Association between Perceived Health Risks of Smoking and Cessation Intent among Youths in the Gambia: Global Youth Tobacco Survey (GYTS) 2017

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Abstract

Smoking is a major risk factor of noncommunicable diseases (NCDs); and as such it is important to understand and leverage on factors that influence cessation intent. This study examined the relationship between intention to quit, perceived health risks of smoking and other relevant covariates. Data obtained from 1,610 t respondents aged 11-17, who currently smoked, from the Gambian Global Youth Tobacco Survey (GYTS) of 2017 were analysed. The prevalence of intention to quit was reported by age, sex, smoking frequency, parents' and friends' smoking statuses, perceived harm of smoking and exposure to anti-smoking messages. Multivariate logistic regression was used to assess the relationship between intention to quit and the above covariates. Approximately 77.8% of adolescents, who smoked, had the intention to quit. Notwithstanding the strong association (p<0.001) shown at the univariate level between perceived health risks of smoking and intention to quit, the adjusted model shows no statistically significant association between the two (AOR = 1.59, 95% CI = 0.99 - 2.56). Those whose close friends currently smoked were less likely to have intention to quit compared with those who did not have any friend who smoked (AOR =3.0, 95% CI:1.34-6.74) after adjusting for other covariates. Participants exposed to anti-smoking messages; boys; and youths without friends who smoke and those who smoked the least number of cigarettes had increased odds of intending to quit smoking. These findings can guide smoking cessation strategies. Anti-smoking messages can encourage people who smoke to quit as well as discourage none smokers from initiating tobacco use.

Introduction

As cardiovascular and other non-communicable diseases increasingly supersede communicable diseases as public health problems [2], the search for risk factors of these conditions have intensified in recent years. One such predictor is smoking. Globally, it is estimated that tobacco use accounts for a substantial number of deaths annually. In 2019 alone, close to 8 million deaths were attributed to smoking [1]. Albeit the documented global decline in the proportion of people who smoke, population increase has put the number of people who currently smoke at over 1 billion

people around the world [2]. Without concerted and targeted interventions, it is expected that the number of people who smoke will remain high especially in developing countries where close to 80% of smoking-related deaths occurred in 2019 [3].

In Sub-Saharan Africa, there has been a 75% increase (68% for The Gambia) from 1990 in the number of people who smoke, the bulk of whom are young people who, in most cases, continue to smoke in adulthood [2-5]. A comparative age-standardized survey has found smoking to be more prevalent (1.6 times) among young people in The Gambia than their neighbouring Senegalese counterparts [2]. A school-based study conducted in 2016 found the prevalence of smoking among young Gambians 12–20-year was 16.7% [6]. Like in most developing countries, cigarette smoking in The Gambia is more prevalent among males [7,8]. Islam *et al* found that smoking initiation and prevalence were much higher among Gambian men (19.3%) than women (0.65%) (p<0.001) [2]. Thus, the need for current smoking cessation campaigns to mostly target young males cannot be overemphasized.

Intention to quit smoking, a cognitive variable, is an important first step in one's quest to quit smoking [9-11]. Nguyen et al has found that people who had the intention to quit smoking were more likely to do so [12]. Several factors have been found to be associated with the intention to stop smoking including smoking bans at home and public places, health messages and warnings and cessation programs. Studies conducted in both America and Vietnam explored the relationship between perceived health risks from smoking and the intention to quit among adults [13,24].

Notwithstanding the reported decline in tobacco use among young people between ages 13 and 15 in The Gambia [14], there has not been studies on factors that influence individual decisions to quit. One of the most prominent studies that sought to ascertain the association between intention to quit and perceived health

risks of smoking are those conducted on the US Population Assessment of Tobacco and Health (PATH) and the Vietnamese Global Adult Tobacco Survey. Both studies were conducted on adults. The Vietnamese study found no statistically significant relationship between the two at the subgroup level. The probable reason suggested for this is the relatively small sample size of the study. The fact that the analyses were limited to males who smoke further reduced statistical power [13]. Unlike the above studies, which were adult-based, the current study will be an analysis of data on adolescents. Thus, with increased statistical power (larger sample size and the inclusion of females), this study principally sought to assess both the overall and the sex-specific relationship between perceived health risks to smoking and the intention to quit among school-going adolescents in The Gambia.

Owing to it being a cognitive variable, it has been quite challenging to establish intent to quit smoking. However, several studies have relied on self-reported "intention to quit" to quantify its prevalence among participants who smoke. Different studies have found significantly different proportions of participants who smoke but yet intending to quit – from as low as 4.7% to as high as 59.0% in studies conducted in Korea and Vietnam respectively [13, 15]. Such huge differences in prevalence could be explained by not only geographic locations but also by the fact that they are both self-reported and the age cohorts are different too.

A cross-country analysis of survey data from four Sub-Saharan African countries (Kenya, Senegal, Tanzania and Ethiopia), where over 83% of people who smoked at the time were male, found similar variations in the proportion of participants who smoked and yet intended to quit. It ranged from 23.5% in Ethiopia to 45% in both Senegal and Kenya [16]. In the Gambia, the 2017 Global Youth Tobacco Survey (GYTS) that involved school-going children between ages 11 and 17 years found that 8 out

of 10 (84.7% for boys) respondent participants who smoke intended to stop smoking [17].

In spite of the misperception among young people in Africa that smoking is the better of two evils when compared to alcohol consumption, there appears to be a high proportion of people who smoke and yet perceive smoking to be harmful to one's health [18]. A cross-sectional study on adolescents between ages 12 and 18 years found that 69.1% of young people perceived smoking a packet or more cigarettes per day to have serious health consequences [19]. A similar proportion of adolescents (60%) perceived smoking to have negative health impacts in Nepal [20] and the mean perception of absolute risk to lung cancer from smoking among Americans was found to be 48% [21].

It is estimated that low-and middle-income countries account for over 80% of the world's population, approximately 1 billion identified as people who smoke [1, 2]. Thus, it is paramount that factors that trigger or are associated with cessation decisions or the intention to quit are understood. Studies have found significant associations between intention to quit smoking and a number of factors such as smoking intensity, living in homes with smoking bans and having contact with anti-smoking information [22, 23]. It has been established that there is a strong association (p < 0.001) between individual perceptions of health-related harms resulting from smoking and the intention to quit [24]. Thus, given the weight of the evidence associating the intention to quit and perceptions of health-related harms of smoking found in many studies, it would be helpful to establish the degree of association of the two variables and other relevant factors in The Gambia. We assessed the association between exposure to anti-smoking messages, smoking frequency, age, parents' and close friends' smoking status with intention to quit in this study.

Research Methodology

Data Source

The study was a secondary analysis of the Gambia 2017 Global Youth Tobacco Survey (GYTS). The primary study obtained ethical approval from the relevant authorities. No ethical approval was required to gain access to the dataset as it is publicly available online.

It was a nationally representative cross-sectional survey of Gambian school-going adolescents aged 11 and 17 years [25]. The GYTS is an international partnership program involving governments, the World Health Organization (WHO) and the US Centres for Disease Control and Prevention. It uses a school-based approach that seeks to track adolescent tobacco use and the effectiveness or otherwise of recognized tobacco control measures. Under the leadership and coordination of the Ministry of Health, The GYTS was conducted in The Gambia in 2017.

A multistage sampling approach was employed to select schools for this survey, according to enrolment size, which was followed by a random selection of classrooms within the selected schools. All the students in selected classes had equal chances of participating in the survey. This resulted in the recruitment of a total of 12,585 students aged 11-17 years.

Using a standard core questionnaire, data was collected on a number of smoking-related variables. Structured, self-administered questionnaire, that required about 30-40 minutes to complete, were used to obtain data. To minimize non-response and under-reporting, all responses were made anonymous and the answer sheets were computer scannable. Field work took a duration of 6-8 weeks to complete. The main variables of interest to this study were: intention to quit and perceived health risks of smoking. We first assessed the prevalence of "intention to quit" among respondents who perceived smoking to have health risks; and those exposed to anti-

smoking messages among respondents who smoked at the time. The prevalence of intention to quit was also estimated along the categories of sex, smoking frequency, age and the smoking statuses of parents and close friends of participants. This ultimately enabled us to establish the degree of association between the two variables by conducting both univariate and multivariable logistic regression analyses. Other variables that were included in the model are age, parents' and close friends' smoking status, exposure to anti-smoking messages, sex and smoking frequency.

Sample Size Determination and Eligibility Criteria

The eligibility criteria for the current study included that out of the 12,585 students in the GYTS survey, a respondent must be male or female between ages 11 and 17 years; and be a person who currently smoked (defined as having smoked in the last 30 days) at the time of the study. The exclusion criteria included people who did not meet the precedent inclusion criteria (Figure 1). Thus, the sample size for this study is 1,610 adolescents between ages 11 and 17 years.
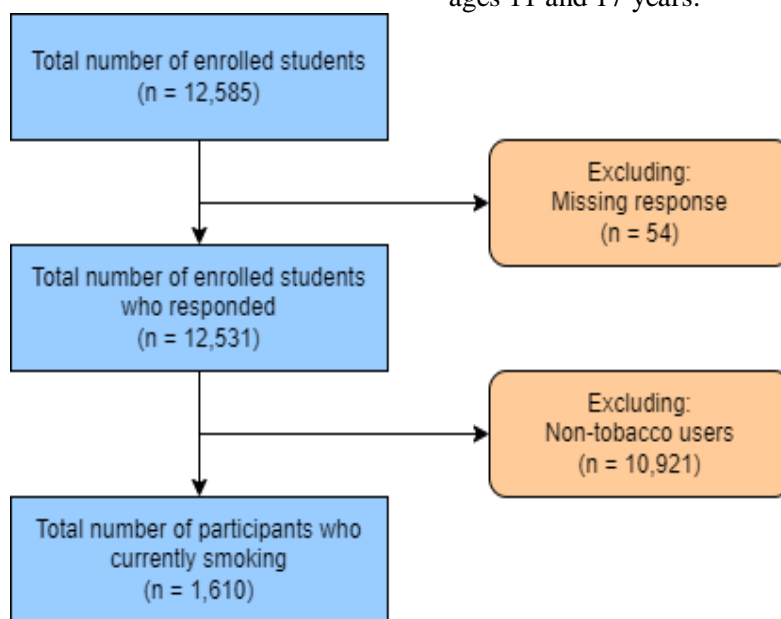
Figure 1. Flowchart of Participant Selection (Global Youth Tobacco Survey (GYTS) 2017)

Statistical Analysis

Statistical analyses were performed using STATA (version 18). Descriptive analyses were conducted for each and every study variable. Rates are reported as percentages with their corresponding 95% confidence intervals. Furthermore, univariate and multivariate regression analyses were conducted to assess the relationship between intention to quit (as a dependent variable) and perceived health risks of smoking, exposure to anti-smoking messages, smoking frequency, parents' and close friends' smoking status. P-values more than 0.05 or confidence intervals that embrace

the null are considered statistically insignificant.

In order to obtain information on potential confounders, data collected on demographic and other baseline variables from each study subject was included in the regression model. Collinearity of individual-level variables was considered prior to inclusion in the model and it resulted in the exclusion of the "Age at smoking initiation" variable. Some of the variables included are: smoking status, age and sex. To adjust for the complex nature of the study design, we applied Stata's Svy command [4] to apportion sampling weights in order to determine true prevalence and stratify cluster variables.

Results

Demographic Information and Characteristics of the Participants

The demographic and other basic characteristics of the study participants are described in Table 1 below. The sample, comprise of 1,610 school-going adolescents (65.4% boys, 34.6% girls) and their ages ranged from 11 to 17 years, with over 50% aged between 14 to 16 years old.

Table 1. Participant Characteristics, Global Youth Tobacco Survey–AFRO, Gambia All Schools, Regions 1-6, 2017

	Unweighted frequency	Weighted percent (95% CI)
Sex		
Male	1013	65.4 (61.0-69.5)
Female	536	34.6 (30.5-39.0)
Missing	61	
Age		
≤11 Years Old	47	3.1 (2.2-4.3)
12 years Old	89	5.8 (4.4-7.4)
13 years Old	169	10.9 (8.9-13.4)
14 years Old	317	20.5 (17.4-24.0)
15 years Old	274	17.7 (15.0-20.8)
16 years Old	270	17.4 (14.8-20.4)
≥17 years Old	381	24.7 (20.7-29.1))
Missing	64	
Smoking Frequency		
None®	615	44.9 (39.7-50.1)
<1 Cigarette/Day	414	30.2 (25.3-35.6)
1 to 5 Cigarettes/Day	282	20.6 (17.1-24.5)
6 to 10 Cigarettes/Day	39	2.9 (1.8-4.6)
11 to ≥20 Cigarettes/Day	21	1.5 (0.9-2.8)
Missing	240	
Parents' smoking status		
None	994	63.1 (59.2-66.9)
Both	87	5.5 (4.2-7.3)
Father Only	273	17.3 (14.5-20.6)
Mother Only	91	5.8 (4.4-7.5)
Don't Know	130	8.3 (6.3-10.7)
Missing	36	
Close friends' smoking status		
None	745	48.2 (44.3-52.1)
Some	554	35.9 (33.1-38.8)

	Unweighted frequency	Weighted percent (95% CI)
Most	169	11.0 (8.5-14.1)
All	76	4.9 (3.7-6.5)
Missing	66	
Exposure to Anti-Smoking Messages		
Yes	771	52.3 (47.8-56.9)
No	702	47.7 (43.1-52.2)
Missing	137	
Intention to Quit		
Yes	693	77.8 (71.1-83.3)
No	375	22.2 (16.7-28.9)
Missing	542	
Perceived harm from smoking		
No	724	47.3 (42.4-52.3)
Yes	808	52.7 (47.8-57.6)
Missing	78	
(N=1,610)		

Prevalence of Intention to Quit Among Gambian Students who Smoke

The prevalence of some of the potential predictors of intention to quit smoking considered in the analyses was: 30.5% (95% CI: 25.5% - 36.0%) of men and 15.9% (95% CI: 11.8% - 21.0%) of women; 30.3% (95% CI: 24.5% - 36.7%) of those exposed to anti-smoking messages and 22.2% (95% CI: 18.2% - 26.8%) of those unexposed to anti-smoking messages; and 30.8% (95% CI: 24.6% - 37.8%) of tobacco users who perceive that smoking has harmful health consequences and 21.7% (95% CI: 17.2% - 27.1%) of those who do not hold such a perception. The prevalence of intention to quit for the rest of covariates are as presented in Table 2.

Factors Associated with Intention to quit Smoking among Gambian Students

At the univariate level, all but one independent variable exhibited a statistically significant relationship, for at least one of its categories, with intention to quit. The only factor that did not show any statistical significance in any of its categories is age. Factors with the strongest statistical significance in the univariate analysis (Table 3) are sex, perceived harm from smoking, close friends' smoking status and smoking frequency.

In our multivariate regression model, the factors strongly associated with intention to quit (statistical significance at least p<0.01) include sex, smoking frequency, close friends' smoking status and exposure to anti-smoking messages. However, among the responses on participants' close friends' smoking status, statistical significance was recorded for only those who had all their close friends as tobacco users albeit being non-statistically significant at the univariate level. While exposure to anti-smoking messages remained slightly associated with intention to quit, perceived harm from smoking did not turn out to be statistically significant after adjusting for other covariates in

the multivariate analysis. The age of adolescent tobacco users has consistently (at both univariate and multivariate levels) been found not to be associated with intention to quit.

Table 2. Prevalence of Intention to Quit Smoking Among Gambian Students who Smoke, Global Youth Tobacco Survey – AFRO, Gambia All Schools, Regions 1-6, 2017

	Unweighted sample n	Intention to Quit % (95% CI)
Sex		
Male	1013	30.5 (25.5-36.0)
Female	536	15.9 (11.8-21.0)
Age		
≤11 Years Old	47	37.1 (23.0-53.7)
12 years Old	89	21.1 (11.6-35.2)
13 years Old	169	27.4 (16.8-41.4)
14 years Old	317	27.1 (17.2-39.8)
15 years Old	274	20.4 (13.9-29.1)
16 years Old	270	21.7 (15.4-29.7)
≥17 years Old	381	27.3 (20.5-35.5)
Parents' smoking status		
None	994	25.2 (21.1-29.8)
Both	87	16.0 (8.2-28.8)
Father Only	273	36.7 (27.3-47.2)
Mother Only	91	27.3 (16.3-42.1)
Don't Know	130	14.5 (8.5-23.7)
Close friends' smoking status		
None	745	19.1 (14.0-25.7)
Some	554	33.1 (27.4-39.3)
Most	169	34.9 (25.8-45.3)
All	76	24.1 (14.1-38.1)
Exposure to Anti-Smoking Messages		
Yes	771	30.3 (24.5-36.7)
No	702	22.2 (18.2-26.8)
Perceived harm from smoking		
No	724	21.7 (17.2-27.1)
Yes	808	30.8 (24.6-37.8)
Smoking Frequency		
None	615	10.0 (6.8-14.6)
<1 Cigarette/Day	414	40.9 (32.6-49.7)
1 to 5 Cigarettes/Day	282	39.5 (32.2-47.4)
6 to 10 Cigarettes/Day	39	19.0 (6.9-42.6)
11 to ≥20 Cigarettes/Day	21	31.9 (16.0-53.6)
(N=1,610)		

Table 3. Factors Associated with Intention to Quit Smoking among Gambian Students who Smoke, Global Youth Tobacco Survey – AFRO, Gambia All Schools, Regions 1-6, 2017

Variable	Unweighted sample n	Intention to Quit	
		OR (95% CI)	AOR (95% CI)
Sex			
Male®	1013	1	1
Female	536	0.30 (0.22-0.42)	0.50 (0.33-0.76)
Age			
≤11 Years Old®	47	1	1
12 years Old	89	0.66 (0.26-1.67)	0.72(0.26-1.99)
13 years Old	169	0.81 (0.30-2.17)	0.77 (0.21-2.85)
14 years Old	317	0.80 (0.32-2.02)	1.09 (0.31-3.81)
15 years Old	274	0.96 (0.41-2.25)	0.93 (0.28-3.07)
16 years Old	270	1.09 (0.44-2.69)	0.81 (0.21-3.22)
≥17 years Old	381	1.55 (0.66-3.62)	1.22 (0.40-3.67)
Parents' smoking status			
None®	994	1	1
Both	87	0.84 (0.51-1.39)	1.17 (0.47-2.92)
Father Only	273	1.68 (1.06-2.64) *	1.64 (0.89-3.015)
Mother Only	91	0.72 (0.38-1.36)	0.72 (0.34-1.52)
Don't Know	130	0.54 (0.31-0.93) *	1.26 (0.60 -2.656)
Close friends' smoking status			
None®	745	1	1
Some	554	2.66 (2.00-3.52)	1.15 (0.77-1.73)
Most	169	3.33 (1.82-6.08)	2.01 (0.76-5.30)
All	76	1.40 (0.74-2.62)	3.01 (1.34-6.74)
Exposure to Anti-Smoking Messages			
Yes ®	771	1	1
No	702	0.70 (0.55-0.90) * *	0.66 (0.44-0.99) *
Perceived harm from smoking			
No ®	808	1	1
Yes	724	1.83 (1.35-2.48)	1.59 (0.99-2.56)
Smoking Frequency			
None®	615	1	1
<1 Cigarette/Day	414	25.30 (13.60-47.05)	21.10(11.15-
1 to 5 Cigarettes/Day	282	30.40 (11.34-81.45)	18.86 (6.79-52.36)
6 to 10 Cigarettes/Day	39	16.85 (5.20-54.67)	7.46 (2.00-27.91)
11 to ≥20 Cigarettes/Day	21	12.39 (2.77-55.415)	29.02(5.21-61.76)
(N=1,610)			

® *Reference: * p<0.05, ** p<0.01, *** p<0.001*

Discussion

Smoking is one of the major risk factors of cardiovascular and other noncommunicable diseases (NCDs) and as such cessation of the practice significantly reduces the risks of such outcomes [2]. Several factors could potentially influence the intention to quit smoking [9-13]. However, there is paucity of data on the predictors of intention to quit in The Gambia and other sub-Saharan African countries. This study principally sought to assess the association between perceived health risks of smoking and intention to quit. The relationship between other potential factors of cessation intent and intention to quit was also assessed.

Diminished statistical power, arising from the relatively small number of respondents who admitted to being current tobacco users (1,610) and the high non-response rate to smoking-related questions, may have played a part in not finding statistically significant relationships between quit intention and some variables [27]. The high non-response rate of participants on smoking-related questions has led to the loss of a considerable number of observations. The Gambia being a conservative society [28], where adolescent smoking is regarded as a wayward behaviour, such non-response rate is not a surprise. Furthermore, since the inclusion criteria of this study confined participation to school-going adolescents between ages 11 and 17 years, generalization of the findings to the general population should be done with caution. Difficulty in establishing temporality between intention to quit and perceived harm or any of the covariates considered in the analysis is another limitation of the study.

In the current study, approximately 77.8% of adolescents (30.5% of boys and 15.9% of girls), who smoked, had the intention to quit. Different studies found significantly different proportions of participants who smoke but yet intending to quit – from as low as 4.7% to as high as 59.0% in studies conducted in Korea and Vietnam respectively [13, 15]. Such huge differences in prevalence could be explained by not only geographic locations but also by the fact that they are both self-reported and the age cohorts are different too.

Notwithstanding the strong association (p<0.001) shown at the univariate level between perceived health risks of smoking and intention to quit, the adjusted model shows no statistically significant association between the two (OR = 1.59, 95% CI = 0.99 - 2.56). This is somewhat consistent with the findings of the Vietnamese Global Adult Tobacco Survey, at the subgroup level, where it was found that perceived harm from tobacco use was not necessarily associated with intention to quit among waterpipe or dual users and the authors cited low statistical power as the likely cause [13]. Despite the discordance of the age groups between the two studies, the sample sizes are not very different (1,610 versus 1,351). However, the bulk of studies with significantly bigger sample sizes found the reverse at the multivariate level – that there is a strong association between perceived harm from smoking and intention to quit [13,28,290]. Thus, there is a need for a bigger study with a wider age range to assess the association between intention to quit and perceived harm from smoking.

Exposure to anti-smoking messages, sex and smoking frequency were the only independent variables that consistently exhibited statistical significance (at least p<0.05) in their association with intention to quit at both the univariate and multivariable levels. Previous studies corroborate these findings [22, 23, 29, 30]. The age of an adolescent has in both univariate and multivariable models consistently shown not to be associated with intention to quit. While this finding is consistent with a previous finding [31], another study found the reverse [22].

Our findings highlight significant factors influencing youth smoking cessation intentions. Specifically, youth with close friends who smoke are less likely to intend to quit, suggesting the powerful role of social networks

in shaping smoking behaviours. A previous study using the same data found that youth who had friends that smoke was more likely to experiment cigarette smoking compared with those who did not [32]). Conversely, exposure to anti-smoking messages, being male, having fewer smoking peers, and smoking fewer cigarettes are positively associated with intentions to quit. These results underscore the need for further investigation into the social dynamics of smoking among youth, particularly the influence of peer networks on smoking cessation intentions. Future research should explore interventions that disrupt these social reinforcements, such as peer-led smoking prevention programs, while examining gender differences in smoking behaviours and cessation motivations. Policymakers should prioritize anti-smoking campaigns targeting youth, with a focus on increasing exposure to anti-smoking messages through schools, social media, and community programs. Policies could also benefit from incorporating strategies to weaken peer influence, such as fostering smoke-free environments and promoting peer support systems for cessation. Comprehensive tobacco control measures, including higher taxes on cigarettes and restrictions on youth access to tobacco products, remain critical to reducing smoking prevalence and facilitating cessation efforts among young populations. This multidimensional approach can help curb smoking initiation and support quitting intentions, ultimately reducing the public health burden of tobacco use.

Conclusion

The results of the study suggest that youths/adolescents exposed to anti-smoking messages compared to those not exposed to such messages; boys compared to girls; and those who smoked the least number of cigarettes had increased odds of intending to quit smoking. Prioritizing anti-smoking campaigns targeting youth, with a focus on increasing exposure to anti-smoking messages through schools, social media, and community programs could be effective in encouraging cessation among people who currently smoker and preventing cessation among those who don't smoke.

Acknowledgement

Conflict of Interest

We have no conflict of interest to declare.

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