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RESEARCH ARTICLE

The Equity Impact of Proactive Outreach to Smokers: Analysis of a Randomized Trial

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Introduction: Population-based smoking-cessation services tend to preferentially benefit high-SES smokers, potentially exacerbating disparities. Interventions that include proactive outreach, telephone counseling, and free or low-cost cessation medications may be more likely to help low-SES smokers quit. This analysis evaluated the role of SES in smokers' response to a population-based proactive smoking-cessation intervention.

Methods: This study, conducted in 2016 and 2017, was a secondary analysis of the Veterans Victory Over Tobacco Study, a multicenter pragmatic RCT of a proactive smoking-cessation intervention conducted from 2009 to 2011. Logistic regression modeling was used to test the effect of income or education level on 6-month prolonged abstinence at 1-year follow-up.

Results: Of the 5,123 eligible, randomized participants, 2,565 (50%) reported their education level and 2,430 (47%) reported their income level. The interactions between education (p=0.07) or income (p=0.74) X treatment arm were not statistically significant at the 0.05 level. The largest effect sizes for the intervention were found among smokers in the lowest education category (≤11th grade), with a quit rate of 17.3% as compared with 5.7% in usual care (OR=3.5, 95% CI=1.4, 8.6) and in the lowest income range (<$10,000), with a quit rate of 18.7% as compared with 9.4% in usual care (OR=2.2, 95% CI=1.2, 4.0).

Conclusions: In a large, multicenter smoking-cessation trial, proactive outreach was associated with higher rates of prolonged abstinence among smokers at all SES levels. Proactive outreach interventions that integrate telephone-based care and facilitated cessation medication access have the potential to reduce socioeconomic disparities in quitting.

Trial registration: This study is registered at www.clinicaltrials.gov NCT00608426.
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INTRODUCTION

Low SES is a fundamental contributor to disease and premature death. As the prevalence of cigarette smoking declines in developed nations, SES-related smoking disparities expand.[1,2] Low SES is associated with a higher prevalence of smoking,[3−5] heavier use of cigarettes,[6,7] and higher morbidity and mortality from smoking-related illness.[8] Smoking cigarettes accounts for up to half the mortality difference between low- and high-SES men and women.[9,10]

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Tobacco control efforts can inadvertently widen the socioeconomic gap by preferentially benefiting high-SES smokers. Phelan and Link's Theory of Fundamental Causes explains that socioeconomic disparities in preventable diseases develop as a consequence of unequal access to knowledge or tools related to disease prevention.[11,12] Traditional smoking-cessation services, including counseling and cessation medications, have historically been more accessible to high-SES smokers.[7,13,14] Population-level interventions, such as mass-media campaigns or indoor-smoking bans, also often impact high-SES smokers preferentially.[15–17] Only cigarette taxes have been shown to have a greater impact on tobacco use by low-SES smokers,[18] though they achieve this by placing a heavier burden on the poor.[19]

An equity approach to tobacco control mandates that interventions aimed at shrinking the overall prevalence of smoking must simultaneously reduce smoking-related socioeconomic disparities.[5] Yet for multiple reasons, promising interventions often have little impact on low-SES smokers. Though most studies find that low-SES smokers have similar interest in quitting and make the same number of quit attempts as high-SES smokers, they are far less likely to succeed.[3,7,20,21] Individual-level barriers include heaviness of smoking, nicotine dependence, personal agency, and confidence to quit.[21,22] Social and community resources, such as household factors, social support, and neighborhood disadvantage, also impact quit success.[22–26] Low-SES smokers often begin smoking cessation treatment but are less likely to complete therapy.[27–29]

Certain features of tobacco control interventions may help low-SES smokers overcome obstacles. Phelan and Link[30] advocate interventions that obviate the connection between having resources and accessing/using health promoting knowledge or treatment. For example, treatments should be affordable, easy to use, and readily accessible, overcoming advantages related to individual resources such as money, knowledge, and connections. Free or low-cost cessation medications and telephone counseling both improve access to evidence-based smoking-cessation therapies.[5] Additionally, interventions should reach the entire population automatically, overcoming differential access to community-based resources. A proactive outreach approach to smoking cessation (as compared with the more common, reactive approach) involves contacting all smokers as a matter of course and offering help with quitting.

The Veterans Victory Over Tobacco Study (Victory) was a pragmatic RCT of proactive versus usual care, in which the intervention combined proactive outreach with an offer of telephone or in-person smoking cessation counseling, as well as facilitated access to free or low-cost cessation medications.[31] The primary outcome paper reported an overall 2.6% population-level increase in 6-month prolonged abstinence at 1-year follow-up for smokers randomized to proactive care as compared with usual care.[32] These population-level findings were similar to prior studies involving active recruitment of smokers to proactive telephone counseling interventions.[33] However, it was unknown whether this intervention improved or widened SES-related smoking disparities.

The current paper is a secondary analysis of the Victory Study with an equity focus. The primary question is whether the proactive care intervention had a differential effect on 6-month prolonged abstinence at 1-year follow-up for smokers at different SES levels. Secondary outcomes of interest include uptake of smoking-cessation treatments and quit attempts. The hypothesis being tested is that the proactive care intervention will help smokers at all SES levels, resulting in prolonged abstinence rates that do not vary by SES level.

METHODS

Study Sample

The Victory Study was a pragmatic RCT that received approval from all participating sites' IRBs. Pragmatic trials use minimal inclusion/exclusion criteria to compare clinically relevant treatments under real-world conditions.[34] Current smokers (aged 18–80 years) were identified using the U.S. Department of Veterans Affairs (VA) electronic medical record. Participants were recruited from October 2009 to September 2010 from four VA medical centers (New York City, New York; Jackson, Wyoming; Tampa, Florida; and Minneapolis, Minnesota) and follow-up was completed in November 2011. More details have been previously described.[31,32] The current analysis was completed in 2017.

The proactive care intervention combined an active recruitment strategy, proactive outreach (mailed materials followed by telephone outreach), with an offer of telephone smoking-cessation counseling or referral to in-person counseling. Telephone care included proactive counselor-initiated calls from counselors at the Minneapolis VA who were trained in motivational interviewing. Counselors also facilitated access to smoking-cessation pharmacotherapy through the participant's VA provider. The usual-care group did not receive proactive outreach but did have access to smoking-cessation services through their local VA and state telephone quitline.

VA administrative and healthcare utilization data were obtained from VA National Patient Care Databases. Survey data were collected at baseline and 1-year follow-up.

Measures

SES was measured at baseline using self-reported education and income separately. Education levels included ≤11th grade, high school graduate or equivalent, some college, and college graduate or more. Income levels were defined by annual income <$10,000, $10,000–$20,000, $20,001–$40,000, $40,001–$60,000, and >$60,000. The primary outcome was self-reported 6-month prolonged abstinence at 1-year follow-up, and was assessed among all

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