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Article · May 2022

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Volume 2 Issue1,May 2022

Spending on Tobacco and Heaviness of Smoking Index among Ugandans

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Abstract

The study investigated how education and employment are related to spending on tobacco and the heaviness of the smoking index among adult Ugandans in rural and urban areas. Secondary data analysis was from the Global Tobacco Adult Survey for Uganda in 2013 (n= 8503 respondents). Global Adult Tobacco Surveys are nationally representative data samples of 112 districts in Uganda. Associations and multivariate analyses were performed [P <0.005]. Overall, there is no difference in spending on tobacco by gender and residence. Some 34.3% (95% CI: 17.2-56.7) of adult smokers in Uganda spend >1000/= on manufactured cigarettes. Adult smokers in Uganda are moderate/highly addicted to tobacco at 41% (CI 34.3-42.7). These tobacco addicts are unemployed and educated beyond the Ordinary level of education. Smokers who notice adverts and promotions in tobacco stores are more likely to get addicted (AOR= 2.800 95% CI: 1.117-7.016) and spend ≥1000/= per day (AOR=2.278 95% CI: 1.150-4.513, P <0.000). Noticing adverts and promotions on tobacco is a precursor to spending and accelerates the Heaviness of Smoking Index. The study recommends the adoption of tobacco cessation services in primary health care clinics to encourage adult smokers to quit tobacco use. The ban on tobacco advertisement promotions and sponsorship (TAPS) must continue as per the current Tobacco Control Act 2015 in Uganda.

Keywords: *Spending on tobacco, Heaviness of Smoking Index, Adult Ugandans, Uganda*

Introduction

Tobacco use is on the rise, continues to harm human health, and strains Uganda's economy (Ndugwa *et al*., 2016). Tobacco use is the leading cause of preventable diseases posing a huge burden on treatment costs. Tobacco smoking is on the increase globally (Ravi *et al*., 2013). Tobacco use can be influenced by an individual's education and income earned (Siahpush *et al*., 2013). The use of tobacco is the leading cause of preventable death in the world (CEHURD, 2013).

Tobacco smoking is addictive. The Heaviness of Smoking Index is a two-item self-report measure including questions on the time to first cigarette and the number of cigarettes smoked per day, which was derived from the Fagerström Test for Nicotine Dependence. "Time to first smoke in the morning and number of cigarettes per day. It uses a six-point scale calculated from the number of cigarettes smoked per day (1-10, 11-20, 21-30, 31+) and the time to the first cigarette after waking (less than/equal to 5, 6-30, 31-60, and 61+ minutes). Nicotine dependence is then categorized into a three-category variable: low (0-1), medium (2-4), and high (5-6). HSI as a measure for assessing nicotine dependence may have significant floor effects among lighter smokers seen in non-clinical populations and the validity of the measure for assessing dependence in a general population may be questioned. Nevertheless, HSI is commonly used in both clinical and population surveys to assess dependence and

may provide a simple way for clinicians prescribing dependency-based treatments to classify their patients" (NIDA, 2016).

According to the World Health Organisation (WHO) Report of 2006, in the 20th century, an estimated 100 million people died of tobacco use (WHO, 2006); 1 billion people are expected to die in the 21st century. By 2030, the death toll from tobacco is projected to rise to 10 million persons per year. Some 70% of tobacco-related deaths shall occur in Low- and Middle-Income Countries, Uganda inclusive. Smoking cigarettes also impose huge financial burdens and is associated with a lowered standard of living (USDHHS, 2014). Tobacco kills more than 8 million people each year. More than 7 million of those deaths are the result of direct tobacco use while around 1.2 million are the result of non-smokers being exposed to second-hand smoke. Over 80% of the world's 1.3 billion tobacco users live in low- and middle-income countries. In 2020, 22.3% of the global population used tobacco, 36.7% of all men, and 7.8% of the world's women (WHO, 2022).

Smokers are more likely to experience financial stress compared to non-smokers (Siahpush *et al.*, 2006). The WHO estimated about six million people died of tobacco use in Africa; about 400 adult deaths are reported every day (WHO, 2006). By 2016, 16.8% of adult males and 2.9% of adult females aged 18-29 years smoked tobacco in Uganda (MOH, 2014). An estimated 11.9% and 9.0% of males and females respectively used smokeless tobacco (Ali *et al.*, 2012).

According to the Centre for Tobacco Africa report (2017), tobacco use stresses the health budget in Uganda. The annual average medical cost of a current or former smoker suffering from a tobacco-attributable disease is UGX 3,697,225 (USD 1,422), this is 2.28 times higher than the annual medical cost of a never smoker/tobacco user at UGX 1,619,309 [USD 622.8] (CTCA, 2017). Though this could be a major consequence of tobacco use at the national level, at the individual level, the smoker is likely to go without a meal for tobacco (Joy de *et al.*, 2011).

Previous studies conducted by the Ministry of Health Uganda, on tobacco use surveillance among adults in Uganda were done through Uganda Demographic Health Surveys and Global Adult Tobacco Surveys (GATS) [12], whereas the GATS data provides for prevalence rates of tobacco use. Factors such as tobacco exposure in homes, indoor smoking policies, special gifts and discounts on other products after buying tobacco, noticing adverts and promotions were assessed with spending on tobacco and the heaviness of the smoking index among adult smokers in Uganda.

Methods

Data source

In Uganda, Global Adult Tobacco Surveys (GATS) were conducted in 2013 as a household survey of persons 15 years of age and older by the Uganda Bureau of Statistics (UBOS), under the coordination of the Ministry of Health. A multi-stage, geographically clustered sample design was used to produce nationally representative data (MoH, 2013). A total of 10,382 households were surveyed and 8,508 respondents completed individual interviews with an overall response rate of 86.6%. From the GATS data set, secondary data analysis was performed as shown in Tables 1, 2, and 3.

Data Collection

In the initial GATS survey, participants were first asked how many of their household members were aged 15+years and older, and who used tobacco. Then data for tobacco consumption for each eligible

household member were collected including the respondent. This has been used as an inclusion and exclusion criteria for this study.

Education and income spent on tobacco: Education was categorized as, "Less than primary level completed", Less than Ordinary level completed" and "Ordinary level and higher completed". Education and how it influenced spending on tobacco was assessed with the heaviness of the smoking index (HSI).

Employment and amount spent on tobacco: To measure how employment status influenced spending on tobacco use daily, the question asked was "How much money in Ugandan shillings did you pay for cigarettes purchased? The response options were "UGX 100 to 999" and "UGX1000+".

The heaviness of the smoking index, and the amount spent: HSI was assessed with two questions "1. On the days that you smoke, how soon after you wake up do you have your first cigarette? The options were: A. 'Within 5 minutes (3 points)' B. '6-30 minutes (2 points)' C. '31 – 60 minutes (1 point)' D. 'After 60 minutes (0 points)' and 2. How many cigarettes do you typically smoke per day? A. '10 or fewer (0 points)' B. '11-2 0 (1point) C. '21 -30 (2 points)' D. 31 or more (3 points), the two questions were computed using and scored as, "low addiction" and "moderate/high addiction".

Background characteristics/ Social demographic variables

Social demographic variables included gender (assessed with the question, "what is your gender?" and the residence of the respondents which were categorized as either "rural" or "urban". The age of the respondents was not considered in demographic characteristics, since most data on age were missing from the data set. However, the GAT survey primarily considered respondents aged 15+ years and older. Gender and residence have been used as a measure of prevalence and spending on tobacco use of males versus females. Overall, more females participated in the study compared to males (54.7%, versus 45.3%) n= 8508.

Statistical analyses of Secondary Data

Using Statistical Package for Social Scientists (SPSS), two statistical analyses were performed. Cross-tabulation to measure the association between demographic data against spending on tobacco and the heaviness of the smoking index (HSI). Two multivariable-adjusted Logistic Regression Analyses were performed to examine factors associated with the amount spent daily on tobacco and the heaviness of the smoking index (HSI). Independent variables assessed were level of education level completed, employment status over the last 12 months, gender, and residence of adult smokers.

Results

The study found no significant difference in spending by gender between males and females, employment and amount spent, as well as the residence of adult smokers in Uganda (Table 1).

Table 1: Association between Independent variables against amount spent daily on tobacco, and Heaviness of Smoking Index

	Amount spent daily on tobacco use (UGX) *1000+* *N,%,(95%CI,P)*				*The Heaviness of the Smoking Index (HSI)* *Moderate/High addiction* *N,%,(95%CI,P)*			
	n	%	95%CI	P	n	%	95%CI	P
Gender								
Male	72	21.0	(15.4-27.8)	0.888	162	43.5	(37.1-50.0)	0.158
Female	4	19.5	(6.5-45.7)		25	32.6	(21.0-46.8)	
Residence								
Urban	35	20.6	(13.4-30.3)	0.938	75	39.3	(30.8-48.4)	0.565
Rural	41	21.0	(14.3-29.7)		112	46.2	(36.5-50.0)	
Education level completed								
Less than primary level	35	15.6	(9.6-24.2)	0.037	131	42.5	(35.7-49.5)	0.608
Less than O level	25	30.1	(19.3-43.6)		40	42.9	(30.4-56.4)	
O level and higher	16	34.3	(17.2-56.7)		15	31.1	(15.7-52.3)	
Employment of the respondents								
Employed	68	21.0	(15.3-28.0)	0.805	152	40.6	(34.3-42.7)	0.008
Unemployed	6	23.6	(8.9-49.3)		25	67.2	(47.7-82.2)	
Is smoking allowed inside your home?								
Allowed	31	18.3	(10.5-29.9)	0.002	98	46.0	(38.2-53.9)	0.441
Not allowed	16	12.0	(6.5 - 21.0)		52	38.2	(28.6-48.8)	
No rules	28	61.4	(25.8-53.3)		36	38.4	(26.1-52.3)	
Indoor smoking policy at the workplace								
Allowed	1	3.1	(0.4-20.7)	0.034	10	85.5	(60.1-95.8)	0.007
Not allowed	19	43.9	(24.7-65.1)		17	37.0	(19.6-58.6)	
No policy	8	43.3	(31.8-78.6)		8	34.6	(15.9-59.7)	
Gifts/special discounts on buying cigarettes								
Yes	3	45.0	(12.9-81.9)	0.171	7	88.9	(62.6-97.5)	0.000
No	72	20.2	(14.8-27.0)		179	40.8	(35.0-46.9)	
Advertisements/promotions for cigarettes								
Yes	14	25.1	(11.9-45.4)	0.571	11	20.1	(9.8-37.0)	0.005
No	62	20.2	(14.6-27.2)		172	44.6	(38.7-50.8)	

Expenditure of >UGX 1000 on cigarette purchases is more likely among those smokers with ≥O levels of education (69.9% 95% CI 56.4-80.70. Such smokers are associated with no-smoking rules at home (61.6 95% CI: 47.7-73.9), they are unemployed (67.2, 95% CI: 47.7-82.2), and their workplaces have no indoor smoking policies (34.6 95% CI 15.9-59.7) as shown in Table 1. Furthermore, adult smokers spend ≥UGX.1000 (AOR=2.278 95% CI: 1.150-4.513) were associated with receiving gifts and discounts on other products after their last purchase of cigarettes Table 3.

Heavy addiction to nicotine was associated with no-smoking rules at home (AOR=4.269 95% CI: 1.572-11.595) as shown in Table 2. Adult smokers in Uganda who were highly addicted spent ≥UGX.1000 (AOR= 2.278 95% CI: 1.150-4.513). The heaviness of the smoking index was also associated with noticing adverts and promotions within tobacco stores in the last 30 days (AOR= 2.800 95% CI: 1.117-7.016) Table 3.

Multivariable associations with the amount spent daily on tobacco and addiction (HSI) among Ugandan adults.

Factors associated with spending and HSI were noticing advertisements/promotions for cigarettes in the last 30 days, having or no indoor smoking policy at the workplaces, receiving gifts/special discounts on other products after buying cigarettes, and whether smoking was allowed in respondents' homes. Respondents who received gifts and discounts on other products after purchasing cigarettes were highly addicted to cigarette smoking and spent more on tobacco. On logistic regression model 1, heavy addiction to tobacco (AOR= 2.512 95% CI: 1.212-5.209) as shown in Table 2, was significantly associated with spending >UGX.1000 per day (AOR=2.278 95% CI: 1.150-4.513), P < 0.030), as shown in Table 3. Having no-smoking rules in a home was also significantly associated with spending >UGX.1000 (AOR=4.269, 95% CI: 1.572-11.595) as shown in Table 2.

Table 2: Multivariable Logistic Regression Model 1 of factors associated with income spent daily on tobacco

	Spending >1000 daily on tobacco (Uganda shillings) *AOR(95%CI)*
Smoking inside a home	
Allowed 1(Ref) Not allowed	1.00 0.931 (0.317-2.73)*
No rules	4.269 (1.572-11.595)*
Addiction to tobacco use	
Low 1(Ref)	1.00
Moderate/High Addiction	2.512 (1.212-5.209)

**P < 0.05*

On logistic regression model 2, spending ≥UGX.1000 per day AOR 2.278 [1.150-4.513] was highly associated with moderate/high addiction to nicotine in Uganda (Table 3). Noticing advertisements and promotions in stores where cigarettes were sold, this factor was statistically significant to moderate/heavy addiction (AOR=2.800 95% CI: 1.117-7.016) Table 3.

Table 3: Multivariable Logistic Regression Model 2 of factors associated with HSI (n=319)

	Moderate/High Addiction
	AOR (95%CI)
Noticing adverts and promotions on cigarettes in stores	
No 1(Ref)	1.00
Yes	2.800 (1.117-7.016)
Amount spent daily on tobacco	
100-999 1(Ref)	1.00
>1000	2.278(1.150-4.513)

*In the last 30 days, have you noticed any *advertisements or signs promoting* cigarettes in the following places? In stores where cigarettes are sold? *P < .05*

Discussion

Spending on tobacco use is related to education and employment status [2]. Tobacco use is on the rise in Uganda [1]. Education influences expenditure on tobacco in Uganda among adults aged 15 years and older. Using the 2013 Global Adult Tobacco Surveys which measures tobacco use and prevalence among adults, the study found no statistically significant difference between gender and residence of the respondents who participated in the survey. Most adult smokers are unemployed and spend more than one thousand shillings per day on buying tobacco (manufactured cigarettes). There are no-smoking rules at home and no indoor smoking policies at the workplace. Adult smokers, who receive gifts and discounts after buying cigarettes on other products, and/or noticed advertisements in tobacco stores where cigarettes are sold, were highly addicted to tobacco use. There is an urgent need for the government to provide tobacco cessation services in primary health care (PHC) clinics in Uganda.

The least employed are likely to be impoverished by smoking in Uganda. An adult smoker who is unemployed, and highly getting addicted to tobacco is a threat to the economy of Uganda. It is estimated that the annual cost spent on treatment of a smoker in Uganda compared to a non-smoker was UGX 3,697,225 (USD 1,422) versus UGX 1,619,309 [USD 623] (CTCA, 2017), this is three times higher in comparison. With the increasing number of smokers in Uganda getting addicted, if no interventions are taken, the Government of Uganda is likely to spend even more on treating NCDs related to tobacco (Ndugwa *et al*., 2016). When tobacco cessation services are incorporated into Primary Health Care (PHC), the amount spent daily on tobacco can be used to provide health insurance in Uganda, to reduce the cost of treatment currently borne by the Government.

Those with ≥ O levels of education spend ≥UGX 1000 per day on tobacco. Since not low levels of education are associated with spending highly on tobacco, these findings do not correlate with a study conducted in India, where it was observed that lower smoking rates were associated with low education (Bidyut *et al*., 2017). However, the other work-related factors such as having no indoor smoking places are associated with expenditure on tobacco. Receiving gifts and special discounts on other products after buying cigarettes was highly associated with spending on tobacco in Uganda. Using the theory of competing advantage (Pampel and Rogers, 2004). It can be noted that though some smokers spend <UGX.1000, their smoking lifestyles and choices should also be regarded as they might accumulate

additively. The more they buy cigarette sticks, the higher the chances of addiction.

These secondary data analyses were performed on an available public use data set using complex samples, the data was validated, and the study could be novel in Uganda, with grey scientific insights, especially on how smoking is associated with addiction. These are some of the study strengths. However, the data could have been misreported in the initial survey. There were a few limitations to the study, but most importantly to note is the fact most of the data on the age of the respondents interviewed during the initial survey was missing in the GATS data set. The study could therefore not measure the association between age and amount spent on tobacco against the heaviness of the smoking index. The study has also been conducted based on self-reported data. Though the study has been conducted three years after the Tobacco Control Act was enacted in 2015, the findings still support the major aspects of the law, especially the ban on Tobacco Advertisements, Promotion, and Sponsorship which could scale down addiction levels if well enforced.

Conclusion

Tobacco addiction is on the rise in Uganda after smokers notice advertisements and promotions about cigarettes. The levels of addiction are even heavier when smokers receive gifts and discounts on other products after buying cigarettes. The relationship between education levels completed against spending on tobacco (manufactured cigarettes) is demonstrated, and these findings add to the existing stock of knowledge and evidence that adult smokers in Uganda who completed O level and higher spend more on tobacco. The study did not find a significant difference between gender and residence versus tobacco use. However, further insight is provided into the association between amounts spent daily on tobacco about addiction (HSI). The need to incorporate tobacco cessation services in Primary Health Care clinics and conduct more primary research studies to assess the implementation and effect of Uganda's Tobacco Control Act of 2015 is recommended.

Acknowledgment

I would like to acknowledge the African Center for Tobacco Industry Monitoring and Policy Research led by Prof. Ayo Yusuf Lekan for the opportunity to participate and train in an evidence-based tobacco control policy research fellowship at Sefako Makgatho Health Sciences University, Pretoria. I would also like to thank Dr. Catherine Egbe and Mr. Londani Mukhetwa for the training extended to me in form of qualitative and quantitative research skills. I acknowledge Prof. Faustino Orach-Meza who proofread the manuscript.

Conflict of Interest

The author has indicated there is no potential conflict of interest to disclose.

References

Ali A.Y.M, Safwat T, Onyemelukwe G, Otaibi M.A.A., Amir A.A, Nawas Y.N., Aouina H, Afif M.H, Bolliger C.T. (2012). Smoking Prevention and Cessation in Africa and Middle East Region: A Consensus Draft Guideline for Healthcare Providers – Executive Summary. *Respiration*, 83:423-432.

Bidyut K.S, Lion S, Monika A, Jasjit S.A, Srinath K, and Robert W. (2017). The Social GradGradientacco Use Does Not Generalize to Low-Income Urban Communities in India: Findings from a Census Survey. . *Nicotine & Tobacco Research*, 1516–1520.

Center for Tobacco Control in Africa. (2017). *The health cost of tobacco use in Uganda*. Kampala Uganda: Makerere University Press.

Centre for Human Rights and Development - CEHURD (2013). *The burden of tobacco use in Uganda*. Kampala, Uganda: CEHURD.

Joy de B, Chris L, Ayda Y. (2011). Tobacco and Poverty. *Tobacco Control*, 10:210–211.

Ministry of Health. (2013). *Global Adult Tobacco Survey Fact Sheet*. Kampala: Ministry of Health.

Ministry of Health - MoH. (2014). *Uganda Non-Communicable Disease Risk Factor Baseline Survey Report*. Kampala: Ministry of Health Uganda.

Ndugwa S.K; Sheila N, Mutungi G, Wesonga R, Bahendeka S.K and Guwatudde D. (2016). Tobacco use and associated factors among adults in Uganda: Findings from a nationwide survey. . *Tobacco Induced Diseases. DOI: https://doi.org/10.1186/s12971-016-0093-8*, 14:27.

National Institute on Drug Abuse - NIDA. (2016, February 25). *The heaviness of the Smoking Index*. Retrieved from USA National Institute on Drug Abuse: https://datashare.nida.nih.gov/instrument/heaviness-of-smoking-index

Pampel F.C and Rogers G.R. . (2004). Socioeconomic Status, Smoking, and Health: A Test of Competing Theories of Cumulative Advantage. *Journal of Health and Social Behaviour.* , doi.org/10.1177/002214650404500305.

Ravi B.P.K, Shankar R.D, and Rao A.R. Kuppuswamy's. (2013). Socio-Economic Status Scale – A Revision of Economic Parameter. *International Journal of Research & Development of Health.*, Vol. 1(1):2-4.

Siahpush M, Borland R, Scollo M. (2013). Smoking and financial stress. . *Tobacco Control*, 12:60–69.

Siahpush, M; McNeill, A; Hammond, D and Fong G.T. (2006). Socioeconomic and country variations in knowledge of health risks of tobacco smoking and toxic constituents of smoke: results from the 2002 International Tobacco Control (ITC) Four Country Survey. *Tobacco Control*, DOI: 10.1136/tc.2005.013276.

United States Department of Health and Human Services - USDHHS (2014). *The health consequences of smoking—50 years of progress: a report of the Surgeon General. 17 Atlanta, GA: USDepartment of Health and Human Services, Center for Disease Control and Prevention, National Center for Chronic Disease Prevention*. Atlanta USA: United States Department of Human Health Services.

World Health Organisation - WHO. (2006). *Survey on Tobacco and Health Inequality*. Geneva Switzerland: World Health Organisation.

World Health Organisation WHO. (2022, May 24). *World Health Organisation International Newsroom*. Retrieved from Tobacco: Key facts: https://www.who.int/news-room/fact-sheets/detail/tobacco#:~:text=Tobacco%20kills%20more%20than%208,%2D%20and%20middle%2Dincome%20countries.