Sociodemographics, but not Acculturation Proxies, Account for Differences in Lifetime Cessation between White and Hispanic Smokers

Yessenia Castro, PhD[1]; Cristina B. Bares, PhD[2]; Berenice Castillo, MSW[2]; Ariel Kennedy, BA[2]

Objective: Prominent addiction theories predict that Hispanic smokers should have more success at quitting than White smokers due to less physical dependence on average, but extant findings are mixed. This might be due in part to a lack of attention to confounding demographic and acculturation-related variables. Our study compared likelihood of lifetime cessation between White and Hispanic men and women of different language proficiency, nativity and residency status, controlling for age, education, and poverty level.

Method: Data from 123,574 White and Hispanic participants in the 2011-2015 National Health Interview Surveys were used. Logistic regression analyses examined ethnic differences in odds of being a former smoker. Predicted probabilities of being a former smoker were calculated from these models.

Results: In unadjusted analyses, White men demonstrated higher odds of being a former smoker compared with Hispanic men, Hispanic women, and White women. In adjusted analyses, Hispanics demonstrated higher odds of being a former smoker compared with Whites, and differences by acculturation proxies emerged.

Conclusions: Not accounting for demographics may suppress ethnic differences in likelihood of smoking cessation. Among Hispanics, demographics may be more important determinants of lifetime quitting than acculturation-related characteristics. *Ethn Dis*. 2018;28(3):145-152; doi:10.18865/ed.28.3.145

Keywords: Ethnic Differences; Smoking Cessation; Hispanics/Latinos; Acculturation

Introduction

Tobacco is the leading cause of preventable death in the United States.[1] Smoking is strongly linked to cancer,[2,3] the leading cause of death among Hispanic adults in the United States[4,5] and Hispanics have lower lung cancer survival rates relative to Whites.[6] Thus, examination of factors that lead to disparities in smoking cessation is a public health concern. The smoking topography of Hispanic compared with White smokers is characterized by fewer cigarettes per day,[7–9] non-daily or intermittent smoking,[7–9] and longer latency of time between waking and smoking one's first cigarette of the day.[7,9]

Less severe smoking should be prognostic of greater success at quitting, according to prominent models of addiction.[10–12] Thus, Hispanic smokers should demonstrate more success at quitting, but epidemiological studies demonstrate similar or lower rates of lifetime or recent smoking cessation among Hispanics compared with Whites.[8,13,14] However, these studies do not account for important sociodemographics known to relate to cessation in the general population of smokers, such as income,[13,15] education,[13–16] or age.[16,17] The few published studies that have focused on Hispanic smokers suggest lifetime quitting is also associated with income, age and education among Hispanics, specifically.[18–20]

It is also important to consider acculturation-related variables when seeking to understand tobacco use among Hispanics.[21] Among Hispanic women, acculturation-related factors such as being US-born, greater English proficiency, and more years of US residency are associated with being a current smoker.[22,23] Two studies have examined associations between acculturation proxies and lifetime cessation among Hispanics.[19,20] Merzel et al found that being foreign-born and having lower English proficiency were associated with status as a former smoker. However, years of US residency was not associated with smok-

[1] Steve Hicks School of Social Work, The University of Texas at Austin, Texas
[2] School of Social Work, University of Michigan, Ann Arbor, Michigan

Address correspondence to Yessenia Castro, PhD; Assistant Professor; Steve Hicks School of Social Work, The University of Texas at Austin; 1925 San Jacinto Blvd, R5100; Austin Texas, 78712; ycastro@austin.utexas.edu

ing status and observed associations were accounted for by sociodemographics. Samet et al examined language preference and did not find it to be associated with smoking status.

To our knowledge, no published study has examined racial/ethnic differences in likelihood of quitting in one's lifetime while accounting for both relevant sociodemographic and acculturation-related variables. Adjusting for such factors when examining racial/ethnic differences in likelihood of quitting may help clarify the counter-intuitive and mixed findings observed thus far and have the potential to inform the development of tailored and targeted interventions for smoking cessation among Hispanics. This, in turn, may reduce the burden of tobacco among groups at elevated risk of failed cessation. Therefore, the purpose of our current study was to: 1) compare the likelihood of being a former smoker among White and Hispanic persons with a lifetime history of smoking; and 2) examine the influence of sociodemographic and acculturation-related variables on racial/ethnic differences in the likelihood of quitting in one's lifetime.

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Methods

Data

Our current study pooled data from years 2011-2015 of the National Health Interview Survey (NHIS). The NHIS is a cross-sectional survey that follows a multistage area probability sampling design and draws participants from each state and District of Columbia.[24] We use data from 123,574 participants who were aged ≥18 years, self-identified as non-Hispanic White or Hispanic of any race, and reported a lifetime history of smoking, defined as having smoked at least 100 cigarettes in one's lifetime. Additionally, all non-Hispanic White persons reported speaking English "very well" and being US-born.

Measures

Acculturation Proxies

English proficiency was a dichotomous variable indicating whether the person reported speaking English "very well" vs "well," "not well," or "not at all." Nativity was a dichotomous variable indicating whether persons were born in the United States vs outside of the United States (including Puerto Rico). Years of US residency was a dichotomous variable asked only of those persons who reported being non-US born and represents persons who have resided in the United States <5 years vs ≥5 years.

Smoking Status

Those who reported currently smoking cigarettes "every day" or "some days" were considered current smokers while persons who reported currently smoking cigarettes "not at all" were considered former smokers.

Sociodemographics

Participant poverty level was measured on an ordinal scale (1-14) representing ranges of the ratio of family income to the federal poverty level (eg, 1=<.5, 2=.5 to .74, 13=4.75-.499, 14=≥5), with higher scores indicating higher income in relation to poverty level. Age, years of education, and poverty level were used as covariates, and analyses were stratified by sex.

Data Analysis

The predictor of primary interest was ethnicity/acculturation status. Three variables were computed from race/ethnicity and each acculturation proxy; each variable had three categories: 1) non-Hispanic White, 2) Hispanic, with "high" status on the acculturation proxy (high English proficiency, US-born, or ≤5 years US residency); and 3) Hispan-

Table 1. Estimated study group descriptive statistics

	Mean (95% CI)			
	White Men (N=49,976)	Hispanic Men (N=13,194)	White Women (N=51,649)	Hispanic Women (N=8,755)
Age	50.6 (50.2-50.9)	44.2 (43.5-44.8)[a]	48.9 (48.5-49.2)[ab]	43.7 (43.0-44.4)[ac]
Income	9.6 (9.5-9.8)	7.4 (7.1-7.7)[a]	8.8 (8.7-9.0)[ab]	6.4 (6.1-6.8)[abc]
Years of education	13.7 (13.7-13.8)	10.9 (10.8-11.1)[a]	13.2 (13.1-13.2)[ab]	11.1 (10.9-11.3)[ac]
Former smoker	58.5 (57.6-59.5)	55.7 (53.8-57.6)[a]	54.8 (53.7-55.9)[a]	55.1 (52.7-57.6)[a]
Speak English "very well"		76.7 (74.5-78.9)		65.2 (63.3-71.9)[b]
US-born		70.4 (68.8-71.9)		58.3 (56.7-60.0)[b]
≥5 years US residency		92.6 (90.6-94.1)		92.5 (91.2-93.6)

a. Significantly different from White men.
b. Significantly different from Hispanic men
c. significantly different from White women.

ic, "low" status on the acculturation proxy (low English proficiency, foreign-born, or >5 years US residency). These variables were represented in analyses with two dummy coded variables wherein low and high status on the acculturation proxy were each compared with "non-Hispanic White." The outcome variable of interest was current smoking status, a dichotomous variable representing former smokers (coded 1) vs current smokers (coded 0).

Unadjusted logistic regression models of the associations between each predictor and likelihood of being a former smoker were estimated, followed by models adjusted for age, years of education, and poverty level. Unadjusted and adjusted predicted probabilities of being a former smoker were calculated from these models. Analyses were conducted separately by acculturation proxy and sex. Due to the exploratory nature of the analyses and the numerous comparisons made,[25] an alpha level of <.01 was selected *a priori*. Parameters were estimated in Mplus (Version 8)[26] using full information maximum likelihood to account for missing data, and robust standard errors and sample weights to account for the complex sampling design. For differences between groups described on the probability scale, effect sizes were calculated as Cohen's *h*,[27] which is a measure of the magnitude of the difference between two probabilities.

Results

Descriptive Characteristics

Sociodemograhics

Of the 123,574 ever smokers included in these analyses, 49,976 identified as non-Hispanic White and male (40.4%); 51,649 as non-Hispanic White and female (41.8%); 13,194 as Hispanic and male (10.7%); and 8,755 as Hispanic and female (7.1%). The proportion of former smokers in the overall sample was 56.5%. Table 1 summarizes all study group descriptive statistics by sex and ethnicity. The proportion of former smokers among White men was significantly higher than the proportion among Hispanic men and women, and White women (Ps<.01), although these differences were small (Cohen's *h*s=.06-.08). The proportion of former smokers did not differ significantly among Hispanic men, Hispanic women, and White women.

Likelihood of Being a Former Smoker

Unadjusted Analyses

Unadjusted logistic regression analyses examining the relative likelihood of being a former smoker for Hispanic vs White persons are summarized in Table 2. US-born Hispanic men were significantly less likely to be a former smoker compared with White men (unstandardized coefficient [*b*]=-.17, standard error of *b* [SE *b*]=.05, P<.001), and

Table 2. Unadjusted and adjusted odds of being a former smoker

	Odds ratio (95% CI)					
	Model 1		Model 2		Model 3	
	Men	Women	Men	Women	Men	Women
Hispanic/English spoken "very well"	.93 (.81-1.07)	.93 (.79-1.1)				
Hispanic/English spoken "well" to "not at all"	.93 (.80-1.09)	1.18 (.96-1.46)				
Hispanic/US-born			.84 (.76-.93)[a]	.92 (.83-1.03)		
Hispanic/Foreign.-born			.99 (.89-1.10)	1.29 (1.12-1.48)[a]		
Hispanic/≥5 years US residency					1.02 (.93-1.13)	1.26 (1.09-3.03)[a]
Hispanic/<5 years US residency					.60 (.43-.85)[a]	1.71 (.96-3.03)
	Adjusted odds ratio (95% CI)					
Hispanic/English spoken "very well"	1.56 (1.32-1.85)[a]	1.53 (1.26-1.87)[a]				
Hispanic/English spoken "well" to "not at all"	1.76 (1.46-2.12)[a]	1.85 (1.44-2.39)[a]				
Hispanic/US-born			1.49 (1.31-1.69)[a]	1.59 (1.39-1.82)[a]		
Hispanic/Foreign-born			1.61 (1.42-1.84)[a]	1.83 (1.52-2.21)[a]		
Hispanic/≥5 years US residency					1.66 (1.46-1.9)[a]	1.74 (1.46-2.09)[a]
Hispanic/<5 years US residency					1.9 (1.29-2.82)[a]	3.96 (1.92-8.18)[a]
Age	1.046 (1.044-1.048)[a]	1.038 (1.036-1.04)[a]	1.046 (1.044-1.048)[a]	1.038 (1.036-1.04)[a]	1.046 (1.044-1.048)[a]	1.038 (1.036-1.04)[a]
Income	1.13 (1.11-1.15)[a]	1.12 (1.10-1.14)[a]	1.13 (1.11-1.15)[a]	1.12 (1.10-1.14)[a]	1.14 (1.12-1.16)[a]	1.12 (1.11-1.14)[a]
Years of education	1.00 (1.00-1.01)	1.01 (1.01-1.02)[a]	1.00 (.99-1.01)	1.01 (1.00-1.02)	1.00 (1.00-1.01)	1.01 (1.01-1.02)

a. Statistically significant effect.
In all models, Whites were the designated referent group.

those with >5 years US residency (*b*=-.51, SE *b*=.18, P<.01). In contrast, foreign-born Hispanic women were significantly more likely to be a former smoker compared with White women (*b*=.25, SE *b*=.07, P<.001), as were those with ≥5 years U.S. residency (*b*=.23, SE *b*=.07, P<.001). English proficiency was not associated with smoking status for either men or women.

Adjusted Analyses

Logistic regression analyses adjusted for age, years of education, and poverty level revealed more consistent patterns of associations across analyses (Table 2). Across all models, Hispanics demonstrated greater likelihood of being a former smoker compared with Whites (*b*s ranged from .42 to 1.37, all Ps<.01). Greater age and higher income in relation to poverty level

Table 3. Unadjusted and adjusted probabilities of being a former smoker

	Predicted Probability (95% CI)			
	Men	Women	Men	Women
	Unadjusted Models		Adjusted Models	
Model 1				
White	.58 (.57-.59)	.55 (.54-.56)	.58 (.57-.59)	.54 (.53-.56)
Hispanic/English spoken "very well"	.56 (.54-.59)	.54 (.51-.57)	.68 (.65-.72)[a]	.65 (.60-.69)[a]
Hispanic/English spoken "well" to "not at all"	.56 (.53-.58)	.59 (.55-.64)	.71 (.67-.74)[a]	.69 (.64-.74)[a]
Model 2				
White	.59 (.58-.60)	.55 (.54-.56)	.58 (.57-.59)	.54 (.53-.56)
Hispanic/US-born	.54 (.52-.56)[a]	.53 (.50-.55)	.68 (.65-.70)[a]	.66 (.63-.68)[a]
Hispanic/Foreign-born	.58 (.56-.60)[b]	.61 (.58-.64)[ab]	.69 (.67-.72)[a]	.69 (.65-.72)[a]
Model 3				
White	.59 (.58-.60)	.55 (.54-.56)	.59 (.58-.61)	.55 (.54-.57)
Hispanic/≥5 years US residency	.59 (.57-.61)	.60 (.57-.64)[a]	.71 (.68-.73)[a]	.68 (.65-.72)[a]
Hispanic/<5 years US residency	.46 (.38-.55)[ac]	.67 (.54-.78)	.74 (.65-.81)[a]	.83 (.71-.91)[a]

a. Significantly different from Whites.
b. Significantly different from U.S-born Hispanics.
c. Significantly different from Hispanics with ≥5 years of US residency.
In all models, Whites were the designated referent group.

were associated with increased likelihood of being a former smoker in all analyses (for age, *b*s ranged from .04 to .05; for poverty level, .11-.13; all Ps<.001). More years of education was associated with greater likelihood of being a former smoker among women in the models examining English language fluency (*b*=.01, SE *b*=.003, P<.01) and years of US residency (*b*=.01, SE *b*=.003, P<.001).

Predicted Probability of Being a Former Smoker

Unadjusted Predicted Probabilities

Predicted probabilities of being a former smoker estimated from the unadjusted models are presented in Table 3. The predicted probability for US-born Hispanic men was significantly lower than that of foreign-born Hispanic men and White men (Ps<.001), but differences were small (Cohen's *h*=.08 and .09, respectively). The predicted probability for Hispanic men with >5 years of US residency was significantly lower than that of Hispanic men with ≥5 years of US residency and White men, with a moderate effect size (Ps<.001; Cohen's *h*=.26, and .25, respectively). The predicted probability for foreign-born women was significantly higher than that of US-born women and White women (Ps<.001) but these differences were small (Cohen's *h*=.17 and .13, respectively). The predicted probability for Hispanic women with ≥5 years of US residency was significantly higher than that of White women, also with a small effect size (P<.01, Cohen's *h*=.11). No other comparisons were statistically significant.

Adjusted Predicted Probabilities

Predicted probabilities of being a former smoker estimated from the adjusted models are also presented in Table 3. Across all acculturation proxy categories, Hispanic men and women demonstrated significantly higher predicted probabilities of being a former smoker compared with White men and women, respectively (Ps<.001). Effect sizes for these differences ranged from moderate to large (Cohen's *h*s=.21-.62). Predicted probabilities of being a former smoker did not differ between Hispanic groups in any adjusted model.

Discussion

Our current study is the first, to our knowledge, to examine the combined influence of demographic and acculturated-related variables on ethnic differences in the likelihood of quitting smoking in one's lifetime. Unadjusted analyses revealed contrasting patterns of associations across acculturation proxy

and sex; thus, they largely reflect the conflicting findings observed in the broader literature.[8,13,14] Adjusted analyses revealed a very consistent pattern of findings across sex and acculturation proxy variables. Controlling for age, education, and poverty level, Hispanics demonstrated greater likelihood of being a former smoker compared with Whites. Taken together, findings suggest that not accounting for relevant sociodemographics suppressed differences in likelihood of cessation between Hispanics and Whites. Suppression is a form of confounding wherein the absence of the confounding variable from a model results in the attenuation of the statistical effect among the variables of interest.[28] Models that account for suppressor variables are expected to provide more accurate estimates of the relationship between a predictor variable and an outcome of interest.[28] In addition, results of the adjusted analyses are consistent with what would be expected given the less severe smoking pattern of Hispanic smokers. Examination of group differences in the covariates supports the presence of suppression effects. Age, poverty level, and years of education were all positively associated with being a former smoker, but negatively associated with being Hispanic (ie, Hispanics had lower mean age, income in relation to poverty level, and education compared with Whites; Table 1). Thus, the similar or greater likelihood of being a former smoker among Hispanics observed in unadjusted analyses are accounted for by the fact that Hispanics are more likely to demonstrate major correlates of failed cessation (younger age, lower income in relation to poverty level, lower education).

Controlling for age, education, and poverty level, Hispanics demonstrated greater likelihood of being a former smoker compared with Whites.

Confounder effects were also observed in comparisons between Hispanic groups. In particular, the higher probability of being a former smoker observed among foreign-born Hispanic women was accounted for by their older age compared with US-born Hispanic women. Similarly, the higher probability of being a former smoker among Hispanic men with ≥5 years of US residency was accounted for by their older age and higher income in relation to poverty level. Results suggest that among Hispanic smokers, sociodemographics may be more important determinants of quitting in one's lifetime than acculturation-related characteristics.

Notably, after accounting for sociodemographics, White women had the lowest predicted probability of being a former smoker. As such, White women demonstrate a significant disadvantage in lifetime quitting that cannot be accounted for by sociodemographics. This disparity has been previously demonstrated across numerous treatment studies on smoking abstinence.[29–31] Experts have called for increased research identifying the mechanisms underlying this disparity and sex-specific determinants of cessation.[32]

Our current study has some limitations. Analyses were cross-sectional and thus cannot speak to causal relationships. Dichotomous demographic proxies of acculturation were utilized in our study. Despite their demonstrated association with more comprehensive and theoretically grounded measures of acculturation,[33] such proxies have been rightly critiqued for their limited content and construct validity.

Conclusion

Our current study contributes to the clarification of inconsistent findings regarding racial/ethnic differences in smoking cessation and suggests that greater attention to sociodemographic factors, which act as suppressor variables, is needed to more accurately describe process of smoking cessation among Latinos.

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Conflict of Interest

No conflicts of interest to report.

Author Contributions

Research concept and design: Castro, Bares; Acquisition of data: Bares, Kennedy; Data analysis and interpretation: Castro, Bares, Castillo; Manuscript draft: Castro, Bares, Castillo, Kennedy; Statistical expertise: Castro, Bares; Acquisition of funding: Castro; Administrative: Castro, Kennedy; Supervision: Castro, Bares

References

1. Centers for Disease Control and Prevention (CDC). CDC National Health Report: leading causes of morbidity and mortality and associated behavioral risk and protective factors—United States, 2005–2013. *MMWR Morb Mortal Wkly Rep*. 2014;63(4)(suppl):1-27.
2. Henley SJ, Thomas CC, Sharapova SR, et al. Vital Signs: Disparities in Tobacco-Related Cancer Incidence and Mortality - United States, 2004-2013. *MMWR Morb Mortal Wkly Rep*. 2016;65(44):1212-1218. https://doi.org/10.15585/mmwr.mm6544a3 PMID:27832048
3. National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General.* Atlanta: CDC; 2014.
4. Fagan P, Moolchan ET, Lawrence D, Fernander A, Ponder PK. Identifying health disparities across the tobacco continuum. *Addiction*. 2007;102(suppl 2):5-29. https://doi.org/10.1111/j.1360-0443.2007.01952.x PMID:17850611
5. Yanez B, McGinty HL, Buitrago D, Ramirez AG, Penedo FJ. Cancer Outcomes in Hispanics/Latinos in the United States: An Integrative Review and Conceptual Model of Determinants of Health. *J Lat Psychol*. 2016;4(2):114-129. https://doi.org/10.1037/lat0000055 PMID:27429867
6. Wisnivesky JP, McGinn T, Henschke C, Hebert P, Iannuzzi MC, Halm EA. Ethnic disparities in the treatment of stage I non-small cell lung cancer. *Am J Respir Crit Care Med*. 2005;171(10):1158-1163. https://doi.org/10.1164/rccm.200411-1475OC PMID:15735053
7. Daza P, Cofta-Woerpel L, Mazas C, et al. Racial and ethnic differences in predictors of smoking cessation. *Subst Use Misuse*. 2006;41(3):317-339. https://doi.org/10.1080/10826080500410884 PMID:16467009
8. Trinidad DR, Pérez-Stable EJ, White MM, Emery SL, Messer K. A nationwide analysis of US racial/ethnic disparities in smoking behaviors, smoking cessation, and cessation-related factors. *Am J Public Health*. 2011;101(4):699-706. https://doi.org/10.2105/AJPH.2010.191668 PMID:21330593
9. Trinidad DR, Pérez-Stable EJ, Emery SL, White MM, Grana RA, Messer KS. Intermittent and light daily smoking across racial/ethnic groups in the United States. *Nicotine Tob Res*. 2009;11(2):203-210. https://doi.org/10.1093/ntr/ntn018 PMID:19246433
10. Baker TB, Piper ME, McCarthy DE, Majeskie MR, Fiore MC. Addiction motivation reformulated: an affective processing model of negative reinforcement. *Psychol Rev*. 2004;111(1):33-51. https://doi.org/10.1037/0033-295X.111.1.33 PMID:14756584
11. Niaura R. Cognitive social learning and related perspectives on drug craving. *Addiction*. 2000;95(8s2)(suppl 2):S155-S163. https://doi.org/10.1046/j.1360-0443.95.8s2.4.x PMID:11002910
12. Witkiewitz K, Marlatt GA. Relapse prevention for alcohol and drug problems: that was Zen, this is Tao. *Am Psychol*. 2004;59(4):224-235. https://doi.org/10.1037/0003-066X.59.4.224 PMID:15149263
13. Centers for Disease Control and Prevention (CDC). Cigarette smoking among adults—United States, 2000. *MMWR Morb Mortal Wkly Rep*. 2002;51(29):642-645. PMID:12186222
14. Centers for Disease Control and Prevention (CDC). Quitting smoking among adults—United States, 2001-2010. *MMWR Morb Mortal Wkly Rep*. 2011;60(44):1513-1519. PMID:22071589
15. Barbeau EM, Krieger N, Soobader MJ. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health*. 2004;94(2):269-278. https://doi.org/10.2105/AJPH.94.2.269 PMID:14759942
16. Centers for Disease Control and Prevention (CDC). Cigarette Smoking Among Adults--United States, 2007. *Mor Mortal Wkly Rep*. 2008; 57(45);1221-1226.
17. Agaku IT, King BA, Dube SR; Centers for Disease Control and Prevention (CDC). Current cigarette smoking among adults - United States, 2005-2012. *MMWR Morb Mortal Wkly Rep*. 2014;63(2):29-34. PMID:24430098
18. Kaplan RC, Bangdiwala SI, Barnhart JM, et al. Smoking among U.S. Hispanic/Latino adults: the Hispanic community health study/study of Latinos. *Am J Prev Med*. 2014;46(5):496-506. https://doi.org/10.1016/j.amepre.2014.01.014 PMID:24745640
19. Merzel CR, Isasi CR, Strizich G, et al. Smoking cessation among U.S. Hispanic/Latino adults: Findings from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). *Prev Med*. 2015;81:412-419. https://doi.org/10.1016/j.ypmed.2015.10.006 PMID:26515291
20. Samet JM, Howard CA, Coultas DB, Skipper BJ. Acculturation, education, and income as determinants of cigarette smoking in New Mexico Hispanics. *Cancer Epidemiol Biomarkers Prev*. 1992;1(3):235-240. PMID:1306108
21. Castro Y. Determinants of Smoking and Cessation Among Latinos: Challenges and Implications for Research. *Soc Personal Psychol Compass*. 2016;10(7):390-404. https://doi.org/10.1111/spc3.12256 PMID:27672402
22. Bethel JW, Schenker MB. Acculturation and smoking patterns among Hispanics: a review. *Am J Prev Med*. 2005;29(2):143-148. https://doi.org/10.1016/j.amepre.2005.04.014 PMID:16005811
23. Kondo KK, Rossi JS, Schwartz SJ, Zamboanga BL, Scalf CD. Acculturation and cigarette smoking in Hispanic women: A meta-analysis. *J Ethn Subst Abuse*. 2016;15(1):46-72. https://doi.org/10.1080/15332640.2014.1002878 PMID:26114872
24. National Center for Health Statistics. About the National Health Interview Survey. July 11, 2017. Last accessed February 10, 2018 from https://www.cdc.gov/nchs/nhis/about_nhis.htm.
25. Darlington RB, Hayes AF. *Regression Analysis and Linear Models: Concepts.* Guilford: Applications, and Implementation; 2016.
26. Muthén LK, Muthén BO. *Mplus User's Guide.* 8th ed. Los Angeles, CA: Muthén & Muthén; 1998.
27. Cohen J. *Statistical Power Analysis for the Behavioral Sciences.* Mahwah, NJ: Lawrence Erlbaum Associates; 1988.
28. Pandey S, Elliott W. Suppressor variables in social work research: ways to identify in multiple regression models. *J Soc Social Work Res*. 2010;1(1):28-40. https://doi.org/10.5243/jsswr.2010.2
29. Bohadana A, Nilsson F, Rasmussen T, Martinet Y. Gender differences in quit rates following smoking cessation with combination nicotine therapy: influence of baseline smoking behavior. *Nicotine Tob Res*. 2003;5(1):111-116. https://doi.org/10.1080/1462220021000060482 PMID:12745512
30. Perkins KA. Smoking cessation in women. Special considerations. *CNS Drugs*. 2001;15(5):391-411. https://doi.org/10.2165/00023210-200115050-00005 PMID:11475944

31. Wetter DW, Kenford SL, Smith SS, Fiore MC, Jorenby DE, Baker TB. Gender differences in smoking cessation. *J Consult Clin Psychol*. 1999;67(4):555-562. https://doi.org/10.1037/0022-006X.67.4.555 PMID:10450626
32. Fiore MC, Jaén CR, Baker TB, et al. *Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline.* Rockville, MD: U.S. Department of Health and Human Services; 2008.
33. 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. https://doi.org/10.1007/s10464-007-9090-7 PMID:17437189