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Predictors of tobacco smoking and smokeless tobacco use among adults in Bangladesh

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Abstract

Introduction—To examine predictors of current tobacco smoking and smokeless tobacco use among the adult population in Bangladesh.

Materials and Methods—We used data from the 2009 Global Adult Tobacco Survey (GATS) in Bangladesh consisting of 9,629 adults aged 15 years. Differences in and predictors of prevalence for both smoking and smokeless tobacco use were analyzed using selected socioeconomic and demographic characteristics that included gender, age, place of residence, education, occupation, and an index of wealth.

Results—The prevalence of smoking is high among males (44.7%, 95% confidence interval [CI]: 42.5–47.0) as compared to females (1.5%, 95% CI: 1.1–2.1), whereas the prevalence of smokeless tobacco is almost similar among both males (26.4%, 95% CI: 24.2–28.6) and females (27.9%, 95% CI: 25.9–30.0). Correlates of current smoking are male gender (odds ratio [OR] = 41.46, CI = 23.8–73.4), and adults in older age (ORs range from 1.99 in 24–35 years age to 5.49 in 55–64 years age), less education (ORs range from 1.47 in less than secondary to 3.25 in no formal education), and lower socioeconomic status (ORs range from 1.56 in high wealth index to 2.48 in lowest wealth index). Predictors of smokeless tobacco use are older age (ORs range from 2.54 in 24–35 years age to 12.31 in 55–64 years age), less education (ORs range from 1.44 in less than secondary to 2.70 in no formal education), and the low (OR = 1.34, CI = 1.0–1.7) or lowest (OR = 1.43, CI = 1.1–1.9) socioeconomic status.

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Conclusion—Implementation of tobacco control strategies needs to bring special attention on disadvantaged group and cover all types of tobacco product as outlined in the WHO Framework Convention on Tobacco Control (FCTC) and WHO MPOWER to protect people's health and prevent premature death.

Keywords

Bangladesh; global adult tobacco survey; social determinants tobacco use; smokeless tobacco; use tobacco smoking

Introduction

Tobacco use is the leading preventable cause of premature death and disease worldwide, and its impact is even more pronounced in low-and middle-income countries.[1] In Bangladesh, tobacco use has become not only a major contributor to the country's high morbidity[2] but also the biggest drains to the nation's economy.[3] Several national and sub-national studies in Bangladesh have shown high prevalence of both smoking (e.g., cigarettes, *bidis*) and use of smokeless tobacco (e.g., betel quid with tobacco, *khoini*, *gul*, *zarda*).[4–10]

Surveys in Bangladesh have shown that males and individuals with no education, lower household income, and a lower standard of living have higher smoking prevalence.[4,5] These surveys, however, were multi-topical and thus not designed solely to collect information on tobacco use. The Global Adult Tobacco Survey (GATS)[10] offered an opportunity to focus on the prevalence of tobacco use in Bangladesh using a globally standardized methodology. A study based on GATS finding analyzed the social determinants of tobacco use as a whole.[11] The present paper examines predictors' of smoking and smokeless tobacco use using data from the GATS conducted in 2009.

Materials and Methods

The GATS is a nationally representative household survey that uses a standardized questionnaire, sample design, and procedures for data collection and management. The survey provides cross-sectional estimates for the country as a whole as well as by urban city (rural/urban residence) and gender.[10]

Variables included in the analyses

In accordance with the guidelines for GATS indicators,[12,13] current smoking and smokeless tobacco use, the dependent variable in this analysis, were defined as smoking or the use of any smokeless tobacco product either daily or occasionally. The following two questions were used—(1) “Do you currently smoke tobacco on a daily basis, less than daily, or not at all?” and (2) “Do you currently use smokeless tobacco on a daily basis, less than daily, or not at all?” The information on the use of tobacco smoking products included cigarettes (both manufactured and hand rolled), *bidis*, *hookahs*, *pipes*, *cigars*, cheroots, *cigarillos*, or any other unspecified smoked tobacco products. For smokeless tobacco, the products included were betel quid with tobacco (*zarda*, *zarda with supari*, *sada pata*, and *pan*

masala with tobacco), *sada pata* chewing, *gul*, *khoinnee*, or any other unspecified smokeless tobacco products.

The variables related to social determinants used in this analysis were age, place of residence (urban/rural), gender (male/female), education (highest level completed), occupation, and wealth index (described below). For this analysis, educational level had five categories: No formal schooling, less than primary, primary completed, less than secondary, and secondary school or above completed (including high school, college/university, and postgraduate and above). Occupational categories were based on a question that asked about the primary work status of the respondent in the past 12 months. The responses to this question were recorded into five mutually exclusive categories: Employed, self-employed, homemaker, student, and unemployed/retired. The wealth index, a proxy measure for the respondents' socioeconomic status, was constructed using principal component analysis[13,14] applied to information on household ownership of assets. The index used here, which was similar to the one that has been developed and tested in a large number of countries in relation to inequities in household income,[6,14,15] is an indicator of the level of wealth that is consistent with measures of expenditures and income.[14,15] Information on assets collected in GATS included household ownership of a number of items, such as electricity, flush toilet, fixed telephone, cell telephone, television, radio, refrigerator, automobile, moped/scooter/motorcycle, washing machine, bicycle, sewing machine, *almirah*/wardrobe, table, bed or cot, chair or bench, watch or clock, as well as the type of main material used for the roof of the main house (cement, tin, or *katcha* such as bamboo/thatch/straw). The sample was categorized into quintiles of wealth from 1 (lowest) to 5 (highest).

The GATS data used in the analysis consisted of 9,629 completed interviews of adults aged 15 years, with an overall response rate of 93.6%. All data collected on adults was used for this analysis; the estimates for prevalence were reported as percentages with 95% confidence intervals (CIs). Chi-square test was used to test associations between the prevalence and various socioeconomic and demographic categories. A *P* value of <0.05 was considered statistically significant. The effects of these social determinants on the prevalence of both smoking and smokeless tobacco use were estimated using a multivariate logistic regression model using SPSS 17.0 software for complex samples.

Results

Tobacco smoking

The prevalence of tobacco smoking was higher among males. The prevalence of smoking by age group among adults aged 15+ ranged from 12.0% (15-24 years) to 32.9% (45-54 years). There was no significant variation by place of residence for prevalence of tobacco smoking. In contrast, there was a strong gradient in smoking prevalence by educational level. Among adults, the rate of smoking was highest among those with no formal education and lowest among those with a secondary education or more. In addition, the prevalence of smoking was highest among those in the lowest quintile of the wealth index (29.2%) and lowest among those in the highest quintile (13.6%). Tobacco smoking was more prevalent among

self-employed (46.7%) and employed (43.3%) adults than in the other occupational categories [Table 1].

Use of smokeless tobacco

The use of smokeless tobacco by age was highest among older adults (≥ 65 years), and the age gradient was significant ($P < 0.05$). The proportion of adults consuming smokeless tobacco was higher among rural adults than among urban adults of both genders ($P < 0.05$). Among adults, only 10.2% of those at the highest educational level used smokeless tobacco as compared to 42.3% of those with no formal education. In terms of the wealth index, there was a notable gradient, with the percentage of adults consuming smokeless tobacco decreasing from 36.1% in the lowest quintile to 17.3% in the highest. By occupation, prevalence of smokeless tobacco use among adults was highest among the unemployed/retired (32.4%) as compared to a prevalence of 29.6% among homemakers [Table 1].

Predictors of smoking and smokeless tobacco use

Table 2 presents the multivariate logistic regressions that predict the socioeconomics and demographic correlates of both smoking and smokeless tobacco use. The strongest correlates of current smoking are male gender (odds ratio [OR] = 41.46, CI = 23.8-73.4), and adults in older age (ORs range from 1.99 in 24-35 years age to 5.49 in 55-64 years age), less education (ORs range from 1.47 in less than secondary to 3.25 in no formal education), and the lower socioeconomic status (ORs range from 1.56 in high wealth index to 2.48 in lowest wealth index).

Similarly, the significant predictors of smokeless tobacco use are older age (ORs range from 2.54 in 24-35 years age to 12.31 in 55-64), less education (ORs range from 1.44 in less than secondary to 2.70 in no formal education), and the low (OR = 1.34, CI = 1.0-1.7) or lowest (OR = 1.43, CI = 1.1-1.9) socioeconomic status.

Discussion

The high prevalence of tobacco use in Bangladesh reported here is consistent with most of the national and sub-national surveys among the adult population in this nation of more than 145 million people located in northeastern south Asia.[4–8] This analysis indicated that, in Bangladesh, the use of tobacco is more common among older adults aged 35+ years, living in rural areas, with lower socioeconomic status, and less education for both genders.[16] The socioeconomic gradient for tobacco use, in this case using a previously developed wealth index, is similar to the ones reported in other national[5,6] and sub-national surveys[4,8] for this Bangladesh. The prevalence pattern of both tobacco smoking and smokeless tobacco use was similar to that of overall tobacco use. Though the current study describes the pattern of tobacco smoking and smokeless tobacco use among various socioeconomic and demographic sub-groups, attention should be given to further investigating reasons for tobacco use in Bangladesh to develop an evidence base for interventions. These patterns of use are also consistent with six previous studies[2,3,5,6,11,16,17] that reported that a large proportion of household income among poor families is spent on tobacco in Bangladesh. Given our findings and based on earlier research,[11,12,18] it would likely be advantageous

to develop appropriate public health interventions to reduce tobacco use in Bangladesh with a focus on the disadvantaged populations. Given the morbidity and mortality associated with tobacco use,[1,3,16] regulating the production, sales, and marketing of tobacco in Bangladesh could be considered. More resources for effective public health education and interventions may be created by raising taxes on tobacco and then earmarking part of the funds for public health initiatives.

The fact that over one-fourth of men and women in Bangladesh used smokeless tobacco in some form or other is also a source of concern. For women smoking cigarettes or *bidis* is considered socially unacceptable in the South-East Asian community, but using smokeless tobacco is socially acceptable. Unfortunately, there are common misconceptions among different socio-demographic sectors of population in South-East Asia that smokeless tobacco is less harmful than cigarettes and actually good for the teeth and gums, resulting in it being often used in the form of a dentifrice. An estimated 5% of Bangladeshi adults use tobacco as dentifrice.[9]

Among women, the use of smokeless tobacco has dual health implications particularly in the reproductive years, affecting both mothers and fetuses (due to increased risk for low birth weight and preterm deliveries).[19] Because of the greater use of smokeless tobacco in women as well as the exposure of both women and children to second-hand smoke, integration of tobacco control programs that focus on smokeless tobacco and second-hand smoke into the maternal and child health program could be a cost-effective strategy to educate people, particularly women, about dangers of tobacco use and benefits of quitting; [12] further research is needed to determine if it would be feasible to do this. Interestingly, none of the earlier studies had captured comprehensive information on use of smokeless tobacco; the present study provides results related to the use of smokeless tobacco across various demographic subgroups and identified important predictors such as education and socioeconomic status that may have bearing on public health policy. In Bangladesh, tobacco control legislation at present does not cover smokeless tobacco[20] and, thus, it may prove beneficial to include smokeless tobacco into tobacco policies addressing marketing, packaging, sales, and investing in effective educational or media campaigns to educate the public about harmful effects of smoking as well as using smokeless tobacco.

Bangladesh ratified the World Health Organization (WHO) Framework Convention for Tobacco Control (FCTC) in 2004, formulated national tobacco control legislation in 2005, [20] and issued further regulations in 2006.[21] GATS data for the first time offered an opportunity to study some critical elements of the WHO FCTC[22] and monitoring component of WHO MPOWER.[23] To prevent premature morbidity and mortality associated with smokeless tobacco use, it is desirable to revise the tobacco control policy in Bangladesh to include provisions for prevention and control of smokeless tobacco in national tobacco control policies and programs.

The present study found no statistically significant difference in the prevalence of smoking between the urban and rural populations, but did find that the use of smokeless tobacco was statistically higher in the rural population. Providing health warnings on all tobacco products has been demonstrated to be a cost-effective health education tool.[20] Bangladesh has

implemented a textual health warning on smoking products, but it has done this only on cigarette packs, not on packs of *bidis* and smokeless tobacco products. In view of low literacy rate in Bangladesh, pictorial health warnings likely would provide a more effective public health message. The WHO Framework Convention has called for graphic health warnings covering 50% or more of the front and back of all tobacco products, and providing such warnings should contribute to prevent and reduce initiation, and promote cessation.

There are limitations in the study. We note that the findings in this report are subject to the limitation that estimates that prevalence was based on self-reports. In certain settings, social norms (e.g., the unacceptability of smoking by women) might result in underreporting. Furthermore, both the education and occupational categories had only five subcategories each, which could have contributed to biased estimates in terms of the pattern of results observed. Nonetheless, these groupings were more specific than those used in earlier research on tobacco use in Bangladesh. Finally, the construction of the wealth index for this study was based on a limited number of asset variables. Essentially predictors are same for male and female. In addition, although we observed huge differences in smoking between males and females, the number of female smokers was very less to carry out logistic regression with many variables in the model.

Conclusion

In Bangladesh, tobacco smoking and the use of smokeless tobacco individually are strongly associated with social disadvantage (e.g., low socioeconomic status, less education), indicating an important association between tobacco use and social determinants. Findings from GATS indicate that rural residence and having less education and wealth are predictors of smoking and use of smokeless tobacco. We also found that the prevalence of use increased as age increased for all forms of tobacco use. Implementation of tobacco control strategies drawn from the standards outlined in the WHO Framework Convention on Tobacco Control (FCTC) and WHO MPOWER could have benefits in reducing tobacco use and preventing premature death.

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References

1. World Health Organization. [Last accessed on 2011 Dec 19] Tobacco Fact Sheet. 2011. May, <http://www.who.int/mediacentre/factsheets/fs339/en/index.html>
2. Cohen N. Smoking, health, and survival: Prospects in Bangladesh. *Lancet*. 1981; 1:1090–3. [PubMed: 6112456]

3. Zaman, MM, Nargis, N, Perucic, AM, Rahman, K, Zaman, MM, Nargis, N. , et al. Impact of tobacco-related illnesses in Bangladesh. New Delhi: South-East Asia Regional Office, World Health Organization; 2007. Available from: http://whqlibdoc.who.int/hq/2005/TOB_NCD_001_eng.pdf. [Last accessed on 2013 Jan 16]
4. Bangladesh Bureau of Statistics. Bangladesh Health and Demographic Survey. Report of survey on prevalence of morbidity, treatment status, treatment expenditures, fertility, immunization and smoking, July 1997 Dhaka, Bangladesh: Bangladesh Bureau of Statistics; 1999.
5. National Institute of Population Research and Training. Bangladesh Urban Health Survey, 2006. Dhaka, Bangladesh, and Chapel Hill, NC, USA: Measure DHS; 2008. Available from: <http://www.cpc.unc.edu/measure/publications/tr-08-68>. [Last accessed on 2013 Jan 16]
6. National Institute of Population Research and Training. Bangladesh Demographic and Health Survey. Dhaka, Bangladesh, and Calverton, Maryland, USA: Mitra and Associates, and ORC Macro; 2007.
7. Ashraf A, Quaiyum MA, Ng N, Van Minh H, Razzaque A, Masud Ahmed S, et al. Self-reported use of tobacco products in nine rural INDEPTH Health and Demographic Surveillance Systems in Asia. *Glob Health Action*. 2009; 2
8. World Health Organization, Regional Office for South-East Asia Region. [Last accessed on 2013 Jan 16] Fact Sheet. Bangladesh Dental Students Global Health Professions Students Survey 2005. Available from: <http://apps.nccd.cdc.gov/GTSSData/Ancillary/DataReports.aspx?CAID=1>.
9. World Health Organization. Report on Global Youth Tobacco Survey (GYTS) and Global School Personnel Survey (GSPS) in Bangladesh. New Delhi, India: World Health Organization, Office for South-East Asia Region; 2007.
10. World Health Organization. Global Adult Tobacco Survey: Bangladesh Report 2009. Dhaka, Bangladesh: Country Office for Bangladesh; 2009. Available from www.who.int/entity/tobacco/surveillance/global_adult_tobacco_survey_bangladesh_report_2009.pdf. [Last accessed on 2013 Jan 16]
11. Sinha DN, Palipudi KM, Rolle I, Asma S, Rinchen S. Tobacco use among youth and adults in member countries of South-East Asia region: Review of findings from surveys under the global tobacco surveillance system. *Indian J Public Health*. 2011; 55:169–76. [PubMed: 22089684]
12. Palipudi KM, Gupta PC, Sinha DN, Andes LJ, Asma S, McAfee T. Social determinants of health and tobacco use in thirteen low and middle income countries: Evidence from Global Adult Tobacco Survey. *PLoS ONE*. 2012; 7
13. Global Tobacco Surveillance System. Global Adult Tobacco Survey (GATS): Indicator Guidelines: Definition and Syntax. Atlanta, USA: 2009.
14. Rutstein, S, Johnson, K. The DHS Wealth Index DHS Comparative Reports No. 6. Calverton, Maryland: ORC Macro; 2004.
15. Rutstein, S. Wealth versus Expenditure: Comparison between the DHS Wealth Index and Household Expenditures in Four Departments of Guatemala. Calverton, Maryland, USA: ORC Macro; 1999.
16. Efroymson D, Ahmed S, Townsend J, Alam SM, Dey AR, Saha R, et al. Hungry for tobacco: An analysis of the economic impact of tobacco consumption on the poor in Bangladesh. *Tob Control*. 2001; 10:212–7. [PubMed: 11544383]
17. Bobak, M, Jha, P, Nguyen, S, Jarvis, M. Poverty and smoking Tobacco control in developing countries. Prabhat, J, Frank, C, editors New York: Oxford University Press for the World Bank; 2000. 41–61.
18. Giovino GA, Mirza SA, Samet JM, Gupta PC, Jarvis MJ, Bhala N, et al. Tobacco use in 3 billion individuals from 16 countries: An analysis of nationally representative cross-sectional household surveys. *Lancet*. 2012; 380:668–79. [PubMed: 22901888]
19. Gupta PC, Subramoney S. Smokeless tobacco use, birth weight, and gestational age: Population based prospective cohort study of 1217 women in Mumbai, India. *BMJ*. 2004; 328:1538. [PubMed: 15198947]
20. Ministry of Health. Bangladesh Tobacco Control Legislation. Dhaka, Bangladesh: Ministry of Health; 2005.

21. Ministry of Health. Bangladesh Tobacco Control Legislation. Dhaka, Bangladesh: Ministry of Health; 2006.
22. WHO. WHO Framework Convention on Tobacco Control. Geneva: WHO; 2003. Available from: http://www.who.int/fctc/text_download/en/index.html. [Last accessed on 2013 January 16]
23. WHO. Report on the global tobacco epidemic, 2008: The MPOWER package. Geneva: WHO; 2008. Available from: http://www.who.int/tobacco/mpower/gtcr_download/en/index.html. [Last accessed on 2013 January 16]

Table 1
Pattern of current tobacco use among adults in Bangladesh by type of use and socioeconomic and demographic characteristics

Socioeconomic or demographic characteristic	Tobacco use		Tobacco smoking		Smokeless tobacco use		Sample size <i>n</i>
	%	(95% CI)	%	(95% CI)	%	(95% CI)	
Overall	43.3	(41.7, 45.0)	23.0	(21.9, 24.2)	27.2	(25.5, 28.9)	9,629
Gender	<i>P</i> <0.05		<i>P</i> <0.05		<i>P</i> >0.05		
Male	58.0	(55.9, 60.1)	44.7	(42.5, 47.0)	26.4	(24.2, 28.6)	4468
Female	28.7	(26.7, 30.8)	1.5	(1.1, 2.1)	27.9	(25.9, 30.0)	5161
Age (years)	<i>P</i> <0.05		<i>P</i> <0.05		<i>P</i> <0.05		
15–24	16.9	(14.7, 19.4)	12.0	(10.2, 14.1)	6.6	(5.1, 8.6)	2,073
25–34	36.3	(33.6, 39.1)	22.6	(20.3, 25.1)	19.9	(17.7, 22.3)	2,665
35–44	55.0	(51.7, 58.2)	29.8	(27.3, 32.4)	35.0	(31.8, 38.4)	2,232
45–54	67.6	(63.9, 71.1)	32.9	(29.6, 36.3)	46.7	(42.4, 51.0)	1,329
55–64	70.7	(66.4, 74.6)	31.6	(27.3, 36.3)	49.3	(44.6, 54.0)	755
65+	70.8	(66.2, 75.1)	23.5	(19.5, 28.0)	56.4	(51.3, 61.4)	575
Place of residence	<i>P</i> <0.05		<i>P</i> >0.05		<i>P</i> <0.05		
Urban	38.1	(35.6, 40.7)	21.3	(19.8, 22.9)	22.5	(20.3, 24.8)	4,857
Rural	45.1	(43.2, 47.1)	23.6	(22.2, 25.1)	28.8	(26.8, 30.9)	4,772
Education	<i>P</i> <0.05		<i>P</i> <0.05		<i>P</i> <0.05		
No formal education	62.9	(60.7, 65.1)	31.1	(29.1, 33.3)	42.3	(39.8, 44.9)	3,416
Less than primary	47.2	(43.0, 51.4)	26.6	(23.6, 29.8)	28.7	(25.0, 32.8)	1,487
Primary	37.6	(34.0, 41.3)	17.5	(14.7, 20.6)	24.9	(21.4, 28.7)	1,115
Less than secondary	26.2	(23.5, 29.0)	16.7	(14.6, 19.0)	13.5	(11.5, 15.7)	1,937
Secondary or above	21.7	(18.7, 25.0)	14.3	(11.9, 17.2)	10.2	(8.1, 12.7)	1,610
Occupation	<i>P</i> <0.05		<i>P</i> <0.05		<i>P</i> <0.05		
Employed	57.6	(54.6, 60.6)	43.3	(40.3, 46.3)	26.5	(23.6, 29.7)	2,326
Self-employed	62.5	(59.6, 65.3)	46.7	(44.0, 49.4)	30.7	(28.0, 33.5)	2,271
Homemaker	30.4	(28.1, 32.8)	1.4	(1.0, 2.0)	29.6	(27.3, 32.0)	4,132
Student	4.4	(2.3, 8.3)	3.4	(1.5, 7.5)	1.0	(0.4, 2.6)	461
Unemployed/retired	49.8	(43.3, 56.4)	22.1	(17.1, 28.2)	32.4	(26.6, 38.8)	435
Wealth index	<i>P</i> <0.05		<i>P</i> <0.05		<i>P</i> <0.05		
Lowest	55.6	(52.7, 58.5)	29.2	(26.4, 32.2)	36.1	(32.6, 39.8)	1,866
Low	48.1	(45.2, 51.0)	26.3	(24.0, 28.7)	30.3	(27.4, 33.3)	2,068
Middle	43.1	(39.6, 46.6)	23.2	(20.6, 26.1)	26.3	(23.2, 29.6)	1,732
High	38.4	(35.6, 41.4)	20.5	(18.2, 22.9)	23.8	(21.4, 26.3)	2,040
Highest	28.1	(25.1, 31.2)	13.6	(11.8, 15.7)	17.3	(14.8, 20.1)	1,923

CI=Confidence interval

Table 2

Predictors of current tobacco smoking and smokeless tobacco use among adults age 15 years and above in Bangladesh using logistic regression analysis

Selected socioeconomic and demographic characteristics	Tobacco smoking		Smokeless tobacco use	
	OR	95% CI	OR	95% CI
Gender	$P<0.001$		$P<0.01$	
Male	41.76	(23.8, 73.4)***	0.81	(0.6, 1.1)
Female (RC)	1.00		1.00	
Age	$P<0.001$		$P<0.001$	
15-24 (RC)	1.00		1.00	
25-34	1.99	(1.5, 2.7)***	2.54	(1.8, 3.5)***
35-44	2.80	(2.1, 3.8)***	5.18	(3.8, 7.1)***
45-54	4.17	(3.0, 5.9)***	8.52	(6.0, 12.0)***
55-64	5.49	(3.7, 8.2)***	9.75	(6.8, 14.0)***
65+	3.55	(2.1, 6.1)***	12.31	(8.6, 17.5)***
Place of residence	$P>0.05$		$P>0.05$	
Urban (RC)	1.00		1.00	
Rural	0.86	(0.7, 1.0)	1.09	(0.9, 1.3)
Education	$P<0.001$		$P<0.001$	
No formal education	3.25	(2.3, 4.6)***	2.70	(2.0, 3.6)***
Less than primary	1.90	(1.3, 2.8)***	2.23	(1.6, 3.1)***
Primary completed	1.49	(1.0, 2.3)	2.28	(1.6, 3.2)***
Less than secondary	1.47	(1.0, 2.1)*	1.44	(1.1, 2.0)*
Secondary or above (RC)	1.00		1.00	
Occupation	$P<0.001$		$P<0.001$	
Employed (RC)	1.00		1.00	
Self-employed	0.99	(0.8, 1.2)	1.09	(0.9, 1.3)
Homemaker	0.27	(0.1, 0.5)***	0.85	(0.7, 1.1)
Student	0.19	(0.1, 0.4)***	0.17	(0.1, 0.5)***
Unemployed/retired	0.69	(0.4, 1.3)	0.83	(0.6, 1.2)
Wealth index	$P<0.001$		$P>0.05$	
Lowest	2.48	(1.7, 3.6)***	1.43	(1.1, 1.9)*
Low	1.72	(1.3, 2.4)***	1.34	(1.0, 1.7)*
Middle	1.64	(1.2, 2.3)**	1.18	(0.9, 1.5)
High	1.56	(1.1, 2.1)**	1.16	(0.9, 1.5)
Highest (RC)	1.00		1.00	
Sample size	8999		9327	

*** $P<0.001$. ** $P<0.01$. * $P<0.05$. † P values shown for test of linear trend. OR=Odds Ratio. CI=Confidence interval. RC=Reference category. Dependent variable: 1=Current smokers/users. 0=Never smokers/users (former smokers/users excluded)