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Social and Environmental Factors Related to Smoking Cessation among Mothers: Findings from the Geographic Research on Welling (Grow) Study

Yessenia Castro, PhD,

Assistant Professor, University of Texas at Austin, School of Social Work, Austin, TX.

Katherine Heck, MPH,

Research Analyst, University of California, San Francisco, Department of Family and Community Medicine, San Francisco, CA.

Jean L. Forster, PhD, MPH,

Professor, Division of Epidemiology and Community Health, University of Minnesota School of Public Health, Minneapolis, MN.

Rachel Widome, PhD, MHS, and

Assistant Professor, Division of Epidemiology and Community Health, University of Minnesota School of Public Health, Minneapolis, MN.

Catherine Cubbin, PhD

Associate Professor, University of Texas at Austin, School of Social Work, Austin, TX.

Abstract

Objectives—The current study examined associations between race/ethnicity and psychosocial/environmental factors with current smoking status, and whether psychosocial/environmental factors accounted for racial differences in smoking status in a population-based sample of mothers in California.

Methods—Cross-sectional data from 542 women with a history of smoking were used. Analyses adjusted for age, partner status, and educational attainment.

Results—In models adjusted for sociodemographics, black women had significantly lower odds, and Latina immigrants had significantly higher odds of being a former smoker compared to white women. Persons smoking in the home, having a majority of friends who smoke, having perceptions of their neighborhood as being somewhat or very unsafe, and experiencing food insecurity were associated with decreased odds of being a former smoker. When these variables

Correspondence Dr Cubbin; ccubbin@austin.utexas.edu.

Human Subjects Approval Statement

The GROW study was approved by the Institutional Review Boards at the University of Texas at Austin, the University of California, San Francisco, and the California Department of Public Health; all participants gave informed consent prior to the start of study procedures.

Conflict of Interest Disclosure Statement

The authors have no conflicts of interest to disclose.

were entered into a single model, only being a Latina immigrant and having a majority of friends who smoke were significantly associated with smoking status.

Conclusions—Black women demonstrated a notable disparity compared with white women in smoking status, accounted for by psychosocial/environmental factors. Immigrant Latinas demonstrated notable success in ever quitting smoking. Social networks may be important barriers to smoking cessation among women.

Keywords

smoking cessation; women; disparities; race/ethnicity; maternal smoking

Although the smoking prevalence rate among women in the United States (US) is lower than that of men (15.3% vs 20.5%),¹ women often have less success during a quit attempt and demonstrate lower quit rates compared to men.^{2–8} Racial/ethnic disparities exist in smoking cessation⁹ but this disparity is rarely examined within each sex.¹⁰ Further, it is well accepted that racial/ethnic disparities are not inherent, but rather, are a function of inequities in social structure and context.¹¹ Experts have called for cessation interventions to take into account the unique needs of women who smoke^{12,13} and for research that identifies culturally-relevant or sex-relevant motivators and determinants of cessation.¹⁴ Thus, research is needed to identify factors that account for racial/ethnic disparities in smoking cessation within women.

Research has identified numerous psychosocial and environmental factors associated with smoking behavior,^{15–23} but little is known about the role of race/ethnicity in the process of smoking cessation among women. In addition, little is known about whether these psychosocial and environmental factors are uniquely associated with ever having quit among women. Finally, extant research on psychosocial and environmental correlates of smoking behavior that has focused on women has largely utilized samples of women who are pregnant or in the peripartum period.^{24–32} Some research suggests that the process of smoking cessation, in particular, may be different in pregnant smokers versus non-pregnant smokers.³⁰ Therefore, the purpose of the current study was to characterize the patterns and correlates of smoking status in a diverse sample of women with a lifetime history of smoking. Such information is useful for identifying populations of women at particular risk for failed cessation and for identifying potential targets of treatment to inform intervention development. This study is unique in that no known published study demonstrates all 3 design characteristics of: (1) an exclusive focus on women in the examination of racial/ethnic disparities in smoking status and correlates of being a former smoker; (2) an examination of factors that account for racial/ethnic disparities among women, and; (3) a sample that is not limited to women in the peripartum period.

Environmental and Psychosocial Factors Associated with Smoking Behavior

Various environmental and psychosocial factors are determinants of smoking behaviors. Low neighborhood level socioeconomic status (SES) is associated with smoking even after adjusting for individual level SES.^{33–38} Neighborhood poverty¹⁶ and education and

employment³⁴ have been associated with smoking among black women. Neighborhood deprivation has been associated with cessation among white, black and Latino smokers engaged in a quit attempt,³⁹ as has neighborhood level unemployment and level of debt among black smokers participating in a cessation trial.⁴⁰ Neither cessation study further examined associations by sex.

Neighborhood crime and disorder and concerns about neighborhood safety also have been associated with smoking behavior.^{26,38,41,42} Burdette et al⁴¹ found that neighborhood safety was associated with smoking among women with young children. Tseng et al³⁸ found that living in a high crime area was associated with current smoking among female ever smokers. Patterson et al²⁶ found neighborhood violence was associated with smoking during pregnancy. These studies did not examine racial disparities. Research has demonstrated a consistent link between discrimination and smoking behavior,^{24,43–51} but only one published study found that experiencing a major discriminatory event was negatively associated with cessation among Mexican-American smokers engaged in a quit attempt.⁵² This study controlled for sex rather than examine its effects.

Smoking is more prevalent among individuals living below the poverty level compared with those living above the poverty level.^{1,53} Income has been associated with smoking among women⁵⁴ and among black women, specifically.²³ However, income has not shown a consistent association with smoking among Latinos or Asian Americans.^{45,55} Less is known about how income is associated with quitting. Income has been associated with cessation in the general population⁵⁶ but some research suggests it is not a predictor of cessation among Latinos attempting to quit.^{57–59} Also, it is unclear whether changes in income impact smoking behavior. Young-Hoon et al⁶⁰ examined the association between one's change in income over time and status as a former smoker. Increases in income were associated with greater odds of being a former smoker; decreases in income were associated with lower odds of being a former smoker only when the drop in income fell below the poverty level. However, Blakely et al⁶¹ found that income change was not associated with smoking status among adults over age 25. None of these studies examined associations among women separately or by race/ethnicity.

Being unemployed has shown a consistent association with being a smoker,^{62–65} although not among Mexican Americans.⁵⁵ However, differences by sex and race/ethnicity are rarely examined. The relationship between employment status and cessation is not clear. Studies have found that unemployment is related to lower odds of quitting among women,⁶⁶ higher odds of quitting among women,³ and no association between income and cessation.⁶⁷ Employment status has not been associated with quitting among Latinos.⁵⁸ Each of these studies controlled for but did not examine sex and/or race/ethnicity.

One's immediate social circle plays a role in smoking behavior. Having children has shown an inconsistent association with both smoking and cessation,^{59,64,65} but this may be accounted for by the moderating effects of age at motherhood, race/ethnicity, and partner status found in other studies.^{68–71} However, to our knowledge, no published research has examined whether number of children is associated with smoking or cessation among mothers. Having friends who smoke is associated with smoking^{21,72–74} and failure to quit

smoking.^{19,20,24–29} Oh et al²¹ found that having friends or family who smoke was significantly associated with ever smoking among European women, and Solomon et al²⁹ found it to be associated with postpartum relapse. People smoking in one's home is associated with smoking^{19,55} and home smoking bans have shown a consistent association with smoking less and greater odds of cessation.^{22,75–78} One study has examined the association of a household smoking ban with smoking among women and found greater odds of cessation.²² Social support has been associated with odds of cessation^{2,32,39,79,80} and odds of being a former smoker.⁸¹ However, among the few studies that focus on women, the results are mixed. Creswell et al⁵⁷ found that support was related to cessation among women with weight concerns seeking cessation counseling, as did Ward et al³² among pregnant women. However, Pollak and Mullen²⁷ did not find social support to be associated with relapse among women who quit smoking due to pregnancy. Turner et al⁸² found that, whereas the main effect of social support was not statistically significant, social support buffered the negative impact of depression on cessation among women seeking cessation counseling.

Related to individual and household stressors, food insecurity, or the inability to access adequate food due to limited resources, has been shown to be positively related to smoking behavior,^{83–87} including among women specifically.^{17,18} However, extant research has not examined its relationship with smoking status. Perceived stress is among the most consistent predictors of smoking^{15,28,31,88–93} and cessation.^{20,25,28,39,93–97} Among women in particular, perceived stress has predicted time to relapse,⁹⁶ smoking prevalence and failure to quit among peripartum women,^{25,28,31} and women not in the peripartum period.^{20,89} In contrast, few studies have failed to find an association between perceived stress and smoking behavior among women.²⁷

In summary, extant research has demonstrated links between psychosocial and environmental variables and smoking, but in most instances, little or no published research has examined their links with cessation, be it either current smoking status or success in a specific quit attempt. In addition, research with population-based, racially/ethnically diverse samples of women is lacking, but especially research on samples of women not in the peripartum period. Identifying populations of women who are at particular risk for failed cessation and illuminating potential targets of intervention is needed to inform the development of effective interventions. Factors at multiple levels (community, household, individual) are influential in women's lives and likely serve as barriers or enablers of transitioning from being a current to a former smoker. As such, the current study examined racial/ethnic disparities in smoking status in a population-based sample of women in California with young children, focusing on the known psychosocial and environmental determinants of smoking.

METHODS

Data

The Geographic Research on Wellbeing (GROW) study (2012–2013) is a follow-up survey of women who participated in California's Maternal and Infant Health Assessment (MIHA) survey during 2003–2007.⁹⁸ MIHA, sponsored by the California Department of Public

Health, is an annual statewide, representative survey of mothers delivering live infants in California during February-May, linked with birth certificate data. Women are eligible for MIHA if they are English-speaking or Spanish-speaking California residents, aged 15 years or older, with singleton, twin, or triplet births, and whose addresses are recorded in birth certificates. The sample is selected according to region, education, and race/ethnicity, oversampling black women. During 2003–2007, MIHA surveyed approximately 3500 women who were representative of the approximately 500,000 women who gave birth to a live infant in California that year. Self-administered surveys in English and Spanish are mailed to women starting about 8 weeks after they give birth. Telephone contact is attempted with non-responders. Questionnaires were completed by mail for 69% and by telephone for 31% of respondents; 71% of the surveys were completed in English and 29% in Spanish. Response rates exceeded 70% in each year of MIHA. Additional details about MIHA have been described previously^{99–102} and further information is available at <http://www.cdph.ca.gov/data/surveys/MIHA/Documents/MIHA%20Technical%20Document%20Web%202011.pdf>.

MIHA respondents from 6 largely urbanized counties with the highest number of respondents (Alameda, Los Angeles, Orange, Sacramento, San Diego, and Santa Clara) and who had agreed to be re-contacted for a future study (95% of all MIHA respondents) were eligible for GROW (N = 9256, or 51% of all MIHA respondents). In February 2012, letters were mailed to notify women that they would be receiving a survey in the mail and to ascertain undeliverable addresses before the actual mailing. Several weeks later, the questionnaire packets were mailed in the language (English or Spanish) in which women completed the MIHA survey, and a reminder postcard was mailed several weeks later. Address tracing and re-mailing were performed continuously. Additional contact information for non-respondents was obtained through an approved data linkage request with the Women, Infants, and Children (WIC) Supplemental Nutrition program. Telephone surveys for those who did not return paper surveys were attempted between May 2012 and May, 2013. In March, 2013, a postcard was mailed notifying women of a doubling of the gift card incentive (from \$10 to \$20) and an additional raffle to win an iPad, iPod touch, or a children's bicycle. Data collection for GROW occurred during 2012–2013 when the index children from MIHA were 5–10 years old.

The GROW survey was intended to be as similar as possible to MIHA in format, language, and survey administration. The questionnaire included approximately 80 questions regarding demographic, socioeconomic, neighborhood-related, psychosocial, and health-related characteristics, pertaining to themselves and their index child (their infant from the MIHA survey). The survey development process lasted 14 months, beginning with an outline of the measurement domains and a search of existing instruments. Multiple drafts of the instrument were reviewed by the project investigators to refine the survey. Six focus groups were then staggered over time to allow for refinement of the instrument and translation into Spanish. Finally, a convenience sample of 7 women with children was used to pilot test the final mail version for timing and logic and 6 women selected as a convenience sample were interviewed by phone via Computer-Assisted Telephone Interviewing (CATI) to pilot test the phone version. Home addresses were geocoded to the census tract level. Among the eligible respondents who were located (N = 4026), the response rate was 75% (N = 3016);

among all eligible respondents (N = 9256), it was 33%. Comparing the weighted GROW sample (N = 3016) to the weighted MIHA sample and the target population of all women in California who gave birth during the relevant time period, GROW is representative in terms of important sociodemographic characteristics. The analytic sample for the current study includes all women in GROW who reported that they ever smoked 100 cigarettes in their lifetime and self-reported their race/ethnicity as non-Hispanic Asian/Pacific Islander, non-Hispanic black, Latina, or non-Hispanic white (N = 542).

Measures

The dependent variable was current smoking status. A woman was defined as a former smoker if in the GROW survey she reported ever smoking 100 cigarettes in her lifetime, but not current cigarette smoking. Sociodemographic control variables included race/ethnicity (defined above), educational attainment (less than high school, high school or GED, some college, college graduate), age (in years), and partner status (single/separated/ divorced/ widowed, married/cohabiting).

There were several independent psychosocial and environmental variables. Number of children in the household was based on the total number of children or grandchildren at any age whom the mother had living with her. Employment status was based on how many hours per week the mother usually worked at one or more paid jobs during the past 2 weeks (did not work at a paid job, part-time [less than 40 hours], full time [at least 40 hours]). Based on our prior work,¹⁰³ neighborhood poverty was based on a latent class growth modeling analysis (LGCM)⁸⁵ of poverty rates for all census tracts in California, using data from the Neighborhood Change Database, 1970–2000 (published by Geolytics, Inc.), and the American Community Survey, 2005–2009. We estimated 3 distinct latent classes, referred to as long-term low poverty, long-term moderate poverty, and long-term high poverty, which are linked to GROW data via geocodes. Neighborhood safety was defined from responses to the question on how safe respondents felt their neighborhood was from crime (somewhat or very unsafe, somewhat safe, very safe). Income was measured by self-report of the previous calendar year's income from all sources combined with family size and categorized into percent of the federal poverty level ($\leq 200\%$, 201%–400%, $> 400\%$). Change in income was based on comparing the respondent's income at MIHA to her income in GROW (income as a percentage of the poverty level dropped between MIHA and GROW; income did not drop). Friends who smoke was based on the statement: "Most of my friends smoke cigarettes" (yes, no). Smoking in the home, modified from the National Health Interview Survey-Cancer Control Supplement (2005) was based on responses to how often people usually smoked anywhere inside the respondent's home during the previous year (never, sometimes/most days/daily). Worry about discrimination, modified from the MIHA 2011 survey, was defined in response to the question: "Overall during your life until now, how often have you worried that you might be treated or judged unfairly because of your race or ethnic group?" Response options included "very/somewhat often, not very often/never." We used a 6-item food insecurity scale developed by the National Center for Health Statistics and Abt Associates Inc. that includes questions referencing the last 12 months and querying mothers on issues such as: "The food I bought just didn't last, and I didn't have money to get more," "I couldn't afford to eat balanced meals," and "Did you

ever cut the size of your meals or skip meals because there wasn't enough money for food.”⁸⁶ Women who answered affirmatively to at least 2 of the items were considered food insecure (versus food secure). Perceived stress was defined in response to the question: “How often did you feel that you had more to do than you could comfortably handle” during the past year (very/somewhat often, not very often/ never).¹⁰⁴ Finally, social support measures, modified from MIHA 2011 and the National Health and Nutrition Examination Survey, were divided into 3 types (yes, no), based on the questions: “Do you have someone you turn to if you needed...someone to comfort or listen to you,” (emotional support), “... some extra help financially, like help paying for some bills, the rent or mortgage, or food that you needed” (financial support), or “...practical help, like getting a ride somewhere, help with shopping or cooking a meal, or help watching your children for a short time” (practical support).

Data Analysis

Data regarding smoking status were not comparable between the MIHA and GROW surveys; therefore, we could not examine change in smoking status prospectively. Thus, we examined cross-sectional associations of sociodemographic and environmental variables with smoking status among the 542 women in the GROW sample who reported ever smoking. Logistic regression models were constructed with smoking status as the dependent variable (odds of being a former smoker). First, we examined a sociodemographic model, adjusting for race/ethnicity, age, partner status, and educational attainment. Then, we added each psychosocial and environmental variable to that sociodemographic model to determine whether there was an independent effect of each. Finally, all significant psychosocial and environmental variables were added simultaneously to a final model. All analyses were weighted for non-response and accounted for the complex sample design. Because the data were not highly clustered by census tract (mean of 1.4 respondents per tract; 90% of tracts contained only one or 2 GROW respondents), multilevel modeling procedures were not warranted.

RESULTS

Participant Characteristics

The final sample consisted of all 542 women who reported in the GROW survey ever having smoked at least 100 cigarettes in their lifetime. As summarized in Table 1, 43% identified as non-Hispanic white, 7% as non-Hispanic black, and 15% as Asian/Pacific Islander. Half of the 35% of respondents who were Latina were born in the US, and half were born outside the US. Nearly half of participants were between the ages of 30 and 39, nearly 75% were married to or cohabitating with a partner, and over three-fifths of all women had at least some college education.

The majority of women had 2–4 children at home, and over half were employed in the previous 2 weeks. About one-third of participants lived in a neighborhood that had experienced long-term high or moderate poverty levels, and nearly 17% perceived their neighborhood to be somewhat or very unsafe. Nearly half of participants earned an income less than 200% of the federal poverty level, and over one-fifth experienced a drop in income

since their baseline MIHA survey. Almost 15% reported that most of their friends smoked cigarettes, but only 3% reported that people smoked inside their home. Fourteen percent reported worry about discrimination very or somewhat often; one-fifth of respondents reported food insecurity. Finally, although half of the participants perceived relatively high stress levels (more than they could comfortably handle very or somewhat often), they also reported high levels of social support, depending on the type of support (79%-95%).

Prevalence of Ever Quitting

The overall quit ratio (proportion of women that had ever smoked who were no longer smoking at the time of the survey) for the GROW sample was 73%. When examined by race/ethnicity (Table 1) the quit ratio was lowest for black women (41%) and highest for immigrant Latinas (82%). As expected, the quit ratio increased with age, and was higher among married/cohabitating versus previously/never married women. The quit ratio was highest for women with the highest level of educational attainment.

Quit ratios did not vary much by the number of children in the household (68%-73%) or employment status (67%-76%). Quit ratios were lowest for women living in neighborhoods that have experienced long-term high poverty (60%) and neighborhoods that are perceived as being unsafe (62%) compared with their counterparts. Quit ratios were also lowest for women with low incomes (62%) or whose income dropped since baseline (64%) compared with higher income women or those whose income did not drop. Quit ratios were very low for women reporting that most of their friends smoke cigarettes (37%) or women reporting that people smoke inside her home (25%). However, quit ratios were 70% for women not reporting discrimination (not very often/never), those who were food secure, those not experiencing stress very/somewhat often, and those with social support.

Sociodemographic Associations with Smoking Status

Compared with white women, black women had significantly lower odds of being a former smoker (odds ratio [OR] = 0.22, 95% confidence interval [CI]: 0.12–0.43) in unadjusted analyses (Table 2). No other racial/ethnic group differed significantly from white women in their odds of being a former smoker in unadjusted analyses. This disparity remained after adjusting for age, partner status, and educational attainment (adjusted odds ratio [AOR] = 0.47, 95% CI=0.23–0.98; Table 2). In addition, immigrant Latinas had significantly higher odds of being a former smoker compared to white women in adjusted analyses (AOR = 2.82, 95% CI: 1.17–6.82). Previously/never married women had lower odds of being a former smoker compared with married or cohabitating women (AOR = 0.44, 95% CI: 0.26–0.75), and women with lower educational attainment had lower odds of being a former smoker compared with college graduates.

Psychosocial and Environmental Associations with Smoking Status

Each variable was tested for its association with smoking status in a separate logistic regression, controlling for race/ethnicity, age, partner status, and educational attainment. These results are summarized in Table 3. Estimates for race/ ethnicity, age, partner status, and educational attainment were generally stable across models and similar to those presented in Table 2.

Perceptions of one's neighborhood as somewhat or very unsafe, having low income, having a majority of friends who smoke, having persons who smoke in the home, and experiencing food insecurity each was associated with decreased odds of being a former smoker. When these 5 variables were entered into a single model with covariates to examine their unique associations with smoking status, only having a majority of friends who smoke retained statistical significance (Table 4). In addition, the association between identifying as black and smoking status was no longer significant after adjusting for the 5 significant psychosocial and environmental variables; however, the association between self-identification as immigrant Latina and smoking status remained statistically significant.

DISCUSSION

Our study examined racial/ethnic differences in sociodemographic, psychosocial, and environmental variables relevant to smoking status in a diverse sample of women with a history of smoking. As such, it is among the first to characterize areas of disadvantage in a sample of women who have ever smoked, and adds to the limited extant research on correlates of cessation among women.

Black women had half the odds of being a former smoker compared with white women after adjusting for sociodemographics. However, this disparity was attenuated after additionally adjusting for important psychosocial and environmental variables. This is a notable finding, as the social and environmental factors identified here are amenable to change, thereby allowing for more opportunities for intervention. For example, environmental-level interventions which may promote smoking cessation include implementing a smoking ban in the home or in housing units, community-level programs to reduce crime, and food assistance programs. In addition, these interventions may have beneficial health effects beyond cessation. Increasing interpersonal skills for navigating and avoiding social environments where smoking is common also may be important. More generally, these results underscore the importance of social context as a determinant of racial/ethnic health disparities and the need to consider a more holistic approach to supporting smoking cessation among women that addresses both psychosocial and environmental determinants.

Immigrant Latinas had almost 3 times higher odds of being a former smoker compared with white women in analyses adjusted for sociodemographics. That this association was not found in unadjusted analyses suggests a strong suppression effect¹⁰⁵ of sociodemographic variables on the relationship between immigrant Latina status and smoking status. That is, immigrant status and sociodemographics, particularly educational attainment, share variance that contributes to the association between immigrant Latina status and smoking status. Thus, future research with immigrant Latinas should consider age, partner status, and educational attainment to gain a clear understanding of the process of smoking cessation among this population.

The association between being an immigrant Latina and smoking status was not attenuated after additionally adjusting for psychosocial and environmental variables. Thus, additional research is needed to identify factors that account for this association to identify additional potential treatment targets. It is not known to what extent, if at all, the immigrant status

variable used here is associated with acculturation, which is a cultural construct thought to consist of attitudes, values, and practices rooted in one's cultures.¹⁰⁶ However, immigrant status has consistently been associated with acculturation.^{106–108} Thus, future research may build upon current findings by examining the extent to which acculturation is associated with smoking status or cessation. In particular, studies using theoretically grounded multidimensional measures may help to clarify which specific aspects of acculturation are important to cessation. Alternatively, immigrant status may be associated with other, non-culturally specific determinants of cessation which were not assessed here (eg, family support, partner support). Thus, future research may also benefit from examining whether immigrant status and/or acculturation is associated with known determinants of cessation among Latinas.

In individual analyses, 5 psychosocial and environmental variables were significantly associated with smoking status above and beyond sociodemographic variables. These were neighborhood safety, low income, having a majority of friends who smoke, allowing persons to smoke in the home, and food insecurity. When these 5 variables were entered simultaneously into a single model, only having a majority of friends who smoke remained a significantly associated with smoking status. This relationship speaks to the relative importance of smokers in one's social network to the process of cessation among women. However, given the cross-sectional design of the study, it cannot be determined whether quitting encourages women to seek social networks with fewer smokers or vice versa.

Future research may benefit from prospective studies that test causal hypotheses about the relationship between these variables (neighborhood safety, having a majority of friends who smoke, allowing persons to smoke in the home, and food insecurity) and smoking cessation. In addition, it will be important to investigate the mechanisms through which these variables exert effects on cessation. Consistent with social-cognitive theory of drug use and relapse,¹⁰⁹ these psychosocial and environmental variables may be relatively distal contextual determinants that indirectly affect cessation through more proximal intrapersonal determinants. For example, having smokers in the home may increase craving for cigarettes or decrease one's self-efficacy to abstain from smoking, which may in turn undermine a quit attempt. As another example, food insecurity or concerns about neighborhood safety may increase the experience of negative emotions or stress, which may in turn undermine quitting. Research into the mechanisms that account for these associations not only serves to inform both theoretical models of the process of smoking cessation, but also has implications for intervention development by identifying additional intrapersonal treatment targets.

Our study has some limitations. First, with cross-sectional data, we cannot speak to the causal nature of the observed associations among the variables. Similarly, because smoking status data were not comparable from MIHA to GROW and we cannot determine precisely when women quit, we could not examine change in smoking status prospectively. Prospective research among women actively engaged in a quit attempt is needed to gain insight on causal relationships and mechanisms. Second, the sample size (N = 542) is considered small by epidemiological standards, as are the sample sizes of the racial/ethnic minority groups examined here. Generalizability of our findings, particularly for the black

and Latina immigrant groups, should be considered with this limitation in mind. Third is the use of categorical variables to measure constructs that may be more accurately represented on a continuum (eg, perceived support, perceived stress). This can result in a loss of variability and reduce the ability to detect some relationships. Lastly, the women in the sample were all mothers of young children, and this sample characteristic may influence the observed relationships between the variables examined here. Additional research with other samples of women is needed to support generalizability of the current findings.

In summary, we examined racial/ethnic disparities in smoking status and cross-sectional associations between psychosocial and environmental variables with status in a diverse sample of women who have ever smoked cigarettes. The current research sheds light on potential determinants of cessation among women outside of the peripartum period, where the majority of research on women smokers has focused. Results underscore the importance of considering psychosocial and environmental variables in the process of smoking cessation among women, but prospective research is needed.

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References

1. Jamal A, Agaku IT, O'Connor E, et al. Current cigarette smoking among adults – United States, 2005–2013. *MMWR Morb Mortal Wkly Rep*. 2014; 63(47):1108–1112. [PubMed: 25426653]
2. Bjornson W, Rand C, Connett JE, et al. Gender differences in smoking cessation after 3 years in the Lung Health Study. *Am J Public Health*. 1995; 85(2):223–230. [PubMed: 7856782]
3. Burgess DJ, Fu SS, Noorbaloochi S, et al. Employment, gender, and smoking cessation outcomes in low-income smokers using nicotine replacement therapy. *Nicotine Tob Res*. 2009; 11(12):1439–1447. [PubMed: 19875765]
4. Cepeda-Benito A, Reynoso JT, Erath S. Meta-analysis of the efficacy of nicotine replacement therapy for smoking cessation: differences between men and women. *J Consult Clin Psychol*. 2004; 72(4):712–722. [PubMed: 15301656]
5. Perkins KA, Scott J. Sex differences in long-term smoking cessation rates due to nicotine patch. *Nicotine Tob Res*. 2008; 10(7):1245–1250. [PubMed: 18629735]
6. Senore C, Battista RN, Shapiro SH, et al. Predictors of smoking cessation following physicians' counseling. *Prev Med*. 1998; 27(3):412–421. [PubMed: 9612831]
7. Ward KD, Klesges RC, Zbikowski SM, et al. Gender differences in the outcome of an unaided smoking cessation attempt. *Addict Behav*. 1997; 22(4):521–533. [PubMed: 9290861]
8. Wetter DW, Kenford SL, Smith SS, et al. Gender differences in smoking cessation. *J Consult Clin Psychol*. 1999; 67(4):555–562. [PubMed: 10450626]
9. Centers for Disease Control and Prevention. Quitting smoking among adults - United States, 2001–2010. *MMWR Morb Mortal Wkly Rep*. 2011; 60(44):1513–1519. [PubMed: 22071589]
10. Amos A, Greaves L, Nichter M, Bloch M. Women and tobacco: a call for including gender in tobacco control research, policy and practice. *Tob Control*. 2012; 21(2):236–243. [PubMed: 22166266]
11. Williams DR, Sternthal M. Understanding racial/ethnic disparities in health: sociological contributions. *J Health Soc Behav*. 2010; 51(Suppl):S15–S27. [PubMed: 20943580]

12. Perkins KA. Smoking cessation in women: special considerations. *CNS Drugs*. 2001; 15(5):391–411. [PubMed: 11475944]
13. Schnoll RA, Patterson F, Lerman C. Treating tobacco dependence in women. *J Womens Health*. 2007; 16(8):1211–1218.
14. Fiore, MC.; Jaén, CR.; Baker, TB., et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: US Department of Health and Human Services; 2008.
15. Cui X, Rockett IRH, Yang T, Cao R. Work stress, life stress, and smoking among rural-urban migrant workers in China. *BMC Public Health*. 2012; 12:979. [PubMed: 23151299]
16. Datta GD, Subramanian SV, Colditz GA, et al. Individual, neighborhood, and state-level predictors of smoking among us black women: a multilevel analysis. *Soc Sci Med*. 2006; 63(4):1034–1044. [PubMed: 16650514]
17. Duffy P, Zizza C, Jacoby J, Tayie FA. Diet quality is low among female food pantry clients in eastern Alabama. *J Nutr Educ Behav*. 2009; 41(6):414–419. [PubMed: 19879497]
18. Fitzgerald N, Hromi-Fiedler A, Segura-Pérez S, Pérez-Escamilla R. Food insecurity is related to increased risk of type 2 diabetes among Latinas. *Ethn Dis*. 2011; 21(3):328–334. [PubMed: 21942166]
19. Klein EG, Forster JL, Erickson DJ. Longitudinal predictors of stopping smoking in young adulthood. *J Adolesc Health*. 2013; 53(3):363–367. [PubMed: 23763963]
20. Manfredi C, Lacey L, Warnecke RB, Buis M. Smoking-related behavior, beliefs, and social environment of young black women in subsidized public housing in Chicago. *Am J Public Health*. 1992; 82(2):267–272. [PubMed: 1739162]
21. Oh DL, Heck JE, Dresler C, et al. Determinants of smoking initiation among women in five European countries: a cross-sectional survey. *BMC Public Health*. 2010; 10:74. [PubMed: 20163736]
22. Shelley D, Nguyen N, Yemeni R, Fahs M. Tobacco use behaviors and household smoking bans among Chinese Americans. *Am J Health Promot*. 2008; 22(3):168–175. [PubMed: 18251116]
23. Webb MS, Carey MP. Tobacco smoking among low-income black women: demographic and psychosocial correlates in a community sample. *Nicotine Tob Res*. 2008; 10(1):219–229. [PubMed: 18188763]
24. Bennett IM, Culhane JF, Webb DA, et al. Perceived discrimination and depressive symptoms, smoking, and recent alcohol use in pregnancy. *Birth*. 2010; 37(2):90–97. [PubMed: 20557531]
25. Crittenden KS, Manfredi C, Cho YI, Dolecek TA. Smoking cessation processes in low-SES women: the impact of time-varying pregnancy status, health care messages, stress, and health concerns. *Addict Behav*. 2007; 32(7):1347–1366. [PubMed: 17097815]
26. Patterson F, Seravalli L, Hanlon A, Nelson DB. Neighborhood safety as a correlate of tobacco use in a sample of urban, pregnant women. *Addict Behav*. 2012; 37(10):1132–1137. [PubMed: 22688344]
27. Pollak KI, Mullen PD. An exploration of the effects of partner smoking, type of social support, and stress on postpartum smoking in married women who stopped smoking during pregnancy. *Psychol Addict Behav*. 1997; 11(3):182–189.
28. Silveira ML, Pekow PS, Dole N, et al. Correlates of high perceived stress among pregnant Hispanic women in western Massachusetts. *Matern Child Health J*. 2013; 17(6):1138–1150. [PubMed: 23010861]
29. Solomon LJ, Higgins ST, Heil SH, et al. Predictors of postpartum relapse to smoking. *Drug Alcohol Depend*. 2007; 90(2–3):224–227. [PubMed: 17475418]
30. Stotts AL, DiClemente CC, Carbonari JP, Mullen PD. Pregnancy smoking cessation: a case of mistaken identity. *Addict Behav*. 1996; 21(4):459–471. [PubMed: 8830904]
31. Varescon I, Leignel S, Poulain X, Gerard C. Coping strategies and perceived stress in pregnant smokers seeking help for cessation. *J Smok Cessat*. 2011; 6(2):126–132.
32. Ward KD, Vander Weg MW, Sell MA, et al. Characteristics and correlates of quitting among black and white low-income pregnant smokers. *Am J Health Behav*. 2006; 30(6):651–662. [PubMed: 17096622]

33. Chuang YC, Cubbin C, Ahn D, Winkleby MA. Effects of neighbourhood socioeconomic status and convenience store concentration on individual level smoking. *J Epidemiol Community Health*. 2005; 59(7):568–573. [PubMed: 15965140]
34. Cohen SS, Sunderman JS, Mumma MT, et al. Individual and neighborhood-level socioeconomic characteristics in relation to smoking prevalence among black and white adults in the southeastern United States: a cross-sectional study. *BMC Public Health*. 2011; 11:877. [PubMed: 22103960]
35. Diez Roux AV, Merkin SS, Hannan P, et al. Area characteristics, individual-level socioeconomic indicators, and smoking in young adults: the Coronary Artery Disease Risk Development in Young Adults study. *Am J Epidemiol*. 2003; 157(4):315–326. [PubMed: 12578802]
36. Shohaimi S, Luben R, Wareham N, et al. Residential area deprivation predicts smoking habit independently of individual educational level and occupational social class: a cross sectional study in the Norfolk cohort of the European Investigation Into Cancer (EPIC-Norfolk). *J Epidemiol Community Health*. 2003; 57(4):270–276. [PubMed: 12646543]
37. Sundquist J, Malmstrom M, Johansson SE. Cardiovascular risk factors and the neighbourhood environment: a multilevel analysis. *Int J Epidemiol*. 1999; 28(5):841–845. [PubMed: 10597980]
38. Tseng M, Yeatts K, Millikan R, Newman B. Area-level characteristics and smoking in women. *Am J Public Health*. 2001; 91(11):1847–1850. [PubMed: 11684614]
39. Businelle MS, Kendzor DE, Reitzel LR, et al. Mechanisms linking socioeconomic status to smoking cessation: a structural equation modeling approach. *Health Psychol*. 2010; 29(3):262–273. [PubMed: 20496980]
40. Kendzor DE, Reitzel LR, Mazas CA, et al. Individual- and area-level unemployment influence smoking cessation among African Americans participating in a randomized clinical trial. *Soc Sci Med*. 2012; 74(9):1394–1401. [PubMed: 22405506]
41. Burdette HL, Wadden TA, Whitaker RC. Neighborhood safety, collective efficacy, and obesity in women with young children. *Obesity*. 2006; 14(3):518–525. [PubMed: 16648624]
42. Miles R. Neighborhood disorder and smoking: findings of a European urban survey. *Soc Sci Med*. 2006; 63(9):2464–2475. [PubMed: 16904800]
43. Albert MA, Ravenell J, Glynn RJ, et al. Cardiovascular risk indicators and perceived race/ethnic discrimination in the Dallas Heart Study. *Am Heart J*. 2008; 156(6):1103–1109. [PubMed: 19033005]
44. Borrell LN, Jacobs DR Jr, Williams DR, et al. Self-reported racial discrimination and substance use in the coronary artery risk development in adults study. *Am J Epidemiol*. 2007; 166(9):1068–1079. [PubMed: 17698506]
45. Chae DH, Takeuchi DT, Barbeau EM, et al. Unfair treatment, racial/ethnic discrimination, ethnic identification, and smoking among Asian Americans in the National Latino and Asian American Study. *Am J Public Health*. 2008; 98(3):485–492. [PubMed: 18235073]
46. Dutra LM, Williams DR, Kawachi I, Okechukwu CA. Racial and non-racial discrimination and smoking status among South African adults 10 years after apartheid. *Tob Control*. 2014; 23(e2):e114–e121. [PubMed: 24789604]
47. Landrine H, Klonoff EA. Racial discrimination and cigarette smoking among blacks: findings from two studies. *Ethn Dis*. 2000; 10(2):195–202. [PubMed: 10892825]
48. Nguyen KH, Subramanian SV, Sorensen G, et al. Influence of experiences of racial discrimination and ethnic identity on prenatal smoking among urban black and Hispanic women. *J Epidemiol Community Health*. 2012; 66(4):315–321. [PubMed: 20974840]
49. Purnell JQ, Peppone LJ, Alcaraz K, et al. Perceived discrimination, psychological distress, and current smoking status: results from the Behavioral Risk Factor Surveillance System reactions to race module, 2004–2008. *Am J Public Health*. 2012; 102(5):844–851. [PubMed: 22420821]
50. Shin SS, Wan X, Wang Q, et al. Perceived discrimination and smoking among rural-to-urban migrant women in China. *J Immigr Minor Health*. 2013; 15(1):132–140. [PubMed: 22389186]
51. Tran AGTT, Lee RM, Burgess DJ. Perceived discrimination and substance use in Hispanic/Latino, African-born black, and southeast Asian immigrants. *Cultur Divers Ethnic Minor Psychol*. 2010; 16(2):226–236. [PubMed: 20438161]
52. Kendzor DE, Businelle MS, Reitzel LR, et al. The influence of discrimination on smoking cessation among Latinos. *Drug Alcohol Depend*. 2014; 136:143–148. [PubMed: 24485880]

53. Centers for Disease Control and Prevention. Current cigarette smoking among adults - United States, 2011. *MMWR Morb Mortal Wkly Rep.* 2012; 61(44):889–894. [PubMed: 23134971]
54. Laaksonen M, Rahkonen O, Karvonen S, Lahelma E. Socioeconomic status and smoking. *Eur J Public Health.* 2005; 15(3):262–269. [PubMed: 15755781]
55. Coreil J, Ray LA, Markides KS. Predictors of smoking among Mexican-Americans: findings from the Hispanic HANES. *Prev Med.* 1991; 20(4):508–517. [PubMed: 1871079]
56. Hymowitz N, Cummings KM, Hyland A, et al. Predictors of smoking cessation in a cohort of adult smokers followed for five years. *Tob Control.* 1997; 6(Suppl 2):S57–S62. [PubMed: 9583654]
57. Castro Y, Reitzel LR, Businelle MS, et al. Acculturation differentially predicts smoking cessation among Latino men and women. *Cancer Epidemiol Biomarkers Prev.* 2009; 18(12):3468–3475. [PubMed: 19959697]
58. Chiang K, Borrelli B. Income predictors of smoking cessation among Hispanics. *J Health Psychol.* 2014; 19(7):869–876. [PubMed: 23584511]
59. Nevid JS, Javier RA. Preliminary investigation of a culturally specific smoking cessation intervention for Hispanic smokers. *Am J Health Promot.* 1997; 11(3):198–207. [PubMed: 10165099]
60. Young-Hoon KN. A longitudinal study on the impact of income change and poverty on smoking cessation. *Can J Public Health.* 2012; 103(3):189–194. [PubMed: 22905637]
61. Blakely T, van der Deen FS, Woodward A, et al. Do changes in income, deprivation, labour force status and family status influence smoking behaviour over the short run? Panel study of 15,000 adults. *Tob Control.* 2013; 23(e2):e106–e113. [PubMed: 24002128]
62. Fagan P, Shavers V, Lawrence D, et al. Cigarette smoking and quitting behaviors among unemployed adults in the United States. *Nicotine Tob Res.* 2007; 9(2):241–248. [PubMed: 17365755]
63. Lee AJ, Crombie IK, Smith WCS, Tunstall-Pedoe HD. Cigarette smoking and employment status. *Soc Sci Med.* 1991; 33(11):1309–1312. [PubMed: 1776044]
64. Novo M, Hammarström A, Janlert U. Smoking habits— a question of trend or unemployment? A comparison of young men and women between boom and recession. *Public Health.* 2000; 114(6):460–463. [PubMed: 11114757]
65. Waldron I, Lye D. Employment, unemployment, occupation, and smoking. *Am J Prev Med.* 1989; 5(3):142–149. [PubMed: 2742795]
66. Weden MM, Astone NM, Bishai D. Racial, ethnic, and gender differences in smoking cessation associated with employment and joblessness through young adulthood in the U.S. *Soc Sci Med.* 2006; 62(2):303–316. [PubMed: 16029919]
67. Monso E, Campbell J, Tønnesen P, et al. Sociodemographic predictors of success in smoking intervention. *Tob Control.* 2001; 10(2):165–169. [PubMed: 11387538]
68. Graham H, Francis B, Inskip HM, et al. Socioeconomic lifecourse influences on women's smoking status in early adulthood. *J Epidemiol Community Health.* 2006; 60(3):228–233. [PubMed: 16476753]
69. Jun H-J, Acevedo-Garcia D. The effect of single motherhood on smoking by socioeconomic status and race/ ethnicity. *Soc Sci Med.* 2007; 65(4):653–666. [PubMed: 17493724]
70. McGee R, Williams S. Predictors of persistent smoking and quitting among women smokers. *Addict Behav.* 2006; 31(9):1711–1715. [PubMed: 16457962]
71. Tehranifar P, Liao Y, Ferris J, Terry M. Life course socioeconomic conditions, passive tobacco exposures and cigarette smoking in a multiethnic birth cohort of U.S. women. *Cancer Causes Control.* 2009; 20(6):867–876. [PubMed: 19238563]
72. Bernat DH, Klein EG, Forster JL. Smoking initiation during young adulthood: a longitudinal study of a population-based cohort. *J Adolesc Health.* 2012; 51(5):497–502. [PubMed: 23084172]
73. Dietz NA, Sly DF, Lee DJ, et al. Correlates of smoking among young adults: the role of lifestyle, attitudes/beliefs, demographics, and exposure to anti-tobacco media messaging. *Drug Alcohol Depend.* 2013; 130(1–3):115–121. [PubMed: 23182411]
74. Rose JS, Chassin L, Presson CC, Sherman SJ. Demographic factors in adult smoking status: mediating and moderating influences. *Psychol Addict Behav.* 1996; 10(1):28–37.

75. Hendricks PS, Westmaas JL, Ta Park VM, et al. Smoking abstinence-related expectancies among American Indians, African Americans, and women: potential mechanisms of tobacco-related disparities. *Psychol Addict Behav.* 2014; 28(1):193–205. [PubMed: 23528192]
76. Hyland A, Higbee C, Travers MJ, et al. Smoke-free homes and smoking cessation and relapse in a longitudinal population of adults. *Nicotine Tob Res.* 2009; 11(6):614–618. [PubMed: 19346505]
77. Okechukwu CA, Dutra LM, Bacic J, et al. Home matters: work and household predictors of smoking and cessation among blue-collar workers. *Prev Med.* 2013; 56(2):130–134. [PubMed: 23262360]
78. Shopland DR, Anderson CM, Burns DM. Association between home smoking restrictions and changes in smoking behaviour among employed women. *J Epidemiol Community Health.* 2006; 60(Suppl 2):44–50. [PubMed: 17708010]
79. Creswell KG, Cheng Y, Levine MD. A test of the stress-buffering model of social support in smoking cessation: is the relationship between social support and time to relapse mediated by reduced withdrawal symptoms? *Nicotine Tob Res.* 2014; 17(5):566–571. [PubMed: 25257978]
80. Mermelstein R, Cohen S, Lichtenstein E, et al. Social support and smoking cessation and maintenance. *J Consult Clin Psychol.* 1986; 54(4):447–453. [PubMed: 3745596]
81. Ross L, Thomsen BL, Boesen SH, et al. Social relations and smoking abstinence among ever-smokers: a report from two large population-based Danish cohort studies. *Scand J Public Health.* 2013; 41(5):531–540. [PubMed: 23575654]
82. Turner LR, Mermelstein R, Hitsman B, Warnecke RB. Social support as a moderator of the relationship between recent history of depression and smoking cessation among lower-educated women. *Nicotine Tob Res.* 2008; 10(1):201–212. [PubMed: 18188761]
83. Armour BS, Pitts MM, Lee C-W. Cigarette smoking and food insecurity among low-income families in the United States, 2001. *Am J Health Promot.* 2008; 22(6):386–392. [PubMed: 18677878]
84. Cutler-Triggs C, Fryer GE, Miyoshi TJ, Weitzman M. Increased rates and severity of child and adult food insecurity in households with adult smokers. *Arch Pediatr Adolesc Med.* 2008; 162(11):1056–1062. [PubMed: 18981354]
85. Semba RD, Campbell AA, Sun K, et al. Paternal smoking is associated with greater food insecurity among poor families in rural Indonesia. *Asia Pac J Clin Nutr.* 2011; 20(4):618–623. [PubMed: 22094848]
86. Widome R, Jensen A, Bangerter A, Fu SS. Food insecurity among veterans of the U.S. wars in Iraq and Afghanistan. *Public Health Nutr.* 2015; 18(5):844–849. [PubMed: 24806818]
87. Willows N, Veugelaers P, Raine K, Kuhle S. Associations between household food insecurity and health outcomes in the aboriginal population (excluding reserves). *Health Rep.* 2011; 22(2):15–20. [PubMed: 21848128]
88. Businelle MS, Kendzor DE, Costello TJ, et al. Light versus heavy smoking among African American men and women. *Addict Behav.* 2009; 34(2):197–203. [PubMed: 18976867]
89. Fernander A, Schumacher M. An examination of socioculturally specific stress and coping factors on smoking status among African American women. *Stress Health.* 2008; 24(5):365–374.
90. Gallo LC, Roesch SC, Fortmann AL, et al. Associations of chronic stress burden, perceived stress, and traumatic stress with cardiovascular disease prevalence and risk factors in the Hispanic Community Health Study/Study of Latinos sociocultural ancillary study. *Psychosom Med.* 2014; 76(6):468–475. [PubMed: 24979579]
91. Ng DM, Jeffery RW. Relationships between perceived stress and health behaviors in a sample of working adults. *Health Psychol.* 2003; 22(6):638–642. [PubMed: 14640862]
92. Perera B, Torabi MR, Jayawardana C, Perera R. Knowledge of and attitudes toward smoking, smoking patterns and perceived stress in Sri Lankan undergraduates. *Int J Child Health Hum Dev.* 2010; 3(1):49–56.
93. Slopen N, Kontos EZ, Ryff CD, et al. Psychosocial stress and cigarette smoking persistence, cessation, and relapse over 9–10 years: a prospective study of middle-aged adults in the United States. *Cancer Causes Control.* 2013; 24(10):1849–1863. [PubMed: 23860953]
94. Cohen S, Lichtenstein E. Perceived stress, quitting smoking, and smoking relapse. *Health Psychol.* 1990; 9(4):466–478. [PubMed: 2373070]

95. Gregor K, Borrelli B. Barriers to quitting smoking among medically ill smokers. *Behav Med*. 2012; 35(5):484–491.
96. Nakajima M, al' Absi M. Predictors of risk for smoking relapse in men and women: a prospective examination. *Psychol Addict Behav*. 2012; 26(3):633–637. [PubMed: 22352701]
97. Rod NH, Grønbaek M, Schnohr P, et al. Perceived stress as a risk factor for changes in health behaviour and cardiac risk profile: a longitudinal study. *J Intern Med*. 2009; 266(5):467–475. [PubMed: 19570055]
98. Cubbin C. Survey methodology of the Geographic Research on Wellbeing (GROW) Study. *BMC Res*. In press
99. Chung E, Hung Y, Marchi K, et al. Infant sleep position: associated maternal and infant factors. *Ambulator Pediatrics*. 2003; 3(5):234–239.
100. Cubbin C, Braveman P, Marchi K, et al. Socioeconomic and racial/ethnic disparities in unintended pregnancy among postpartum women in California. *Matern Child Health J*. 2002; 6(4):237–246. [PubMed: 12512765]
101. Galbraith A, Egerter S, Marchi K, et al. Newborn early discharge revisited: are California newborns receiving recommended postnatal services? *Pediatrics*. 2003; 111(2):364–371. [PubMed: 12563065]
102. Heck K, Schoendorf K, Chavez G, Braveman P. Does postpartum length of stay affect breastfeeding duration? A population-based study. *Birth*. 2003; 30(3):153–159. [PubMed: 12911797]
103. Margerison-Zilko C, Cubbin C, Jun J, et al. Beyond the cross-sectional: neighborhood poverty histories and preterm birth. *Am J Public Health*. 2015; 105(6):1174–1180. [PubMed: 25880941]
104. Bohen, H.; Viveros-Long, A. *Balancing Jobs and Family Life*. Philadelphia: Temple University Press; 1981.
105. MacKinnon DP, Krull JL, Lockwood CM. Equivalence of the mediation, confounding and suppression effect. *Prev Sci*. 2000; 1(4):173–181. [PubMed: 11523746]
106. Schwartz SJ, Unger JB, Zamboanga BL, Szapocznik J. Rethinking the concept of acculturation: implications for theory and research. *Am Psychol*. 2010; 65(4):237–251. [PubMed: 20455618]
107. Zea MC, Asner-Self KK, Birman D, Buki LP. The Abbreviated Multidimensional Acculturation Scale: empirical validation with two Latino/Latina samples. *Cultur Divers Ethn Minor Psychol*. 2003; 9(2):107–126.
108. Rodriguez N, Mira CB, Paez ND, Myers HF. Exploring the complexities of familism and acculturation: central constructs for people of Mexican origin. *Am J Community Psychol*. 2007; 39(1–2):61–77. [PubMed: 17437189]
109. Witkiewitz K, Marlatt GA. Relapse prevention for alcohol and drug problems: that was zen, this is tao. *Am Psychol*. 2004; 59(4):224–235. [PubMed: 15149263]

Table 1

Characteristics and Prevalence of Quitting among Ever Smokers, Geographic Research on Wellbeing (GROW) Study, 2012–2013 (N = 542)

	Weighted % (N)	Cessation Prevalence Weighted % (95% CI)
Race/Ethnicity		
Asian/Pacific Islander	14.6 (42)	72.1 (56.6–87.6)
Black	7.2 (65)	40.5 (26.8–54.1)
Latina, immigrant	17.4 (73)	82.0 (72.6–91.4)
Latina, US-born	17.4 (87)	69.6 (59.1–80.1)
White	43.4 (275)	75.3 (69.5–81.2)
Age		
20–29 years	17.9 (79)	58.4 (46.6–70.3)
30–39 years	48.9 (250)	73.7 (67.3–80.1)
40+ years	33.2 (213)	78.4 (72.1–84.7)
Partner Status		
Married/cohabitating	73.3 (397)	79.2 (74.6–83.8)
Previously/never married	26.7 (139)	55.2 (45.6–64.8)
Educational Attainment		
Did not complete high school	14.7 (65)	63.2 (49.6–76.8)
High school graduate/GED	23.5 (108)	70.0 (60.1–79.9)
Some college	33.1 (178)	67.4 (59.6–75.3)
College graduate	28.7 (188)	84.8 (79.1–90.6)
Number of Children in Household		
0–1	13.1 (66)	68.4 (54.2–82.5)
2–4	78.8 (423)	73.3 (68.8–78.4)
5 or more	8.1 (43)	68.7 (53.4–84.0)
Employment Status		
Did not work	44.5 (231)	75.8 (69.8–81.8)
Part-time	26.1 (138)	72.2 (62.8–81.6)
Full-time	29.4 (167)	68.6 (60.4–76.7)
Long-term Neighborhood Poverty^a		
High	9.5 (40)	60.3 (44.6–76.0)
Moderate	22.6 (107)	68.1 (58.1–78.1)
Low	67.9 (361)	76.6 (71.6–81.6)
Perceived Neighborhood Safety		
Very safe	36.5 (207)	78.6 (71.9–85.3)
Somewhat safe	46.7 (241)	71.3 (64.7–77.8)
Somewhat/very unsafe	16.8 (90)	61.5 (50.0–73.0)

	Weighted % (N)	Cessation Prevalence Weighted % (95% CI)
Income		
Missing	8.5 (39)	66.7 (48.1–85.4)
200% federal poverty level	39.5 (195)	62.1 (54.3–69.8)
201%–400% federal poverty level	25.4 (126)	76.1 (67.9–84.3)
>400% federal poverty level	26.6 (182)	86.5 (81.2–91.8)
Change in Income Since Baseline		
Dropped	20.5 (90)	64.4 (53.0–75.8)
Did not drop	79.5 (392)	75.3 (70.4–80.3)
Most Friends Smoke Cigarettes		
Yes	14.7 (74)	36.6 (24.0–49.2)
No	85.3 (460)	79.5 (75.4–83.7)
Smoking in the Home		
Never	97.0 (522)	74.1 (69.8–78.4)
Sometimes or daily	3.0 (19)	24.6 (2.6–46.7)
Worry about Discrimination		
Not very often/never	86.2 (471)	73.9 (69.3–78.6)
Very/somewhat often	13.8 (71)	63.6 (50.4–76.9)
Food Insecurity		
Yes	20.8 (113)	59.3 (49.1–69.5)
No	79.2 (427)	75.8 (71.0–80.6)
Perceived Stress		
Not very often/never	49.8 (257)	75.0 (69.0–80.9)
Very/somewhat often	50.2 (285)	70.1 (63.8–76.4)
Emotional Support		
Yes	95.1 (516)	73.5 (69.1–78.0)
No	4.5 (24)	53.7 (31.7–75.7)
Financial Support		
Yes	79.4 (432)	75.3 (70.6–79.9)
No	20.6 (105)	65.6 (55.6–75.6)
Practical Support		
Yes	91.0 (495)	74.1 (69.7–78.6)
No	9.0 (46)	57.5 (41.3–73.7)

Note.

^aExcludes inaccurate geocodes at the census tract level (N = 16) and women not residing in California at the time of GROW (N = 34).

Table 2

Associations between Sociodemographic Characteristics and Quitting, Geographic Research on Wellbeing (GROW) Study, 2012–2013 (N = 542)

	Unadjusted Odds Ratio	95% Confidence Interval
Race/Ethnicity		
Asian/Pacific Islander	0.85	0.36–1.94
Black	0.22**	0.12–0.43
Latina, immigrant	1.49	0.73–3.04
Latina, US-born	0.75	0.42–1.35
White	1.00	
<hr/>		
	Adjusted Odds Ratio	95% Confidence Interval
Race/Ethnicity		
Asian/Pacific Islander	1.01	0.46–2.23
Black	0.47*	0.23–0.98
Latina, immigrant	2.82*	1.17–6.82
Latina, US-born	1.20	0.61–2.34
White	1.00	
<hr/>		
Age	1.03	0.99–1.07
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Partner Status		
Married/cohabitating	1.00	
Previously/never married	0.44**	0.26–0.75
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Educational Attainment		
Did not graduate high school	0.33*	0.14–0.78
High school graduate/GED	0.47*	0.23–1.00
Some college	0.52*	0.28–0.96
College graduate	1.00	

*
p < .05;

**
p < .01

Table 3

Associations between Psychosocial and Environmental Characteristics and Quitting, Geographic Research on Wellbeing (GROW) Study, 2012–2013 (N = 542)

	Adjusted Odds Ratio	95% Confidence Interval
Number of Children in Household		
0–1	1.00	
2–4	1.11	0.58–2.15
5 or more	1.26	0.47–3.40
Employment Status		
Did not work	1.00	
Part-time	0.66	0.36–1.21
Full-time	0.58	0.33–1.03
Long-term Neighborhood Poverty^a		
High	0.60	0.24–1.51
Moderate	0.67	0.36–1.25
Low	1.00	
Perceived Neighborhood Safety		
Very safe	1.00	
Somewhat safe	0.65	0.38–1.11
Somewhat/very unsafe	0.46*	0.24–0.88
Income		
Missing	0.48	0.19–1.22
200% federal poverty level	0.36**	0.17–0.76
201%–400% federal poverty level	0.57	0.29–1.13
>400% federal poverty level	1.00	
Change in Income Since Baseline		
Dropped	0.66	0.36–1.21
Did not drop	1.00	
Most Friends Smoke Cigarettes		
Yes	0.20***	0.10–0.37
No	1.00	
Smoking in the Home		
Never	1.00	
Sometimes or daily	0.18**	0.05–0.66
Worry about Discrimination		
Not very often/never	1.00	
Very/somewhat often	0.65	0.33–1.28

	Adjusted Odds Ratio	95% Confidence Interval
Food Insecurity		
Yes	0.55*	0.32–0.95
No	1.00	
Perceived Stress		
Not very often/never	1.00	
Very/somewhat often	0.74	0.46–1.19
Emotional Support		
Yes	2.15	0.92–5.03
No	1.00	
Financial Support		
Yes	1.36	0.74–2.50
No	1.00	
Practical Support		
Yes	1.82	0.82–4.06
No	1.00	

*
p < .05;

**
p < .01;

p < .001

Note.

Each covariate was tested in a separate logistic regression model controlling for race/ethnicity, age, partner status, and educational attainment.

^aExcludes inaccurate geocodes at the census tract level (N = 16) and women not residing in California at the time of GROW (N = 34).

Table 4

Final Model of Associations between Psychosocial and Environmental Characteristics and Quitting,
Geographic Research on Wellbeing (GROW) Study, 2012–2013 (N = 542)

	Adjusted Odds Ratio	95% Confidence Interval
Race/Ethnicity		
Asian/Pacific Islander	1.34	0.59–3.05
Black	0.72	0.32–1.65
Latina, immigrant	3.64*	1.28–10.32
Latina, US-born	1.27	0.62–2.61
White	1.00	
Age		
	1.00	0.95–1.04
Partner Status		
Married/cohabitating	1.00	
Previously/never married	0.59	0.33–1.06
Educational Attainment		
Did not complete high school	0.47	0.18–1.25
High school graduate/GED	0.62	0.28–1.39
Some college	0.62	0.31–1.26
College graduate	1.00	
Income		
Missing	0.49	0.17–1.38
<200% federal poverty level	0.45	0.20–1.05
201%–400% federal poverty level	0.63	0.30–1.36
>400% federal poverty level	1.00	
Perceived Neighborhood Safety		
Very safe	1.00	
Somewhat safe	0.80	0.46–1.41
Somewhat/very unsafe	0.72	0.34–1.51
Most Friends Smoke Cigarettes		
Yes	0.23**	0.12–0.44
No	1.00	
Smoking in the Home		
Never	1.00	
Sometimes to daily	0.26	0.07–1.01
Food Insecurity		
Yes	0.83	0.45–1.55
No	1.00	

*
p < .05;

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p < .001

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