

Determinants of tobacco use in Sudan: secondary analysis of STEPwise Survey 2016

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Abstract

Background: Tobacco is a leading cause of death and illness despite > 50 years of antitobacco efforts.

Aims: To establish the determinants of current and former smoking and smokeless tobacco use in Sudan as measured by the STEPwise Survey 2016.

Methods: A household-based cross-sectional World Health Organization STEPwise Survey was conducted among 7745 Sudanese citizens aged 18–69 years across 11 states in Sudan. A 4-stage stratified cluster sampling design was implemented. The generic STEPS Instrument (version 3.2) was used and questions were tailored to the Sudanese context.

Results: Among current male smokers, 63.7% were aged ≤ 35 years, 50.7% were illiterate or did not complete primary school, 84.5% were employed and 52.4% were in the lowest 2 quintiles of income. Among male smokeless tobacco users, 54.8% were aged ≤ 35 years, 48.4% were illiterate or did not complete primary school, 89.7% were employed and 52.2% were in the lowest 2 quintiles of income. Using multivariate logistic regression models, current smoking in men was associated with older age, informal education, unemployment and lower income. Smokeless tobacco use was associated with age 18–25 years, informal education, unemployment and lower income.

Conclusions: Both forms of tobacco use were associated with poor socioeconomic status and unemployment. Smokeless tobacco use was associated with age 18–25 years as opposed to smoking tobacco use. These results can inform the target audience of the future tobacco control plans.

Keywords: tobacco, Sudan, STEPwise, survey smoking.

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Introduction

The tobacco epidemic is one of the biggest global public health threats (1) and remains a leading cause of death, illness and impoverishment despite > 50 years of antitobacco efforts (2,3). The World Health Organization (WHO) reported in 2018 that there were 1.1 billion smokers worldwide; most of whom live in low- and middle-income countries (1). In 2015, smoking prevalence worldwide was estimated to be 25.0% in men and 5.4% in women (4). Current tobacco smoking varies among countries in the Eastern Mediterranean Region from 11.0% in the Islamic Republic of Iran to 24.9% in Tunisia (5). In 2015, 11.5% of global deaths were attributable to smoking (6.4 million people) (4). In the Eastern Mediterranean Region, noncommunicable diseases (NCDs) are responsible for > 1.7 million deaths every year; two thirds of which are linked to unhealthy behaviour, or risk factors, including tobacco use (6).

In Sudan, NCDs are emerging, doubling the existing burden of communicable diseases and causing 52% of all deaths in the country in 2016 (7). The prevalence of smoking and smokeless tobacco users in Sudan was 15.6% in 2016 as reported by the National STEPwise Survey. The overall prevalence of smoking prevalence was 9.6%, 17.1%

of men and 0.7% of women, similar to Kenyan (10.1%) and Ugandan (9.6%) estimates (8,9), but lower than some countries in the Eastern Mediterranean Region, such as Egypt (22.7%) and Kuwait (20.5%) (10,11). Prevalence of smokeless tobacco users was 7.9%, 17.3% in men and 0.2% in women (12). This prevalence is higher than in most neighbouring countries: 0.2% in Egypt, 0.9% in Iraq and around 4% in Uganda and Kenya (8–10,13). Also, the habit is almost exclusive to men in Egypt and Iraq (10,13). In Kenya, tobacco use was evenly distributed across both sexes (8), while in Uganda, women aged 50–69 years had a higher prevalence (9).

In Sudan, smokeless tobacco is locally known as toombak, which is a highly addictive substance. Its preparation is cheap and poorly regulated. Oral cancer which is ranked sixth amongst all cancer types in Sudan is strongly associated with this habit (14).

A broad range of social, environmental, psychological and genetic factors are associated with tobacco use. Inequities in these factors lead to discrepancies in tobacco use and impediment of its cessation and control (15). By understanding these determinants in the Sudanese population, we may be able to meet the needs of different social groups; particularly the most disadvantaged. The

aim of this study was to establish the determinants of current and former smoking and smokeless tobacco use in Sudan as measured by Sudan's STEPwise Survey of 2016.

Methods

Study population

This was a WHO STEPwise household-based cross-sectional survey (16). It was conducted among Sudanese citizens aged 18–69 years across 11 states in Sudan from February to December 2016. A 4-stage stratified cluster sampling design was used. Administratively, Sudan is divided into 18 states and 6 regions: North, East, Khartoum, Central, Kordofan and Darfur. States were randomly selected from each region. No geographical areas or populations were excluded from the sampling frame. Thus, 11 states were selected according to probability proportional to the size (PPS), to represent the 6 regions. The Popular Administrative Unit (PAU) is the smallest geographical unit, defined as the cluster in the region. Clusters were randomly sampled from a list of PAUs, from both urban and rural strata, according to PPS. All households in the selected PAU were selected randomly from each cluster. All the household members fulfilling inclusion criteria were listed and 1 member was selected randomly.

The target population size used was a projected estimate for 2016 based on the household census of 2008. The calculated sample size was 8154 based on precision of 95%, a nonresponse rate estimate of 10% and design effect of 1.5. This sample had the power to produce results representative for Sudan and to the 6 geographical regions.

Data collection

Data were obtained from the first of the 3 steps of the WHO STEPwise Survey and collected using digital handheld devices (16). Interviews were administered by trained interviewers. The generic STEPS Instrument (version 3.2) questions were adapted to the Sudanese context. Variables used were the following sociodemographic variables: age (18–25, 26–35, 36–45, 46–55 and 56–69 years); sex; educational level [illiterate, Quranic schools (informal Islamic and Arabic language education); did not complete primary school, completed primary school, completed secondary school, and completed university studies and above]; employment status; ever used alcohol; income quintiles (poorest, second, middle, fourth and richest); and marital status (not married, married and formerly married). The main instrument outcomes used were current and former use of smoking and smokeless tobacco. Smoking tobacco included cigarettes, cigars, pipes and hookah. Smokeless tobacco referred to the use of what is locally known as toombak (14). Current tobacco users, smoking and smokeless, were those who were currently smoking or using tobacco on a daily basis and/or occasionally.

Data analysis

Data were analysed using IBM SPSS version 20. Frequencies, χ^2 and multivariate logistic regression models were used.

Results

Sociodemographics of tobacco users

We included 7745 respondents (95% response rate) in the analysis. Reported results were weighted by geographic region and rural–urban residence status. Among current Sudanese male smokers, 63.7% were aged ≤ 35 years, 50.7% were illiterate or did not complete primary school, 84.5% were employed, 22.6% consumed alcohol, 52.4% were in the lowest 2 quintiles of income and 61% were married (Table 1). Among male former smokers, 42.5% were aged ≤ 35 years, 43.5% were illiterate or did not complete primary school, 86.5% were employed, 23.7% consumed alcohol, 43.5% were in the lowest 2 quintiles of income and 67.5% were married. Among current Sudanese male smokeless tobacco users, 54.8% were aged ≤ 35 years, 48.4% were illiterate or did not complete primary school, 89.7% were employed, 22.0% consumed alcohol, 52.2% were in the lowest 2 quintiles of income and 68.2% were married. Among those who were former smokeless tobacco users, 37.5% were aged ≤ 35 years, 45.5% were illiterate or did not complete primary school, 84.9% were employed, 39.8% consumed alcohol, 40.3% were in the lowest 2 quintiles of income and 71.4% were married.

Among Sudanese current female smokers, 54.9% were aged ≤ 35 years, 38.7% were illiterate or did not complete primary school, 55.9% were employed, 10.0% consumed alcohol, 54.6% were within the lowest 2 income quintiles and 71.8% were married (Table 2). Among former smokers, 38.1% were aged ≤ 35 years, 74.7% were illiterate or did not complete primary school, 23% were employed, 40.2% consumed alcohol, 59.2% were from the second income band and 54.8% were married. Among current Sudanese female smokeless tobacco users, 27.7% were aged ≤ 35 years, 54.4% were illiterate or did not complete primary school, 33.2% were employed, 61.2% consumed alcohol, 26.7% were within the second income quintile and 93.6% were married. Among the former female smokeless tobacco users, 41.7% were aged ≤ 35 years, 21.6% were illiterate, 43.2% were employed, 39.8% consumed alcohol, 38.5% were from the lowest 2 income quintiles and 80.1% were married.

Determinants of tobacco use among Sudanese men

Using multivariate logistic regression models to adjust for confounders, tobacco use was associated with all of the measured variables as follows.

Current smoking in men was associated with older age, informal education, unemployment, not ever using alcohol, lower income and marital status of single (Table 3). Older men (aged 26–35, 36–45, 46–55 and ≥ 56 years) were more likely to be smokers when compared to

Table 1 Sociodemographic percentages of current and former male tobacco users (n = 2718)

Variable	Smoking tobacco users		Smokeless tobacco users	
	Current	Former	Current	Former
Age, years				
18–25	36.0 (35.9–36.1)	23.8 (23.7–23.9)	23.4 (23.3–23.5)	24.8 (24.7–25.0)
26–35	27.7 (27.6–27.8)	18.7 (18.6–18.8)	31.4 (31.3–31.4)	12.7 (12.5–12.8)
36–45	20.3 (20.2–20.3)	22.7 (22.6–22.8)	21.1 (21.0–21.2)	23.0 (22.9–23.1)
46–55	9.6 (9.5–9.6)	18.1 (18.0–18.2)	16.2 (16.1–16.2)	20.2 (20.1–20.3)
≥ 56	6.4 (6.3–6.5)	16.8 (16.7–16.9)	7.9 (7.8–7.9)	19.3 (19.1–19.4)
Educational level				
Illiterate	24.5 (24.4–24.6)	20.1 (20.0–20.2)	27.7 (27.6–27.8)	16.5 (16.4–16.6)
Completed (informal) Quranic school	3.3 (3.2–3.3)	2.4 (2.3–2.4)	1.3 (1.2–1.3)	2.4 (2.3–2.5)
Did not complete primary school	26.2 (26.1–26.3)	23.4 (23.2–23.4)	20.7 (20.6–20.8)	29.0 (28.8–29.1)
Completed primary school	13.1 (13.0–13.2)	12.9 (12.8–13.0)	10.5 (10.4–10.5)	16.1 (16.0–16.2)
Completed secondary school	20.0 (19.9–20.1)	29.9 (29.8–30.0)	28.2 (28.1–28.3)	19.6 (19.5–19.7)
Completed university/postgraduate	12.9 (12.8–12.9)	11.4 (11.3–11.5)	11.6 (11.5–11.7)	16.4 (16.3–16.5)
Employment				
Yes	84.5 (84.4–84.5)	86.5 (86.4–86.6)	89.7 (89.6–89.7)	84.9 (84.8–85.1)
No	15.5 (15.4–15.6)	13.5 (13.4–13.6)	10.3 (10.3–10.7)	15.1 (14.9–15.2)
Ever consumed alcohol				
Yes	22.6 (22.5–22.7)	23.7 (23.6–23.8)	22.0 (21.9–22.1)	39.8 (39.7–40.0)
No	77.4 (77.3–77.5)	76.3 (76.1–76.4)	78.0 (77.9–78.1)	60.2 (60.0–60.3)
Income				
Lowest	15.7 (15.6–15.7)	6.4 (6.3–6.5)	11.9 (11.8–12.0)	5.6 (5.5–5.7)
Second	36.7 (36.6–36.8)	37.1 (36.9–37.2)	40.3 (40.2–40.4)	34.7 (34.5–34.8)
Middle	32.4 (32.2–32.4)	37.2 (37.0–37.3)	32.6 (32.5–32.7)	44.0 (43.8–44.2)
Fourth	8.9 (8.8–8.9)	14.1 (14.0–14.2)	11.4 (11.3–11.4)	9.6 (9.4–9.7)
Highest	6.4 (6.3–6.4)	5.2 (5.1–5.3)	3.8 (3.7–3.8)	6.2 (6.1–6.3)
Marital status				
Not married	37.9 (37.8–38.0)	29.7 (29.6–29.8)	29.8 (29.7–29.9)	26.8 (26.6–26.9)
Married	61.0 (60.9–61.0)	67.5 (67.4–67.6)	68.2 (68.1–68.3)	71.4 (71.3–71.6)
Formerly married	1.1 (1.0–1.2)	2.8 (2.7–2.8)	2.0 (1.9–2.0)	1.8 (1.7–1.9)

Results presented as percentage (95% confidence interval)

men aged 18–25 years. Men who completed university/postgraduate studies were less likely to be smokers than those who were illiterate. Unemployed men were more likely to be smokers. Those who consumed alcohol were less likely to be current smokers than those who never consumed alcohol. Men with the lowest income tended to be smokers when compared to their richest counterparts. Married men were less likely to be smokers than unmarried men.

Former smoking in men was associated with the same factors as in current smokers. Older men (aged 36–45, 46–55 and ≥ 56 years) were less likely to be former smokers than younger men were (Table 3). Those who had any formal schooling were less likely to be former smokers than illiterate men were. Unemployed men were twice more likely to be former smokers. Men who ever consumed alcohol were less likely to have been former smokers. Men from the lowest income band were

8 times more likely to be former smokers. Those who were married were more likely to be former smokers than unmarried men were.

Current smokeless tobacco use was associated with age 18–25 years, low education, unemployment, never consuming alcohol and low income (Table 3). Older men were less likely to be current smokeless tobacco users than younger men were, which differed from current smokers. Informal education was highly associated with smokeless tobacco use. Unemployed men were more likely to be smokeless tobacco users than employed men were. Those who had ever consumed alcohol were less likely to be smokeless tobacco users than those who had not. Men in the lowest income band were twice more likely to be smokeless tobacco users than those in the highest income band. Married men were more likely to be users of smokeless tobacco than unmarried men were.

Table 2 Sociodemographic percentages of current and former female tobacco users (n = 5027)

Variable	Smoking tobacco users		Smokeless tobacco users	
	Current	Former	Current	Former
Age group, years				
18–25	8.4 (8.2–8.7)	3.8 (3.6–4.1)	12.5 (11.9–13.0)	19.9 (19.3–20.5)
26–35	46.5 (46.1–46.9)	34.3 (33.6–34.9)	15.2 (14.6–15.7)	21.8 (21.2–22.4)
36–45	35.8 (35.4–36.2)	11.0 (10.6–11.4)	61.2 (60.3–61.9)	58.3 (57.6–59.0)
46–55	1.1 (1.0–1.2)	15.4 (14.9–15.8)	6.3 (5.9–6.7)	0 (0.0–0.2)
≥ 56	8.1 (7.9–8.4)	35.5 (34.8–36.1)	4.9 (4.5–5.2)	0 (0.0–0.2)
Educational level				
Illiterate	25.6 (25.2–25.9)	60.1 (59.5–60.8)	35.2 (34.4–36.0)	21.6 (21.0–22.2)
Completed (informal) Quranic school	6.2 (6.0–6.4)	0 (0.0–0.02)	0 (0.0–0.03)	0 (0.0–0.02)
Did not complete primary school	13.1 (12.8–13.4)	14.6 (14.1–15.0)	19.2 (18.5–19.8)	0 (0.0–0.02)
Completed primary school	1.6 (1.5–1.7)	6.5 (6.1–6.8)	12.5 (11.9–13.0)	5.5 (5.2–5.8)
Completed secondary school	28.4 (28.1–28.8)	10.1 (9.7–10.5)	15.2 (14.6–15.7)	56.6 (55.9–57.3)
Completed university/postgraduate	25.1 (24.8–25.4)	8.7 (8.4–9.1)	18.0 (17.4–18.7)	16.3 (15.7–16.8)
Employment				
Yes	55.9 (55.4–56.3)	23.0 (22.5–23.6)	33.2 (32.4–34.0)	43.2 (42.5–43.8)
No	44.1 (43.7–44.5)	77.0 (76.4–77.5)	66.8 (66.1–67.6)	56.8 (56.2–57.5)
Ever consumed alcohol				
Yes	10.0 (9.8–10.3)	40.2 (39.6–40.8)	61.2 (60.3–62.0)	0 (0.0–0.02)
No	90.0 (89.7–90.2)	59.8 (59.2–60.4)	38.8 (38.1–39.6)	100.0 (99.9–100)
Income				
Lowest	17.1 (16.7–17.4)	0 (0.0–0.02)	0 (0.0–0.04)	25.4 (24.8–26.0)
Second	37.5 (37.1–37.9)	59.2 (58.6–60.0)	26.7 (25.7–27.6)	13.1 (12.7–13.6)
Middle	32.9 (32.5–33.3)	18.4 (17.9–18.9)	41.6 (40.5–42.7)	50.4 (49.7–51.0)
Fourth	8.4 (8.2–8.7)	11.2 (10.7–11.6)	31.7 (30.7–32.7)	11.1 (10.7–11.6)
Highest	4.0 (3.8–4.2)	11.3 (10.8–11.7)	0 (0.0–0.04)	0 (0.0–0.02)
Marital status				
Not married	6.0 (5.8–6.2)	8.7 (8.4–9.1)	0 (0.0–0.03)	19.9 (19.4–20.5)
Married	71.8 (71.5–72.2)	54.8 (54.1–55.4)	93.6 (93.1–94.0)	80.1 (79.5–80.6)
Formerly married	22.2 (21.9–22.5)	36.5 (35.9–37.1)	6.4 (5.9–6.9)	0 (0.0–0.02)

Results presented as percentage (95% confidence interval).

Former smokeless tobacco use was associated with age 18–35 years, respondents who were illiterate and those with informal education, unemployment, not consuming alcohol, and low income (Table 3). Older men were less likely to be former smokeless tobacco users than the youngest age group were. Respondents with informal education were more likely to be former tobacco users than illiterate respondents were. Those who received formal education were all less likely to be former smokeless tobacco users than illiterate individuals were. Unemployed men were more likely to be former smokeless tobacco users than employed men were. Those who had ever consumed alcohol were less likely to be users than those who had never consumed alcohol. Those in the lowest income quintile were 5 times more likely to have been former tobacco users than those in the richest quintile. Married men were less likely to be former smokers than unmarried men were.

Since tobacco use was uncommon among female respondents, no significant associations were found.

Discussion

This nationwide survey found that poor socioeconomic status and young age were associated with tobacco use in Sudanese men. Current and former smoked and smokeless tobacco users tended to have low education, were unemployed and had low income. Former male smokers were more likely to have been middle-aged, while current smokers were elderly. Most reported Sudanese smokers were men. This is similar to reports from countries in the Eastern Mediterranean Region (Bahrain, Islamic Republic of Iran, Egypt, Jordan, Iraq and Kuwait), African Region (Uganda, Kenya and Ethiopia), and Asian region (Pakistan and Nepal) (8–10,11,13,17–19,21,22). Low reports of female smokers could have been aggravated by interviewer bias subsequent to gender-based social stigma (17).

Table 3 Multivariate analysis estimating the determinants associated with tobacco use in Sudanese men

Variable	Current Smokers ^a	Former Smokers ^b	Current smokeless tobacco user ^c	Former Smokeless tobacco user ^d
Age, years				
18–25	1	1	1	1
26–35	1.24 (1.24–1.25)**	1.32 (1.31–1.33)**	0.60 (0.59–0.60)**	1.47 (1.45–1.49)**
36–45	1.19 (1.19–1.20)**	0.62 (0.62–0.63)**	0.65 (0.65–0.65)**	0.48 (0.48–0.49)**
46–55	1.95 (1.93–1.96)**	0.65 (0.64–0.65)**	0.69 (0.68–0.69)**	0.44 (0.44–0.45)**
≥ 56	2.13 (2.11–2.14)**	0.38 (0.38–0.38)**	0.97 (0.96–0.97)**	0.35 (0.35–0.36)**
Educational level				
Illiterate	1	1	1	1
Completed (informal)Quranic school	2.03 (2.02–2.06)**	4.14 (4.07–4.21)**	11.90 (11.67–12.13)**	2.94 (2.87–3.01)**
Did not complete primary school	0.78 (0.78–0.78)**	0.59 (0.58–0.59)**	1.34 (1.33–1.34)**	0.47 (0.47–0.48)**
Completed primary school	0.75 (0.75–0.75)**	0.62 (0.62–0.63)**	1.25 (1.24–1.26)**	0.41 (0.40–0.41)**
Completed secondary school	1.23 (1.23–1.24)**	0.59 (0.59–0.60)**	0.95 (0.94–0.95)**	0.65 (0.64–0.66)**
Completed university/postgraduate	0.88 (0.87–0.88)**	0.81 (0.80–0.82)**	1.21 (1.20–1.22)**	0.53 (0.53–0.54)**
Employment				
Yes	1	1	1	1
No	2.28 (2.26–2.29)**	2.15 (2.13–2.17)**	1.98 (1.97–1.99)**	1.30 (1.29–1.32)**
Ever consumed alcohol				
No	1	1	1	1
Yes	0.24 (0.24–0.24)**	0.13 (0.13–0.13)**	0.27 (0.27–0.27)**	0.08 (0.08–0.08)**
Income				
Highest	1	1	1	1
Lowest	3.85 (3.19–3.88)**	8.02 (7.91–8.14)**	2.04 (2.01–2.06)**	5.58 (5.46–5.69)**
Second	2.71 (2.69–2.74)**	2.29 (2.26–2.32)**	1.01 (1.00–1.02)	1.65 (1.65–1.68)**
Middle	2.12 (2.10–2.14)**	1.51 (1.49–1.53)**	0.91 (0.90–0.92)**	0.92 (0.90–0.93)**
Fourth	2.32 (2.30–2.34)**	1.27 (1.26–1.29)**	0.78 (0.77–0.79)**	1.05 (1.03–1.07)**
Marital status				
Not married	1	1	1	1
Married	0.88 (0.87–0.90)**	1.30 (1.27–1.32)**	1.36 (1.34–1.38)**	0.85 (0.82–0.87)*
Formerly married	0.75 (0.74–0.76)**	1.34 (1.32–1.36)**	1.22 (1.20–1.24)**	0.87 (0.84–0.89)**

Results presented as percentage (95% confidence interval).

* $P < 0.05$, ** $P < 0.001$.

^aBinary logistic regression model with current smokers as a dependent variable ($n = 2707$), likelihood ratio = 8 115 748.809 Nagelkerke square = 0.114.

^bBinary logistic regression model with former smokers as a dependent variable ($n = 2707$), likelihood ratio = 4 688 621.783, Nagelkerke square = 0.208.

^cBinary logistic regression model with current smokeless tobacco users as a dependent variable ($n = 2707$), likelihood ratio = 7 470 530.444, Nagelkerke square = 0.124.

^dBinary logistic regression model with former smokeless tobacco users as a dependent variable ($n = 2707$), likelihood ratio = 2 444 451.320, Nagelkerke square = 0.236.

More than 60% of male smokers were aged ≤ 35 years with the highest proportion (36%) in 18–25-year age group. Similar findings have been found in other countries. The highest proportion in Bahrain was aged 20–39 years (17) and in Kuwait, 29.8% were aged 20–24 years and 27.1% 25–34 years (11). In contrast, in Iraq the highest proportion was aged 35–44 years (13), in Nepal 36–49 years (22) and other upper-middle-income countries like Argentina, Malaysia and Romania, the proportion was higher in middle-aged men (25–44 years) (23). Countries like the Islamic Republic of Iran, Kenya and Ethiopia showed higher estimates in older age groups (8,18,20). Furthermore, the older population (≥ 56 years) demonstrated a higher risk of association with current tobacco smoking. The longer experience and established networks of tobacco use in this age group could have discouraged them from

quitting (20). Younger men were more likely to have been former smokers, supporting the finding that older men may find it more difficult to quit. Evidence has shown that health benefits are greater for people who quit at younger ages (24). In contrast, smokeless tobacco use had a higher association with younger men, possibly because it was cheaper and more readily available compared to cigarettes.

Smokers tended to have a low educational background in Sudan. Many studies in countries like Kenya and Pakistan have found that most tobacco users had only attended primary school (8,21,23). Furthermore, studies in Kenya, Pakistan, Nepal and India have shown that smokeless tobacco use was strongly associated with people with limited education, as in the present study (8,21,22,25). Low education could be a proxy for

low awareness and consumer information on tobacco products, thus preventing individuals from taking informed decisions to avoid tobacco use (8,23). It was also found that participants with the lowest income were highly associated with tobacco use. Low income is commonly associated with undesired habits at national levels and within countries. A study in 48 low- and middle-income countries demonstrated the prevalence of smoking in men with lower incomes to be higher in most countries (26,27). Associations of tobacco use with poverty could lead to greater health inequalities between rich and poor people (20,23,25).

The economic recession in Sudan led to a rise in unemployment, a social determinant of health, thereby likely increasing the likelihood of smoking (28). People exposed to social and economic stressors like financial strain, stigma and loss of social role could perceive smoking as a coping mechanism (29). However, provision of employment opportunities may not solely prevent tobacco use. This was experienced in Nepal, where manual jobs increased the risk of using tobacco when compared to professional or office-based jobs (22). Therefore, in addition to improving job prospects, promotion of work ethics demanded by professional workers to reduce tobacco use, like in Ethiopia, is essential, and should be extended to all sectors (20).

The present study found that men who reportedly never consumed alcohol were more likely to use tobacco. A study among Sudanese university students showed that alcohol was the third most commonly used substance after tobacco and cannabis (30). Alcohol, prohibited by law in Sudan, could have introduced an interviewer bias. Participants may have avoided reporting consumption because of religious restrictions, thus leading us to doubt the association.

Our findings are representative of the whole country because of the high response rate and the detailed sampling frame that took into account all the levels of the administrative organizational structure. Interestingly, 65% of the studied sample were women. This skewness can be explained by the internal migration of men to cities and out-migration to other countries, in search of better

economic opportunities. This, in addition to the work of men as farmers and pastoralists resulted in the absence of eligible men in the households. The multivariate logistic regression models captured between 8.3% and 33% of the variables associated with tobacco use. This limited explanation of variance suggests the need for further research to explore variables that were not considered in this study. Nevertheless, our findings can be used to inform tobacco control policies in Sudan.

Sudan ratified the WHO Framework Convention on Tobacco Control in 2005 (31), but since then efforts have not been sufficient to put the country on track for achieving the global targets for tobacco control. Tobacco control is challenged by several factors including the strong influence of the tobacco industry as it continues to prevent, weaken and delay effective implementation of the Convention. Today, Sudan intends to focus on 3 areas: graphic tobacco warnings, review of tobacco law, and tobacco taxation. Future strategies can be informed by the present findings. Adjusting the interventions to target the reported vulnerable age groups will be cost-effective and impactful. Taxation could prove to be beneficial in Sudan (32), since higher taxes are especially effective for poor people and can even prevent young people from starting to smoke (5). Strong concerted efforts from the Ministries of Health and Social Welfare in Sudan and from civil society organizations can focus on availing employment and educational opportunities.

Conclusion

Low socioeconomic status and young age were associated with tobacco use in Sudanese men. Current and former smoked and smokeless tobacco users tended to have low education, were unemployed and had low income. Former male smokers were more likely to have been middle-aged, while current smokers were elderly. Smokeless tobacco use was common among those aged 18–25 years. These results can inform the target audience of the future tobacco control plans.

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Déterminants de la consommation de tabac au Soudan : analyse secondaire de l'enquête STEPwise 2016

Résumé

Contexte : Le tabac est une des principales causes de mortalité et de morbidité malgré les efforts déployés depuis plus de 50 ans en matière de lutte antitabac.

Objectifs : Établir les déterminants du tabagisme et de la consommation de tabac sans fumée au moment de l'étude et dans le passé au Soudan, tels que mesurés par l'enquête STEPwise 2016.

Méthodes : Une enquête transversale STEPwise menée au sein des ménages par l'Organisation mondiale de la Santé (OMS) a été réalisée auprès de 7745 citoyens soudanais âgés de 18 à 69 ans dans 11 États du Soudan. Un sondage par grappe stratifié à quatre degrés a été mis en œuvre. L'instrument générique STEPS (version 3.2) a été utilisé et les questions ont été adaptées au contexte soudanais.

Résultats : Parmi les fumeurs masculins au moment de l'étude, 63,7 % avaient un âge inférieur ou égal à 35 ans, 50,7 % étaient analphabètes ou n'avaient pas terminé leurs études primaires, 84,5 % avaient un emploi et 52,4 % se situaient

dans les deux quintiles de revenu les plus bas. Parmi les consommateurs de tabac sans fumée, 54,8 % avaient un âge inférieur ou égal à 35 ans, 48,4 % étaient analphabètes ou n'avaient pas terminé leurs études primaires, 89,7 % étaient en emploi et 52,2 % se situaient dans les deux quintiles de revenu les plus bas. À l'aide de modèles de régression logistique multivariée, le tabagisme au moment de l'étude chez les hommes était associé à un âge plus avancé, à une éducation informelle, au chômage et à des revenus plus faibles. Le tabagisme sans fumée est associé à la tranche d'âge 18-25 ans, à l'éducation informelle, au chômage et à une baisse des revenus.

Conclusions : Ces deux formes de consommation de tabac sont associées à un statut socio-économique précaire et au chômage. Par opposition à la consommation de tabac fumé, le tabagisme sans fumée est associé à la tranche d'âge des 18-25 ans. Ces résultats pourront éclairer le public cible des futurs plans de lutte antitabac.

محددات تعاطي التبغ في السودان: التحليل الثانوي للمسح ذو النهج التدريجي لعام 2016

منى نور، نعيمة وجيال، مي التيجاني، منال الإمام، نازك إبراهيم، ناهد علي، فاطمة حسن، نازك حسن، نازك نور الهدى

الخلاصة

الخلفية: التبغ هو أحد الأسباب الرئيسية للوفاة والمرض بالمرض بالرغم من جهود مكافحة التبغ المبذولة منذ ما يزيد عن 50 عاماً.

الأهداف: هدفت هذه الدراسة إلى الوقوف على محددات التدخين الحالي والسابق وتعاطي التبغ عديم الدخان في السودان، بحسب قياسات المسح ذو النهج التدريجي في عام 2016.

طرق البحث: أجرت منظمة الصحة العالمية مسحاً منزلياً مقطوعياً يتبع النهج التدريجي شمل 7745 مواطناً سودانياً تراوح أعمارهم بين 18 و69 عاماً في 11 ولاية بالسودان. ونُفذ تصميم الطريقة الشرائحية العنقودية لأخذ العينة على 4 مراحل. واستُخدمت أداة النهج التدريجي العامة (الإصدار 2.3)، وُصممت الأسئلة لتناسب السياق السوداني.

النتائج: من بين الذكور المدخنين حالياً، وُجد أن 63.7% منهم يبلغون من العمر 35 عاماً أو أقل، وكان 50.7% منهم من غير المتعلمين أو لم يكملوا تعليمهم الابتدائي، وكان 84.5% منهم يعملون، بينما كان 52.4% منهم في أدنى شريحتين خمسيّتين من شرائح الدخل. ومن بين الذكور المتعاطين للتبغ عديم الدخان، وُجد أن 54.8% يبلغون من العمر 35 عاماً أو أقل، وكان 48.4% منهم من غير المتعلمين أو لم يكملوا تعليمهم الابتدائي، وكان 89.7% منهم يعملون، بينما كان 52.2% منهم في أدنى شريحتين خمسيّتين من شرائح الدخل. وباستخدام نماذج تحليل التحوُّف اللوجستي المتعدد المتغيرات، تبين ارتباط التدخين الحالي في صفوف الرجال بتقدم السن، والتعليم غير الرسمي، والبطالة، وانخفاض الدخل. وارتبط تعاطي التبغ عديم الدخان بالأعمار من 18 إلى 25 عاماً، والتعليم غير الرسمي، والبطالة، وانخفاض الدخل.

الاستنتاجات: ارتبط كلا هذين الشكلين من أشكال تعاطي التبغ بتدهور الوضع الاجتماعي والاقتصادي والبطالة. وتبين وجود ارتباط بين تعاطي التبغ عديم الدخان وبين تراوح السن بين 18 و25 عاماً، على عكس تعاطي التبغ المدخن. ويمكن لتلك النتائج أن توجه الجمهور المستهدف للخطط المستقبلية الموضوعية لمكافحة التبغ.

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