



Prevalence and social determinants of tobacco use in Afghanistan

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Background: Limited evidence exists on the prevalence and social determinants of tobacco use in Afghanistan—a fragile post-war context where the tobacco epidemic is on the rise. This study aimed to estimate the prevalence and social determinants of tobacco use in Afghan men and women.

Methods: Data from the 2015 Afghanistan Demographic and Health Survey of 10 760 men and 29 461 women were used to generate weighted prevalence estimates for smoking, smokeless tobacco (SLT) products including chew and snuff tobacco, ‘any tobacco use’ and ‘dual tobacco use’. We also modelled associations with tobacco outcomes using binary logistic regressions.

Results: We found that for men, smoking cigarettes was the most prevalent form of tobacco use (21.9% [95% confidence interval {CI} 21.2–22.7]). Prevalence rates were far lower for women, with cigarette/pipe smoking at 3.4% (95% CI 3.2–3.7). For both sexes, tobacco use was inversely associated with education and positively associated with agricultural and skilled and unskilled manual labour occupations. Wealth increased the odds of smoking for men but decreased the odds for women. Media exposure had little influence on tobacco use among women; however, the effects were more varied for men.

Conclusions: Our results demonstrate social inequalities in tobacco use among Afghan men and women, which calls for stronger tobacco control measures and continued monitoring of this growing epidemic.

Keywords: Afghanistan, cigarettes, chew, dual use, media exposure, smokeless tobacco

Introduction

Tobacco is the leading cause of death, illness and impoverishment globally.¹ While there has been a decrease in the global prevalence of daily smoking, the sheer number of smokers has increased, specifically among men, a billion of which live in low- and middle-income countries (LMICs).^{1,2} Jha and Peto³ suggest that if current smoking patterns persist, tobacco will kill about 1 billion people this century, mostly in LMICs, largely due to cancers and cardiovascular diseases—contributing to the growing burden of non-communicable diseases (NCDs) that are on the rise in the global south.⁴ LMICs have also witnessed an increase in the use of smokeless tobacco (SLT) products each year, including various forms of chewing tobacco and dipping tobacco (e.g. snuff),⁵ resulting in the loss of 6 million disability-adjusted life years (DALYs).⁶

Within the World Health Organization (WHO) Eastern Mediterranean Region (EMRO), where member countries have witnessed adverse changes in recent years due to ongoing instability across

the Middle East and Afghanistan, tobacco smoking is rated in the top 10 of NCD risk factors contributing to DALYs⁷ although countries such as Afghanistan have recognized tobacco consumption as a public health concern of significant importance. In fact, the government of Afghanistan ratified the WHO Framework Convention on Tobacco Control (FCTC), the world’s first public health treaty—stimulating smoke-free legislation and mobilizing the implementation of a national tobacco control programme applying MPOWER policies.⁸ In Afghanistan, MPOWER policies have led to the enforcement of smoke-free public places, including healthcare, educational and government facilities, restaurants and public transport systems. Direct (e.g. national TV and radio) and indirect bans (e.g. promotional discounts) on tobacco advertising have been enforced with which the country’s compliance is considered high. However, a national anti-tobacco media campaign has not yet been implemented to warn about the dangers of tobacco; health warning labels on tobacco product packaging appear in text-only form, and not pictorial form, which may be more effective, and the country is currently out of compliance

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when it comes to raising taxes on tobacco products in order to make them more expensive. For example, according to the WHO, 70% of the retail price of tobacco products should be excise tax; in Afghanistan this is currently 0%.⁹

What is currently known about tobacco use in Afghanistan is that on a national level the prevalence of daily smoking is 7% among women and 21% among men—rates that are higher than those observed among men in other politically unstable (EMRO member) LMICs, including Somalia (13%) and Yemen (19%).¹⁰ Others show that the prevalence of cigarette smoking among men 15–49 y of age in Kabul province is 35%,¹¹ with the odds of smoking being higher in men raised in households where family members smoked, which is why the authors suggest that smoking prevention programmes should target young people in early adolescence. These subgroups are at greatest risk given their exposure to tobacco products via television and points of sale, based on the Kabul-based Global Youth Tobacco Survey.¹²

Existing studies on cigarette smoking in Afghanistan have generally focused only on cigarette use, were conducted mainly in Kabul province and generally do not explore important contextual factors associated with smoking. We therefore set out to examine the prevalence of cigarette smoking and the use of SLT products, including chewing tobacco and dipping tobacco/snuff (locally referred to as *naswar*) among men and women 15–49 y of age across all 34 provinces in Afghanistan using data from the most recent (2015) Afghanistan Demographic and Health Survey (AfDHS).¹³ Also, following Sinha et al.,⁵ we examined the prevalence of ‘any tobacco use’ or those who either smoke, chew or use snuff, along with ‘dual use’, referring to users who smoke *and* chew or use snuff concurrently. Sinha et al. suggest that the dual use phenomenon is emerging and understudied in developing countries, and such users have a greater risk of developing tobacco-related diseases and are less likely to quit their habits. The authors found that in Southeast Asia, the prevalence of any tobacco use was as high as 76% in Indonesia among men, with Nepal having the highest prevalence of dual tobacco use in both men (18%) and women (1.5%).

As a secondary aim of this study, we also examine sociodemographic and socio-economic disparities in all forms of tobacco use among men and women—an approach modelled after recent prevalence studies by Sreeramareddy et al.^{14,15} who use DHS data from various regions. Based on findings from these studies, in addition to expecting that tobacco use will be higher in men than in women, we theorize that less educated individuals will be more likely to use tobacco products due to their lack of knowledge on its associated health consequences, an issue also likely to be more prevalent among rural vs urban dwellers, who may be poorer with limited access to health services and (preventive) health-related information about tobacco use, as previously demonstrated in India.¹⁶ Lower education and poorer economic status have been shown to influence cigarette smoking and SLT use rates in a study using DHS data from 54 LMICs (not including Afghanistan).¹⁷ Sreeramareddy et al. argue for tobacco control policies that not only reduce initiation and prevalence, but also reduce the gap in use between socio-economic groups, inequalities that make an important contribution to mortality differentials. Additionally, we test whether one’s occupational status has an influence on smoking and SLT use. It is plausible

that one’s education determines one’s work environment such that smoking, for example, may be more prevalent and more acceptable with fewer incentives to quit in low-status manual labour occupations.¹⁸ Hence we hypothesize that those working in non-professional occupations (e.g. agriculture, skilled and unskilled manual labour) will be more likely to report tobacco use.

We also examine the association between media exposure and tobacco use, which we expect to be higher among individuals who watch television, listen to radio, and read newspapers and magazines at higher frequencies. Media exposure is significant in light of evidence pointing to the tobacco industry’s expansion in LMICs, with marketing campaigns that deliberately target non-smokers such as women and young people.¹⁹ While limited knowledge exists on the impact of advertising on smoking and SLT uptake in Afghanistan and the EMRO region, data from US studies where adult smoking has significantly decreased in recent years²⁰ show that there are several subgroups in which tobacco use was maintained or even increased. These subgroups were specifically targeted by tobacco advertisements, which tap into the complex psychosocial reasons affecting these patterns, including groups that endure poverty and stress.

Mass media can also be effective in countering negative messages, preventing the initiation and supporting the cessation of tobacco product use through increasing knowledge of its harms.²¹ Yet the tobacco industry’s lobbying power, known to interfere with tobacco control policies in LMICs,¹⁹ is particularly concerning for Afghanistan, a country vulnerable to corporate tobacco market expansion due to its weak economy, rising corruption, and failing state and political institutions.²² Another challenge for Afghanistan is that poverty and ongoing political violence have created stressful social conditions, especially for many young Afghans who already possess little hope for social advancement. Consequently, based on faulty beliefs that tobacco consumption is helpful in reducing stress,²³ many may turn to smoking and SLT products as a means of coping with boredom, frustration and depression²⁴—factors shown to give rise to fatalistic attitudes and risk-taking behaviours.²⁵ For these reasons, along with the fact that tobacco consumption may further contribute to poverty (and stress) by diverting household spending from basic needs,¹ the rising rates of NCDs such as hypertension that have been linked to smoking in urban Kabul,²⁶ along with recent studies showing a link between tobacco smoke and various cancers in Afghanistan,²⁷ there is a need to continually monitor the prevalence and patterns of tobacco use in Afghanistan in order to achieve effective tobacco control, which we hope to contribute toward here.

Materials and methods

Sampling and procedures

We conducted a secondary analysis of AfDHS data from a nationally representative sample of 10 760 men and 29 461 women between the ages of 15 and 49 y. The AfDHS is a nationally representative cross-sectional household survey that aims to provide up-to-date estimates of basic demographic and health indicators using a stratified two-stage sampling design in urban and rural areas across all regions within Afghanistan. Datasets are available at the DHS programme’s webpage (www.dhsprogram.com).

Questionnaires are administered by local staff in various languages spoken in Afghanistan (e.g. Dari, Pashto, etc.).

Before each interview, an informed consent statement is read to the respondent, which covers topics such as the purpose of the interview, participants' rights, potential risks and benefits, as well as emphasizing that participation is voluntary. To further ensure confidentiality, discussion of interview data is limited to essential conversations between interviewers and other team members. Each respondent's questionnaire, which is de-identified by a series of numbers (e.g. household number), is destroyed after the data are processed. The DHS programme's webpage indicates that procedures and questionnaires for DHS survey protocols are reviewed by the ICF International (consulting firm contracted by the US Agency for International Development) institutional review board (IRB) and typically by an IRB in the host country. Further details about survey administration procedures, the consent process and data management can be found on the DHS program's methodology webpage.²⁸

Measures

Tobacco use

The AfDHS includes a number of items on tobacco use. Tobacco use items assess whether participants currently smoke cigarettes and if they smoke or use any other tobacco products, including chewing tobacco and dipping tobacco or snuff. For instance, questions in the survey included 'Do you currently smoke cigarettes?', presented using a binary 'yes-no' scale. A 'no' response then prompts the question: 'Do you currently smoke or use any (other) type of tobacco?', also presented on a binary 'yes-no' scale. A 'yes' response then prompts the question: 'What (other) types of tobacco do you currently smoke or use?', with response options including *chelum* (*hookah*), chewing tobacco and snuff. Sinha et al.'s⁵ operationalization of any tobacco use and dual tobacco use was used to create these variables here. We combined the two forms of smoking for women (cigarettes and pipe smoking) and omitted tobacco chewing and dual use variables given that only 63 (0.2%) women reported using chew, with only 64 being dual users.

Sociodemographic characteristics

We selected a range of sociodemographic and socio-economic variables to include age (provided in 5 y categories ranging from 15 to 49), ethnicity (Pashtun, Tajik, Hazara, Uzbek and all other ethnic groups/Nuristani, Turkmen, etc.), educational attainment (provided in four categories: 1, no education; 2, primary education; 3, secondary education; 4, higher education). In determining these levels, respondents are asked the highest level of schooling attended and the highest grade completed at that level.

DHS surveys generally do not collect data on income but do collect detailed information on dwelling and household characteristics and access to a variety of consumer goods and services and assets, e.g. a television, car, drinking water, toilet facilities, etc., which together are used as a measure of household economic status. The resulting wealth index, based on quintiles ranging from 1 (poorest) to 5 (richest), is an indicator of the level of wealth that is consistent with expenditure and income measures.²⁸ The wealth index is constructed using household

asset data via principal components analysis. We also included variables to assess the type of place of residence (rural/urban) and the respondents' occupation (e.g. unemployed, professional, sales and clerical, agricultural, and skilled and unskilled manual labour). We also included variables measuring the extent of media exposure to radio, newspaper and magazines, and television—all of which were assessed on a four-point scale ranging from 'not at all' to 'almost daily'. A potential source of bias that may influence gender comparisons in tobacco use include major disparities in educational attainment between men and women. Additionally, while wealth status may be more evenly distributed across wealth quintiles within and between genders, only 3.2% of men report being unemployed compared with 86.8% of women who report being unemployed.

Data analysis

SPSS version 25.0 (IBM, Armonk, NY, USA) was used for all data analysis.²⁹ First, for descriptive purposes, we conducted univariate analyses by generating absolute values and percentages for all variables, followed by generating weighted prevalence estimates and confidence intervals (CIs) for five outcome variables for men: cigarette smoking, tobacco chewing, tobacco dipping, any tobacco use and dual use. We generated models for women, but only for three outcome variables: cigarette/pipe smoking, tobacco dipping and any tobacco use. As noted above, the frequencies of tobacco chewing and dual users were extremely low, $n=63$ and $n=64$, respectively, therefore models were not generated for these outcomes. Lastly, we developed five binary logistic regression models to examine factors associated with each outcome variable for men and three regression models for women. Logistic regression analyses were weighted according to the DHS Guide to Statistics for weighting individual cases for men and women.³⁰ Binary logistic regression analysis computed adjusted odds ratios (ORs) with 95% CIs and p-values of the association between each covariate and outcome.

Results

Sample characteristics

Table 1 indicates that of the 10 760 men who completed surveys, the modal age was 25–29 y, the majority of participants resided in a rural area of Afghanistan, more than half reported no education and only 7% reported having higher education. Wealth was nearly equally distributed across the poorest to the richest wealth quintiles. In terms of occupation type, more than one-third of respondents reported being employed in the skilled or unskilled manual labour sector, which was closely followed by employment in the agricultural sector. In terms of media exposure, participants indicated reading newspapers and magazines far less than watching television and listening to radio. Table 2 shows that of the 29 461 women who completed surveys, the modal age was 25–29 y, most were Pashtun and the vast majority possessed no education (83.5%) and were unemployed (86.8%). However, for women who reported working, most were employed in professional or skilled and unskilled labour occupations. Akin to men, wealth status was close to equal in its distribution, and the majority (76.67%) resided in a rural region of Afghanistan.

Table 1. Weighted prevalence estimates (%) and 95% CIs for cigarette smoking, SLT use, any tobacco use and dual use among men

Characteristics, n (%) ^a	Cigarette smoking	Tobacco chewing	Tobacco dipping/snuff	Any tobacco use	Dual use	
Overall prevalence (95% CI)	21.9 (21.2 to 22.7)	17.7 (17.0 to 18.4)	14.2 (13.6 to 14.9)	44.2 (43.3 to 45.2)	6.2 (5.7 to 6.6)	
Age (years)						
15–19	142 (1.3)	13.9 (9.1 to 20.5)	8.6 (4.7 to 13.9)	9.8 (5.8 to 15.6)	26.0 (19.5 to 34.1)	3.6 (1.4 to 7.5)
20–24	1162 (10.8)	20.4 (18.2 to 22.8)	11.9 (10.1 to 13.8)	13.0 (11.2 to 15.1)	37.7 (34.9 to 40.0)	4.6 (3.5 to 6.0)
25–29	2422 (22.5)	23.7 (22.1 to 25.5)	14.6 (13.3 to 16.1)	14.9 (13.5 to 16.3)	41.5 (39.4 to 43.5)	7.4 (6.4 to 8.5)
30–34	2008 (18.7)	19.7 (18.0 to 21.4)	17.1 (15.5 to 18.8)	14.6 (13.1 to 16.2)	42.9 (40.7 to 45.2)	5.4 (4.5 to 6.4)
35–39	1935 (18.0)	28.2 (26.2 to 30.2)	15.0 (13.5 to 16.7)	15.3 (13.8 to 17.0)	48.0 (45.7 to 50.4)	6.9 (5.9 to 8.1)
40–44	1402 (13.0)	19.3 (17.3 to 21.4)	23.5 (21.3 to 25.7)	13.4 (11.7 to 15.2)	45.2 (42.5 to 47.9)	7.0 (5.8 to 8.5)
45–49	1688 (15.7)	18.9 (17.0 to 20.7)	25.7 (23.7 to 27.9)	13.6 (12.0 to 15.3)	50.7 (48.3 to 53.2)	4.9 (4.0 to 6.0)
Ethnicity						
Pashtun	4501 (41.8)	22.8 (21.6 to 24.1)	11.0 (10.1 to 12.0)	30.9 (29.6 to 32.3)	51.1 (49.9 to 53.0)	9.0 (8.2 to 9.8)
Tajik	3438 (32.0)	22.1 (20.7 to 23.5)	23.5 (22.1 to 25.0)	1.7 (1.3 to 2.2)	41.5 (39.8 to 43.2)	3.6 (3.0 to 4.3)
Hazara	915 (8.5)	12.4 (10.4 to 14.6)	26.6 (23.9 to 29.6)	1.9 (1.1 to 2.9)	36.4 (33.3 to 39.6)	2.7 (1.8 to 3.9)
Uzbek	1153 (10.7)	21.6 (19.3 to 24.0)	17.2 (15.1 to 19.4)	0.1 (0.0 to 0.4)	30.5 (27.8 to 33.2)	5.0 (3.8 to 6.3)
All other ethnicities	752 (7.0)	28.1 (24.9 to 31.4)	20.7 (18.0 to 23.8)	8.5 (6.6 to 10.6)	46.8 (43.1 to 50.5)	6.8 (5.1 to 8.7)
Region of residence						
Rural	8281 (77.0)	21.4 (20.6 to 22.3)	19.8 (19.0 to 20.7)	16.5 (15.7 to 17.3)	47.0 (45.8 to 48.1)	7.0 (6.5 to 7.6)
Urban	2479 (23.0)	23.6 (22.0 to 25.3)	10.6 (9.4 to 11.9)	6.7 (5.7 to 7.7)	35.5 (33.6 to 37.5)	3.3 (2.6 to 4.0)
Education						
None	5447 (50.6)	23.6 (22.5 to 24.8)	21.7 (20.6 to 22.8)	19.5 (18.4 to 20.5)	52.7 (51.3 to 54.1)	8.2 (7.5 to 8.9)
Primary	1987 (18.5)	19.4 (17.7 to 21.2)	17.7 (16.1 to 19.5)	10.9 (9.6 to 12.3)	40.8 (38.6 to 43.0)	4.5 (3.7 to 5.5)
Secondary	2632 (24.5)	23.5 (21.9 to 25.1)	13.0 (11.8 to 14.3)	9.2 (8.1 to 10.3)	38.3 (36.4 to 40.2)	4.6 (3.8 to 5.5)
Higher	695 (6.5)	10.1 (8.0 to 12.5)	3.6 (2.4 to 5.2)	2.2 (1.4 to 3.6)	14.3 (11.9 to 17.2)	0.9 (0.4 to 1.8)
Wealth						
Poorest	2029 (18.9)	19.3 (17.6 to 21.0)	34.1 (32.1 to 36.2)	3.1 (2.4 to 3.9)	50.1 (47.9 to 52.4)	4.1 (3.3 to 5.1)
Poor	2233 (20.8)	21.5 (19.9 to 23.3)	21.9 (20.2 to 23.6)	17.8 (16.3 to 19.4)	51.2 (49.0 to 53.3)	6.8 (5.8 to 7.9)
Middle	2160 (20.1)	21.6 (19.9 to 23.4)	12.8 (11.4 to 14.2)	25.2 (23.4 to 27.1)	45.4 (43.2 to 47.6)	9.2 (8.0 to 10.4)
Rich	2260 (21.0)	23.5 (21.8 to 25.3)	13.4 (12.0 to 14.8)	17.2 (15.6 to 18.8)	41.9 (39.8 to 44.0)	7.7 (6.6 to 8.8)
Richest	2078 (19.3)	23.6 (21.8 to 25.5)	6.9 (5.9 to 8.0)	6.7 (5.7 to 7.9)	32.8 (30.7 to 34.8)	2.7 (2.1 to 3.5)
Occupation						
Unemployed	345 (3.2)	11.9 (8.7 to 15.6)	11.6 (8.4 to 15.3)	13.4 (10.0 to 17.3)	32.2 (27.5 to 37.7)	2.7 (1.3 to 4.7)
Professional	1255 (11.7)	19.4 (19.1 to 21.7)	8.2 (6.8 to 9.8)	7.5 (6.1 to 9.1)	28.4 (26.0 to 31.1)	3.9 (2.9 to 5.1)
Sales and clerical	2099 (19.5)	22.4 (20.6 to 24.2)	14.6 (13.2 to 16.2)	11.4 (10.1 to 12.8)	41.3 (39.3 to 43.5)	4.5 (3.6 to 5.4)
Agriculture	3261 (30.3)	21.8 (20.4 to 23.3)	24.6 (23.1 to 26.1)	18.4 (17.1 to 19.8)	52.3 (50.5 to 54.1)	8.4 (7.5 to 9.4)
Skilled and unskilled manual labour	3800 (35.3)	23.5 (22.2 to 24.9)	17.11 (6.0 to 18.4)	14.5 (13.4 to 15.7)	45.6 (44.0 to 47.2)	6.2 (5.5 to 7.0)
Media exposure						
Radio						
Not at all	4236 (39.4)	18.9 (17.7 to 20.1)	20.3 (19.5 to 21.2)	7.9 (7.1 to 8.7)	39.8 (38.3 to 41.3)	4.8 (4.2 to 5.5)
Less than once/week	1763 (16.4)	24.8 (22.8 to 26.9)	11.9 (9.9 to 14.1)	18.4 (16.6 to 20.2)	52.1 (49.6 to 54.5)	8.6 (7.4 to 10.0)
At least once/week	4748 (44.2)	23.7 (22.5 to 24.9)	5.3 (4.2 to 6.6)	18.5 (17.4 to 19.6)	45.5 (44.0 to 47.0)	6.4 (5.8 to 7.2)
Almost everyday	–	–	–	–	–	–
Newspapers and magazines						
Not at all	8423 (78.5)	23.3 (22.4 to 24.3)	20.8 (19.6 to 22.1)	15.9 (15.1 to 16.7)	48.7 (47.5 to 49.8)	7.2 (6.6 to 7.7)
Less than once/week	893 (8.3)	18.7 (16.2 to 21.3)	21.8 (20.0 to 23.8)	12.2 (10.2 to 14.5)	37.3 (34.2 to 40.6)	3.4 (2.3 to 4.7)
At least once/week	1409 (13.1)	15.4 (13.5 to 17.3)	13.3 (12.4 to 14.3)	5.8 (4.6 to 7.1)	23.6 (21.4 to 25.9)	1.6 (1.1 to 2.4)
Almost everyday	–	–	–	–	–	–
Television						
Not at all	4790 (44.6)	19.8 (18.7 to 21.0)	16.5 (15.5 to 17.6)	22.3 (21.1 to 23.5)	47.1 (45.6 to 48.6)	7.5 (6.8 to 8.3)
Less than once/week	1017 (9.5)	26.0 (23.4 to 28.8)	25.3 (22.7 to 28.1)	16.9 (14.7 to 19.3)	54.4 (51.2 to 57.6)	9.3 (7.6 to 11.1)
At least once/week	4929 (45.9)	23.2 (22.1 to 24.4)	17.3 (16.2 to 18.3)	6.0 (5.3 to 6.6)	39.7 (38.3 to 41.1)	4.2 (3.7 to 4.8)
Almost everyday	–	–	–	–	–	–

^aSome percentage totals do not equal 100 because of missing data.

Table 2. Weighted prevalence estimates (%) and 95% CIs for cigarette and tobacco pipe smoking, SLT use/snuffing by mouth and any tobacco use among women

Characteristics, n (%) ^a	Cigarette and tobacco pipe smoking	Tobacco dipping/snuff	Any tobacco use
Overall prevalence (95% CI)	3.4 (3.2 to 3.7)	2.4 (2.2 to 2.5)	5.4 (5.1 to 5.6)
Age (years)			
15–19	1825 (6.2)	0.9 (0.6 to 1.5)	1.3 (0.8 to 1.9)
20–24	6089 (20.7)	1.7 (1.4 to 2.0)	2.3 (1.9 to 2.7)
25–29	6299 (21.4)	2.5 (2.1 to 2.9)	3.3 (2.9 to 3.7)
30–34	4302 (14.6)	2.5 (2.1 to 3.0)	4.2 (3.7 to 4.9)
35–39	4463 (15.1)	3.9 (3.3 to 4.4)	6.3 (5.6 to 7.0)
40–44	3113 (10.6)	5.3 (4.5 to 6.1)	9.6 (8.6 to 10.7)
45–49	3369 (11.4)	8.8 (7.9 to 9.8)	13.5 (12.4 to 14.7)
Ethnicity			
Pashtun	11 618 (39.4)	3.4 (3.1 to 3.7)	5.2 (4.8 to 5.6)
Tajik	9592 (32.6)	4.5 (4.1 to 4.9)	6.8 (6.3 to 7.3)
Hazara	2878 (9.8)	0.8 (0.5 to 1.1)	2.3 (1.8 to 2.9)
Uzbek	3276 (11.1)	1.7 (1.3 to 2.1)	2.4 (1.9 to 3.0)
All other ethnicities	2097 (7.1)	5.5 (4.6 to 6.5)	8.9 (7.7 to 10.1)
Region of residence			
Rural	22 591 (76.7)	3.8 (3.6 to 4.1)	6.2 (5.9 to 6.5)
Urban	6870 (23.3)	2.2 (1.9 to 2.6)	2.7 (2.3 to 3.1)
Education			
None	24 604 (83.5)	3.8 (3.6 to 4.1)	6.1 (5.8 to 6.4)
Primary	2330 (7.9)	2.6 (2.0 to 3.3)	3.0 (2.4 to 3.8)
Secondary	1971 (6.7)	0.8 (0.5 to 1.3)	1.2 (0.8 to 1.7)
Higher	556 (1.9)	0.1 (0.0 to 0.8)	0.1 (0.0 to 0.8)
Wealth			
Poorest	5904 (20.0)	5.5 (4.9 to 6.1)	9.4 (8.7 to 10.1)
Poor	6001 (20.4)	3.7 (3.2 to 4.2)	6.5 (5.9 to 7.1)
Middle	5888 (20.0)	3.9 (3.4 to 4.4)	5.6 (5.0 to 6.2)
Rich	6010 (20.4)	1.9 (1.6 to 2.3)	2.8 (2.4 to 3.3)
Richest	5657 (19.2)	2.3 (1.9 to 2.7)	2. (2.1 to 3.0)
Occupation			
Unemployed	25 578 (86.8)	3.3 (3.1 to 3.5)	5.0 (4.7 to 5.2)
Professional	1938 (6.6)	3.1 (2.4 to 3.9)	3.7 (2.9 to 4.6)
Sales and clerical	62 (0.2)	5.1 (1.4 to 12.4)	5.2 (1.4 to 12.5)
Agriculture	628 (2.1)	3.4 (2.1 to 5.0)	12.1 (9.7 to 14.8)
Skilled and unskilled Manual labour	1255 (4.3)	7.5 (6.2 to 9.1)	12.1 (10.3 to 13.9)
Media exposure			
Radio			
Not at all	18 130 (61.5)	4.0 (3.7 to 4.3)	6.3 (6.0 to 6.7)
Less than once/week	4257 (14.4)	1.5 (1.1 to 1.9)	2.4 (1.9 to 2.9)
At least once/week	7056 (24.0)	3.2 (2.9 to 3.7)	4.8 (4.3 to 5.3)
Almost everyday	–	–	–
Newspapers and magazines			
Not at all	27 862 (94.6)	3.6 (3.4 to 3.8)	5.6 (5.3 to 5.9)
Less than once/week	795 (2.7)	1.8 (1.0 to 2.9)	2.2 (1.3 to 3.3)
At least once/week	746 (2.5)	0.9 (0.4 to 1.8)	1.1 (0.5 to 2.0)
Almost everyday	–	–	–

Continued

Table 2. (continued)

Characteristics, n (%) ^a		Cigarette and tobacco pipe smoking	Tobacco dipping/snuff	Any tobacco use
Television				
Not at all	14 928 (50.7)	3.9 (3.6 to 4.3)	3.1 (2.8 to 3.4)	6.4 (6.0 to 6.8)
Less than once/week	2922 (9.9)	2.5 (2.0 to 3.2)	2.0 (1.6 to 2.6)	4.0 (3.3 to 4.7)
At least once/week	11 561 (39.2)	3.1 (2.8 to 3.4)	1.5 (1.3 to 1.7)	4.4 (4.0, 4.8)
Almost everyday	–	–	–	–

^aSome percentage totals do not equal 100 because of missing data.

A small proportion reported reading newspapers, approximately half reported not watching television at all and nearly one-quarter reported listening to radio at least once per week.

Prevalence of tobacco use: men

Weighted prevalence estimates in Table 1 show that for men, smoking cigarettes (21.9%) was the most prevalent form of tobacco use, followed by tobacco chewing (17.7%) and tobacco dipping (14.2%). The prevalence of any tobacco use or those who either smoked, chewed or dipped was 44.2%, whereas the prevalence of dual use was far lower at 6.2%. The highest rate of cigarette smoking was observed among men 35–39 y of age (28.2%), and for tobacco chewing the highest prevalence was among the 45–49 y age group (25.7%); however, little variation was observed in tobacco dipping and dual use across age groups, while the prevalence of any tobacco use consistently increased with older age. With regard to ethnicity, the prevalence of using snuff was comparably higher among Pashtun men, especially when compared with Uzbeks (30.9% vs 0.1%). Pashtuns also reported the highest rate of any tobacco use and dual use. The latter two outcomes, along with the use of SLTs, was higher among respondents residing in rural vs urban areas.

Socio-economic disparities are also observed with all forms of tobacco use, along with any use and dual use being more prevalent among respondents working in agricultural as well as skilled and unskilled occupations, and lower among respondents with higher education. Among highly educated participants, rates as low as 2.2% are observed for using snuff, 10.1% for smoking and 0.9% for dual use. The effects of wealth varied, with smoking rates modestly increasing, moving from the poorer to the richer wealth quintiles, whereas SLT use was lowest for respondents in the richest wealth quintiles. Wealth varied among dual users; however, consistent decreases in any tobacco use were observed moving from the poorest to the richest wealth quintiles. The effects of media also varied; however, lower tobacco use was generally observed among respondents reporting reading newspapers and magazines at least once per week.

Prevalence of tobacco use: women

Weighted prevalence estimates for tobacco use among women were considerably lower compared with men. As shown in Table 2, 3.4% reported smoking, 2.4% reported using snuff,

with any tobacco use (smoking or dipping tobacco) at 5.4%. Tobacco use prevalence increased with age, with the highest rates observed among women 45–49 y of age. Moreover, prevalence rates were higher in rural areas and among women employed in skilled and unskilled manual labour occupations. Also, tobacco use was highest among women in the poorest wealth quintile and among women with no education, and consistently decreased moving to the higher education category. Women who reported reading newspapers and magazines reported the lowest use rates; for example, the prevalence of tobacco dipping was 0.2% in those reading newspapers and magazines at least once per week.

Associations with tobacco use: men and women

Tables 3 and 4 show adjusted ORs examining relationships between sociodemographic, socio-economic and media exposure variables and tobacco use for men and women. Below we summarize the findings from each model.

Smoking

Tables 3 and 4 show that age is not statistically associated with smoking for men, whereas for women a significant positive relationship is observed, increasing its odds by 7%. However, for both sexes, higher education significantly reduced the odds of smoking, occupations in skilled and unskilled manual labour increased the odds of smoking (compared with unemployed individuals) and place of residence had no significant impact. With respect to media exposure, higher frequencies of reading newspapers and magazines significantly reduced the odds of smoking for men while a non-significant association was observed for women. For men, the odds of smoking increased with more radio listening and television watching, while for women, radio listening reduced the odds of smoking. Higher wealth status was significantly and positively associated with smoking for men but inversely associated with smoking for women.

SLT use

Tables 3 and 4 show that the likelihood of tobacco chewing slightly but significantly increases with age for men and also slightly increases for women who use snuff. The odds of tobacco chewing were lowest in Pashtun men, while tobacco dipping

Table 3. Binary logistic regression analysis for factors associated with cigarette smoking, SLT use and dual use among men

Characteristics	Cigarette smoking	Tobacco chewing	Adjusted OR (95% CI)		
			Tobacco dipping/snuff	Any tobacco use	Dual use
Age	1.00 (0.99 to 1.00)	1.04 (1.03 to 1.04)***	1.01 (1.00 to 1.01)	1.02 (1.02 to 1.03)***	1.00 (0.99 to 1.01)
Ethnicity					
Pashtun	0.71 (0.60 to 0.86)**	0.73 (0.59 to 0.90)**	3.80 (2.89 to 5.01)***	1.40 (1.18 to 1.66)***	1.24 (0.91 to 1.69)
Tajik	0.70 (0.58 to 0.84)***	1.56 (1.27 to 1.92)***	0.23 (0.16 to 0.33)***	0.95 (0.80 to 1.13)	0.60 (0.43 to 0.85)**
Hazara	0.33 (0.25 to 0.42)***	1.82 (1.43 to 2.33)***	0.25 (0.14 to 0.43)***	0.71 (0.57 to 0.87)**	0.43 (0.26 to 0.71)**
Uzbek	0.75 (0.60 to 0.93)**	0.92 (0.72 to 1.18)	0.01 (0.00 to 0.08)***	0.56 (0.46 to 0.69)***	0.86 (0.58 to 1.27)
Residence: urban ^a	1.04 (0.90 to 1.20)	1.00 (0.83 to 1.20)	0.36 (0.29 to 0.45)***	0.93 (0.82 to 1.06)	0.50 (0.37 to 0.67)***
Education	0.92 (0.87 to 0.99)*	0.91 (0.85 to 0.98)*	0.66 (0.60 to 0.73)***	0.82 (0.77 to 0.87)***	0.83 (0.73 to 0.93)**
Wealth	1.08 (1.03 to 1.13)**	0.65 (0.62 to 0.69)***	1.39 (1.30 to 1.49)***	0.87 (0.83 to 0.91)***	1.21 (1.11 to 1.31)***
Occupation ^b					
Professional	1.92 (1.33 to 2.77)**	0.90 (0.59 to 1.38)	0.94 (0.61 to 1.43)	1.19 (0.90 to 1.57)***	2.18 (1.04 to 4.54)*
Sales and clerical	2.01 (1.41 to 2.86)***	1.49 (1.02 to 2.19)*	1.21 (0.82 to 1.77)	1.63 (1.26 to 2.12)***	1.94 (0.96 to 3.90)
Agriculture	2.08 (1.47 to 2.95)***	1.64 (1.14 to 2.38)**	1.60 (1.10 to 2.31)*	1.86 (1.44 to 2.40)***	3.04 (1.53 to 6.01)**
Skilled and unskilled Manual labour	2.09 (1.48 to 2.96)***	1.54 (1.06 to 2.23)*	1.53 (1.06 to 2.20)*	1.81 (1.41 to 2.34)***	2.41 (1.22 to 4.78)*
Media exposure					
Radio	1.18 (1.12 to 1.25)***	0.92 (0.86 to 0.98)**	1.55 (1.44 to 1.68)***	0.74 (0.69 to 0.80)***	0.57 (0.46 to 0.71)***
Newspapers and magazines	0.74 (0.67 to 0.81)***	0.63 (0.56 to 0.72)***	1.01 (0.88 to 1.17)	1.23 (1.17 to 1.29)***	1.19 (1.08 to 1.31)***
Television	1.14 (1.08 to 1.21)***	1.31 (1.23 to 1.40)***	0.62 (0.57 to 0.67)***	1.08 (1.03 to 1.14)**	0.94 (0.85 to 1.04)
Nagelkerke R ²	0.04	0.17	0.39	0.12	0.08

^aReference group: rural.

^bReference group: unemployed.

* <.05

** <.01

*** <.001

was highest among this ethnic group, and both Uzbek men and women were the least likely to use snuff. Among both sexes, urban residence and higher education were significantly and inversely associated with tobacco dipping. SLT use was significantly more likely among men in agricultural and skilled and unskilled labour occupations, and, relatedly, tobacco dipping was associated with these occupations for women. In contrast, higher wealth was inversely associated with tobacco dipping for women, whereas snuff use increased for wealthier men. Among men, television watching increased the odds of tobacco chewing but decreased the odds of tobacco dipping, while reading newspapers and magazines demonstrated a consistent inverse relationship with tobacco chewing. Lastly, women who listened to radio were less likely to use snuff while the exposure to other media sources demonstrated non-significant associations.

Any tobacco use

For both sexes, any tobacco use was significantly associated with older age. However, residence had no effect on use for men, whereas urban women were significantly less likely to use any tobacco compared with their rural counterparts. Higher wealth significantly decreased the odds for both sexes, as did higher

education. Radio listening was inversely associated with any tobacco use for both sexes, while television watching and reading newspapers and magazines increased the odds of use for men.

Dual use

Table 3 shows that for men, dual use was positively associated with wealth and all occupations except 'sales and clerical' jobs, and was most likely among those working in the agricultural sector. Moreover, dual users were significantly more likely to reside in rural regions and possess lower education. Dual use was least likely among Hazaras, as well as in individuals with higher education. In terms of media exposure, television watching had no effect, whereas radio listening was significantly and inversely associated with 'dual use', while reading newspaper and magazines increased the odds.

Discussion

The purpose of this study was to examine the prevalence and social determinants of tobacco use in Afghanistan. We conducted a secondary analysis of data from the 2015 AfDHS and

Table 4. Binary logistic regression analysis for factors associated with cigarette and pipe smoking, SLT use/snuffing by mouth and any tobacco use among women

Characteristics	Adjusted OR (95% CI)		
	Cigarette and tobacco pipe smoking	Tobacco dipping/snuff	Any tobacco use
Age	1.07 (1.06 to 1.08)***	1.09 (1.08 to 1.10)***	1.08 (1.07 to 1.09)***
Ethnicity			
Pashtun	1.06 (0.83 to 1.36)	1.09 (0.83 to 1.43)	1.17 (0.96 to 1.43)
Tajik	1.29 (1.01 to 1.65)*	1.01 (0.77 to 1.32)	1.37 (1.12 to 1.67)**
Hazara	0.20 (0.13 to 0.32)***	0.49 (0.33 to 0.71)***	0.39 (0.29 to 0.52)***
Uzbek	0.33 (0.23 to 0.46)***	0.23 (0.15 to 0.35)***	0.31 (0.23 to 0.41)***
Residence: urban ^a	0.93 (0.75 to 1.16)	0.51 (0.35 to 0.76)**	0.81 (0.67 to 0.99)*
Education	0.69 (0.56 to 0.84)***	0.67 (0.48 to 0.95)*	0.68 (0.57 to 0.81)***
Wealth	0.81 (0.76 to 0.86)***	0.61 (0.56 to 0.66)***	0.74 (0.70 to 0.78)***
Occupation ^b			
Professional	1.58 (1.20 to 2.08)**	0.70 (0.41 to 1.21)	1.33 (1.03 to 1.71)
Sales and clerical	1.81 (0.56 to 5.83)	0.87 (0.12 to 6.59)	1.16 (0.36 to 3.78)
Agriculture	1.01 (0.64 to 1.58)	4.31 (3.21 to 5.78)***	2.46 (1.89 to 3.21)***
Skilled and unskilled manual labour	2.41 (1.86 to 3.12)***	3.14 (2.35 to 4.18)***	2.77 (2.24 to 3.43)***
Media exposure			
Radio	0.88 (0.81 to 0.96)**	0.85 (0.76 to 0.95)**	0.87 (0.81 to 0.93)***
Newspapers and magazines	1.04 (0.73 to 1.48)	1.03 (0.51 to 2.10)	1.06 (0.77 to 1.47)
Television	1.04 (0.96 to 1.12)	0.97 (0.88 to 1.06)	1.03 (0.96 to 1.10)
Nagelkerke R ²	0.10	0.18	0.14

^aReference group: rural.

^bReference group: unemployed.

* <.05

** <.01

*** <.001

found that tobacco use was generally higher among men than in women. Among the 10 760 men surveyed, the overall prevalence of any tobacco use was highest at 44.2%, which equates to approximately 4 million Afghan men between 15 and 49 y of age who either smoke, chew or dip tobacco products. For the 29 461 women completing surveys, the 5.4% prevalence rate for any tobacco use suggests that approximately 500 000 Afghan women between 15 and 49 y of age use tobacco products.

When analysed separately, smoking was the most prevalent form of tobacco product use for both men and women, followed by tobacco chewing (analysed for men only) and tobacco dipping. Rates for men and women are comparable to cigarette smoking and SLT use rates observed in the most recent DHS of men and women conducted in neighbouring Pakistan.³¹ Akin to Pakistan's DHS, we also observed wide disparities in tobacco use between men and women. For example, smoking prevalence was 21.9% for men and 3.4% for women, whereas the use of SLT products such as snuff was 14.2% for men and 2.4% for women. What is striking is that for young Afghan boys and girls such wide disparities in tobacco use do not exist. The Global Youth Tobacco Survey¹² shows that for Afghan boys and girls between 13 and 15 y of age, smoking prevalence is 4.3% and 1.0%, respectively. Moreover, rates of use for SLT

products are even more narrow between genders, with 4.8% of boys and 3.3% of girls reporting use. Future studies are needed to explain the exponential increase in tobacco use among males as they age and why rates increase slightly or stagnate for females, which may help identify potential intervention targets.

Furthermore, Afghanistan presents a challenging case as the country's broken economy and weak political institutions could usher in increased tobacco marketing and political lobbying that can interfere with tobacco control efforts,¹⁹ ultimately leading to further increases in tobacco use prevalence rates. Also, the social stress that many Afghans endure and the use of tobacco products as a socially acceptable means of coping with ongoing poverty and insecurity may contribute to this growing epidemic. While we could not confirm the relationship between stress and tobacco use given the limits of our dataset, future investigations into this may help stem this public health challenge at this early stage by targeting certain risk groups, namely women who are poor with limited educational attainment residing in rural areas, as our analysis shows, or Pashtun men, who report the highest rates of using snuff, along with dual users, who are at the highest risk of tobacco-related morbidity⁵ and likely unaware of its harms.

We were able to demonstrate that education is robustly associated with the use of any and all forms of tobacco products for both men and women. Respondents with lower education were more likely to use tobacco products, possibly due to their limited knowledge of diseases and conditions associated with tobacco use and potentially a greater emphasis on healthy lifestyles among the more educated. For example, Cockerham,³² among others, suggests that healthy practices associated with high levels of education are related as much to lifestyle differences among those with high cultural capital as they are to increased knowledge. They may have different relationships to the body and a different sense of life course that stems from their relative freedom from the pressures of daily survival. Regardless, one's education as a social determinant of tobacco use has clear public health implications for preventing initiation and promoting cessation through heightening the general public's awareness of the harms associated with tobacco use.

Current efforts like health warnings on labelling and packaging of tobacco products may be one immediate and efficient approach in achieving this goal. While this is implemented in Afghanistan per MPOWER policies, as previously mentioned, text-only warning labels are used in Afghanistan.⁹ We contend that such warning labels are not effective because they might not be relevant to a populace with low education and high illiteracy rates. In this context, pictorial warning labels may be more helpful than text-only labels in terms of increasing knowledge about the harms of smoking, as are graphic images communicated through mass media.^{1,21} With regard to mass media, our data suggest that media exposure does not significantly influence tobacco consumption among women. However, it seems that Afghan men are indeed influenced by media exposure. Our data suggest that they receive conflicting messages about the harms of tobacco use. While Afghanistan has taken steps to restrict tobacco advertising, the country currently has yet to implement a national anti-tobacco media campaign,⁹ supporting claims that FCTC guidelines are underutilized in LMICs.¹⁹ Therefore, continued monitoring of this is needed to ensure that comprehensive bans on tobacco advertising and promotion are consistently enforced and are working to negatively influence tobacco consumption.³³

Moreover, because education determines one's occupational status, those in the non-professional labour sector might be particularly vulnerable, as we found here for both men and women. Not only are they less aware of the disease risks associated with tobacco use, but they may be more likely to initiate use due to work environments that condone or make tobacco use more acceptable.¹⁸ Moreover, the effects of wealth were not as consistent, in that higher wealth status increased the odds of smoking (for men only) as well as dipping tobacco (for both sexes) but lowered the odds of any tobacco use (for both sexes). This pattern is probably related to the cost of different types and/or class status associations with different types of tobacco use. The wealthy might use tobacco less, but when they do, they use the more expensive and higher status types such as cigarettes and snuff (more refined chewing tobacco), and dual users are able to afford cigarettes and snuff. Of note, it is possible that men who have less wealth may use non-commercial locally grown tobacco products such as chew, a distinction we could not explore given the limitations of our data.

Our findings should be interpreted with caution due to several limitations. First, the cross-sectional design does not allow for making causal inferences. Second, a number of unmeasured factors may have influenced our findings. This includes the frequency of exposure respondents have to tobacco advertisements through points of sale, the ease of access in terms of purchasing tobacco products and their knowledge and attitudes toward tobacco use and its harmful health impacts. Also, the rate of tobacco use may be under-reported here given the potential stigma associated with smoking and SLT use among women. Also, the DHS does not provide contextual information as to why women snuff by nose and smoke tobacco through a pipe. Future DHS surveys should consider assessing how the internet and social media negatively influence tobacco use. Such platforms could be used to potentially bolster prevention campaigns. A fuller assessment of media influences should include content analyses of tobacco advertising in the different types of media.

Conclusions

Our study contributes to knowledge about the social determinants of tobacco use in Afghanistan on a national level, using a large and representative sample of men and women between 15 and 49 y of age. We found that the use of all tobacco products was more prevalent among men than in women, although patterns in tobacco use support previous research suggesting sociodemographic and socio-economic inequalities in tobacco use across both genders.¹⁷ In this economically and politically unstable country, it is critical to continue to monitor tobacco use but expand such surveys to regularly explore social determinants for use as well as monitor advertising by tobacco corporations who aim to reach those most vulnerable to either initiating or using tobacco, such as women, who were found here to be an important risk group. This should be aligned with developing and implementing policies to control such advertising along with targeted educational outreach campaigns.

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