Prevalence and factors associated with use of hookah tobacco among young adults in the U.S.

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Abstract

\textbf{Introduction}: Among young adults, use of hookah tobacco (HT) is an emerging health-risk behavior. The goals were to demonstrate that (1) the prevalence of ever-use and current use of HT increased among U.S. young adults (18–30 years old) in the period from 2010 to 2015 and (2) the patterns of HT use differed across diverse demographic subpopulations of young adults.

\textbf{Methods}: We merged and analyzed data from the 2010–2011 and 2014–2015 Tobacco Use Supplement to the Current Population Survey. The sample (n = 55,352) was representative of the young adult population in the U.S. Two binary measures were the ever and current use of HT. The significance level was 5%.

\textbf{Results}: The rate of current use of HT increased from 1% in 2010–11 to 2% in 2014–15 (CI = 0.6%:1.1%). The rate of ever-use increased from 7% to 12% (CI = 4.2%:5.6%). The over-time increase was not uniform: the increase was most rapid among 26–30 year-old adults, non-Hispanic Black and African American adults, and in Northeastern and Midwestern U.S. regions. HT ever-use, overall, was associated (all p’s < 0.001) with many sociodemographic factors and current tobacco-use behaviors. The rate of HT ever-use was 16% for daily and 23% for occasional cigarette smokers, 23% for users of smokeless tobacco products, 37% for cigar smokers, and 55% for smokers of regular pipe (filled with tobacco).

\textbf{Discussion/conclusion}: HT use is becoming increasingly more popular among young adults in the U.S. Methods should target not only cessation of cigarette smoking but use of all tobacco products.
Keywords
Response bias; Survey administration mode; Waterpipe

1. Introduction

The prevalence of use of hookah tobacco (HT) is relatively low among adults in the U.S.; for instance, the rate of ever using a HT was 3.9% among 18–40 year-old adults in 2010–11 (Grinberg & Goodwin, 2016). However, the prevalence is relatively high among U.S. youth and young adults; e.g., the rate of ever-use was 30.5% among college students in 2008–09 (Primack et al., 2013).

Use of HT is also associated with use of other tobacco products, such as cigarette or e-cigarettes (Barnett, Soule, Forrest, Porter, & Tomar, 2015; Cobb, Ward, Maziak, Shihadeh, & Eissenberg, 2010; Leventhal et al., 2015; Rice et al., 2006; Ward, Vander Weg, Relyea, DeBon, & Klesges, 2006). Moreover, among Arab American adolescents, HT use was linked to cigarette smoking initiation: the odds of cigarette smoking initiation were 8 times higher among those who had ever used HT than among those who had not used HT (Rice et al., 2006). A study of young adult US military recruits also indicated that intentions to start smoking cigarettes in the next year were higher among current HT users relative to HT non-users (Ward et al., 2006).

Young adult HT users generally perceive HT use safe and socially acceptable. In particular, HT users tend to believe that using a HT is less harmful than smoking cigarettes, that the government has evaluated HT for safety and that use of HT is not addictive (Aljarrah, Ababneh, & Al-Delaimy, 2009; Chen & Loukas, 2015; Primack et al., 2008; Sidani, Shensa, Barnett, Cook, & Primack, 2014). Additionally, the majority of college students have close friends who have used a HT (Heinz et al., 2013). Misconceptions about safety of use of HT have been linked to HT use initiation, as well as increased prevalence of HT use among college students (Villanti, Cobb, Cohn, Williams, & Rath, 2015). Nonetheless, HT use could be as dangerous as cigarette smoking, could cause nicotine addiction, and was linked to heart disease and cancer (Cobb et al., 2010; Jabbour, El-Roueiheb, & Sibai, 2003; Maziak, 2011).

In addition to perceptions, there are established demographic correlates of HT use. Studies of ever-use of HT in diverse populations in the U.S. indicated that the prevalence of HT ever-use was higher among younger than older subjects; non-Hispanic Whites than the other racial/ethnic groups including Hispanics, non-Hispanic Blacks/African Americans, non-Hispanic Asians, and non-Hispanic American Indians/Native Americans; more educated than less educated individuals; never-married than married individuals; childless individuals compared to those with children and those living in the West or Midwest compared to those living in the South or Northeast (Grinberg & Goodwin, 2016; Salloum, Thrasher, Kates, & Maziak, 2015; Villanti et al., 2015).

Several systematic reviews of worldwide publications addressing HT use indicated a lack of studies with nationally representative samples, disproportional rates of HT use across...
different countries, as well as adverse effect of HT use on health (Akl et al., 2013, 2011; Jawad et al., 2018; Waziry, Jawad, Bailout, Al Akel, & Akl, 2016). While these and several other studies have estimated the prevalence of HT use and identified related factors, there is limited literature on trends in HT use in the U.S. (Robinson, Wang, Jackson, Donaldson, & Ryant, 2017). Our study aimed to examine the trends in prevalence of ever-use of HT over the period from 2010 to 2015 and to identify the key characteristics associated with HT ever-use by means of a large data set representative of the U.S. young-adult population. The goals were to demonstrate that the prevalence of ever-use and current use of HT increased among young adults in recent years and the patterns of HT use differed across diverse demographic subpopulations of young adults.

2. Methods

We used pooled data from the 2010–2011 (30,135 adults surveyed) and 2014–2015 (25,217 adults surveyed) Tobacco Use Supplement to the Current Population Survey (US Department of Commerce Census Bureau, 2016). The 2010–2011 and 2014–2015 data sets are representative of civilian non-institutional adults (18+ years old) in the U.S. in the periods 2010–2011 and 2014–2015, respectively. Each survey period (2010–11 and 2014–15) consisted of three monthly surveys, where the non-response rates among self-respondents varied from 37.7% to 40.2% in 2010–11 and from 46.3% to 55.7% in 2014–15 (US Department of Commerce Census Bureau, 2012, 2016).

In the study we used information on self-reported tobacco use among 55,352 young adults (i.e., 18–30 years old); the sample was weighted so it was representative of 54,140,106 U.S. young adults. The interviews were conducted either in-person (46%) or by phone (54%). The majority of young adults resided in a metropolitan area (86.6%).

Our key measure of interest was HT ever-use which was defined using responses of “Yes” and “No” to the survey item, “Have you ever used any of the following even one time: A water pipe or hookah pipe filled with tobacco?” Responses to the follow-up question, “Do you now smoke a water pipe or hookah pipe filled with tobacco every day, some days or not at all?” were used to measure current HT use. Current HT users were respondents who indicated every day or someday use; current HT non-users were respondents who were ever-users and answered “not at all” to the follow-up question. Current cigarette smoking status and other tobacco use measures were defined using similar questions. These and additional measures such as sociodemographic characteristics are listed in Table 1.

We used Rao-Scott chi-square tests to identify factors associated with HT ever-use. Adjustments for the complex design of the TUS-CPS were incorporated in all analyses; specifically, we used balanced repeated replications for variance estimation and main survey weights for point estimation (“US Department of Commerce, US Census Bureau. Current Popoulation Survey. Methodology”, 2017; Ha & Soulakova, 2017). The significance level for each test of association was 5%. If the test indicated a significant association between ever-use and a categorical measure with three or more categories, we performed post-hoc comparisons using Bonferroni-adjusted p-values. When comparing the over-time differences in the prevalence of HT use, we also constructed the 95% confidence intervals (CI) for the...
deifferences: 2014–15 prevalence minus 2010–11 prevalence. Therefore, positive limits indicate increased prevalence from 2010 to 11 to 2014–15.

We also used a logistic regression (Likelihood Ratio = 4,320,602, df =34, \( p < 0.0001 \)) to model the relationship between the logit of probability of HT ever-use and the other factors, i.e., time period (2011–2012, 2014–2015), characteristics depicted in Table 1, metropolitan status of residency (metropolitan area, non-metropolitan area) and survey mode (phone interview, in-person interview). While building the model we explored significance of all possible two-way interaction effects between time period and the other covariates, starting with the full model containing all these interactions. Then we used an analog of backward elimination: in each step, we detected all interactions with \( p \)-values exceeding 0.050, among these detected interactions we deleted the interaction with the highest \( p \)-value, and refitted the model. The final model contained three two-way interactions between time period and age (\( p \)-value < 0.0001), race/ethnicity (\( p \)-value < 0.0001) and region of residency (\( p \)-value = 0.0007), as well as main effects (\( p = 0.0041 \) for survey mode and \( p \)'s < 0.0001 for all other factors). Analyses were performed using SAS®9.4 software (SAS Institute Inc., 2016) and methods described previously (Ha & Soulakova, 2017).

3. Results

The overall prevalence of current use of HT was 1.5%. The prevalence significantly increased from 1.1% in 2010–2011 to 1.9% in 2014–2015 (\( p < 0.0001 \); 95% CI = 0.6%: 1.1%). Similarly, the prevalence of ever-use of HT significantly increased from 7.1% in 2010–2011 to 12.0% in 2014–2015 (\( p < 0.0001 \); CI = 4.2%:5.6%). Overall (across both time periods), the prevalence of HT ever-use differed significantly among populations with diverse sociodemographic characteristics and current tobacco use behaviors (all \( p \)'s < 0.0001). Specifically, the prevalence of ever-use was significantly higher among 18–25 year-olds (10.1%) than 26–30 year-olds (8.8%), among males (12.0%) than females (7.2%), among those residing in a metropolitan area (10.2%) compared to those residing in a non-metropolitan area (6.5%), and among additional subpopulations depicted in Table 2. Phone interviews were associated (\( p < 0.0001 \)) with higher prevalence (10.2%) of HT ever-use than in-person interviews (8.8%). In addition, the 2014–15 prevalence of ever-use was significantly higher among young adults who were current users of e-cigarettes (38.3%) relative to non-users (11.1%, i.e., former or never users of e-cigarettes). We note that use of e-cigarettes was not surveyed in 2010–2011. Overall, in 2010–2015 the prevalence of ever-use was significantly higher among young adults who were current users of smokeless tobacco products (22.8%) relative to non-users (9.3%); cigars, cigarillos or little filtered cigars (37.2%) relative to non-users (8.7%); and regular tobacco pipes (54.8%) relative to non-users (9.4%).

The estimates based on the fitted multiple logistic regression for over-time comparisons of diverse populations as well as comparisons for main effects are depicted in Table 3. In addition to the results depicted in Table 3, residing in a metropolitan area was associated with higher odds of HT ever-use relative to residing in a non-metropolitan area (OR = 1.706, CI = 1.485:1.960) and interviewing in-person was associated with lower odds of ever-use.
relative to interviewing by phone (OR = 0.897, CI = 0.832:0.966). All results for factors not included in the interactions were consistent with the results based on unadjusted analyses.

4. Discussion

4.1. Increased overall rates of current and ever-use of HT

The prevalence of current use of HT remains relatively low among young adults in the U.S.; however, despite small rates of < 2%, there was a significant increase in the rate of current use from 2010 to 2015. In addition, there was a significant 5% increase in the prevalence of ever-use of HT in this period. The rate of HT ever-use is much more pronounced: the rate was about 7% in 2010–2011 and 12% in 2014–2015. This significant escalation in the rates of HT use indicates that HT becomes increasingly more popular among young adults in the U.S. Considering HT use is similar to cigarette smoking in that it leads to nicotine dependence and increased risks for cardiovascular disease and cancer (Cobb et al., 2010; Jabbour et al., 2003; Maziak, 2011; Maziak, Eissenberg, & Ward, 2005), the topics of initiation of HT use and current HT use deserve much more attention in the public health research and media than are given currently. The study results are consistent with prior research indicating that HT use is a rising health concern across the nation (Cobb et al., 2010).

4.2. Over-time differences in the rates of ever-use for diverse populations

The over-time differences in the prevalence of HT ever-use (after controlling for sociodemographic characteristics and current cigarette smoking status) were not uniform across the age groups, races/ethnicities or U.S. regions. Specifically, the increase in the rates of HT use was more noticeable among 26–30 year-old than 18–25 year-old adults, and for the Non-Hispanic Black/African American population, followed in turn by the Non-Hispanic Multiracial, Hispanic, Non-Hispanic White and Non-Hispanic Asian populations. The odds ratios for Non-Hispanic Hawaiian/Pacific Islander and Non-Hispanic American Indian/Alaskan Native populations were not significant, potentially indicating no over-time difference in the rates of HT ever-use in these populations. Among the U.S. regions, the most pronounced increase in the rates of HT ever-use was observed for the Northeast, followed by the Midwest, the South and then the West.

4.3. Sociodemographic factors and tobacco use behaviors associated with HT ever-use

The overall prevalence of HT ever-use was higher among younger (18–25 year old) than older (26–30 year old) adults, among men than women, among non-Hispanic Multiracials and non-Hispanic Whites compared to the other racial/ethnic groups, among more educated than less educated adults, among employed individuals compared to those who are not in labor force, among those who have never been married and among those residing in the U.S. Western or Midwestern regions. These results are consistent with prior literature (Grinberg & Goodwin, 2016; Salloum et al., 2015; Villanti et al., 2015). In addition, the overall prevalence of HT ever-use was highest for occasional cigarette smokers (23%), former smokers (21%) and daily smokers (16%) than never smokers (7%). The ever-use of HT was positively associated with current cigarette smoking, use of smokeless tobacco products,
cigar smoking (including cigarillo and little filtered cigars) and smoking a pipe filled with tobacco.

4.4. Study limitations

The study has several limitations. First, the study indicated that phone interviews resulted in a higher prevalence estimate of HT ever-use than did in-person interviews. This points to a response bias associated with the survey mode (Bowling, 2005; Bright & Soulakova, 2014; Ha & Soulakova, 2018; Kolenikov & Kennedy, 2014; Soulakova, Davis, Hartman, & Gibson, 2009; St-Pierre & Beland, 2004). However, we believe that adjusting for the survey mode in the model (used in this study) resulted in decreased discrepancy associated with the mixed modes used in the survey. We note that the TUS-CPS data could be potentially subject to other types of response bias, e.g., recall bias (Bright & Soulakova, 2014; Soulakova, Bright, & Crockett, 2013; Soulakova, Bright, & Crockett, 2015; Soulakova, Huang, & Crockett, 2015). Second, while results based on Rao-Scott tests and regression model were generally consistent, the model is potentially under-fitted (all effects in the model were highly significant). Therefore, future studies could consider a larger set of covariates in the hopes of improving model fit and accuracy of estimation. Third, there was a relatively small sample size for Non-Hispanic Hawaiian/Pacific Islander population (n = 249, < 1% of the sample). Thus, all inferences for this population should be drawn with caution, e.g., while there was a relatively large odds ratio (exceeding 4) potentially pointing to a drastic increase in the rate of ever-use from 2010 to 11 to 2014–15 in this population, the ratio was not statistically significant. In addition, analyses targeted ever-use of HT rather than current use of HT; the small proportion of current HT users prohibited testing for associations between current HT use and the other characteristics.

4.5. Implications

A significant increase in the rates of current and lifetime HT use from 2010 to 2015 suggests growing popularity of HT among young adults in the U.S. in recent years. The high rate of HT use among former smokers indicates that quitting cigarette smoking does not necessarily imply discontinued use of other tobacco products. Thus, smoking cessation methods should target discontinuation of tobacco use in general, not just cessation of cigarette use. Otherwise there is a risk that cigarettes will be replaced with other tobacco products or ways of smoking tobacco. The overall rate of HT ever-use was the lowest among non-Hispanic Blacks and African Americans. However, HT use became much more prevalent within this population (relative to the other racial/ethnic groups) in the period from 2010 to 2015. Therefore, the racial/ethnic differences in the rates of HT use could become smaller in the near future because HT use is a rapidly emerging behavior among non-Hispanic Black and African American young adults. The study confirms the importance of a new tobacco use policy covering all tobacco products, including HT, and use of HT at commercial premises, such as water-pipe bars, e.g., mandatory health warning labels to the hookah apparatus have been previously suggested (Jawad et al., 2018).

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HIGHLIGHTS

• Current use of hookah tobacco (HT) was defined as current daily or occasional use

• The 2014–15 rate of current HT use among young adults in the U.S. was about 2%

• The rate of HT ever-use increased significantly from 7% in 2010–11 to 12% in 2014–15

• Among diverse races/ethnicities, the rates of HT use increased most for Non-Hispanic Blacks/African Americans

• The high rate of HT use among former cigarette smokers (21%) indicates continued use of tobacco among former smokers
Table 1
Sample summary statistics for sociodemographic characteristics and current tobacco use in young adults.

| Characteristics                        | Sample count | Percent based on the population count |
|----------------------------------------|--------------|---------------------------------------|
| **Sociodemographic characteristics**   |              |                                       |
| Age                                    |              |                                       |
| 18–25                                  | 28,733       | 61.4%                                 |
| 26–30                                  | 26,619       | 38.6%                                 |
| Sex                                     |              |                                       |
| Male                                   | 25,064       | 49.8%                                 |
| Female                                 | 30,288       | 50.2%                                 |
| Race/ethnicity                         |              |                                       |
| Non-Hispanic White                     | 35,357       | 57.2%                                 |
| Non-Hispanic Black/African American    | 6110         | 13.7%                                 |
| Non-Hispanic American Indian/Alaskan Native | 639       | 0.8%                                 |
| Non-Hispanic Asian                    | 2680         | 5.4%                                  |
| Non-Hispanic Hawaiian/Pacific Islander | 249          | 0.4%                                  |
| Non-Hispanic Multiracial              | 1003         | 1.9%                                  |
| Hispanic                               | 9314         | 20.7%                                 |
| Highest level of education             |              |                                       |
| Less than high school                  | 5942         | 12.6%                                 |
| High school or equivalent              | 15,052       | 28.5%                                 |
| Some college or Bachelor’s degree      | 30,963       | 54.1%                                 |
| Graduate degree                        | 3395         | 4.9%                                  |
| Employment status                      |              |                                       |
| Employed                               | 38,828       | 66.8%                                 |
| Unemployed                             | 4745         | 9.6%                                  |
| Not in labor force                     | 11,779       | 23.6%                                 |
| Marital status                         |              |                                       |
| Married (live with a spouse)           | 16,230       | 24.7%                                 |
| Widowed, divorced, separated           | 2686         | 4.2%                                  |
| Never married                          | 36,436       | 71.1%                                 |
| Region                                 |              |                                       |
| Northeast                              | 8927         | 15.5%                                 |
| Midwest                                | 13,243       | 21.4%                                 |
| South                                  | 18,952       | 37.6%                                 |
| West                                   | 14,230       | 24.0%                                 |
| Current tobacco use Cigarette smoking status |        |                                       |
| Never smoker                           | 40,905       | 76.5%                                 |
| Former smoker                          | 4857         | 7.5%                                  |
| Occasional smoker                      | 2547         | 4.5%                                  |
| Daily smoker                           | 7043         | 11.5%                                 |
| E-cigarette (2014–2015 data only)      |              |                                       |
| Characteristics                          | Sample count | Percent based on the population count |
|-----------------------------------------|--------------|---------------------------------------|
| Non-user (former user or never user)    | 24,336       | 96.6%                                 |
| Current user (daily user or occasional user) | 877          | 3.4%                                  |
| Smokeless tobacco                       |              |                                       |
| Non-user                                | 54,024       | 97.9%                                 |
| Current user                            | 1328         | 2.1%                                  |
| Cigar, cigarillo, or little filtered cigars |              |                                       |
| Non-user                                | 53,739       | 96.9%                                 |
| Current user                            | 1613         | 3.1%                                  |
| Regular pipe filled with tobacco        |              |                                       |
| Non-user                                | 55,131       | 99.6%                                 |
| Current user                            | 221          | 0.4%                                  |
Table 2
Pair-wise comparisons for characteristics significantly associated with HT ever-use.

| Characteristics                          | Prevalence of HT ever-use | Adjusted p-value |
|------------------------------------------|---------------------------|------------------|
| Race/ethnicity                           |                           |                  |
| Non-Hispanic White                       | 11.8%                     | Reference level  |
| Non-Hispanic Black/African American      | 4.6%                      | < 0.0006         |
| Non-Hispanic American Indian/Alaskan Native | 5.6%                     | < 0.0006         |
| Non-Hispanic Asian                       | 7.4%                      | < 0.0006         |
| Non-Hispanic Hawaiian/Pacific Islander   | 9.9%                      | Not significant  |
| Non-Hispanic Multiracial                 | 15.0%                     | Not significant  |
| Hispanic                                 | 7.0%                      | < 0.0006         |
| Highest level of education               |                           |                  |
| Less than high school                    | 4.4%                      | Reference level  |
| High school or equivalent                | 7.2%                      | < 0.0003         |
| Some college or Bachelor’s degree        | 11.7%                     | < 0.0003         |
| Graduate degree                          | 13.0%                     | < 0.0003         |
| Employment status                        |                           |                  |
| Employed                                 | 10.7%                     | Reference level  |
| Unemployed                               | 9.6%                      | Not significant  |
| Not in labor force                       | 6.3%                      | < 0.0002         |
| Marital status                           |                           |                  |
| Married (live with a spouse)             | 6.4%                      | Reference level  |
| Widowed, divorced, separated             | 7.2%                      | Not significant  |
| Never married                            | 10.9%                     | < 0.0002         |
| Region                                   |                           |                  |
| Northeast                                | 8.8%                      | Reference level  |
| Midwest                                  | 10.5%                     | 0.0081           |
| South                                    | 7.6%                      | 0.0153           |
| West                                     | 12.4%                     | < 0.0003         |
| Current smoking status                   |                           |                  |
| Never smoker                             | 6.7%                      | Reference level  |
| Former smoker                            | 21.2%                     | < 0.0003         |
| Occasional smoker                        | 23.0%                     | < 0.0003         |
| Daily smoker                             | 16.2%                     | < 0.0003         |
## Table 3

Logistic regression model results: odds ratios of HT ever-use.

| Comparison                                      | Odds ratio | Simultaneous 95% confidence interval for odds ratio | Adjusted p-value |
|------------------------------------------------|------------|------------------------------------------------------|------------------|
| Over-time comparison: 2014–15 versus 2010–11   |            |                                                      |                  |
| Age                                             |            |                                                      |                  |
| 18–25                                           | 1.774      | 1.346: 2.339                                         | < 0.0001         |
| 26–30                                           | 2.810      | 2.122: 3.720                                         | < 0.0001         |
| Race/ethnicity                                  |            |                                                      |                  |
| Non-Hispanic White                              | 2.016      | 1.773: 2.292                                         | < 0.0001         |
| Non-Hispanic Black/African American             | 4.226      | 2.649: 6.742                                         | < 0.0001         |
| Non-Hispanic American Indian/Alaskan Native     | 0.577      | 0.169: 1.967                                         | NS*              |
| Non-Hispanic Asian                              | 1.866      | 1.152: 3.022                                         | 0.0035           |
| Non-Hispanic Hawaiian/Pacific Islander          | 4.649      | 0.889: 24.316                                        | NS*              |
| Non-Hispanic Multiracial                        | 2.569      | 1.322: 4.993                                         | 0.0007           |
| Hispanic                                        | 2.523      | 1.849: 3.444                                         | < 0.0001         |
| Region                                          |            |                                                      |                  |
| Northeast                                       | 2.655      | 1.788: 3.942                                         | < 0.0001         |
| Midwest                                         | 2.574      | 1.825: 3.630                                         | < 0.0001         |
| South                                           | 2.089      | 1.522: 2.866                                         | < 0.0001         |
| West                                            | 1.740      | 1.250: 2.424                                         | < 0.0001         |
| Overall comparison                              |            |                                                      |                  |
| Sex: Female versus male                         | 0.614      | 0.572: 0.659                                         | < 0.0001         |
| Marital status                                  |            |                                                      |                  |
| Married (live with a spouse) versus never married| 0.580      | 0.524: 0.642                                         | < 0.0001         |
| Widowed, separated or divorced versus never married| 0.612      | 0.485: 0.772                                         | < 0.0001         |
| Employment status                               |            |                                                      |                  |
| Employed versus not in labor force              | 1.334      | 1.195: 1.490                                         | < 0.0001         |
| Unemployed versus not in labor force            | 1.377      | 1.143: 1.658                                         | 0.0002           |
| Current smoking status                          |            |                                                      |                  |
| Daily smoker versus never smoker                | 3.690      | 3.255: 4.184                                         | < 0.0001         |
| Occasional smoker versus never smoker           | 4.561      | 3.857: 5.393                                         | < 0.0001         |
| Comparison                                      | Odds ratio | Simultaneous 95% confidence interval for odds ratio | Adjusted p-value |
|-------------------------------------------------|------------|------------------------------------------------------|------------------|
| Former smoker versus never smoker               | 4.118      | 3.603:4.695                                          | < 0.0001         |
| Highest level of education                      |            |                                                      |                  |
| Less than high school versus graduate degree    | 0.200      | 0.155:0.259                                          | < 0.0001         |
| High school or equivalent versus graduate degree| 0.295      | 0.245:0.355                                          | < 0.0001         |
| Some college or Bachelor's degree versus graduate degree | 0.602 | 0.508:0.712                                          | < 0.0001         |

*NS stands for not significant at 5% level.*