

Associations of advertisement-promotion-sponsorship-related factors with current cigarette smoking among in-school adolescents in Zambia

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Abstract

Background: Tobacco use is the leading cause of noncommunicable disease morbidity and mortality. Most smokers initiate the smoking habit as adolescents or young adults.

Methods: Survey data from the 2007 Lusaka (Zambia) Global Youth Tobacco Survey were used to estimate the prevalence of current cigarette smoking and assess whether exposure to pro-tobacco media and perception of the potential harm of secondhand smoke are associated with adolescents' smoking. Logistic regression analysis was used to estimate the associations.

Results: Altogether, 2378 students, of whom 56.8% were females, participated in the study. Overall, 10.5% of the students (9.3% among males and 12.1% among females) smoked cigarettes in the 30 days prior to the survey. Students who favored banning smoking in public places were 33% (OR = 0.67; 95% CI [0.47, 0.96]) less likely to smoke cigarettes compared to those who were not in favor of the ban. Seeing actors smoking in TV shows, videos or movies was positively associated with smoking (OR = 1.90; 95% CI [1.26, 2.88]). However, possessing an item with a cigarette brand logo on it, seeing advertisements of cigarettes on billboards and being ever offered a free cigarette by a cigarette sales representative were negatively associated with smoking (OR = 0.39, 95% CI [0.26, 0.58]; OR = 0.63, 95% CI [0.43, 0.92]; and OR = 0.43, 95% CI [0.29, 0.65], respectively).

Conclusion: Findings from this study indicate that TV advertisement-promotion-sponsorship was positively associated with smoking, while it was the opposite with other forms of advertisement; there is a need for further studies.

Keywords: Adolescents, advertisement, cigarette smoking

Résumé

Arrière-plan: Usage du tabac est la principale cause de morbidité de maladies non transmissibles et mortalité. La plupart des fumeurs initier l'habitude de fumer que les adolescents ou jeunes adultes.

Méthodes: Données d'enquête de l'enquête du tabac jeunesse mondiale 2007 Lusaka (Zambie) ont été utilisées. Estimer la prévalence de tabac actuelle et d'évaluer si exposition aux médias pro-tobacco et la perception du préjudice potentiel de seconde main fumée sont associés à adolescents de fumer. Régression logistique analyse a été utilisé pour estimer les associations.

Résultats: Tous les ensemble, les étudiants 2378 dont 56.8% étaient des femmes ont participé à l'étude. Globalement, 10.5% des étudiants (9.3% chez les hommes et 12.1% chez les femmes) fumé de cigarettes dans le passé 30 jours à l'enquête. Étudiants qui favorisait interdiction de fumer dans les lieux publics ont été 33% (OR = 0.67, 95% CI [0.47, 0.96]) moins susceptibles de fumer des cigarettes par rapport à ceux qui n'étaient pas en faveur de la interdiction. Voir les acteurs fumer sur TV, de vidéos ou de films a été associée positivement avec le tabagisme (OR = 1.90, 95% CI [1.26, 2.88]). Toutefois, avoir un élément avec un cigarette logo de la marque, voir des publicités pour des cigarettes sur des panneaux d'affichage, et jamais offert une cigarette libre par un représentant de la cigarette étaient

négativement associés au tabagisme (OR = 0.39, 95% CI [0.26, 1.58], ou = 0.63, 95% CI [0.43, 0.92], et ou = 0.43, 95% CI [0.29, 0.65], respectivement).

Conclusion: Conclusions de cette étude indiquent que TV publicité-promotion-parrainage a été positive associé à fumer alors qu'il était le contraire avec d'autres formes de publicité; il est nécessaire pour les autres études.

Mots clés: Cigarette fumer, de publicité, d'adolescents

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Introduction

Tobacco smoking, especially cigarette smoking, is the leading cause of preventable deaths and disability from noncommunicable diseases. While cigarette smoking has stabilized or is on the decline in many developed nations, there is evidence to suggest presence of a growing epidemic in low- and middle-income countries.^[1,2] In these settings (middle- and low-income countries), there is a growing recognition that there is need for significant investment to be devoted to the fight against the growing burden of noncommunicable diseases arising from, among other causes, tobacco use, just as resources are being earmarked for major and neglected communicable diseases.^[3,4] In fact, Kengne and Anderson have described stroke as a neglected disease in Africa.^[5]

On 28th May 2008, Zambia acceded to the Framework Convention on Tobacco Control (FCTC). Among other things, the convention requires that governments control tobacco advertising, promoting and sponsorship. Even before Zambia acceded to FCTC, it had passed the following regulations on tobacco control in 1992 by banning sale of tobacco to persons below the age of 16 years; tobacco advertisement in mass media; and smoking in government buildings, private work sites, education and health facilities, public transport, and other public places. However, these regulations were not strictly enforced, as has been noted in a previous report.^[6] With the accession of the country to the FCTC, however, there is an expectation that enforcement of regulations will be stricter and access to tobacco and exposure to various pro-tobacco media will be restricted for adolescents. Information on the Framework Convention on Tobacco Control has been published elsewhere.^[7-9] We therefore conducted this analysis of the Lusaka Global Youth Tobacco Survey (GYTS) 2007 for the following reasons: i) To assess the baseline exposure to pro-tobacco (cigarette) advertisements among adolescents within the 12 months preceding accession to the FCTC; ii) Assess if exposure to pro-tobacco media and advertisements is associated with current cigarette smoking.

Materials and Methods

Study design and study participant recruitment

We used data from the Lusaka-Zambia GYTS conducted in 2007, a second wave of the GYTS conducted in Zambia after the 2002 survey. Following the standard protocol of the GYTS, only schools and classes with students of ages 13 to 15 years were eligible to participate. The 2007 GYTS for Lusaka, Zambia included grades 7, 8 and 9 students. Grade 7 students were in primary school, while grades 8 and 9 consisted of secondary students. These grades were selected because they contained the majority of 13 to 15-year-old adolescents in the country. A two-stage cluster sampling design was used to produce representative data for the country. In the first stage of sampling, schools were selected with probability proportional to their student enrolment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate, regardless of their actual ages. A total of 25 schools were selected to participate and 24 (96.0%) participated. Of the 2678 students who were sampled, 2378 (88.8%) eventually participated. Hence an overall response rate of 85.3% (product of school and student response rates) was achieved.

Questionnaire administration

A standard GYTS questionnaire with a few country-specific data was administered to students in their classrooms during one subject session. The questionnaire was administered only to students who were present on the day a particular school was visited. No effort was made to follow up any of the students who were not present. Questionnaires were self-completed anonymously on computer-scanable survey sheets.

Students were asked the following questions, among others: During the past 30 days (1 month), on how many days did you smoke cigarettes? Has anyone in your family discussed the harmful effects of smoking with you? During the past 30 days (1 month), how many anti-smoking media messages (e.g., television, radio, billboards, posters, newspapers, magazines, movies) have you seen or heard? When you go to sports events, fairs, concerts, community

events or social gatherings, how often do you see anti-smoking messages? Responses to the questions were all pre-coded. A comprehensive description of the GYTS methodology has been reported elsewhere.^[10,11]

The following questions were used for variable derivation for this study: Do you think the smoke from other people's cigarettes is harmful to you? Are you in favor of banning smoking in public places and public transport (such as in streetcars, schools and sports arenas)? When you watch TV, videos or movies, how often do you see actors smoking? Do you possess something (T-shirt, pen, backpack, etc.) with a cigarette brand logo on it? During the past 30 days (1 month) when you watched sports events or other programs on TV, how often did you see cigarette brand names? During the past 30 days (1 month), how many advertisements for cigarettes have you seen on billboards? During the past 30 days (1 month), how many advertisements or promotions for cigarettes have you seen in newspapers or magazines? When you go for sports events, fairs, concerts or community events, how often do you see advertisements for cigarettes? Has a cigarette sales representative ever offered you a free cigarette? How old are you? What is your sex?

Ethical considerations

Permission to conduct the study was obtained from the Ministry of Education. All eligible students were also informed that participation was voluntary. Data collection was conducted in school by trained assistants without the presence of the teacher.

Data analysis

The GYTS data were analyzed in SPSS 11.5 (Chicago, IL, United States of America). As is the convention in the Global Tobacco Surveillance System (GTSS), current cigarette smoking was defined as having smoked a cigarette, even a single puff, within the last 30 days prior to the survey.^[9-11] A weighted analysis was conducted to obtain the prevalence of current cigarette smoking, as well as other relevant characteristics. We assessed associations between current smoking and the following: Sex; age; whether the student had reported the following: Seen advertisements for cigarettes at sports events, fairs, concerts or community events; ever offered a free cigarette by a cigarette sales representative; possessed an item with a cigarette brand logo on it; seen actors smoking in TV shows, videos or movies; seen advertisements for cigarettes on billboards; seen advertisements or promotions for cigarettes in newspapers or magazines; seen cigarette brand names at sports events or other programs on TV.

Other variables were also created from individual perceptions towards the following: Favored banning smoking in public places; and believed that smoke from other people's cigarettes (i.e., secondhand smoke) is harmful. A cut off point for statistical significance was set at the 5% level. We report results of bivariate logistic regression analysis as unadjusted odds ratios (ORs), while the results from multivariate analysis are reported as adjusted odds ratios (AORs).

Results

Altogether, 2378 students participated in the Lusaka-Zambia GYTS. A description of the sample is elaborated in Table 1. The sample comprised of mostly females (56.8%), 16 years or older (25.1%), and 39.1% favored banning smoking in public places. About half (52.0%) of the students reported that smoke from cigarettes being smoked by other people is harmful. Overall, 10.5% of the students (9.3% among males and 12.1% among females) smoked cigarettes in the 30 days prior to the survey.

Table 2 shows unadjusted and adjusted odds ratios for factors considered in the study with smoking status as the outcome. All the factors were significantly associated with smoking in bivariate analysis except the following: Seeing actors smoke in TV shows, video or movies; seeing cigarette brand names at sports events or other programs on TV; and reporting that smoke from other people's cigarettes is harmful. However, in multivariate analysis, factors that were significantly associated with smoking were age; favoring banning smoking in public places; seeing actors smoking in TV shows, videos or movies; possessing something with a cigarette brand logo on it; seeing advertisements for cigarettes on TV; and having ever been offered a free cigarette by a cigarette sales representative.

Compared to students of age 12 years or less, older children were younger, likely to smoke cigarettes (OR = 0.51, 95% CI [0.31, 0.84] for 13 year olds; OR = 0.16, 95% CI [0.08, 0.31] for 14 year olds; OR = 0.24, 95% CI [0.14, 0.41] for 15 year olds; OR = 0.47, 95% CI [0.29, 0.75] for 16+ year olds). Students who favored banning smoking in public places were 33% (OR = 0.67; 95% CI [0.47, 0.96]) less likely to smoke cigarettes compared to those who were not in favor of the ban. Seeing actors smoking in TV shows, videos or movies was positively associated with smoking (OR = 1.90; 95% CI [1.26, 2.88]). However, possessing an item with a cigarette brand logo on it, seeing advertisements for cigarettes on billboards and ever being offered a free cigarette by a cigarette

Table 1: Description of the adolescents in the sample of the Zambia GYTS 2007

Factors	Males n (%)	Females n (%)	Total n (%)
Age group (years)			
≤ 12	185 (15.2)	220 (18.5)	407 (16.7)
13	199 (16.8)	205 (16.7)	404 (16.7)
14	278 (24.7)	239 (19.2)	517 (22.3)
15	204 (19.6)	237 (18.7)	441 (19.1)
16+	224 (23.8)	368 (26.9)	593 (25.1)
Sex			
Female	-	-	1093 (56.8)
Male	-	-	1281 (43.2)
Knew that smoke from other people's cigarettes is harmful			
No	539 (48.8)	576 (47.1)	1115 (48.0)
Yes	539 (51.2)	689 (52.9)	1232 (52.0)
Favored banning smoking in public places			
No	688 (63.2)	713 (57.6)	1405 (60.9)
Yes	379 (36.8)	532 (42.4)	911 (39.1)
Had seen actors smoking in TV shows, videos or movies			
No	233 (20.4)	256 (21.0)	489 (20.6)
Yes	844 (79.6)	1009 (79.0)	1857 (79.4)
Possessed something with a cigarette brand logo on it			
No	826 (79.8)	993 (79.2)	1822 (79.5)
Yes	229 (20.2)	253 (20.8)	483 (20.5)
Had seen cigarette brand names at sports events or other programs on TV			
No	402 (37.2)	467 (36.7)	870 (36.9)
Yes	679 (62.8)	803 (63.3)	1485 (63.1)
Had seen advertisements of cigarettes on billboards			
No	478 (45.1)	499 (41.0)	979 (43.3)
Yes	583 (54.9)	732 (59.0)	1317 (56.7)
Has seen advertisements or promotions for cigarettes in newspapers or magazines			
No	432 (41.2)	561 (44.0)	994 (42.4)
Yes	632 (58.8)	691 (56.0)	1326 (57.6)
Had seen advertisements of cigarettes at sports events, fairs, concerts or community events			
No	585 (54.5)	703 (55.6)	1290 (55.0)
Yes	498 (45.5)	556 (44.4)	1056 (45.0)
Had been ever offered a free cigarette by a cigarette sales representative			
No	839 (83.1)	988 (81.7)	1829 (82.4)
Yes	174 (16.9)	218 (18.3)	394 (17.6)
Smoked cigarettes in the 30 days prior to the survey			
No	802 (90.7)	912 (87.9)	1717 (89.5)
Yes	89 (9.3)	125 (12.1)	214 (10.5)

sales representative were negatively associated with smoking (OR = 0.39, 95% CI [0.26, 0.58]; OR = 0.63, 95% CI [0.43, 0.92]; and OR = 0.43, 95% CI [0.29, 0.65], respectively).

Discussion

Overall, 10.5% of the students (9.3% among males and 12.1% among females) smoked cigarettes in the 30 days prior to the survey. In a 1999 Kafue (Zambia) GYTS reported by Siziya *et al.*, 8.2% of the adolescents were current cigarette smokers,

while 93 (10.4%) males and 61 (6.2%) females were current smokers ($P < 0.001$).^[6]

We have assessed proportions of adolescents who remembered to have been exposed to pro-tobacco advertisements and also perceptions of secondhand tobacco smoke exposure among this sample. It is of interest that just about half (52%) of the participants perceived that secondhand smoke (SHS) is harmful to health. This may suggest that education programs in Zambia may not have emphasized the fact that SHS is a health hazard. As the country implements

Table 2: Associations of advertisement-promotion-sponsorship-related factors with cigarette smoking

Factors	OR (95% CI)	AOR (95% CI)
Age group (years)		
≤ 12	1	1
13	0.39 (0.25, 0.63)	0.51 (0.31, 0.84)
14	0.65 (0.46, 0.92)	0.16 (0.08, 0.31)
15	1.07 (0.79, 1.47)	0.24 (0.14, 0.41)
16+	2.22 (1.73, 2.84)	0.47 (0.29, 0.75)
Sex		
Female	1	-
Male	1.24 (0.93, 1.65)	
Knew that smoke from other people's cigarettes is harmful		
No	1	-
Yes	0.82 (0.71, 0.95)	
Favored banning smoking in public places		
No	1	1
Yes	1.29 (1.12, 1.50)	0.67 (0.47, 0.96)
Had seen actors smoking in TV shows, videos or movies		
No	1	1
Yes	0.61 (0.52, 0.71)	1.90 (1.26, 2.88)
Possessed something with a cigarette brand logo on it		
No	1	1
Yes	1.99 (1.70, 2.33)	0.39 (0.26, 0.58)
Had seen cigarette brand names at sports events or other programs on TV		
No	1	-
Yes	0.87 (0.75, 1.01)	
Had seen advertisements of cigarettes on billboards		
No	1	1
Yes	1.35 (1.16, 1.58)	0.63 (0.43, 0.92)
Had seen advertisements or promotions for cigarettes in newspapers or magazines		
No	1	-
Yes	1.29 (1.11, 1.50)	
Had seen advertisements of cigarettes at sports events, fairs, concerts or community events		
No	1	-
Yes	1.30 (1.12, 1.50)	
Had been ever offered a free cigarette by a cigarette sales representative		
No	1	1
Yes	2.05 (1.74, 2.52)	0.43 (0.29, 0.65)

the FCTC, this is an aspect that may have to be emphasized.

Perhaps as a consequence of limited knowledge of the potential harms of SHS, only 39.1% of respondents favored a ban on smoking in public spaces. It can be argued that as long as adolescents are unaware of the health hazard of exposure to SHS, many may dislike exposure just as a nuisance or for other reasons but not for preventing harm to health. Again, we emphasize our expectation that as more and more adolescents become apprised about the harmful effects of SHS, there will be an increasing number of adolescents who will find smoking in public spaces offensive. Although there have been various regulations to restrict children's exposure to tobacco advertisement, many adolescents reported being exposed to information on tobacco products in magazines, billboards, television and videos. About a quarter (20.5%) possessed an item with a cigarette

brand logo on it, and 17.6% had been offered free cigarettes by a tobacco sales representative.

When we assessed whether there was any association between the explanatory variables and current cigarette smoking, we found that adolescents who were males and/or aged ≤12 years and/or who had seen movie actors smoking in a video were more likely to be current cigarette smokers. Paradoxically, we found favoring a ban on public smoking, possessing an item with a cigarette brand logo on it, having had exposure to pro-tobacco advertisements and having ever been offered free cigarettes were negatively associated with being a current cigarette smoker.

The predominance of smoking among males has been reported in many studies.^[6] This has been explained as a consequence of the cultural tolerance that societies have towards male smoking. However, male predominance is not universal; as in some

settings,^[12] such as the United States, adolescent girls and boys have similar smoking prevalence.^[13] That younger adolescents were more likely to smoke may be a reflection of smoking debut within this population. Younger adolescents may be more likely to smoke, but they quit smoking as they grow older. The reasons behind this transition may be suggested and may include acquisition of health information in terms of the harmful effects of smoking. We suggest that studies be conducted to assess why younger adolescents seem more likely to be smokers compared to older peers.

While previous reports have suggested that exposure to tobacco advertisements^[14-17] through the media, having ever been offered a free cigarette and possessing an item with a cigarette brand logo on it were associated with smoking, we found that adolescents in Zambia seemed to behave differently. While this study was not designed to answer why this may have been the case, there are possible explanations. One of the explanations was that these promotion efforts were actually in place because tobacco firms had realized that adolescents were not smoking as much as they would have liked. In such a setting, we would find promotion efforts are in place but are yet to “bear dividends” for the tobacco firms.

This study has several limitations, which have been previously reported.^[13,18] The sampling frame comprised of schools only in Lusaka, which means that only students were eligible to be included in the survey. The findings therefore, although representative of students in Lusaka, may not be representative of all adolescents in Lusaka, let alone in Zambia. Furthermore, even students who were eligible to participate but were not in school on the day that their school was surveyed were not followed up. However, with a response rate of 85.3%, the findings can be described as representative enough.

We also assessed history of current cigarette smoking, which was defined as having smoked, even a single puff, within the 30 days prior to the survey. No bio-specimens for assessment of cotinine, exhaled carbon monoxide and for other relevant tests were collected and assessed to validate self-reports of smoking. Finally, as cross-sectional data were collected, there is the limitation that we cannot ascribe causation to any of the variables assessed. We therefore report associations between the variables and current smoking and not causes.

Conclusion

Findings from this study indicate that TV advertisement-promotion-sponsorship was

positively associated with smoking, while it was the opposite with other forms of advertisement; there is a need for further studies.

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References

1. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006;3:442.
2. Murray CJ, Lopez AD. Mortality by cause for eight regions of the world: Global Burden of Disease Study. *Lancet* 1997;349:1269-76.
3. Snow RW, Guerra CA, Mutheu JJ, Hay SI. International funding for malaria control in relation to populations at risk of stable *Plasmodium falciparum* transmission. *PLoS Med* 2008;5:e142.
4. Gruskin S, Tarantola D. Universal Access to HIV prevention, treatment and care: Assessing the inclusion of human rights in international and national strategic plans. *AIDS* 2008;22:S123-32.
5. Kengne AP, Anderson CS. The neglected burden of stroke in Sub-Saharan Africa. *Int J Stroke* 2006;1:180-90.
6. Siziya S, Rudatsikira E, Muula AS. Cigarette smoking among school-going adolescents in Kafue, Zambia. *Malawi Med J* 2007;19:75-8.
7. Warner KE. The framework convention on tobacco control: Opportunities and issues. *Salud Publica Mex* 2008;50:S283-91.
8. Wakefield M, Liberman J. Back to the future: Tobacco industry interference, evidence and the framework convention on tobacco control. *Tob Control* 2008;17:145-6.
9. Yang T, Wu Y, Abdullah AS, Dai D, Li F, Wu J, *et al.* Attitudes and behavioral response toward key tobacco control measures from the FCTC among Chinese urban residents. *BMC Public Health* 2007;7:248.
10. The GTSS Collaborative Group. The global tobacco surveillance system. *Tob Control* 2006;15:ii1-3.
11. Global Tobacco Surveillance System Collaborating Group. Global Tobacco Surveillance System (GTSS): Purpose, production, and potential. *J Sch Health* 2005;75:15-24.
12. Global Youth Tobacco Survey Collaborating Group. Differences in worldwide tobacco use by gender: Findings from the Global Youth Tobacco Survey. *J Sch Health* 2003;73:207-15.
13. Warren CW, Jones NR, Peruga A, Chauvin J, Baptiste JP, Costa de Silva V, *et al.* Centers for Disease Control and Prevention (CDC): Global youth tobacco surveillance, 2000-2007. *MMWR Surveill Summ* 2008;57:1-28.
14. Siziya S, Rudatsikira E, Muula AS. Antismoking messages and current cigarette smoking status in Somaliland: Results from the Global Youth Tobacco Survey 2004. *Confl Health* 2008;2:6.
15. Osungbade KO, Oshiname FO. Determinants of cigarette smoking among senior secondary school students in a rural community of southwest Nigeria. *Niger J Med* 2008;17:40-4.
16. Guindon GE, Georgiades K, Boyle MH. Susceptibility to smoking among South East Asian youth: A multilevel

- analysis. *Tob Control* 2008;17:190-7.
17. St Romain T, Hawley SR, Ablah E, Kabler BS, Molgaard CA. Tobacco use in silent film: Precedents of modern-day substance use portrayals. *J Commun Health* 2007;32:413-8.
 18. Muula AS, Siziya S, Rudatsikira E. Cigarette smoking

and associated factors among in-school adolescents in Jamaica: Comparison of the Global Youth Tobacco Surveys 2000 and 2006. *BMC Res Notes* 2008;1:55.

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