Cigarette smoking and cigarette marketing exposure among students in selected African countries:
Findings from the Global Youth Tobacco Survey

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Abstract

Objective. To investigate cigarette smoking prevalence and exposure to various forms of cigarette marketing among students in 10 African countries.

Methods. We used data collected during 2009-2011 from the Global Youth Tobacco Survey (GYTS), a school based cross-sectional survey of students aged 13-15 years, to measure the prevalence of cigarette smoking and exposure to cigarette marketing; comparisons to estimates from 2005-2006 were conducted for five countries where data were available. The correlations between country-level cigarette smoking prevalence and exposure to cigarette marketing were also studied.

Results. Current cigarette smoking ranged from 3.4% to 13.6% among students aged 13-15 in the 10 countries studied, although use of tobacco products other than cigarettes was more prevalent in all countries except in Cote D'Ivoire. Cigarette smoking was higher among boys than girls in seven out of the 10 countries. Among the five countries with two rounds of surveys, a significant decrease in cigarette smoking prevalence was observed in Mauritania and Niger; these two countries also experienced a decline in three measures of cigarette marketing exposure. It is also possible that smoking prevalence might have risen faster among girls than boys.

Conclusion. Cigarette smoking among youth was noticeable in 10 African countries evaluated, with the prevalence over 10% in Cote D'Ivoire, Mauritania and South Africa. Cigarette marketing exposure varied by the types of marketing; traditional venues such as TV, outdoor billboards, newspapers and magazines, were still prominent.

Abbreviations: DHS: Demographic and Health Survey; GYTS: Global Youth Tobacco Survey; Cigarette Marketing: Tobacco Advertising, Promotion and Sponsorship; WHO: World Health Organization; FCTC: Framework Convention on Tobacco Control.

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7 *Keywords:* Exposure, cigarette marketing, tobacco advertising, promotion and sponsorship, youth
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Introduction

Tobacco use, a major contributor to the incidence of non-communicable diseases (CDC, 2014), is the most preventable cause of premature death worldwide (WHO, 2013). Smoking causes immediate negative health consequence on the respiratory and cardiovascular systems as well as increases risk of chronic diseases over the life course (USDHHS, 2012). In addition, chronic smoking-related diseases are more common among those who started smoking early in life (Peto, 1986). Almost all adult smokers start smoking in childhood or adolescence; data from 25 countries participating in the Global Adult Tobacco Survey suggest that the mean age of initiating daily smoking was less than 20 years in all countries other than China, including three African countries: Cameroon, Kenya and Uganda (CDC, 2015). Hence, interventions focusing on reducing smoking initiation among adolescents and young adults could help prevent the health and social burden caused by tobacco use.

The decline of tobacco consumption in traditional markets has led tobacco companies to increasingly focus their marketing efforts on youth in developing countries (Lancet, 2013). For example, much of the tobacco companies' marketing efforts in Africa are directed to attract children and youth (Center for Tobacco Control in Africa, 2013). A World Health Organization (WHO) report indicated that most African countries where data are available had tobacco smoking prevalence less than 5% in 2012, well below the global average of 21% (WHO, 2012). For a long time, little attention has been given to tobacco use in Africa due to perceived low prevalence and more urgent needs for infection disease control (Bletcher, 2013). However, it is highly likely that the smoking prevalence in African countries will increase rapidly in the near future along with improvements in local economies (Jemal, 2010). Africa may pose the greatest challenge in future growth of smoking (Bletcher, 2013; Baleta, 2010).

Cigarette marketing can cause the initiation and continuation of smoking among youth (Gilpin, 2007; Pierce, 2010). Even seeing actors smoking in the movies was reported to be linked with increased likeli-

hood of smoking initiation among youth (Sargent 2001; Thrasher, 2008). Research indicated a positive association among youth between smoking susceptibility and cigarette marketing exposures in Northern African countries, as well as between current smoking and cigarette marketing in Sudan and South Sudan (Madkour et al., 2014; Mamudu, 2013). Systematic analyses focusing on cigarette smoking and cigarette marketing among youth in sub-Saharan countries, otherwise, have been scarce. Thus, it is important to understand youth smoking and exposure to cigarette marketing in these countries to identify opportunities for counter-marketing and tobacco control measures. In this present study, we investigated the prevalence of cigarette smoking, and exposure to cigarette marketing among youth in 10 sub-Sahara African countries, using data from Global Youth Tobacco Survey (GYTS). Of our particular interest were differences between boys and girls, and changes over the last two rounds of GYTS.

Methods

Data Source

The GYTS provides a mechanism for monitoring and tracking exposure to cigarette marketing. A school-based cross-sectional survey for students aged 13 to 15 years, GYTS applies standardized survey protocols and questionnaires and thus enables comparisons between countries. GYTS has been conducted in African countries since 1999. Detailed information regarding the survey methods can be found elsewhere (Warren, 2009). In the current study, only countries with nationally representative data were included. The study covered the most recent national data, collected between 2009 and 2011, from 10 countries: Congo, Cote D'Ivoire, Ghana, Mauritania, Malawi, Niger, South Africa, Swaziland, Uganda, and Zambia. Sample size ranged from 1,106 (Congo) to 4,098 (Ghana).

Measures

Students were asked questions regarding tobacco use and exposure to cigarette marketing in the past 30 days prior to the survey. Current cigarette smokers were defined as those who reported smoking at least one cigarette in the past 30 days, and students were considered current users of other tobacco products if they reported using tobacco products other than cigarettes (including smokeless tobacco, cigars, pipes and water pipes) at least once in the past 30 days.

Students were considered exposed to cigarette marketing if they answered affirmatively to the following seven questions: 1) "When you watch TV, videos, or movies, how often do you see an actor smoking?"; 2) "Do you have something (T-Shirt, pen, bag, etc.) with a cigarette brand logo on it?"; 3) "During the past 30 days, when you watched sports events or other programs on TV, how often did you see cigarette brand names?"; 4) "During the past 30 days, how much advertising for cigarettes have you seen on billboard along roadsides?"; 5) "During the past 30 days, how much advertising for cigarettes have you seen on newspaper or magazines?"; 6) "When you go to sports events, fairs, concerts or community events, how often do you see advertisement for cigarettes?"; 7) "Has a cigarette representative ever offered you a free cigarette?" Responses to all questions are categorical, and all were recoded into dichotomous (yes/no) indicators. Those who answered "don't know" or "refused to answer" were treated as missing.

Analysis

The prevalence of cigarette smoking and cigarette marketing exposure were calculated overall and by gender in the 10 countries. We also compared data collected following the WHO Framework Convention for Tobacco Control (WHO FCTC) ratification (2009) to data obtained before ratification (2005 or 2006) using t-tests for percentages in five countries where such data was available (Ghana, Malawi, Mauritania, Niger and Swaziland); Changes in cigarette smoking and exposure to cigarette marketing were also examined for these 5 countries between the two survey waves.

SAS 9.2 (SAS Institute, Cary, NC, USA) and SUDAAN 10.0 (RTI International, Research Triangle Park, NC, USA) were used for statistical analysis. Data were weighted to the national counts of the overall student population stratified by gender and grade; to obtain estimates with appropriate variance, the complex sample design features of GYTS were taken into account.

Results

Cigarette smoking

Current cigarette smoking prevalence was highest in Cote D'Ivoire (13.6%), South Africa (12.6%) and Mauritania (11.6%, Table 1); the lowest prevalence was found in Malawi (3.4%), Ghana and Niger (both at 3.6%). It was significantly higher among males than females in 7 of the 10 countries, all but Ghana, Uganda and Zambia (Table 2). In all countries except Cote d'Ivoire, the prevalence of current use of other tobacco products was higher than current cigarette smoking, ranging from 8.4% in Cote D'Ivoire to 23.9% in Zambia. A high percentage of current cigarette smokers also used other tobacco products in Malawi (69.7%), Zambia (67.4%), Uganda (63.5%), while this percentage was quite low in Niger (4.1%), Mauritania (8.3%) and Cote d'Ivoire (16.9%).

Cigarette Marketing Exposure

The prevalence of seeing an actor smoking on TV or in a movie/video was highest in Cote d'Ivoire at 91.5% and lowest in Malawi (51.2%). Cote d'Ivoire had the highest prevalence of seeing a cigarette brand logo on TV (72.0%), while Malawi had the lowest (30.1%) (Table 1). The prevalence of seeing cigarette advertising on a roadside billboard ranged from a low of 40.6% in Congo to 76.6% in Cote d'Ivoire, while the prevalence of seeing cigarette promotion in newspapers or magazines ranged from 32.2% in Congo to 67.0% in Niger. The lowest prevalence of seeing a cigarette advertisement during an event was in Malawi (20.9%), while the highest was in Swaziland (44.9%). Students in Zambia had the highest

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4 prevalence for being offered free cigarettes by a representative of a cigarette brand (20.0%), a four-fold
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6 difference when compared to the lowest proportion of 4.7% in Cote d'Ivoire. Mauritania had the
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8 highest prevalence of students that own an item with a cigarette brand logo (21.5%), while Swaziland
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10 had the lowest prevalence (8.5%).
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14 In Ghana and South Africa, girls were more likely than boys to see an actor smoking on TV, in movies, or
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16 in videos, while in Cote d'Ivoire, Ghana and Zambia, girls were more likely to see a cigarette brand logo
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18 on TV. There were no significant differences by sex in the other countries for these two indicators
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20 except in Swaziland, where the prevalence of seeing an actor smoking on TV, in movies or in videos was
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22 significantly higher among boys. Compared with girls, boys had significantly higher rates of exposure to
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24 cigarette advertising during events in Cote d'Ivoire, Malawi, Mauritania and Uganda. Additionally, boys
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26 had higher prevalence of having items with tobacco brand logos than girls in Cote d'Ivoire, Ghana, and
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28 South Africa.
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33 *Changes in Cigarette Smoking and Cigarette Marketing Exposure*

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38 In Ghana, Malawi, Mauritania, Niger and Swaziland, the prevalence of cigarette smoking declined
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40 significantly in Mauritania and Niger, while no significant changes were found in the other three
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42 countries (Table 3). Declines in exposure in three of the seven cigarette marketing forms were also
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44 found in Mauritania and Niger, while a decline in two forms was observed in Swaziland and Malawi.
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46 Increases in exposure to cigarette marketing were observed in three instances: Ghana, where the
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48 prevalence of having items with cigarette brand logos increased from 12.1% in 2006 to 15.2% in 2009;
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50 Malawi, where prevalence of students seeing an actor smoking on TV, in movies or in videos increased
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52 from 32.8% in 2005 to 51.2% in 2009, and Niger, where the prevalence of being offered free cigarettes
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54 by tobacco company representatives increased from 2.6% in 2006 to 6.0% in 2009.
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59 **Discussion**

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4 The findings from this study reveal that while cigarette smoking was more prevalent than other tobacco
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6 use only in Cote D'Ivoire; we found that in five of the ten African countries evaluated, current use of
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8 other tobacco products was more prevalent than current cigarette smoking. In addition, use of other
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10 tobacco products among cigarette smokers was common, ranging from 5.4% in Niger to 23.9% in Zambia.
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13 Therefore, as African countries look to address youth tobacco use, it is important that all forms of
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15 tobacco use are considered, including both cigarettes and smokeless tobacco.
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19 Moreover, in all 10 countries, the traditional venues assessed for tobacco advertisement, promotions
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21 and sponsorship, such as TV, outdoor billboards, newspapers and magazines, were prominent venues
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23 for cigarette marketing. Of particular note was the finding that a high percentage of students saw an
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25 actor smoking on TV, in movies, or in videos, with rates ranging from 51.2% in Malawi to 91.5% in Cote
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27 D'Ivoire.
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32 Our analysis also provides evidence that there may be a trajectory towards increased smoking among
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34 female in African countries. We reviewed the results from Demographic Household Survey (DHS) in
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36 Ghana, Malawi, Swaziland, Uganda and Zambia, where adult smoking prevalence were available for the
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38 same time period as GYTS (DHS, 2013). While the prevalence among male adults was higher than that
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40 for male students in all five countries, the prevalence among female adults were all lower than that for
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42 female students, indicating the potential for higher smoking prevalence among female adults in future
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44 years in these countries. This finding was consistent with a previous report by Bletcher et al. (2013).
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49 This study is subject to some limitations. First, the GYTS data were collected from students enrolled in
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51 grades 7-9, but enrollment rates varied among countries. School-age children from poorer families may
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53 be less likely to attend school and may do so at a later age than those from wealthier families. Thus,
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55 caution should be exercised when generalizing our results to the national population of youth 13–15 in
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57 countries where school enrollment is relatively low. Second, the data were self-reported and were
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4 subject to reporting bias. Furthermore, readers need to be aware of the potential false positive rates
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6 because all tests were not accounted for multiple comparisons. Finally, it was not possible to establish
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8 causality between the observed declines in smoking prevalence in Mauritania and Niger with declines in
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10 exposure to cigarette marketing; accordingly, more rigorous studies to evaluate the impact of reduction
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12 in exposure to cigarette marketing and cigarette initiation among youth are warranted.
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16 In conclusion, these findings reveal that cigarette smoking and marketing exposure are prevalent among
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18 African youth. Research has indicated positive associations between smoking and exposure to cigarette
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20 marketing among youth (Madkour, 2014; Mamudu, 2013). The WHO FCTC recommends bans on all
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22 forms of cigarette marketing, either direct or indirect, to reduce smoking initiation among youth;
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24 however, none of the countries in our study had adopted comprehensive bans on cigarette marketing at
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26 the time of latest survey, and strong regulation enforcement was also lacking in these countries (WHO,
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28 2013). Comprehensive prohibitions on cigarette marketing with effective enforcement, in combination
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30 with other proven tobacco control interventions aimed at young students, has the potential to further
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32 reduce cigarette smoking initiation.
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Table 1. Prevalence of tobacco use and exposure rate to cigarette marketing among students age 13-15 in 10 African countries, GYTS 2009-2011

Survey year	2009							2011		
Country	Congo	Cote d'Ivoire	Ghana	Malawi	Mauritania	Niger	Swaziland	South Africa	Uganda	Zambia
Sample size	1,106	1,904	4,098	1,284	1,755	1,305	1,239	3,917	2,020	1,935
	Percent (95% CI)									
Tobacco use¹										
Current cigarette smoker	8.2 (6.3 - 10.6)	13.6 (10.9 - 16.8)	3.6 (2.3 - 5.6)	3.4 (1.7 - 6.8)	11.6 (8.9 - 14.9)	3.6 (2.6 - 4.8)	6.4 (4.2 - 9.4)	12.6 (10.8 - 14.7)	4.8 (3.2 - 7.2)	5.9 (4.4 - 8.0)
Current user of tobacco products other than cigarettes	19.7 (16.2 - 23.8)	8.4 (6.4 - 10.8)	10.4 (8.3 - 13.0)	13.0 (9.4 - 17.8)	13.0 (11.0 - 15.3)	5.4 (3.9 - 7.5)	7.0 (4.9 - 9.9)	13.3 (11.8 - 15.0)	15.7 (12.9 - 19.0)	23.9 (20.8 - 27.4)
Use of other tobacco products among current cigarette smokers	42.3 (21.7 - 66.0)	16.9 (12.1 - 23.1)	46.0 (30.2 - 62.7)	69.7 (45.1 - 86.6)	8.3 (4.3 - 15.4)	4.1 (0.8 - 19.6)	26.7 (16.7 - 40.0)	32.8 (26.2 - 40.3)	63.5 (51.3 - 74.1)	67.4 (56.6 - 76.6)
Use of all tobacco products	24.1 (20.6 - 27.9)	19.1 (15.8 - 22.9)	12.3 (9.6 - 15.5)	14.1 (10.7 - 18.4)	22.4 (18.5 - 26.9)	8.6 (7.0 - 10.5)	11.5 (8.7 - 15.1)	21.3 (18.8 - 23.9)	17.3 (14.4 - 20.8)	25.4 (21.8 - 29.4)
Cigarette marketing²										
Saw actors smoking on TV/in movies	67.4 (59.3 - 74.6)	91.5 (89.4 - 93.3)	70.4 (66.1 - 74.4)	51.2 (43.1 - 59.3)	70.2 (66.2 - 73.9)	80.8 (72.4 - 87.1)	82.8 (76.1 - 88.0)	82.8 (79.1 - 86.0)	61.7 (50.5 - 71.9)	70.7 (68.1 - 73.2)
Have items with cigarette brand logos	13.4 (9.8 - 18.1)	13.6 (12.0 - 15.5)	15.2 (13.2 - 17.5)	9.4 (7.0 - 12.4)	21.5 (17.7 - 25.8)	18.5 (13.2 - 25.3)	8.5 (6.7 - 10.6)	13.7 (12.1 - 15.4)	11.3 (9.2 - 13.9)	20.0 (17.0 - 23.4)
Saw cigarette brand logos on TV	53.4 (43.8 - 62.7)	72.0 (67.1 - 76.5)	51.8 (49.5 - 54.0)	30.1 (24.3 - 36.6)	62.5 (58.5 - 66.4)	69.6 (64.7 - 74.1)	62.6 (57.6 - 67.3)	63.3 (60.9 - 65.6)	47.4 (36.3 - 58.7)	55.0 (51.3 - 58.5)
Saw cigarette ads on roadside billboards	40.6 (32.1 - 49.8)	76.6 (71.7 - 81.0)	47.0 (44.2 - 49.8)	42.8 (35.2 - 50.9)	61.6 (57.1 - 65.9)	NA	62.1 (57.8 - 66.2)	62.5 (59.5 - 65.5)	51.9 (42.7 - 60.9)	59.1 (55.4 - 62.7)
Saw cigarette promo in newspapers/magazines	32.2 (24.5 - 40.9)	58.4 (54.3 - 62.5)	42.3 (38.3 - 46.4)	37.7 (32.8 - 42.9)	53.6 (50.2 - 56.9)	67.0 (61.8 - 71.7)	54.2 (50.3 - 58.0)	63.6 (60.1 - 66.9)	46.6 (37.1 - 56.2)	57.5 (54.4 - 60.6)
Saw cigarette ads during sports or social events	26.2 (21.1 - 32.2)	40.3 (35.8 - 45.0)	32.5 (30.7 - 34.4)	20.9 (16.1 - 26.7)	43.7 (39.3 - 48.1)	38.7 (32.1 - 45.6)	44.9 (41.2 - 48.6)	40.5 (38.1 - 43.0)	40.5 (31.3 - 50.5)	42.9 (40.1 - 45.8)
Offered free cigarettes by tobacco representatives	7.5 (5.0 - 11.2)	4.7 (3.6 - 6.0)	11.0 (9.0 - 13.6)	13.7 (10.3 - 17.8)	NA	6.0 (4.2 - 8.6)	7.8 (6.3 - 9.7)	12.0 (10.0 - 14.3)	10.7 (7.7 - 14.7)	20.0 (17.6 - 22.8)

¹ Used products in last 30 days.

² In last 30 days.

NA: Not applicable.

Table 2. Cigarette smoking prevalence and exposure rate to cigarette marketing among students age 13-15 by gender, in 10 African countries. GYTS 2009-2011

Year	2009									
Country	Congo		Cote d'Ivoire		Ghana		Malawi		Mauritania	
Gender	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Sample Size	571	535	1,033	871	1,958	2,140	583	701	846	909
	Percent (95% CI)									
Tobacco use										
Current cigarette smoker	11.3 (8.2 - 15.3)**	5.0 (3.1 - 8.1)	20.9 (17.4 - 24.9)***	5.7 (3.7 - 8.8)	4.3 (2.8 - 6.8)	2.9 (1.7 - 5.0)	5.8 (2.6 - 12.2)*	1.0 (0.3 - 3.0)	14.6 (11.1 - 18.9)**	9.0 (6.3 - 12.6)
Cigarette marketing										
Saw actors smoking on TV/in movies	70.4 (64.3 - 75.9)	64.3 (51.9 - 75.0)	91.9 (89.2 - 93.9)	91.1 (88.1 - 93.4)	68.8 (64.3 - 73.0)*	72.0 (67.5 - 76.1)	51.7 (44.5 - 58.9)	50.7 (39.8 - 61.5)	71.1 (65.8 - 75.9)	69.3 (64.0 - 74.1)
Have items with cigarette brand logos	14.7 (10.0 - 21.0)	12.1 (8.1 - 17.5)	15.6 (13.4 - 18.1)*	11.4 (9.1 - 14.2)	17.4 (15.2 - 19.7)***	13.2 (11.0 - 15.7)	11.4 (7.6 - 16.6)	7.4 (5.0 - 10.9)	23.3 (19.8 - 27.1)	19.8 (15.1 - 25.4)
Saw cigarette brand logos on TV	52.9 (43.8 - 61.7)	53.9 (42.7 - 64.7)	69.6 (64.5 - 74.3)*	74.8 (69.0 - 79.8)	49.2 (46.9 - 51.4)***	54.3 (51.4 - 57.2)	30.5 (25.6 - 35.9)	29.7 (22.2 - 38.6)	65.8 (61.4 - 70.0)	59.5 (53.6 - 65.1)
Saw cigarette ads on roadside billboards	39.8 (32.3 - 47.8)	41.5 (30.9 - 53.0)	77.5 (72.2 - 81.9)	75.7 (69.6 - 80.9)	47.6 (44.0 - 51.3)	46.4 (43.2 - 49.6)	43.7 (34.7 - 53.1)	42.0 (33.8 - 50.6)	62.0 (56.5 - 67.3)	61.2 (54.7 - 67.3)
Saw cigarette promo in newspapers/magazines	30.3 (22.6 - 39.5)	34.1 (24.7 - 45.0)	58.5 (54.3 - 62.7)	58.3 (53.1 - 63.4)	41.5 (36.9 - 46.3)	43.1 (39.3 - 47.0)	41.2 (33.8 - 48.9)	34.3 (27.5 - 41.8)	54.5 (50.9 - 58.1)	52.7 (47.0 - 58.3)
Saw cigarette ads during sports or social events	27.6 (20.4 - 36.1)	24.8 (19.6 - 30.9)	44.0 (39.8 - 48.4)**	36.0 (30.2 - 42.3)	34.8 (31.7 - 38.0)	30.3 (28.4 - 32.3)	27.7 (20.2 - 36.9)**	14.0 (10.6 - 18.4)	49.2 (44.6 - 53.8)***	38.5 (33.4 - 44.0)
Offered free cigarettes by tobacco representatives	6.9 (4.3 - 11.0)	8.1 (5.0 - 13.1)	6.1 (4.6 - 8.2)**	3.0 (1.8 - 5.0)	11.5 (9.2 - 14.2)	10.6 (8.3 - 13.4)	12.7 (8.9 - 17.7)	14.6 (10.3 - 20.3)	NA	NA

Year	2009				2011					
Country	Niger		Swaziland		South Africa		Uganda		Zambia	
Gender	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Sample Size	603	702	525	714	1,628	2,289	822	1,198	893	1,042
	Percent (95% CI)									
Tobacco use										
Current cigarette smoker	6.8 (5.0 - 9.2)***	0.6 (0.2 - 2.2)	9.2 (5.5 - 14.8)*	4.5 (2.9 - 6.9)	15.0 (12.0 - 18.6)*	10.8 (8.7 - 13.4)	5.0 (3.2 - 7.7)	4.7 (2.5 - 8.7)	6.2 (4.3 - 8.8)	5.7 (4.0 - 7.9)
Cigarette marketing										
Saw actors smoking on TV/in movies	81.3 (72.1 - 87.9)	80.4 (71.9 - 86.8)	85.8 (78.0 - 91.1)**	80.8 (74.5 - 85.9)	79.9 (75.9 - 83.3)**	85.0 (80.9 - 88.4)	65.1 (54.1 - 74.6)	59.2 (46.0 - 71.1)	70.5 (65.7 - 74.9)	70.9 (66.9 - 74.7)
Have items with cigarette brand logos	19.7 (13.4 - 28.0)	17.5 (12.6 - 23.6)	9.7 (6.9 - 13.4)	7.6 (5.5 - 10.6)	15.6 (13.0 - 18.7)*	12.2 (10.6 - 14.1)	12.4 (8.5 - 17.7)	10.5 (7.5 - 14.6)	19.9 (16.8 - 23.4)	20.1 (16.4 - 24.4)
Saw cigarette brand logos on TV	67.1 (59.9 - 73.5)	71.9 (66.3 - 76.9)	60.0 (54.7 - 65.0)	64.4 (58.2 - 70.2)	59.1 (53.7 - 64.3)	66.3 (62.2 - 70.2)	46.9 (36.4 - 57.7)	47.7 (35.7 - 60.1)	51.1 (46.6 - 55.6)*	58.2 (53.5 - 62.8)
Saw cigarette ads on roadside billboards	NA	NA	61.5 (56.1 - 66.7)	62.5 (57.5 - 67.2)	60.1 (54.9 - 65.1)	64.3 (61.2 - 67.4)	54.2 (46.0 - 62.1)	50.1 (39.1 - 61.2)	61.1 (57.3 - 64.7)	57.4 (52.4 - 62.4)
Saw cigarette promo in newspapers/magazines	65.7 (58.7 - 72.1)	68.1 (61.1 - 74.3)	49.6 (44.6 - 54.5)**	57.3 (52.9 - 61.6)	61.9 (57.2 - 66.3)	64.8 (61.6 - 67.9)	48.8 (38.9 - 58.9)	44.8 (35.1 - 54.9)	55.5 (52.3 - 58.6)	59.3 (55.2 - 63.3)
Saw cigarette ads during sports or social events	42.2 (35.4 - 49.4)	35.4 (27.4 - 44.2)	45.7 (40.7 - 50.9)	44.3 (40.3 - 48.4)	38.5 (35.3 - 41.7)	42.0 (39.1 - 44.9)	44.2 (34.2 - 54.7)*	37.7 (28.7 - 47.6)	41.3 (37.5 - 45.2)	44.4 (41.1 - 47.7)
Offered free cigarettes by tobacco representatives	7.6 (4.9 - 11.6)	4.6 (3.1 - 6.7)	9.9 (6.4 - 14.9)	6.5 (5.2 - 8.1)	14.6 (11.9 - 17.9)	10.0 (8.1 - 12.3)	10.7 (6.2 - 17.8)	10.7 (7.4 - 15.3)	19.7 (17.0 - 22.6)	20.4 (16.7 - 24.6)

1 Used products in last 30 days.

2 In last 30 days.

* p<0.05, ** p<0.01, *** p<0.001.

NA: Not applicable.

Table 3. Cigarette smoking prevalence and exposure rate to cigarette marketing among students age 13-15 in 5 African countries, GYTS 2005-2011

Country	Ghana		Malawi		Mauritania		Niger		Swaziland	
Survey year	2006	2009	2005	2009	2006	2009	2006	2009	2005	2009
Sample size	5,055	4,098	2,954	1,284	2,020	1,755	1,046	1,305	7,564	1,239
	Percent (95% CI)									
Tobacco use¹										
Current cigarette smoker	2.5 (1.7 - 3.8)	3.6 (2.3 - 5.6)	2.9 (1.8 - 4.7)	3.4 (1.7 - 6.8)	19.3 (16.1 - 23.0)***	11.6 (8.9 - 14.9)	6.2 (4.2 - 9.2)*	3.6 (2.6 - 4.8)	5.4 (4.7 - 6.2)	6.4 (4.2 - 9.4)
Cigarette marketing²										
Saw actors smoking on TV/in movies	67.1 (60.8 - 72.9)	70.4 (66.1 - 74.4)	32.8 (28.2 - 37.9)***	51.2 (43.1 - 59.3)	66.9 (60.9 - 72.4)	70.2 (66.2 - 73.9)	84.7 (77.7 - 89.8)	80.8 (72.4 - 87.1)	79.1 (76.3 - 81.6)	82.8 (76.1 - 88.0)
Have items with cigarette brand logos	12.1 (10.8 - 13.5)*	15.2 (13.2 - 17.5)	20.6 (17.5 - 24.2)***	9.4 (7.0 - 12.4)	27.8 (23.9 - 32.0)*	21.5 (17.7 - 25.8)	29.9 (24.9 - 35.5)**	18.5 (13.2 - 25.3)	10.0 (9.3 - 10.7)	8.5 (6.7 - 10.6)
Saw cigarette brand logos on TV	49.3 (46.3 - 52.3)	51.8 (49.5 - 54.0)	29.6 (25.9 - 33.5)	30.1 (24.3 - 36.6)	63.0 (59.0 - 66.9)	62.5 (58.5 - 66.4)	76.6 (71.4 - 81.0)*	69.6 (64.7 - 74.1)	66.5 (64.3 - 68.5)	62.6 (57.6 - 67.3)
Saw cigarette ads on roadside billboards	46.2 (42.9 - 49.5)	47.0 (44.2 - 49.8)	51.8 (43.7 - 59.8)	42.8 (35.2 - 50.9)	69.0 (64.4 - 73.2)*	61.6 (57.1 - 65.9)	74.9 (69.8 - 79.4)	NA	64.2 (62.0 - 66.4)	62.1 (57.8 - 66.2)
Saw cigarette promo in newspapers/magazines	40.8 (38.5 - 43.0)	42.3 (38.3 - 46.4)	46.8 (39.7 - 54.0)*	37.7 (32.8 - 42.9)	61.4 (57.9 - 64.9)**	53.6 (50.2 - 56.9)	59.7 (51.2 - 67.6)	67.0 (61.8 - 71.7)	59.4 (58.1 - 60.8)**	54.2 (50.3 - 58.0)
Saw cigarette ads during sports or social events	35.4 (32.7 - 38.1)	32.5 (30.7 - 34.4)	26.7 (22.3 - 31.6)	20.9 (16.1 - 26.7)	42.5 (38.7 - 46.5)	43.7 (39.3 - 48.1)	77.1 (72.6 - 81.0)***	38.7 (32.1 - 45.6)	48.5 (46.5 - 50.5)	44.9 (41.2 - 48.6)
Offered free cigarettes by tobacco representatives	10.5 (8.9 - 12.4)	11.0 (9.0 - 13.6)	11.3 (9.3 - 13.7)	13.7 (10.3 - 17.8)	23.0 (20.4 - 25.8)	NA	2.6 (1.6 - 4.0)**	6.0 (4.2 - 8.6)	10.8 (10.0 - 11.7)**	7.8 (6.3 - 9.7)

1 Used products in last 30 days.

2 In last 30 days.

* p<0.05, ** p<0.01, *** p<0.001.

NA: Not applicable.