers and former smokers at the transit agency is unknown, it is not possible to ascertain whether or not these groups were proportionately represented by workers who volunteered to participate in the focus groups. It should be noted, however, that characteristics of the participants (83% African American; 45% female) mirror the composition of the agency's workers. For example, approximately 75% of the agency's bus operators are African American, and near half are female (AC Transit Human Resources Department, 2010). This provides some reassurance that the sample reflects the demographic characteristics of the transit employees. In terms of strengths, this study is among the first to qualitatively explore the lived experiences of transit workers as to work stress, smoking, and perceived barriers to participation in HMO-based smoking cessation treatment. This information can be used to tailor interventions aimed at productive tobacco cessation efforts with these workers and reduce tobacco-related health disparities. Several steps are needed to help accomplish this goal. First, we will share the focus group findings, and the results of the project's tobacco survey conducted among all of the agency's transit union members, with the Union-Management Advisory Group. Second, we will continue to strategize with the Advisory Group on ways in which the transit agency and the union can work together towards the shared goals of reducing smoking and increasing participation in smoking cessation programs and activities (Barbeau et al., 2007). Third, we will share project findings with the HMO to raise awareness about perceived obstacles that prevent

workers from effectively utilizing their smoking cessation options. Fourth, we will publicize project results among the workers through video presentations that can be viewed at the worksite and through social media. Finally, in order to be successful, efforts to reduce smoking among transit workers must address numerous social-contextual factors, such as on-the-job conditions, that influence blue-collar tobacco use and serve as barriers to participation in cessation activities (Sorensen, Barbeau, Hunt, & Emmons, 2004).

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Table 1. Demographic characteristics of focus group participants

Demographics	N = 71 N (%)
Gender	
• Female	32 (45)
• Male	39 (55)
Age, years (SD)	49.9 (9.06)
Ethnicity	
• African American/Black	59 (83)
• Asian / Pacific Islander	3 (4)
• Hispanic/Latino(a)	5 (7)
• White	4 (6)
Job classification	
• Bus operator	59 (83)
• Mechanic / Maintenance	6 (9)
• Clerk / Dispatcher/ Other	6 (9)

Table 2. Cigarette smoking behaviors of focus group participants*

Smoking Behaviors	Smoking Status	
	Current 47 (67%)	Former 23 (33%)
Packs per day smoked	N (%)	N (%)
<1	34 (72)	11 (48)
1	10 (21)	9 (39)
≥1.5	3 (6)	3 (13)
Smoking duration, Years (SD)	22.9 (12.30)	18.7 (9.56)
Number of quit attempts (SD)	4.7 (7.85)	3.6 (3.9)

*Smoking behaviors are missing for one focus group participant.