

## Socioeconomic Disparities in Community-Based Treatment of Tobacco Dependence

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### Study Overview

**Objective.** To examine socioeconomic disparities in community-based tobacco dependence treatment programs.

**Design.** An intervention study of cognitive behavioral treatment and nicotine patches for individuals seeking care at community-based treatment centers.

**Setting and participants.** Participants ( $n = 2739$ ) were English-speaking adults who attended treatment for tobacco dependence in 1 of 14 community health centers in Arkansas (10 healthy education centers, 2 regional medical centers, 1 women's health clinic, and 1 medical center). The behavioral treatment program consisted of 6 weekly, 60-minute cognitive behavioral therapy group sessions that provided information on tobacco use and dependence (eg, physiologic tolerance, triggers, cues, using nicotine to cope with stress). Individuals were permitted to set flexible quit dates and were taught how to reduce consumption, strategies to refuse cigarettes and prevent relapse, problem-solving skills, and stress management. Participants who were

unable to attend the group therapy sessions were offered individual sessions. Combined with therapy, participants received a prescription for nicotine patches in 2-week increments and were encouraged to use the patches for 12 weeks.

**Main outcome measures.** The main outcome measure was smoking status at the end of treatment and at 3 and 6 months after treatment. Participants were asked about the number of cigarettes they had smoked during the day and whether they had smoked any in the past 7 days. The responses to these questions were used to calculate the 7-day point prevalence of tobacco use for each time period. To determine if socioeconomic disparities existed in smoking cessation outcomes, the authors developed a discrete socioeconomic status (SES) analog rating scale (range, 2–10) based on self-reported income and education status. A higher score was indicative of higher income and educational attainment. The authors categorized this measure into 3 levels: SES1 (2–4, lowest SES group), SES2 (5–7, intermediate SES group), and SES3 (8–10, highest SES group). Nicotine dependence was assessed using

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the Fagerstrom test for Nicotine Dependence and perceived stress was assessed using a 4-item questionnaire; higher scores in both these measures were indicative of higher dependence or stress levels, respectively. The authors also assessed motivation and self-efficacy in quitting, concern about weight gain, and adoption of home smoking restrictions. There were several treatment use outcomes: number of treatment contacts, amount of treatment content (sessions 1–6), number of patches dispensed, completion of behavioral treatment, and whether individuals participated in individual or group sessions. The authors accommodated attrition using 2 methods: intention-to-treat analysis, classifying all those lost to follow-up as current smokers; and complete-case analysis, excluding all those lost to follow-up from the analysis. They used logistic regression to identify factors associated with abstinence rates.

**Main results.** Most participants belonged to the low-income group, 82.2% were white, and 42.7% had private insurance. Participants smoked on average over a pack of cigarettes per day for approximately 30 years. Although participants expressed high motivation and confidence levels to quit smoking, less than 10% had made a previous quit attempt in the past 30 days and 10% had never attempted to quit. Almost two-thirds of the participants reported no home smoking restrictions, and the majority of participants who worked reported having some smoking restrictions (inside only or inside and outside) at their workplaces. Most participants were referred by their health care providers (46.6%), followed by word-of-mouth (25.5%), workplaces (9.7%), website or print brochures (9.1%), and television or radio (8.9%).

Less than half of the participants (40.8%) completed treatment, with a mean of 4.4 treatment contacts. Across all participants, 47.7% were treated entirely in groups, 37.7% attended only individual sessions, and 14.6% attended both. Of the participants, 39.5% received a prescription for nicotine patches. Participants who were lost to follow-up were generally younger, of lower SES, more likely to be unemployed, less likely to have made a previous quit attempt or sought professional help with the quit attempt, and had higher stress levels. The end of treatment abstinence rate was 37.7% for the entire sample. The intention-to-treat abstinence rates were 19.0% at 3 months and 16.9%

at 6 months post-treatment, with the complete-case analysis rates being slightly higher (28.2% at 3 months and 27.3% at 6 months).

Individuals who belonged to the SES1 group (lowest SES), compared with SES2 and SES3 groups, were more likely to be of minority status, be disabled, and have public health insurance. SES1 individuals were more likely to have a partner who smoked, report a psychiatric diagnosis, and smoke more cigarettes per day compared to SES2 and SES3 individuals. SES1 individuals received the least amount of treatment content but were the most likely to have received patches compared to the other SES groups. The SES1 individuals were most likely to attend individual therapy sessions than the other SES groups. The treatment completion rate was 35.7% for SES1, 41.7% for SES2, and 47.1% for SES3 groups. SES1 individuals were least likely to be abstinent at the end of treatment and at 3 and 6 months after treatment.

In logistic regression analysis, SES was not associated with end of treatment abstinence rates; however, it was associated with abstinence at 3 and 6 months after treatment. A unit increase in the SES scale was associated with adjusted odds of 1.06 (95% CI, 1.00–1.11) and 1.12 (95% CI, 1.06–1.18) of being abstinent at 3 and 6 months after treatment, respectively. Receipt of more treatment contact (adjusted odds ratio [AOR], 1.32; 95% CI, 1.32–1.41), having indoor and outdoor home smoking restrictions (AOR, 2.05; 95% CI 1.14–3.67), being referred by a health care provider (AOR, 2.17; 95% CI, 1.36–3.44), and having a higher self-efficacy score for quitting (AOR, 1.07; 95% CI, 1.02–1.13) were associated with abstinence at 6 months after treatment.

**Conclusion.** There were significant socioeconomic disparities in cessation after participating in a community-based tobacco dependence treatment program. Potential avenues for improving rates of tobacco cessation for lower SES groups include increasing access to treatment content and addressing social and environmental barriers (eg, home smoking restrictions, higher stress levels, having a partner who smokes) that might limit ability to participate in treatment programs and engage in sustained cessation.

### Commentary

While tobacco use has declined over the past 3 de-

ades, prevalence remains high among individuals living below the federal poverty level (28.9%) [1]. That socioeconomic differences exist in tobacco use is well established; however, the role of these disparities in receipt of tobacco dependence treatment and cessation outcomes is less well known. The current study set out to establish socioeconomic disparities in receipt of community-based tobacco dependence treatment and assessed the role of several social and environmental factors more prevalent in lower SES groups on cessation outcomes. The study found that lower SES individuals were heavier smokers, had higher stress levels, and were less likely to adopt home smoking restrictions. They were less likely to complete all treatment sessions, receive all the tobacco cessation content, and be abstinent at the end of treatment and at 3 and 6 months after treatment.

This study has important implications for community-based tobacco dependence programs. Because lower SES adults are more likely to seek the services of community-based health and education centers, these settings offer several advantages for engaging a population of potentially heavy smokers in smoking cessation. By conducting smoking cessation within these centers, there lies an opportunity to integrate smoking cessation treatment with receipt of medical and social services and involve health care and social services providers in smoking cessation treatment. That lower SES smokers were more likely to have higher stress levels suggests a need for strategies that address stress management and coping skills during the course of treatment and after cessation to prevent relapses. Smoke-free living environments are effective in reducing cigarette consumption and encouraging cessation [2,3], and health care and social services providers should encourage all adults, particularly those who are of lower SES, to adopt home smoking restrictions.

Lower SES adults attended fewer therapy sessions and preferred individual to group sessions. These results challenge the structure of existing tobacco cessation programs that are conducted mostly in groups and for finite time periods. Because of competing priorities, many lower SES individuals may find it hard to attend 6 consecutive sessions, thus limiting the efficacy of such programs. There is a need for cessation programs that are longer, incorporate individually tailored counseling, offer more pharmacologic support to prevent withdrawal symptoms, and offer post-

cessation follow-up to prevent relapses. Results from recent studies that offer evidence for practice quit attempts using nicotine replacement therapy in priming individuals to make a subsequent, sustained quit attempt [4], and a chronic disease management model for tobacco dependence [5], hold promise, particularly for lower SES individuals who may be heavy smokers. The growing gap in disparities in cessation outcomes between lower and higher SES groups calls for assessing the efficacy of such interventions that go beyond the traditional model.

There are several limitations to the study. The authors mention the significant proportion of participants lost to follow-up at 6 months' post-treatment, with the unbiased, intention-to-treat estimates of abstinence being only 19.0% at 3 months and 16.9% at 6 months. Identifying the role of competing priorities in staying engaged in treatment will be important for future tobacco dependence interventions tailored towards lower SES groups. Although racial/ethnic minorities and persons with Medicare and Medicaid were concentrated in the lower SES group, the majority of the sample was white and almost half the sample was privately insured. Therefore, the results of this study may be less generalizable to other community-based racially/ethnically diverse samples representative of the urban poor. Because data on receipt of treatment and cessation outcomes are less well known for lower SES individuals who belong to racial/ethnic minorities, future community-based tobacco dependence treatment programs should attempt to enroll more of these individuals.

### **Applications for Clinical Practice**

Community-based tobacco dependence treatment programs are ideal settings for offering tobacco cessation treatment for lower SES individuals, and offer opportunities for integrating tobacco cessation with receipt of medical and other social services. Health and social services providers should encourage all adults to adopt home smoking restrictions. Tobacco dependence programs should be structured to account for the unique social vulnerabilities of lower SES smokers, particularly those with competing priorities that might prevent engagement in or completing treatment. Treatment programs should be longer and accommodate practice quit attempts for those who are unmotivated to quit smoking, offer more pharmacologic support to prevent

withdrawal for highly nicotine-dependent smokers, and follow individuals after cessation to prevent relapse.

—*Review by Maya Vijayaraghavan, MD*

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