

A Cross-sectional Study Exploring Sex Differences in the Relationship Between Sex Partner Attitudes and Current Quit Attempt Among a Sample of Smokers in Baltimore, MD, USA.

Davey-Rothwell Melissa A. (✉ mdavey1@jhu.edu)

Johns Hopkins University Bloomberg School of Public Health <https://orcid.org/0000-0002-8483-9297>

Norah Crossnohere

Johns Hopkins University Bloomberg School of Public Health

Paige Hammond

Johns Hopkins University Bloomberg School of Public Health

Tuo-Yen Tseng

Johns Hopkins University Bloomberg School of Public Health

Marlesha Whittington

Johns Hopkins University Bloomberg School of Public Health

Karin Tobin

Johns Hopkins University School of Medicine

Carl Latkin

Johns Hopkins University Bloomberg School of Public Health

Amy Knowlton

Johns Hopkins University Bloomberg School of Public Health

Research article

Keywords: smoking cessation, sex, Tobacco , Drug

Posted Date: August 18th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-55317/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: Limited research has explored sex differences in the relationship between partner behavior and attitudes and smoking cessation.

Methods: The study examined sex partner attitudes about smoking among men and women who are currently trying to quit smoking cigarettes. Data were collected as part of the Tobacco Use in Drug Environment (TIDE) study, a cross-sectional study conducted in Baltimore, MD, USA from September 2013-May 2015. Interviews were administered with current smokers. The sample size for the current analysis was 134 men and 86 women.

Results: Approximately thirty-three percent of male participants (n=45) reported currently trying to quit smoking cigarettes. Twenty-nine percent of women were currently trying to quit. Having a sex partner who did not mind the participant's smoking was associated with decreased odds of trying to quit among men (AOR=0.35, p=0.03, 95% CI: 0.13, 0.91). Having a sex partner who expressed concern about the participant's smoking (AOR=12.9, p<0.01, 95% CI: 3.49, 47.0) and having a sex partner who encouraged the participant to quit smoking was significantly associated current quit attempt.

Conclusions: The relationship between partner support for cessation and current quit attempt was stronger for women than men in this population. Understanding sex-partner attitudes regarding smoking and their relationship to smoking cessation activities may provide insights for future tailored cessation interventions.

Introduction

While tobacco smoking prevalence has declined in the US over the past fifty years,(1, 2) certain populations, including low-income and African American smokers, continue to face high morbidity and mortality rates from smoking-related diseases and significant barriers to smoking cessation. Individuals of lower socioeconomic status are just as likely to make a quit attempt as smokers from other socioeconomic groups but are less likely to succeed.(1) African American smokers are less likely to successfully quit smoking than white or Latino smokers despite making more attempts at cessation.(2, 3) African American communities are also disproportionately targeted by tobacco companies in advertising campaigns,(4, 5) which may inhibit cessation efforts. In addition, normative high levels of smoking in some low-income communities may further compromise cessation efforts(6). Consequently, low-income African Americans experience multiple socio-environmental factors promoting smoking and impeding their smoking cessation despite having similar (or greater) intention to quit than other groups (7, 8).

Partner behavior and attitudes have been shown to influence smoking behaviors and cessation (8, 9). Specifically, partners' supportive behaviors have been found to be associated with cessation, while negative behaviors, such as nagging the smoker and complaining about smoking, are predictive of relapse (10, 11). Interventions that enhance partner support can enhance cessation efforts (10, 12–15).

Limited research has explored sex differences in the relationship between partner behavior and attitudes and current quit attempt.

The literature on exploring sex differences in the partner support-cessation link is sparse. Through a review of studies examining sex differences in cessation, Smith and colleagues posit that women have greater difficulty in achieving long-term smoking cessation. Carlson et al. found that smoking cessation increases with social support. However, this association decreases over time for women.(16)

Understanding sex-partner attitudes regarding smoking and their relationship to smoking cessation activities may provide insights for future tailored cessation interventions. The current study examined the sex-specific influence of partners' attitudes, pertaining to a current quit attempt among a predominantly African American sample of smokers.

Methods

Study Procedures

Data were collected as part of the Tobacco Use in Drug Environment (TIDE) study, a cross-sectional study conducted in Baltimore, MD from September 2013-May 2015. Recruitment occurred via street outreach, posted advertisements, and word of mouth. Interested individuals participated in a brief screening assessment, either face-to-face or by phone. Eligibility requirements included 1) aged 18 or older and 2) self-reported smoked cigarettes in the past week and commutatively over 100 cigarettes in the lifetime. Interviews took place at a community-based research center. After verbal consent, surveys were administered by trained interviewers using Computer-Assisted Personal Interviewing. Participants received \$35.00. The TIDE study was approved by the Johns Hopkins Institutional Bloomberg School of Public Health Review Board.

Measures

Current quit attempt

Participants were asked if they were currently trying to quit smoking. Participants were informed that quitting cigarettes meant not smoking for at least 24 hours straight. Responses options were "yes" or "no."

Sex partner variables

Data on sex partner characteristics was collected through a social network inventory. Participants were asked to provide the first names of people in their social network who played various role and their relationships to these members. Participants were then asked which social network members had, in the past six months, 1) smoked cigarettes; 2) encouraged the participant to quit smoking, 3) were concerned

about the participant's smoking, and 4) did not mind the participant smoking. The responses were dichotomized (i.e. yes and no) categorized by social relationships (i.e. sex partners and kin) who exhibited each behavior. The current study sample was limited to those participants who reported one sex partner. We limited the sample to participants with only one current sex partner because it would not have been feasible to disentangle attitudes of multiple sex partners, especially if attitudes were discrepant. All network members' attitudes and support variables were dichotomous (e.g. sex partner encouraged participant to quit vs. sex partner did not encourage participant to quit).

Smoking Burden

A Heaviness of Smoking Index (HSI) variable to measure nicotine dependence was generated based on responses to 1) how soon the participant smokes their first cigarette after waking and 2) how many cigarettes the participant smokes daily (17–19). Responses to these questions were categorized from 0–3. Responses to the two questions were then summed to obtain a score ranging from 0–6 reflecting mild-severe nicotine dependence.

Demographic variables

Demographic variables included in the analyses were sex (male v. female), employment status (unemployed v. employed), cocaine use (reported use in past six months v. no reported use in the past six months), frequency of alcohol consumption (consumes alcohol more than twice a week v. less than twice a week).

Data Analysis

We conducted bivariate analyses of social network variables and smoking using Chi-squares to examine potential unadjusted relationships. These analyses were performed for both the entire sample and then stratified by sex (male v. female). Participants who completed the social network survey and reported only one sex partner in the last six months were included in analyses. Those missing data on nicotine dependence were excluded.

Demographic characteristics were examined through chi-square and t-tests to identify potential confounding variables. Measures that were at least marginally significant ($p = 0.10$) were retained in the multivariate analyses. Multivariate logistic regression models were then employed to examine the associations of sex partner's attitudes toward respondent's smoking with the outcome of currently trying to quit, controlling for respondent's demographic characteristics and sex partner's smoking status.

- Model 1 examined the association of having a sex partner who did not mind the participant's smoking with the likelihood of a current quit attempt, adjusting for demographic variables and the smoking status of the sex partner.

- Model 2 examined the association of having a sex partner who is concerned about the participant's smoking with the likelihood of a current quit attempt, adjusting for demographic variables and the smoking status of the sex partner.
- Model 3 examined the association of a sex partner who encourages the participant to quit with the likelihood of a current quit attempt, adjusting for demographic variables and the smoking status of the sex partner.

Results

There were 418 of participants who completed the social network survey, among which 236 individuals reported one sex partner in the past six months. The 140 individuals reporting no sex partners and 42 reporting multiple sex partners were excluded from the analysis. Individuals missing data on the HSI were also removed ($n = 18$). The total size of the final sample was 220 (134 men and 86 women). Variables that were significant in bivariate analyses and adjusted for in current modeling included: HSI, unemployment, alcohol consumption, and cocaine use.

As shown in Table 1, 33.6% ($n = 45$) of men were trying to quit smoking. Men who were unemployed were more likely to report that they were not trying to quit smoking (91% versus 60%, $p < 0.01$). Alcohol use was associated with a marginal decreased likelihood of current quit attempt (25% versus 40%, $p < 0.10$). Men who were currently trying to quit smoking had a lower HSI score (2.44 vs 2.98). Regarding sex partner characteristics, men who were trying to quit smoking were marginally more likely to report that their sex partner encouraged them to quit smoking and minded that they smoked ($p < 0.10$)

Twenty-nine percent ($n = 25$) of women reported that they were trying to quit smoking. There was a marginal association between being Black/African American and current quit attempt. Women who used cocaine were more likely to report a current quit attempt (32.0% versus 11.5%, $p < 0.05$). Women were more likely to report a current quit attempt if they had a partner smoked ($p < 0.10$), were concerned about their smoking ($p < 0.01$), or if their partner encouraged them to quit smoking ($p < 0.01$).

Multivariate Analyses

Controlling for socio-demographic variables and sex partner smoking status, having a sex partner who did not mind the participant's smoking was associated with decreased odds of currently trying to quit among men (AOR = 0.35, $p = 0.03$, 95% CI: 0.13, 0.91). Having a sex partner who expressed concern about the participant's smoking was significantly associated with currently trying to quit among female smokers (AOR = 12.9, $p < 0.01$, 95% CI: 3.49, 47.0) but not among men. Finally, having a sex partner who encouraged the participant to quit smoking was significantly associated with odds of currently trying to quit smoking among women (AOR = 10.8, $p < 0.01$, 95% CI: 3.10, 37.6).

Discussion And Conclusions

This study provides evidence that sex partner attitudes regarding smoking were related to the likelihood of currently trying to quit among a sample of low income, mostly African American, smokers. Although the sample size was smaller for women, the relationship between partner support for cessation and current quit attempt was stronger for women than men in this population.

Sex partner attitudes were found to have differential effects on participants' current quit attempt. Among men, sex partners' permissive attitudes towards smoking (i.e. sex partner does not mind participant's smoking) were associated with reduced likelihood of current quit attempt. Furthermore, women whose partner was concerned with their smoking or encouraged them to quit were more likely to report a current quit attempt. Accordingly, interventions that focus on fostering partner support might be especially effective among women in this population.

In this sample, two-thirds of participants reported that their sex partner was also a smoker. Study findings are consistent with previous research that has shown smokers are more likely to have smoking partners as compared to non-smokers.(20) In populations where smoking is more normative, smokers are likely to have sexual partners who are also smokers. Prior research has indicated that partners who are former smokers or are currently quitting may be particularly facilitative of cessation, although these results are not consistent across studies.(12) Thus, dyadic interventions that focus on creating a mutually supportive cessation effort may be a productive means of intervention for both smokers.

Future research is needed to determine how to effectively foster partner support for smoking cessation since the limited existing research indicates a potential lack of efficacy in existing interventions.

Bolstering interventions will be particularly important in populations who live in communities where tobacco use is normative, and hence, partners are likely to be smokers. While the results of this study indicate that partner support is linked to a quit attempt, efforts to increase partner support may be more difficult in the context of communities with normative tobacco use and targeted advertising.

How partner support is expressed may also be important. In this study, supportive behaviors and attitudes (e.g. concern, encouragement) by sex partners were linked to making a quit attempt. Research has documented coercive behaviors of male partners towards their female smoking partner, particularly in the context of pregnancy.(21) Moreover, as noted in prior research, positive, supportive behaviors by partners appear to enhance cessation efforts while negative behaviors (e.g. policing, nagging, etc.) may compromise them (10). While sex partners' supportive behaviors and attitudes may contribute to a quit attempt, it is also possible that individuals who are seeking to quit smoking may select social ties (including partners) who are supportive of cessation and have a longer history together.

This study was limited by the large proportion of respondents who reported no sex partners in the past six months (n=140). Consequently, confidence intervals were large, particularly for the female subsample (n=86). We also did not assess whether the partner was trying to quit smoking. In addition, this study relied on a cross-sectional survey, so temporality and causality cannot be determined. Due to the use of self-report measures, social desirability bias may have been at play in reporting of current quit attempts, number of sex partners, and other measures. A final limitation to note is that the outcome utilized in this

study was a participant reporting a current quit attempt. Thus, the results cannot speak to the influence of partner support on long-term tobacco cessation.

Despite these limitations, this study examined the influence of partner support on smoking cessation in an understudied population of low-income African American smokers. The findings indicate a significant relationship between sex partner support and making a quit attempt among women. Given the high prevalence of partners who are current smokers, dyadic interventions for partners should be explored.

Declarations

Ethics approval and consent to participate

This study was reviewed by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board in Baltimore (Application #4751).

Consent for Publication

Not applicable

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests" in this section.

Funding

This research was supported by the FDA and NIH grant support, Award No. 5R01DA032217-04S1 and research reported in this publication was supported by the NIDA/NIH and FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Author's Contribution

MDR developed the idea and wrote the first draft of the manuscript; NC and PH conducted the analyses, MW collected the data; CL and AK were study PIs and designed the study; and TT and KT reviewed the

References

1. Centers for Disease Control and Prevention (CDC). Trends in Current Cigarette Smoking Among High School Students and Adults, United States, 1965–2014. 2016; Available at: https://www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/index.htm. Accessed June 15, 2018.
2. Centers for Disease Control and Prevention (CDC). African Americans and Tobacco Use. 2017; Available at: <https://www.cdc.gov/tobacco/disparities/african-americans/index.htm>. Accessed June 15, 2018.
3. Centers for Disease Control and Prevention (CDC). Quitting smoking among adults—United States, 2001–2010. *MMWR Morb Mortal Wkly Rep* 2011 Nov 11;60(44):1513–1519.
4. Centers for Disease Control and Prevention (CDC). African Americans and Tobacco Use. 2017; Available at: <https://www.cdc.gov/tobacco/disparities/african-americans/index.htm>, June 15, 2018.
5. Centers for Disease Control and Prevention (CDC). Quitting smoking among adults—United States, 2001–2010. *MMWR Morb Mortal Wkly Rep* 2011 Nov 11;60(44):1513–1519.
6. Stillman FA, Bone L, Avila-Tang E, Smith K, Yancey N, Street C, et al. Barriers to smoking cessation in inner-city African American young adults. *Am J Public Health*. 2007 Aug;97(8):1405–8.
7. Hymowitz N, Cummings KM, Hyland A, Lynn WR, Pechacek TF, Hartwell TD. Predictors of smoking cessation in a cohort of adult smokers followed for five years. *Tob Control*. 1997;6(Suppl 2):57–62.
8. vanDellen MR, Boyd SM, Ranby KW, Beam LB. Successes and failures in resisting cigarettes affect partner support for smoking cessation. *Psychol Health* 2017 Feb;32(2):221–233.
9. Park EW, Tudiver F, Schultz JK, Campbell T. Does enhancing partner support and interaction improve smoking cessation? A meta-analysis. *Ann Fam Med* 2004 Mar-Apr;2(2):170–174.
10. Park EW, Tudiver FG, Campbell T. Enhancing partner support to improve smoking cessation. *Cochrane Database Syst Rev* 2012 Jul 11;(7):CD002928. doi(7):CD002928.
11. Roski J, Schmid LA, Lando HA. Long-term associations of helpful and harmful spousal behaviors with smoking cessation. *Addict Behav*. 1996;21(2):173–85.
12. Coppotelli HC, Orleans CT. Partner support and other determinants of smoking cessation maintenance among women. *J Consult Clin Psychol*. 1985;53(4):455.
13. Gulliver SB, Hughes JR, Solomon LJ, Dey AN. An investigation of self-efficacy, partner support and daily stresses as predictors of relapse to smoking in self-quitters. *Addiction*. 1995;90(6):767–72.
14. Hemsing N, Greaves L, O’Leary R, Chan K, Okoli C. Partner support for smoking cessation during pregnancy: a systematic review. *Nicotine Tobacco Res*. 2011;14(7):767–76.

15. Mermelstein R, Cohen S, Lichtenstein E, Baer JS, Kamarck T. Social support and smoking cessation and maintenance. *J Consult Clin Psychol*. 1986;54(4):447.
16. Carlson LE, Goodey E, Bennett MH, Taenzer P, Koopmans J. The addition of social support to a community-based large-group behavioral smoking cessation intervention: Improved cessation rates and gender differences. *Addictive Behaviors* 2002 July–August. 2002;27(4):547–59.
17. Fagerstrom KO. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addict Behav*. 1978;3(3–4):235–41.
18. Heatheron TF, Kozlowski LT, Frecker RC, Rickert W, Robinson J. Measuring the heaviness of smoking: using self-reported time to the first cigarette of the day and number of cigarettes smoked per day. *Br J Addict*. 1989 Jul;84(7):791–9.
19. Heatheron TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. *Br J Addict*. 1991 Sep;86(9):1119–27.
20. Di Castelnuovo A, Quacquarello G, Donati MB, De Gaetano G, Iacoviello L. Spousal concordance for major coronary risk factors: a systematic review and meta-analysis. *Am J Epidemiol*. 2008;169(1):1–8.
21. Flemming K, Graham H, Heirs M, Fox D, Sowden A. Smoking in pregnancy: a systematic review of qualitative research of women who commence pregnancy as smokers. *J Adv Nurs*. 2013;69(5):1023–36.

Tables

Due to technical limitations, table 1 and table 2 is only available as a download in the Supplemental Files section.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Table2.xlsx](#)
- [Table1.xlsx](#)