

Predictors of smoking among Ugandan adolescents between 2007 and 2011

MASTER OF PUBLIC HEALTH

Paul Ebusu

Student number: 13392809

School of Health Systems and Public Health

Faculty of Health Sciences

University of Pretoria

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PART A: PREAMBLE

DECLARATION

I hereby declare that no aspect of this dissertation entitled “Predictors of smoking among Ugandan adolescents between 2007 and 2011” has been submitted for any degree or examination at any other university. I further declare that all resources used have been duly acknowledged.



.....9th /02/2015.....

STUDENT

Date

Paul Ebusu

Student number: 13392809

.....
SUPERVISOR

.....
Date

Prof. O.A. Ayo-Yusuf
School of Health Systems and Public Health
Faculty of Health Sciences
University of Pretoria

ACKNOWLEDGEMENTS

First and foremost, I am grateful to the American Cancer Society (ACS) through the University of Pretoria – American Cancer Society (UPACS) programme for sponsoring my study for this Master in Public Health (MPH) degree. I would like to extend sincere gratitude to the Centers for Disease Control and Prevention (CDC) for making available the data sets used in this study.

Special thanks go to UPACS Director and my academic supervisor and mentor, Prof. O.A. Ayo-Yusuf, whose continued support and firm guidance during the course of this programme gave me the confidence and courage to carry on. Despite a busy schedule, Prof. Ayo-Yusuf always made time for me. I am also deeply grateful for the opportunity he granted me to participate in project evaluations for African Tobacco Control Consortium/ACS funded projects across Africa. This exposure enriched my experience and added great value to my class work.

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Finally and above all, I want to thank God the Almighty for the blessings, love and protection He granted me during the time of this programme and throughout my life.

DEDICATION

I dedicate this dissertation and Master in Public Health degree to my mother Ann Agango and my brother Jude Opolot. Both of you have loved me unconditionally and believed in my education. You have sacrificed a lot to see me through school and I love you dearly. May the Almighty God bless and be with you all the days of your lives.

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ACRONYMS

ACS	American Cancer Society
AIDS	Acquired Immune Deficiency Syndrome
CDC	Centers for Disease Control and Prevention
CI	Confidence Intervals
CTCA	Centre for Tobacco Control in Africa
FCTC	Framework Convention on Tobacco Control
GYTS	Global Youth Tobacco Surveys
HIV	Human Immunodeficiency Virus
MPH	Master in Public Health
OR	Odds Ratio
TC	Tobacco Control
TI	Tobacco Industry
UPACS	University of Pretoria – American Cancer Society
UP	University of Pretoria
WHO	World Health Organisation

ABSTRACT

BACKGROUND: There are limited studies that have explored smoking predictors among Ugandan adolescents over time. This study investigated factors influencing smoking among Ugandan adolescents between 2007 and 2011.

METHODS: This was a cross-sectional study using secondary data from 2007 and 2011 Ugandan Global Youth Tobacco Surveys (n=7,505). Data analysis included chi-square and multivariate logistic regression. The level of statistical significance was set at $p < 0.05$.

RESULTS: Of the participants, 49.9% (n=3,746) were smokers. Over time, there was a reduction in the prevalence of smoking among boys (10.8% vs. 6.1%; $p=0.01$), but not among girls (5.0% vs. 4.8%; $p=0.48$). After controlling for potential confounders, having both parents smoking (OR=7.52; 95%CI: 1.23-45.91), close friends smoking (OR= 6.59, 95%CI: 3.70-11.74) and exposure to second-hand smoke at home (OR= 3.69, 95%CI: 2.0-6.74) were associated with increased odds of smoking among all Ugandan adolescents.

CONCLUSION: Given the observed gender differences in smoking trends, it is recommended that more attention be given to motivating adolescent girls not to take up smoking or, for those who have already started smoking, to quit. Furthermore, in addition to greater enforcement of the ban in public smoking, there is a need for public education to promote the voluntary adoption of smoke-free homes.

Keywords: Uganda; adolescents; gender differences; predictors of smoking; smoking prevalence; GYTS; 2007 and 2011.

PART B: RESEARCH PROTOCOL

UNIVERSITY OF PRETORIA

FACULTY OF HEALTH SCIENCES

SCHOOL OF HEALTH SYSTEMS AND PUBLIC HEALTH

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MASTER OF PUBLIC HEALTH

Author: Paul Ebusu

Student No: 13392809

Contact details:

Address: School of Health Systems and Public Health, Faculty of

Health Sciences, University of Pretoria

Cell: +27 793 83 56 89 / +27 786 43 75 10

Email: ebusupaul@gmail.com / paulebusu@yahoo.com

Supervisor: Prof. Olalekan A. Ayo-Yusuf

Email address: lekan.ayoyusuf@up.ac.za

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1. Executive summary

Uganda has made substantial efforts in tobacco control, with more significant progress in the recent years following the country's ratification of the World Health Organisation (WHO) Framework Convention on Tobacco Control (FCTC) in 2007. However, as the smoking gap between boys and girls is closing and the average initiation age for underage smokers lowers, little is known about predictors of smoking among adolescents. As such, this study aims to explore smoking predictors among adolescents in Uganda during 2007 and 2011.

This cross-sectional study will involve secondary data analysis of the merged 2007 and 2011 Ugandan Global Youth Tobacco Surveys (GYTS) using STATA12 (n=7,505). The data for this study, which is publicly available, was obtained from the website of the Centers for Disease Control and Prevention (CDC). The study outcome measure will be obtained from a 'yes' response (after recoding) to the question: "During the past 30 days (one month), on how many days did you smoke cigarettes?" The responses; 1) 0 days, 2) 1 or 2 days, 3) 3 to 5 days, 4) 6 to 9 days, 5) 10 to 19 days, 6) 20 to 29 days and 7) All 30 days will be recoded into a binary outcome 'Yes' or 'No'. Responses 2 to 7 will be considered 'Yes' response and response 1 will be considered 'No' response. All yes responses to the question will be considered current smokers. The explanatory variables will include the smoking status of the participants' parents and close friends. Data analysis will include chi-square and multi-variable logistic regression. The level of significance will be set at $p < 0.05$.

Through its findings, this study aims to support evidence-based policy development and the implementation of appropriate strategies to prevent tobacco use, especially among young people.

2. Introduction

Tobacco is the only legally available consumer product which significantly injures people when used entirely as intended.^[1] Tobacco dependence is classified as a

mental and behavioural disorder according to WHO/CDC international classification of diseases.^[2] Tobacco is also the single greatest preventable cause of death in the world today, prematurely killing up to half of the people who use it and lowering the life expectancy of smokers by 20-25 years, as compared to non-smokers.^[3,4] Globally, tobacco use causes nearly six million preventable deaths each year.^[3] This means that tobacco kills more people than HIV/AIDS, malaria and tuberculosis combined.^[1,5]

Overall, there are about 1.3 billion current smokers in the world, with over 80% living in developing countries.^[1,6] As trends show falling levels of tobacco use in the developed world, attention is increasingly turning to the growth of cigarette use in middle- and low-income countries such as Uganda.^[3,7] In Uganda, it is estimated that about 13,000 people, die annually due to tobacco-related illnesses.^[8] According to Muula and Mpabulungi, 5.6% of adolescents in Kampala, Uganda smoked in 2001.^[9]

If smoking does not start during adolescence, it is unlikely ever to occur^[10] and the probability of cessation among adults is inversely related to the age at initiation.^[11,12] The health behaviour of young adults is important because this group is in transition between adolescence and early adulthood, a time during which unhealthy behaviours generally develop.^[13-16] Because of both the health and lifestyle risks facing adolescents, it is important to understand the characteristics associated with smoking in this population and the factors that might be used to influence their smoking behaviour.^[17] Therefore, the aim of this study is to explore predictors of smoking among Ugandan adolescents during 2007 and 2011.

3. Problem statement

Most tobacco use is initiated during adolescence and young adulthood.^[18] Tobacco contains nicotine, which is addictive. This causes many young occasional smokers to slowly graduate into regular smokers as they move into adulthood.^[19] Understanding the factors associated with smoking among adolescents in a particular cultural setting can help inform locally-relevant interventions, including policy development for prevention. However, there are only limited studies that have explored smoking predictors among adolescents in Uganda.

1. Literature review

Adolescent smoking is a global issue. Most adolescents know what the long term effects of smoking are, but do not necessarily care about them because they are not concerned with what might happen to them in future.^[20] Factors such as peer pressure, parental or teacher smoking, low self-efficacy to refuse cigarette offers, exposure to pro-tobacco marketing and a lack of parental supervision have been implicated in adolescent smoking in developed countries.^[21]

4.1 Smoking predictors

Peer influence: It has been suggested that adolescent smoking behaviour is most closely related to the behaviour of the best friend and friends in general, and also related to parental smoking behaviour.^[22] According to Jacobsson et al.,^[23] peer influence is the strongest predictor of smoking initiation in adolescents.^[23] Understanding the association between adolescent peer relationships and smoking is key to the development of prevention and intervention programmes designed to address adolescent smoking as a significant public health concern.^[24]

Influence of adults: The influence of parents has been found to be one of the strongest predictors of adolescents smoking, with a direct bearing on the age adolescents start smoking.^[25] By the time adolescence is reached, the foundation has been laid for a life trajectory that most likely will or will not include cigarette smoking and a host of other behaviours.^[24] Both mother smoking and father smoking have been linked to adolescent smoking.^[26] Similarly, students' exposure to teachers smoking on school premises has been associated with smoking behaviour among adolescents.^[27]

Influence of mass media and advertising: The media influences smoking among adolescents in a number of ways. These include: the modelling of behaviour; the social normalisation of smoking that creates a perception that 'everybody' smokes; image identification; and the branding of tobacco products in a way that associates them with glamour.^[28] There are numerous smoking scenes in films, video games and the mass media in general that children are exposed to.^[29] These aspects often drive young people towards smoking.

Self-efficacy: Cigarette refusal self-efficacy has been found to be associated with smoking behaviour. It has been found that adolescents with a high level of self-efficacy are better able to refuse cigarettes when offered by a friend.^[30]

The role of the tobacco industry: The tobacco industry is the vector that perpetuates the use of tobacco in a bid to continue making profits. Their advertising often targets adolescents and young adults.^[31] The tobacco industry employs marketing strategies such as offering free samples to not only encourage youths to experiment with their first cigarettes but also to maintain them through their transition to being regular smokers.^[31]

4.2 Effects of smoking on adolescents

Smoking has a number of effects on adolescents which range from health to social effects. In relation to health, tobacco contains nicotine, which is addictive. Its smoke contains more than 7,000 chemicals and compounds, hundreds of which are toxic, and at least 69 of which have been shown to cause cancer.^[32] Adolescent smoking reduces lung growth and the level of maximum lung function that can be attained.^[32] It also poses a clear risk for respiratory symptoms which are risk factors for other chronic conditions in adulthood, including chronic obstructive pulmonary disease.^[32]

There are also other effects associated with adolescent smoking. When adolescents smoke, their teeth become yellow-stained as a result of tar and other chemicals in tobacco, and the smell of cigarettes smell may linger on their hair and clothes.^[33] More seriously, tobacco is a known gateway to other adolescent drug abuse. Adolescent smokers are more likely to begin drinking alcohol and using illicit drugs than their non-smoking counterparts.^[33]

4.3 Uganda Country Information (Tobacco Control Efforts)

Uganda ratified the WHO Framework Convention on Tobacco Control (FCTC) in June 2007 and became party to the treaty. The FCTC and its guidelines are binding to its members and must be implemented without reservation. The domestication of WHO FCTC is a salient factor in paving the way for effective tobacco control policies and interventions.^[34] This treaty, however, has not yet been domesticated in the country as is required of all parties.^[35]

Uganda has a number of existing laws that are somewhat pro-tobacco control, but these laws are either not compliant with the WHO Framework Convention on Tobacco Control (FCTC) or have never been effectively implemented.^[36]

A joint capacity assessment for tobacco control conducted by WHO and the Centre for Tobacco Control in Africa (CTCA) indicates that Uganda, like other African countries, still has limited capacity for tobacco control. There is not enough information available to support advocacy on tobacco control in the country.^[37]

There is thus a need for more information relating to the prevalence of tobacco use in general and determinants of smoking among adolescents. As the country is in the process of enacting a tobacco control bill and passing a national policy, more evidence-based advocacy is required.

2. Rationale

With the initiation age of underage smokers reportedly being as low as nine years old, as found in a previous study in Uganda,^[38] and with adolescent smoking playing such a key role in determining adult smoking,^[10] it is important to understand factors associated with adolescent smoking. Understanding the factors that might help inform the design of appropriate interventions that can reduce and/or help stop adolescent smoking.

3. Aim and Objectives

6.1 Aim

The aim of this study is to explore smoking predictors among adolescents in Uganda during 2007 and 2011.

6.2 Objectives

- a) To determine the prevalence of smoking among adolescents in Uganda during 2007 and 2011

- b) To determine the factors independently associated with smoking among Ugandan adolescents during 2007 and 2011
- c) To explore gender difference in the prevalence of regular smoking among Ugandan adolescents in 2007 and 2011

4. Methods

7.1 Study design

The will be a cross-sectional study using secondary data.

7.2 Data source

This study will analyse the 2007 and 2011 Global Youth Tobacco Surveys (GYTS) emerged data set. The GYTS data will be obtained from the CDC website (<http://nccd.cdc.gov/gtssdata/Ancillary/DataReports.aspx?CAID=2>).^[39] The study's selection of the two years (i.e. 2007 and 2011) was based on the fact that they are the most recent nationally representative GYTS studies conducted in Uganda. The first GYTS conducted in Uganda in 2003 was not nationally representative. The two data sets were emerged to enable data analysis within a time period (i.e. between 2007 and 2011) as opposed to a single point in time.

Participants and sample

This secondary data analysis will involve two nationally representative samples of high school grades – senior one to senior three learners (13-15 year olds) who participated in the 2007 (n= 4,071) and 2011 (n= 3,434) GYTS in Uganda. As opposed to the WHO age definition of adolescents (i.e. 10-19 years), the use of 13-15 year olds is because it was the target population for GYTS and hence provides the data that can be comparable to other countries' findings. A two-stage cluster sample design was used to produce representative data for all of Uganda. At the first stage, schools were selected with probability proportional to enrolment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate. The overall response rates were 81.2% and 83.3% for GYTS 2007 and 2011 respectively. These surveys used a self-administered questionnaire.

7.3 Measurements

Outcome measure

The outcome variable will be current smoking. Current smoking will be assessed by asking the respondents the following question “During the past 30 days (one month), on how many days did you smoke cigarettes?” Options included: (1) 0 days, (2) 1 or 2 days, (3) 3 to 5 days, (4) 6 to 9 days, (5) 10 to 19 days, (6) 20 to 29 days and (7) all 30 days. Responses will be dichotomized. Respondents who selected one of options (2) to (7) will be categorised as current smokers (coded 1), otherwise they will be categorised as non-current smokers (coded 0).

Independent variables

Parents’ smoking status: In the two datasets, participants were also asked: ‘Do your parents/guardians smoke?’ and the respondents were asked to pick one of the following options: ‘Both parents/guardians do not smoke’, ‘Both parents/guardians smoke’, ‘Only father/male guardian smokes’ and ‘Only mother/female smokes’.

Friends’ smoking status: The respondents were asked if any of their closest friends smoked cigarettes. The options included: (a) none of them (b) some of them (c) most of them and (d) all of them. The responses would be dichotomized. Options c and d will be combined as those who have most/all friends smoking for ease of analysis and interpretation of results.

Perceived image of smokers: The perceived image of men and women smokers was measured by asking the questions: (1) When you see a man smoking what do you think of him? (2) When you see a woman smoking what do you think of her? The response options will be dichotomized.

Exposure to anti-smoking messages in the media and classrooms: The respondents were asked: During the past 30 days (one month), how many anti-smoking media messages (e.g. television, radio, billboards, posters, newspapers, magazines, movies, drama) have you seen or heard? Respondents were asked to pick from the options (1) a lot (2) few (3) none.

In addition, respondents were asked: “When you go to sports events, fairs, concerts, community events or social gatherings, how often do you see anti-smoking messages?” Respondents were asked to pick from the options (1) never (2) a lot (3) sometimes. Respondents were asked about whether they have classes about the dangers of smoking during the school year. Respondents were asked to pick from the options (1) yes (2) no (3) not sure.

Other information obtained included attitude towards cigarette smoking; beliefs about the harmfulness of cigarette smoking to health; and smoking’s effect on body weight (see Appendix 2).

7.4 Data analysis

The datasets from the two surveys will be merged and the study will be restricted to participants who reported to be ‘current smokers’ (as defined in outcome measure 7.3 above). Data will be analysed using STATA Release 12 (Stata Corporation, College Station, Texas, USA) with an appropriate weighting of selection probabilities. The complex sample design used in the GYTS will also be taken into consideration. Group differences will be assessed using chi-square statistics. Multi-variable adjusted logistic regression will be carried out using a backward deletion approach, starting with a full model. Statistical significance will be set at $P=0.05$.

7.5 Limitations of the study

One limitation of the current study is its cross-sectional nature, which will preclude any influence on causality, given the limited information on the temporal order of events. The findings of this study may not be representative of the individual schools from which the respondents were sampled, but may only be true at the population level. Also, the self-reported nature of the measures may have been subject to reporting bias, as the participants might provide socially desirable responses.

5. Ethical considerations

The GYTS is publicly available on the CDC website. None of the datasets have any personal identifiers and no attempt would be made to link the dataset to any particular school or individual. Permission for ethical clearance of the study protocol

will be obtained from the Human Research Ethics Committee of the University of Pretoria.

6. Budget

There is no budget. The student's study-related cost was mainly covered by the scholarship to the student by the American Cancer Society's Fellowship programme.

7. Timelines

Activity/expected output	March 2014	April 2014	May 2014	June 2014
Final protocol draft				
Submission to ethics				
Data analysis and report writing				
Report submission				

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PART C. JOURNAL MANUSCRIPT

Cover Letter

School of Health Systems and Public Health
Faculty of Health Sciences
University of Pretoria

Date: November 24, 2014

Editor in Chief,

Journal of School Health

SUBMISSION OF ORIGINAL ARTICLE FOR PUBLICATION

I, the corresponding author of this original article, kindly submit it to your journal for consideration for publication. This article entitled: ***“Influence of gender on prevalence and predictors of smoking among Ugandan adolescents between 2007 and 2011”*** is part of a mini dissertation submitted in partial fulfilment of the award of a Master in Public Health (MPH) degree at the University of Pretoria.

The author of this article has reviewed it and it is not being considered for publication elsewhere.

We believe that the findings of this research study are important for Uganda and other African countries in similar settings, especially at this time when several African countries are pushing to pass legislation on tobacco control. Policy makers and tobacco control advocates in Uganda in particular will have added evidence to justify why the country ought to pass the proposed tobacco control law.

Your consideration of this article for publication is appreciated in advance.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Paul Ebusu', with a long horizontal flourish extending to the right.

Paul Ebusu

Corresponding author

Email: ebusupaul@gmail.com

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Ebusu Paul, MPH¹ and Ayo-Yusuf Olalekan A., PhD^{1,2}

¹ School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, South Africa.

² Sefako Makgatho Health Sciences University, Medunsa, South Africa.

ABSTRACT

BACKGROUND: There are limited studies that have explored smoking predictors among Ugandan adolescents over time. This study investigated factors influencing smoking among Ugandan adolescents between 2007 and 2011.

METHODS: This was a cross-sectional study using secondary data from 2007 and 2011 (n=7,505) Ugandan Global Youth Tobacco Surveys (GYTS). Data analysis included chi-square and multivariate logistic regression. The level of statistical significance was set at $p < 0.05$.

RESULTS: Of the participants, 49.9% (n=3,746) were smokers. Over time, there was a reduction in the prevalence of smoking among boys (10.8% vs. 6.1%; $p=0.01$), but not among girls (5.0% vs. 4.8%; $p=0.48$). After controlling for potential confounders, having both parents smoking (OR=7.52; 95%CI: 1.23-45.91), close friends smoking (OR= 6.59, 95%CI: 3.70-11.74) and exposure to second-hand smoke at home (OR= 3.69, 95%CI: 2.0-6.74) were associated with increased odds of smoking among all Ugandan adolescents.

CONCLUSION: Given the observed gender differences in smoking trends, it is recommended that more attention be given to motivating adolescent girls to not take up smoking or, for those who have already started, to quit smoking. Furthermore, in addition to greater enforcement of the ban in public smoking, there is need for public education to promote the voluntary adoption of smoke-free homes.

Keywords: Uganda; adolescents; gender differences; predictors of smoking; smoking prevalence; GYTS; 2007 and 2011.

INTRODUCTION

Adolescent smoking is a global concern because most smoking is initiated during this period.^[1] According to Ugandan national adolescent health policy, the term ‘adolescents’ refers to people aged between 10 and 19 years.^[2] Previous reports suggest that the prevalence of tobacco use among Ugandan adolescents was estimated at 19.3% and 15.5% for boys and girls respectively.^[3,4] The mean underage smoking initiation has been reported to be as low as nine years old with a closing in the gap in smoking prevalence between boys and girls over time.^[5] In Uganda, it is estimated that about 13,000 people including adolescents die annually due to tobacco-related illnesses.^[6]

Uganda had nonetheless ratified the WHO’s Framework Convention on Tobacco (FCTC) and conducted the first nationally representative Global Youth Tobacco Survey (GYTS) in 2007.^[7, 8] Currently, Uganda has a number of advocacy campaigns and existing laws that appear to be pro-tobacco control. However, these laws, such as the ban on smoking in public places, do not appear to be effectively implemented. Exposure to tobacco smoking and the prevalence of smoking remain relatively high among Ugandan adolescents.^[9]

In Africa, the prevalence of smoking for people aged 15 years or older is estimated to range from 5% to 34%.^[10] A number of studies have shown that if smoking does not start during adolescence, it is unlikely to occur.^[11] Previous studies have associated a number of factors with adolescent smoking. These include, but are not limited to, peer influence, parent/teacher smoking, exposure to pro-tobacco advertisements and second-hand smoke exposure.^[12-14] Adolescent smoking is also reported to have a strong relationship with adult smoking.^[15] However, most of the smoking determinant studies have been carried out in high-income countries with a different context to most African countries. For instance, given the relatively low smoking prevalence of adult smoking in many African countries,^[16, 17] the extent of the influence of adult smoking on adolescent smoking remains to be determined. Furthermore, past studies carried out in low- and middle-income countries such as Uganda have been limited to descriptive studies and/or have involved small samples of adolescents that are not nationally representative.

The aim of this study was therefore to investigate, using a nationally representative sample, factors influencing smoking among Ugandan adolescents between 2007 and 2011.

METHODS

This was a cross-sectional analytical study involving secondary data analysis of the 2007 and 2011 Uganda Global Youth Tobacco Surveys (GYTS). The two data sets; GYTS 2007 (n= 4,071) and GYTS 2011 (n= 3,434) were merged (N=7505) for the purpose of analysis.

Participants

GYTS is a school-based survey involving high school learners of senior one to senior three. A two-stage cluster sample design was used to produce representative data for Uganda. At the first stage, schools were selected with probability proportional to enrolment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate. The overall response rates were 81.2% and 83.3% for GYTS 2007 and 2011 respectively.

Instruments and procedure

The GYTS used a self-administered questionnaire to obtain information on age, gender, tobacco use and attitude towards smoking among others.

Main outcome variable

Current smoking was assessed by asking the respondents the following question “During the past 30 days (one month), on how many days did you smoke cigarettes?” Options included: (1) 0 days, (2) 1 or 2 days, (3) 3 to 5 days, (4) 6 to 9 days, (5) 10 to 19 days, (6) 20 to 29 days and (7) all 30 days. Responses were dichotomized. Respondents who selected one of options (2) to (7) were categorised as current smokers (coded 1), otherwise they were categorised as non-current smokers (coded 0).

Independent variables included: parents' smoking status, friends' smoking status, perceived image of smokers, exposure to second-hand smoke and exposure to anti-smoking messages in the media and classroom. These variables were assessed using previously published measures based on the GYTS.^[18,19] With regard to the smoking status of parents and guardians, participants were asked: 'Do your parents/guardians smoke?' and the respondents were asked to pick one of the following options: 'Both parents/guardians do not smoke', 'Both parents/guardians smoke', 'Only father/male guardian smokes' and 'Only mother/female smokes.'

For friends' smoking status, respondents were asked if any of their closest friends smoked cigarettes. The options included: (a) none of them (b) some of them (c) most of them and (d) all of them. Options (c) and (d) were combined for ease of analysis and interpretation of results.

The perceived image of men and women smokers were measured by asking the questions: (1) When you see a man smoking what do you think of him? (2) When you see a woman smoking what do you think of her? There were six options which were dichotomized.

In order to measure the extent of exposure to anti-smoking messages, the respondents were asked: "During the past 30 days (one month), how many anti-smoking media messages (e.g. television, radio, billboards, posters, newspapers, magazines, movies, drama) have you seen or heard?" Respondents were asked to select from the options (1) a lot (2) few and (3) none.

In addition, respondents were asked: "When you go to sports events, fairs, concerts, community event or social gatherings, how often do you see anti-smoking messages?" Respondents were asked to pick from the options (1) never (2) a lot (3) sometimes. Respondents were asked about having classes about the dangers of smoking during the school year and asked to pick from the options (1) yes (2) no (3) not sure.

Other information obtained included attitude towards cigarette smoking, beliefs about the harmfulness of cigarette smoking to health and the effect of smoking on body weight. The datasets from the two surveys were merged and most of the analyses were restricted to participants who reported they had ever smoked.

Data Analysis

Data was analysed using STATA Release 12 (STATA Corporation, College Station, Texas, USA). There was appropriate weighting of selection probabilities and consideration for the complex sample design used in the GYTS. Group differences were assessed using chi-square statistics. Multi-variable adjusted logistic regression was conducted using a backward deletion approach, starting with a full model. All variables significant at $p \leq 0.25$ level in uncontrolled bivariate analyses were included in the multiple regression analysis in order to determine their independent influences on smoking after controlling for potential confounders. Statistical significance was set at $p < 0.05$. Effect sizes were reported as adjusted odds ratio (aOR), with 95% confidence intervals (CI).

RESULTS

Of the respondents who completed the survey, 49.9% ($n=3,746$) were females and 6.4% ($n=462$) reported being current smokers. There was a decline in the prevalence of smoking among boys between 2007 and 2011 (10.8% vs. 6.1%; $p=0.01$) while there was no change in the prevalence among girls during this period (5.0% vs. 4.8%; $p=0.48$) (Table 1).

A higher proportion of adolescents who reported being exposed to second-hand smoke (SHS) at home than those who reported to not being exposed were smokers (15.2% vs. 2.7%; $p < 0.001$). Also, the prevalence of smoking was higher among those who reported to having most or all of their friends smoking (26.4%) or some friends smoking (19.9%) than those who did not have any friends who smoked (2.7%) (Table 2).

After adjusting for potential confounders, students who had both parents or guardians as smokers were more likely to be current smokers (aOR: 7.52; 95% CI: 1.2-45.9) compared to those whose parents or guardians were not smokers. Also, students who were exposed to second-hand smoke at home remain more likely to be smokers (aOR: 3.69; 95% CI: 2.02-6.74) (Table 3).

DISCUSSION

This study has demonstrated a significant decline in adolescent smoking on aggregate, but only boys and not girls experienced a significant decline in smoking between 2007 and 2011. The findings of this study of an apparent narrowing in the gap in smoking prevalence between boys and girls in Uganda are consistent with findings from studies elsewhere.^[20] Other studies around the world have also indicated declining smoking trends among men and an overall stabilization among women.^[21-23] It is pertinent to note that Uganda ratified the Framework Convention on Tobacco Control (FCTC) and conducted the first nationally representative GYTS in 2007. It is therefore conceivable that advocacy campaigns leading up to the adoption of the FCTC and to its subsequent domestication might have had a positive impact on adolescent smoking.

It is observed that there was a significant gender difference in the reduction of smoking prevalence among adolescents over the study period. It is not clear why there was no reduction in the smoking prevalence among girls in Uganda during the study period such as that observed among boys. One possible explanation for this observation could be related to targeted-marketing by the tobacco industry. The tobacco industry has been reported to be targeting women and girls in their marketing strategies in many parts of the world.^[24] The tobacco industry usually targets women's desire for weight loss, emancipation, independence and sex appeal.^[25] Marketing is usually done through advertising using tobacco brand names on non-cigarette products. Also, the promotion of underground concerts and parties and the distribution of free cigarettes in country pubs, universities and colleges is part of the industry's marketing strategy.^[26,27] In particular, girls with a high self-esteem have been identified as most likely to fall prey to these tactics and subsequently take up smoking.^[28] It suffices to add that as women increasingly become economically empowered and independent, they also can potentially create a greater demand for goods and services of choice, including cigarettes.^[29]

As noted from the study's finding, having both parents smoking is strongly associated with adolescent smoking. This is consistent with studies elsewhere.^[15] However, studies have indicated the positive impact of adult-focused anti-smoking campaigns on adolescents. Among other things, exposure to adult-focused anti-

smoking campaigns made adolescents think that smoking is not 'cool' and in some instances, made them want to, attempt to and successfully quit smoking.^[30] This underscores the need to involve parents and other adults in anti-smoking campaigns for adolescents in Uganda as this strategy has been found to have a positive impact on adolescents' smoking behaviour.^[30]

Peer smoking was associated with adolescent smoking in the studied population irrespective of the year of study. This latter finding highlights two things, namely, there is a need to enhance cigarette-offer refusal self-efficacy as part of life skills training of adolescents.^[31,32] Particularly, the 'social influence resistance model' has been found to be effective in influencing adolescent behaviour by appreciating the importance of influences of the significant others beyond the individual.^[31,32] In its approach, the social influence resistance model focuses interventions on imparting skills not only needed to recognize but also resist negative influences including peer pressure.^[31,32] Such an educational intervention can be included in school curriculum and thus help adolescents overcome peer pressure to smoke or use other drugs. It is worth adding that a combination of social influences school based prevention programmes and mass media anti-smoking campaigns have been found to provide even better outcomes.^[33,34] The finding on the influence of peer smoking also highlights the need to encourage parents to watch the kind of friends their children keep.^[35]

Furthermore, SHS exposure at home should be restricted considering its influence on adolescent smoking. However, considering that homes are private spaces that cannot be subjected to government regulations, this finding stresses the need for the government to promote voluntary adoption of smoke-free homes as part of public health campaigns. This strategy has been recommended by other studies that have found that adolescents living in smoke free homes were more likely to quit smoking as opposed to those living in homes with no smoking restrictions.^[36]

Limitations

This study's findings should be interpreted within the limitations of its design. Firstly, this was a cross-sectional study; therefore inferences on causality should be made with caution, as there is no evidence of the temporal order of events. Second, the self-reported nature of the survey measures used may have resulted in

misreporting of tobacco use. However, studies have found that self-report is a valid means of assessing smoking status among adolescents.^[37]

Conclusion

In Uganda, factors significantly associated with adolescent smoking between 2007 and 2011 were having both parents smoke, close friends smoking, as well as being exposed to second-hand smoke at home. It was noted that there was a significant gender difference in the prevalence of smoking over the study period. The findings of a greater decline in smoking prevalence among boys than among girls suggest that the number of boys that quit over time or that did not start smoking was higher than that among girls. However, there is need to conduct further research to enrich this knowledge base for the benefit of policy change and programme design for adolescents anti-smoking interventions.

IMPLICATION FOR SCHOOL HEALTH

Study findings herein hold some important implications for school health. First and foremost, these study results inform school management that, for some reason, girls are not responding to interventions related to reducing adolescent smoking in Uganda. Findings suggest that for schools to gain more positive results in trying to stop smoking among students, interventions should focus on girls as much as they do for boys. For even greater success in this struggle, schools need to involve the parents in their interventions and educate them on the influence parents' smoking has on their children's smoking status. The schools also need to enrich their curricula with life skills for adolescents so as to help them fight peer pressure that may lead to the initiation and continuation of smoking.

STUDY RECOMMENDATIONS

- The government of Uganda needs to strengthen interventions to curb smoking among adolescents, with particular focus on interventions that are relevant to girls as these may be a neglected group. It is especially important to focus anti-

smoking efforts on girls because of the adverse long-term smoking effects on pregnancy and unborn children (stillbirths and underweight babes).

- Furthermore, Uganda needs to promote the voluntary adoption of smoke-free homes as part of the larger effort to enforce current smoke-free policy.
- It is also recommended that adolescents of school-going age be better equipped with life skills needed to overcome peer pressure including copying skills and self-esteem.
- Also adolescents should be informed at school about the dangers of smoking prior to the age at which smoking is generally initiated. This instruction could be made more relevant to female adolescents as it is known that smoking can adversely affect unborn children.

ACKNOWLEDGEMENTS

Special thanks to the American Cancer Society (ACS) through the University of Pretoria – American Cancer Society (UPACS) Master in Public Health programme for supporting this research study. Thanks are also extended to the Centers for Disease Control and Prevention (CDC) for availing the data sets used in this research study. It is acknowledged that this journal manuscript forms part of a mini-dissertation submitted to the University of Pretoria (UP) in partial fulfilment of a Master in Public Health (MPH) degree.

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PART D. APPENDICES

Appendix 1: Ethics Approval

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 22 May 2002 and Expires 20 Oct 2016.
- IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Expires 22/04/2017.



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences Research Ethics Committee

9/06/2014

Approval Certificate New Application

Ethics Reference No.: 138/2014

Title: Predictors of Smoking among Ugandan adolescent between 2007 and 2011

Dear Mr. Ebusu Paul

The **New Application** as supported by documents specified in your cover letter for your research received on the 4th/04/2014, was approved, by the Faculty of Health Sciences Research Ethics Committee on the 23/04/2014.

Please note the following about your ethics approval:

- Ethics Approval is valid from [1 year 6month]. Start date: 21st January, 2013 End date: 30th/06/2014 Total Duration: 1 year 6month
- Please remember to use your protocol number (138/2014) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, or monitor the conduct of your research.

Ethics approval is subject to the following:

- The ethics approval is conditional on the receipt of 6 monthly written Progress Reports, and
- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers; MBChB; MMed (Int); MPharmMed.
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

• Tel: 012-3541330 • Fax: 012-3541367 Fax2/Email: 0866515924 • E-Mail: fseethics@up.ac.za
• Web: www.healthethics-up.co.za • H W Snyman Bld (South) Level 2-34 • Private Bag x 323, Arcadia, Pta, S.A., 0007

Appendix 2: List of Tables

Table 1: Gender differences in smoking prevalence among Ugandan adolescents in 2007 and 2011

Sex	Prevalence Smoking (%)	p-value
<i>Boys</i>		
2007	10.8	
2011	6.1	0.01
<i>Girls</i>		
2007	5.0	
2011	4.2	0.48
<i>Boys and girls</i>		
2007	8.2	
2011	5.1	0.01

Table 2: Percentage of current smokers by sample characteristics in the study population between 2007 and 2011

Sample characteristics	n	%	p-value
<i>Sex</i>			
Boys	293	6.3	
Girls	139	4.2	0.11
<i>Parents smoking</i>			
None	303	3.7	

Both	36	38.2	
Father only	101	12.9	
Mother only	11	11.7	<0.001
<i>Friends smoking</i>			
None of them	181	2.7	
Some of them	218	19.9	
Most/all of them	58	26.4	<0.001
Exposure to second-hand smoking at home			
Not exposed	196	2.7	
Exposed	256	15.2	<0.001
Actors seen smoking in media			
Never	64	3.1	
Sometimes	123	5.2	
A lot	264	7.8	0.040
Cigarette brand name seen in media			
Never	145	3.4	
Sometimes	149	7.0	
A lot	161	8.2	<0.001
Billboard advertisement seen			
None	107	3.5	
A few	200	6.2	
A lot	137	7.5	0.020

Table 3: Factors independently associated with smoking among Ugandan adolescents between 2007 and 2011

Factors		Adjusted Odds ratio	(95% CI)
Parent smoking	None	1 (referent)	
	Both parents	7.52	1.23 - 45.91
	Father only	1.22	0.65 - 2.28
	Mother only	1.34	0.37 -5.05
Friend smoking	None	1 (referent)	
	Few of them	6.59	3.70 -11.74
	All/most of them	4.52	2.50 -8.18
Exposure to SHS at home	Not exposed	1 (referent)	
	Exposed	3.69	2.02 - 6.74

Appendix 3: GYTS Uganda Questionnaires

GYTS-AFRO 2007 Uganda (NATIONAL) Questionnaire

Q1 CR1 Have you ever tried or experimented with cigarette smoking, even one or two puffs?

- 1 Yes
- 2 No

Q2 CR2 How old were you when you first tried a cigarette?

- 1 I have never smoked cigarettes
- 2 7 years old or younger
- 3 8 or 9 years old
- 4 10 or 11 years old
- 5 12 or 13 years old
- 6 14 or 15 years old
- 7 16 years old or older

Q3 CR3 During the past 30 days (one month), on how many days did you smoke cigarettes?

- 1 0 days
- 2 1 or 2 days
- 3 3 to 5 days
- 4 6 to 9 days
- 5 10 to 19 days

- 6 20 to 29 days
- 7 All 30 days

Q4 CR4 During the past 30 days (one month), on the days you smoked, how many cigarettes did you usually smoke?

- 1 I did not smoke cigarettes during the past 30 days (one month)
- 2 Less than 1 cigarette per day
- 3 1 cigarette per day
- 4 2 to 5 cigarettes per day
- 5 6 to 10 cigarettes per day
- 6 11 to 20 cigarettes per day
- 7 More than 20 cigarettes per day

Q5 UGR5 During the past 30 days (one month), how did you usually get your own cigarettes? (Select only one response)

- 1 I did not smoke cigarettes during the past 30 days (one month)

- 2 I bought them in a store, shop or from a street vendor
- 3 I gave someone else money to buy them for me
- 4 I borrowed them from someone else
- 5 I stole them
- 6 An older person gave them to me
- 7 I got them some other way

Q6 UGR6 During the past 30 days (one month), what brand of cigarettes did you usually smoke? (SELECT ONLY ONE RESPONSE)

- 1 I did not smoke cigarettes during the past 30 days
- 2 No usual brand
- 3 Sportsman
- 4 Rex
- 5 Embassy
- 6 Supermatch
- 7 Sweet Menthol
- 8 Other (Safari, Kali...)

Q7 CR7 During the past 30 days (one month), did anyone ever refuse to sell you cigarettes because of your age?

- 1 I did not try to buy cigarettes during the past 30 days (one month)
- 2 Yes, someone refused to sell me cigarettes because of my age
- 3 No, my age did not keep me from buying cigarettes

Q8 CR8 During the past 30 days (one month), did you use any form of smoked tobacco products other than cigarettes (e.g. cigars, water pipes, cigarillos, little cigars, pipes)?

- 1 Yes
- 2 No

Q9 CR9 During the past 30 days (one month), did you use any form of smokeless tobacco products (e.g. chewing tobacco, snuff, dip)?

- 1 Yes
- 2 No

Q10 CR10 Where do you usually smoke? (SELECT ONLY ONE RESPONSE)

- 1 I have never smoked cigarettes
- 2 At home
- 3 At school
- 4 At work
- 5 At friends' houses
- 6 At social events
- 7 In public spaces (e.g. parks, shopping centres, street corners)
- 8 Other

Q11 CR11 Do you ever have a cigarette or feel like having a cigarette first thing in the morning?

- 1 I have never smoked cigarettes
- 2 I no longer smoke cigarettes
- 3 No, I don't have or feel like having a cigarette first thing in the morning
- 4 Yes, I sometimes have or feel like having a cigarette first thing in the morning
- 5 Yes, I always have or feel like having a cigarette first thing in the morning

Q12 CR12 Do your parents smoke?

- 1 None
- 2 Both

- 3 Father only
- 4 Mother only
- 5 I don't know

Q13 CR13 If one of your best friends offered you a cigarette, would you smoke it?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q14 CR14 Has anyone in your family discussed the harmful effects of smoking with you?

- 1 Yes
- 2 No

Q15 CR15 At any time during the next 12 months, do you think you will smoke a cigarette?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q16 CR16 Do you think you will be smoking cigarettes 5 years from now?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q17 CR17 Once someone has started smoking, do you think it would be difficult to quit?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q18 CR18 Do you think boys who smoke cigarettes have more or less friends?

- 1 More friends
- 2 Less friends
- 3 No difference from non-smokers

Q19 CR19 Do you think girls who smoke cigarettes have more or less friends?

- 1 More friends
- 2 Less friends
- 3 No difference from non-smokers

Q20 CR20 Does smoking cigarettes help people feel more or less comfortable at celebrations, parties, or in social gatherings?

- 1 More comfortable
- 2 Less comfortable
- 3 No difference from non-smokers

Q21 CR21 Do you think smoking cigarettes makes boys look more or less attractive?

- 1 More attractive
- 2 Less attractive
- 3 No difference from non-smokers

Q22 CR22 Do you think smoking cigarettes makes girls look more or less attractive?

- 1 More attractive
- 2 Less attractive
- 3 No difference from non-smokers

Q23 CR23 Do you think that smoking cigarettes makes you gain or lose weight?

- 1 Gain weight
- 2 Lose weight
- 3 No difference

Q24 CR24 Do you think cigarette smoking is harmful to your health?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q25 CR25 Do any of your closest friends smoke cigarettes?

- 1 None of them
- 2 Some of them
- 3 Most of them
- 4 All of them

Q26 UGR26 When you see a man smoking, what do you think of him? (Select only one response)

- 1 Lacks confidence

- 2 Stupid
- 3 Loser
- 4 Successful
- 5 Intelligent
- 6 He is a 'real' man/he is strong
- 7 Cool/*kawa*

Q27 UGR27 When you see a woman smoking, what do you think of her? (Select only one response)

- 1 Lacks confidence
- 2 Stupid
- 3 Loser
- 4 Successful
- 5 Intelligent
- 6 Sophisticated
- 7 Sexy
- 8 Prostitute

Q28 CR28 Do you think it is safe to smoke for only a year or two as long as you quit after that?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q29 CR29 Do you think the smoke from other people's cigarettes is harmful to you?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q30 CR30 During the past 7 days, on how many days have people smoked in your home, in your presence?

- 1 0
- 2 1 to 2
- 3 3 to 4
- 4 5 to 6
- 5 7

Q31 CR31 During the past 7 days, on how many days have people smoked in your presence, in places other than in your home?

- 1 0
- 2 1 to 2
- 3 3 to 4
- 4 5 to 6
- 5 7

Q32 CR32 Are you in favour of banning smoking in public places (such as in restaurants, in buses, streetcars, and trains, in schools, on playgrounds, in gyms and sports arenas, in discos)?

1. Yes
2. No

Q33 CR33 Do you want to stop smoking now?

- 1 I have never smoked cigarettes
- 2 I do not smoke now
- 3 Yes
- 4 No

Q34 CR34 During the past year, have you ever tried to stop smoking cigarettes?

- 1 I have never smoked cigarettes
- 2 I did not smoke during the past year
- 3 Yes
- 4 No

Q35 CR35 How long ago did you stop smoking?

- 1 I have never smoked cigarettes
- 2 I have not stopped smoking
- 3 1-3 months
- 4 4-11 months
- 5 One year
- 6 2 years
- 7 3 years or longer

Q36 CR36 What was the main reason you decided to stop smoking? (Select one only)

- 1 I have never smoked cigarettes
- 2 I have not stopped smoking
- 3 To improve my health
- 4 To save money
- 5 Because my family does not like it
- 6 Because my friends don't like it
- 7 Other

Q37 CR37 Do you think you would be able to stop smoking if you wanted to?

- 1 have never smoked cigarettes
- 2 I have already stopped smoking cigarettes
- 3 Yes
- 4 No

Q38 CR38 Have you ever received help or advice to help you stop smoking? (Select only one response)

- 1 I have never smoked cigarettes
- 2 Yes, from a programme or professional
- 3 Yes, from a friend
- 4 Yes, from a family member
- 5 Yes, from both programmes or professionals and from friends or family members
- 6 No

Q39 CR39 During the past 30 days (one month), how many anti-smoking media messages (e.g. television, radio, billboards, posters, newspapers, magazines, movies, drama) have you seen or heard?

- 1 A lot
- 2 A few

3 None

Q40 CR40 When you go to sports events, trade-shows, bashes, concerts, community events, or social gatherings, how often do you see anti-smoking messages?

- 1 I never go to sports events, fairs, concerts, community events, or social gatherings
- 2 A lot
- 3 Sometimes
- 4 Never

Q41 CR41 When you watch TV, videos, or movies, how often do you see actors smoking?

- 1 I never watch TV, videos, or movies
- 2 A lot
- 3 Sometimes
- 4 Never

Q42 CR42 Do you have something (t-shirt, pen, backpack, etc.) with a cigarette brand logo on it?

- 1 Yes
- 2 No

Q43 CR43 During the past 30 days (one month), when you watched sports events or other programmes on TV, how often did you see cigarette brand names?

- 1 I never watch TV
- 2 A lot
- 3 Sometimes
- 4 Never

Q44 CR44 During the past 30 days (one month), how many advertisements for cigarettes have you seen on billboards?

- 1 A lot
- 2 A few
- 3 None

Q45 CR45 During the past 30 days (one month), how many advertisements or promotions for cigarettes have you seen in newspapers or magazines?

- 1 A lot
- 2 A few
- 3 None

Q46 UGR46 During the past 30 days (one month), how many advertisements or promotions for cigarettes have you seen on or in shops, on bicycles and motorcycles?

- 1 A lot
- 2 A few
- 3 None

Q47 CR46 When you go to sports events, trade-shows, concerts, or community events, how often do you see advertisements for cigarettes?

- 1 I never attend sports events, fairs, concerts, or community events
- 2 A lot
- 3 Sometimes
- 4 Never

Q48 CR47 Has a (cigarette representative) ever offered you a free cigarette?

- 1 Yes
- 2 No

Q49 CR48 During this school year, were you taught in any of your

classes about the dangers of smoking?

- 1 Yes
- 2 No
- 3 Not sure

Q50 CR49 During this school year, did you discuss in any of your classes the reasons why people your age smoke?

- 1 Yes
- 2 No
- 3 Not sure

Q51 CR50 During this school year, were you taught in any of your classes about the effects of smoking, like how it makes your teeth yellow, causes wrinkles, or makes you smell bad?

- 1 Yes
- 2 No
- 3 Not sure

Q52 CR51 How long ago did you last discuss smoking and health as part of a lesson?

- | | |
|------------------------|-------------------------|
| 1 Never | 4 14 years old |
| 2 This term | 5 15 years old |
| 3 Last term | 6 16 years old |
| 4 2 terms ago | 7 17 years old or older |
| 5 3 terms ago | |
| 6 More than a year ago | |

Q54 CR53 What is your sex?

Q53 CR52 How old are you?

- 1 11 years old or younger
- 2 12 years old
- 3 13 years old
- 3

- 1 Male
- 2 Female

GYTS-AFRO 2011 Uganda Regions 1-2 (NATIONAL) Questionnaire

Q1 CR1 Have you ever tried or experimented with cigarette smoking, even one or two puffs?

- 1 Yes
- 2 No

- 5 12 or 13 years old
- 6 14 or 15 years old
- 7 16 years old or older

Q2 CR2 How old were you when you first tried a cigarette?

- 1 I have never smoked cigarettes
- 2 7 years old or younger
- 3 8 or 9 years old
- 4 10 or 11 years old

Q3 CR3 During the past 30 days (one month), on how many days did you smoke cigarettes?

- 1 0 days
- 2 1 or 2 days
- 3 3 to 5 days
- 4 6 to 9 days
- 5 10 to 19 days
- 6 20 to 29 days

7 All 30 days

6 An older person gave them to me

7 I got them some other way

Q4 CR4 During the past 30 days (one month), on the days you smoked, how many cigarettes did you usually smoke?

- 1 I did not smoke cigarettes during the past 30 days (one month)
- 2 Less than 1 cigarette per day
- 3 1 cigarette per day
- 4 2 to 5 cigarettes per day
- 5 6 to 10 cigarettes per day
- 6 11 to 20 cigarettes per day
- 7 More than 20 cigarettes per day

Q5 UGR5 During the past 30 days (one month), how did you usually get your own cigarettes? (Select only one response)

- 1 I did not smoke cigarettes during the past 30 days (one month)
- 2 I bought them in a store, shop or from a street vendor
- 3 I gave someone else money to buy them for me
- 4 I borrowed them from someone else
- 5 I stole them

Q6 UGR6 During the past 30 days (one month), what brand of cigarettes did you usually smoke?

(SELECT ONLY ONE RESPONSE)

- 1 I did not smoke cigarettes during the past 30 days
- 2 No usual brand
- 3 Safari
- 4 Sportsman
- 5 Rex
- 6 Supermatch
- 7 Dunhill
- 8 Other

Q7 CR7 During the past 30 days (one month), did anyone ever refuse to sell you cigarettes because of your age?

- 1 I did not try to buy cigarettes during the past 30 days (one month)
- 2 Yes, someone refused to sell me cigarettes because of my age
- 3 No, my age did not keep me from buying cigarettes

8 Other

Q8 CR8 During the past 30 days (one month), did you use any form of smoked tobacco products other than cigarettes (e.g. cigars, water pipes, cigarillos, little cigars, pipes)?

- 1 Yes
- 2 No

Q9 CR9 During the past 30 days (one month), did you use any form of smokeless tobacco products (e.g. chewing tobacco, snuff, dip)?

- 1 Yes
- 2 No

Q10 CR10 Where do you usually smoke? (SELECT ONLY ONE RESPONSE)

- 1 I have never smoked cigarettes
- 2 At home
- 3 At school
- 4 At work
- 5 At friends' houses
- 6 At social events
- 7 In public spaces (e.g. parks, shopping centres, street corners)

Q11 CR11 Do you ever have a cigarette or feel like having a cigarette first thing in the morning?

- 1 I have never smoked cigarettes
- 2 I no longer smoke cigarettes
- 3 No, I don't have or feel like having a cigarette first thing in the morning
- 4 Yes, I sometimes have or feel like having a cigarette first thing in the morning
- 5 Yes, I always have or feel like having a cigarette first thing in the morning

Q12 CR12 Do your parents smoke?

- 1 None
- 2 Both
- 3 Father only
- 4 Mother only
- 5 I don't know

Q13 CR13 If one of your best friends offered you a cigarette, would you smoke it?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q14 CR14 Has anyone in your family discussed the harmful effects of smoking with you?

- 1 Yes
- 2 No

Q15 CR15 At any time during the next 12 months, do you think you will smoke a cigarette?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q16 CR16 Do you think you will be smoking cigarettes 5 years from now?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q17 CR17 Once someone has started smoking, do you think it would be difficult to quit?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q18 CR18 Do you think boys who smoke cigarettes have more or less friends?

- 1 More friends
- 2 Less friends
- 3 No difference from non-smokers

Q19 CR19 Do you think girls who smoke cigarettes have more or less friends?

- 1 More friends
- 2 Less friends
- 3 No difference from non-smokers

Q20 CR20 Does smoking cigarettes help people feel more or less comfortable at celebrations, parties, or in social gatherings?

- 1 More comfortable

- 2 Less comfortable
- 3 No difference from non-smokers

- 3 Probably yes
- 4 Definitely yes

Q21 CR21 Do you think smoking cigarettes makes boys look more or less attractive?

- 1 More attractive
- 2 Less attractive
- 3 No difference from non-smokers

Q25 CR25 Do any of your closest friends smoke cigarettes?

- 1 None of them
- 2 Some of them
- 3 Most of them
- 4 All of them

Q22 CR22 Do you think smoking cigarettes makes girls look more or less attractive?

- 1 More attractive
- 2 Less attractive
- 3 No difference from non-smokers

Q26 UGR26 When you see a man smoking, what do you think of him? (Select only one response)

- 1 Lacks confidence
- 2 Stupid
- 3 Loser
- 4 Successful
- 5 Intelligent
- 6 He is a 'real' man/he is strong
- 7 Cool/*kawa*

Q23 CR23 Do you think that smoking cigarettes makes you gain or lose weight?

- 1 Gain weight
- 2 Lose weight
- 3 No difference

Q27 UGR27 When you see a woman smoking, what do you think of her? (Select only one response)

- 1 Lacks confidence
- 2 Stupid
- 3 Loser
- 4 Successful

Q24 CR24 Do you think cigarette smoking is harmful to your health?

- 1 Definitely not
- 2 Probably not

- 5 Intelligent
- 6 Sophisticated
- 7 Sexy
- 8 Prostitute

Q31 UGR31 During the past 7 days, on how many days have people smoked in your presence, in enclosed public places?

- 1 0
- 2 1 to 2
- 3 3 to 4
- 4 5 to 6
- 5 7

Q28 CR28 Do you think it is safe to smoke for only a year or two as long as you quit after that?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q32 UGR32 During the past 7 days, on how many days have people smoked in your presence, in outdoor public places?

- 1 0
- 2 1 to 2
- 3 3 to 4
- 4 5 to 6
- 5 7

Q29 CR29 Do you think the smoke from other people's cigarettes is harmful to you?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q30 CR30 During the past 7 days, on how many days have people smoked in your home, in your presence?

- 1 0
- 2 1 to 2
- 3 3 to 4
- 4 5 to 6
- 5 7

Q33 CR32 Are you in favour of banning smoking in public places (such as in restaurants, in buses, streetcars, and trains, in schools, on playgrounds, in gyms and sports arenas, in discos)?

- 1 Yes
- 2 No

Q34 CR33 Do you want to stop smoking now?

- 1 I have never smoked cigarettes
- 2 I do not smoke now
- 3 Yes
- 4 No

Q35 CR34 During the past year, have you ever tried to stop smoking cigarettes?

- 1 I have never smoked cigarettes
- 2 I did not smoke during the past year
- 3 Yes
- 4 No

Q36 CR35 How long ago did you stop smoking?

- 1 I have never smoked cigarettes
- 2 I have not stopped smoking
- 3 1-3 months
- 4 4-11 months
- 5 One year
- 6 2 years
- 7 3 years or longer

Q37 CR36 What was the main reason you decided to stop smoking? (Select one only)

- 1 I have never smoked cigarettes
- 2 I have not stopped smoking
- 3 To improve my health
- 4 To save money
- 5 Because my family does not like it
- 6 Because my friends don't like it
- 7 Other

Q38 CR37 Do you think you would be able to stop smoking if you wanted to?

- 1 I have never smoked cigarettes
- 2 I have already stopped smoking cigarettes
- 3 Yes
- 4 No

Q39 CR38 Have you ever received help or advice to help you stop smoking? (Select only one response)

- 1 I have never smoked cigarettes
- 2 Yes, from a programme or professional
- 3 Yes, from a friend

- 4 Yes, from a family member
- 5 Yes, from both programmes or professionals and from friends or family members
- 6 No

Q40 CR39 During the past 30 days (one month), how many anti-smoking media messages (e.g. television, radio, billboards, posters, newspapers, magazines, movies, drama) have you seen or heard?

- 1 A lot
- 2 A few
- 3 None

Q41 CR40 When you go to sports events, trade-shows, bashes, concerts, community events, or social gatherings, how often do you see anti-smoking messages?

- 1 I never go to sports events, fairs, concerts, community events, or social gatherings
- 2 A lot
- 3 Sometimes
- 4 Never

Q42 CR41 When you watch TV, videos, or movies, how often do you see actors smoking?

- 1 I never watch TV, videos, or movies
- 2 A lot
- 3 Sometimes
- 4 Never

Q43 CR42 Do you have something (t-shirt, pen, backpack, etc.) with a cigarette brand logo on it?

- 1 Yes
- 2 No

Q44 CR43 During the past 30 days (one month), when you watched sports events or other programmes on TV how often did you see cigarette brand names?

- 1 I never watch TV
- 2 A lot
- 3 Sometimes
- 4 Never

Q45 CR44 During the past 30 days (one month), how many advertisements for cigarettes have you seen on billboards?

- 1 A lot
- 2 A few
- 3 None

2 No

Q46 CR45 During the past 30 days (one month), how many advertisements or promotions for cigarettes have you seen in newspapers or magazines?

- 1 A lot
- 2 A few
- 3 None

Q49 CR48 During this school year, were you taught in any of your classes about the dangers of smoking?

- 1 Yes
- 2 No
- 3 Not Sure

Q47 CR46 When you go to sports events, trade-shows, concerts, or community events, how often do you see advertisements for cigarettes?

- 1 I never attend sports events, fairs, concerts, or community events
- 2 A lot
- 3 Sometimes
- 4 Never

Q50 CR49 During this school year, did you discuss in any of your classes the reasons why people your age smoke?

- 1 Yes
- 2 No
- 3 Not Sure

Q48 CR47 Has a (cigarette representative) ever offered you a free cigarette?

- 1 Yes

Q51 CR50 During this school year, were you taught in any of your classes about the effects of smoking, like that it makes your teeth yellow, causes wrinkles, or makes you smell bad?

- 1 Yes
- 2 No
- 3 Not Sure

Q52 CR51 How long ago did you last discuss smoking and health as part of a lesson?

- 1 Never
- 2 This term
- 3 Last Term
- 4 2 terms ago
- 5 3 terms ago
- 6 More than a year ago

Q53 CR52 How old are you?

- 1 11 years old or younger
- 2 12 years old
- 3 13 years old
- 4 14 years old
- 5 15 years old
- 6 16 years old
- 7 17 years old or older

Q54 CR53 What is your sex?

- 1 Male
- 2 Female

Q55 CR54 In what grade/form are you?

- 1 P.7

2 S.1

3 S.2

4 S.3

Q56 UGR56 How old were you when you first smoked cigarettes on a daily basis?

- 1 I have never smoked cigarettes
- 2 7 years old or younger
- 3 8 or 9 years old
- 4 10 or 11 years old
- 5 12 or 13 years old
- 6 14 or 15 years old
- 7 16 years old or older

Q57 UGR57 Do you smoke now?

- 1 Not at all
- 2 Occasionally, but less than once a month
- 3 Sometime each month, but less than one cigarette per week
- 4 Sometime each week, but less than one cigarette per day
- 5 Every day, at least one cigarette

Q58 UGR58 Have you ever used chewing tobacco or snuff?

- 1 Yes
- 2 No

Q59 UGR59 How old were you when you used chewing tobacco or snuff for the first time?

- 1 I have never used chewing tobacco or snuff
- 2 7 years old or younger
- 3 8 or 9 years old
- 4 10 or 11 years old
- 5 12 or 13 years old
- 6 14 or 15 years old
- 7 16 years old or older

Q60 UGR60 During the past 30 days, on how many days did you use chewing tobacco or snuff?

- 1 0 days
- 2 1 or 2 days
- 3 3 to 5 days
- 4 6 to 9 days
- 5 10 to 19 days
- 6 20 to 29 days
- 7 All 30 days

Q61 UGR61 Where do you usually use chewing tobacco or snuff?

- 1 I have never used chewing tobacco or snuff

- 2 I no longer use chewing tobacco or snuff
- 3 When I am alone
- 4 In the company of friends
- 5 At home
- 6 At school
- 7 other

Q62 UGR62 During the past 30 days, did you smoke tobacco in a pipe?

- 1 0 days
- 2 1 or 2 days
- 3 3 to 5 days
- 4 6 to 9 days
- 5 10 to 19 days
- 6 20 to 29 days
- 7 All 30 days

Q63 UGR63 Do you sometimes smoke tobacco mixed with other drugs like marijuana?

- 1 I have never smoked
- 2 I no longer smoke
- 3 No, I smoke, but I never mix tobacco with other drugs
- 4 Yes, but only once or twice
- 5 Yes, I have mixed tobacco with other drugs more than twice

Q64 UGR64 Are you more likely to smoke after you have drunk alcohol or used another drug?

- 1 I have never smoked cigarettes
- 2 I no longer smoke cigarettes
- 3 I smoke, but never drink alcohol or use other drugs
- 4 Yes, I smoke more when I drink alcohol or use other drugs
- 5 I smoke about the same when I drink alcohol or use other drugs

Q65 UGR65 During the past 30 days (one month), how did you usually get your own chewing tobacco or snuff?

- 1 I did not use chewing tobacco or snuff in the past 30 days
- 2 I bought them from a shop or street vendor
- 3 I gave someone else money to buy them for me
- 4 I borrowed them from someone else
- 5 I stole them
- 6 An older person gave them to me
- 7 I got them some other way

Q66 UGR66 When you bought or tried to buy cigarettes or chewing tobacco in the past 30 days, were you asked to show proof of age?

- 1 I did not buy cigarettes or chewing tobacco during the past 30 days
- 2 Yes, I was asked to show proof of age
- 3 No, I was not asked to show proof of age

Q67 UGR67 Do you think a person who smokes around others should ask permission?

- 1 Yes
- 2 No

Q68 UGR68 If someone asks permission to smoke around you, do you let them?

- 1 Yes
- 2 No

Q69 UGR69 Do your parents know that you smoke cigarettes?

- 1 I do not smoke cigarettes

- 2 Yes
- 3 No

Q70 UGR70 At any time during the next year, do you think you will use chewing tobacco or snuff?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q71 UGR71 Do you think smoking cigarettes is less dangerous for a person your age because they can always stop later?

- 1 Definitely not
- 2 Probably not
- 3 Probably yes
- 4 Definitely yes

Q72 UGR72 At the present time, what do you consider yourself to be?

- 1 I have never smoked cigarettes
- 2 An ex-smoker
- 3 An occasional smoker
- 4 A frequent smoker
- 5 A daily smoker

Q73 UGR73 Do you want to stop using chewing tobacco or snuff now?

- 1 I have never used chewing tobacco or snuff
- 2 I do not use chewing tobacco or snuff now
- 3 Yes
- 4 No

Q74 UGR74 During the past year, have you ever tried to stop using chewing tobacco or snuff?

- 1 I have never used chewing tobacco or snuff
- 2 I did not use chewing tobacco or snuff during the past year
- 3 Yes
- 4 No

Q75 UGR75 How long ago did you stop using chewing tobacco or snuff?

- 1 I have never used chewing tobacco or snuff
- 2 1 month
- 3 A few months
- 4 One year

- | | | | |
|---|--|---|-------|
| 5 | 2 years | 2 | A lot |
| 6 | 3 years or longer | 3 | A few |
| 7 | I have not stopped using
chewing tobacco or snuff | 4 | None |

Q76 UGR76 When was the last time you smoked a cigarette, even one or two puffs?

- 1 I have never smoked a cigarette
- 2 Today
- 3 Sometime in the past week
- 4 Sometime in the past month
- 5 Sometime in the past 6 months
- 6 1 to 4 years ago

Q77 UGR77 During the past 30 days, how many anti-smoking commercials have you seen on TV?

- 1 I never watch TV
- 2 A lot
- 3 A few
- 4 None

Q78 UGR78 During the past 30 days, how many anti-smoking advertisements have you heard on the radio?

- 1 I never listen to the radio

Q79 UGR79 During the past 30 days, how many anti-smoking messages have you seen on billboards or posters?

- 1 A lot
- 2 A few
- 3 None

Q80 UGR80 During this school year, were you taught in any of your classes that most people your age do not smoke cigarettes?

- 1 Yes
- 2 No
- 3 Not sure

Q81 UGR81 During the past year, have you heard from youth groups discouraging young people of your age from smoking?

- 1 Yes
- 2 No

Q82 UGR82 During the past 1 Yes
year, did any health professional 2 No
explain to you why smoking is
dangerous to your health?

Appendix 4: Instructions for Authors

Journal of School Health

Author Guidelines

These guidelines are to assist prospective authors in preparing manuscripts for the *Journal of School Health*. Failure to follow the guidelines completely may delay or prevent consideration of a manuscript. Contact the *Journal* Editor-in-Chief, Robert J. McDermott, PhD, for general inquiries: email rjmcdermott@ashaweb.org.

Mission

The *Journal of School Health* is committed to communicating information regarding the role of schools, school personnel, or the school environment in facilitating the healthy growth and development of children and youth. This focus on healthy children and youth pre-K to 12th grade encompasses a wide variety of areas including health education; physical education; health services; nutrition services; counseling, psychological, and social services; healthful school environment; health promotion for staff; and family/community involvement. *Journal* readership includes researchers, school administrators, health educators, nurses, physicians, dentists, psychologists, counselors, social workers, nutritionists, dieticians, and other health professionals. These individuals work cooperatively with parents and the community to achieve the common goal of providing the programs, services, and environment necessary to promote healthy children and youth.

NOTE: Manuscripts that focus principally on clinical health issues, on general education issues without a health-related focus, or on collegiate audiences are not typically appropriate for publication consideration.

Manuscript Categories

Manuscripts may be submitted for possible publication in any of the following categories:

- General Articles

General articles include review, theoretical, developmental, historical and philosophical manuscripts. Review articles address topics of broad reader interest and appeal. They should provide systematic, critical assessments of the literature and creative discussion of topics relevant to children and youth pre-K to 12th grade. The manuscript should contain the following major sections **boldfaced**, in all CAPITAL letters, and appearing flush left, presented in this order:

ABSTRACT (unstructured \leq 200 words including headings), **BACKGROUND**, **LITERATURE REVIEW** - including subsections appropriate to the theme of the manuscript, **IMPLICATIONS FOR SCHOOL HEALTH**, and **REFERENCES**. Secondary headings should be **bolded** and appear flush left. For *secondary headings*, only the first letter of each word should be capitalized. If there is a *third level of heading* it should begin the paragraph and be indented, be followed by a period, have **ONLY** the first letter of the first word capitalized, be both *italicized* and **boldfaced**, and end in a period. **DO NOT USE UNDERSCORES ANYWHERE** in the article.

- Research Articles

Most papers appearing in the *Journal* are research articles that report the findings of original, data-based research. They may use quantitative, qualitative, or mixed-methods approaches. The research should directly relate to children and youth pre-K to 12th grade. The *Journal* does not consider papers based on college samples. The manuscript should contain the following **boldfaced** sections presented in this order:

ABSTRACT (The **ABSTRACT** is structured with four **boldfaced** headings – **BACKGROUND**, **METHODS**, **RESULTS**, and **CONCLUSIONS** and is \leq 200 words in length, including headings). The main text of the paper should begin with an unlabeled section that is an introduction and reports background related to the paper, usually indicating the subject's significance and summarizing what is known about the subject to date, and including research questions or hypotheses being tested, and the study's purpose. Subsequent to this section should appear the following major headings appearing **boldfaced** and flush left consisting of: **METHODS** (generally including the following sub-headings: **Participants** (*not Subjects*), **Instrumentation**, **Procedure**, and **Data Analysis**), **RESULTS**; **DISCUSSION** (describes the *importance and contribution of the findings, limitations, and conclusion*); and **IMPLICATIONS FOR SCHOOL**

HEALTH (describes how the information and data presented will help inform school health practice; this section *must* be interpretative and directive and translates the data for possible actions to be considered by school personnel; it should not merely be a gratuitous inclusion – in other words, it should present the actions that schools might undertake but recommended implications/actions should take into consideration budgetary and other constraints that influence decision making by school personnel); **Human Subjects Approval Statement** (a statement indicating approval of the appropriate institution review board or ethics committee for studies involving human participants); **ACKNOWLEDGEMENTS; REFERENCES;** and **Figures** and/or **Tables**. Research articles should include the year and time frame in which the data were collected, as well as information concerning the psychometric properties of instrumentation (validity, reliability, readability, etc.) where appropriate. For research articles, preparation of second-level and third-level headings should follow the style described above for general articles.

The outline below shows how a research article should appear when submitted. Please follow this example to minimize the chance of your paper being rejected or returned without being reviewed. Note the major headings that should appear in all CAPITAL letters.

ABSTRACT

BACKGROUND: (concluding with purpose of the study)

METHODS:

RESULTS:

CONCLUSIONS:

Keywords: (select from dropdown list)

BACKGROUND (If your paper is accepted for publication, no actual heading will be used in the published version; it is useful to include during the review process but it is not required; if you prefer, just begin with the main body of the manuscript text to address the relevant literature in review, research questions, and purpose of study)

METHODS

Participants

Instruments

Procedure

Data Analysis

RESULTS

DISCUSSION

Limitations

Conclusions

IMPLICATIONS FOR SCHOOL HEALTH

Human Subjects Approval Statement

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John L. Smothers, PhD (Corresponding Author)

Assistant Professor

Northwest University

2801 W. Bancroft St.

Fargo, North Dakota 58105

Phone: (701) 785-4180

Fax: (701) 785-4759

Email: jlsmothers@nwu.edu

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