



The relationship between proximity of tobacco retail outlets to schools and tobacco use among school personnel in sub-Saharan Africa



Israel T. Agaku^{a,*}, Akinyele O. Adisa^b, Uyoyo T. Omaduvie^c, Constantine I. Vardavas^a

^a Center for Global Tobacco Control, Department of Social and Behavioral Sciences, Harvard School of Public Health, USA

^b Department of Oral Pathology, University of Ibadan, Nigeria

^c Department of Medicine, University of Ibadan, Nigeria

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ABSTRACT

Background. We investigated the impact of proximity of tobacco retail outlets to schools on tobacco-related behavior and attitudes of school personnel in sub-Saharan Africa.

Methods. A pooled analysis of the 2006–2011 Global School Personnel Surveys from 19 sub-Saharan African countries was performed ($n = 12,201$). Multivariate logistic regression analyses were applied to measure the relationship between proximity of tobacco outlets to school premises and school personnel's tobacco-related behavior and attitudes ($p < 0.05$).

Results. Among all school personnel, there was a significant association between the presence of tobacco outlets on school premises and current cigarette smoking (adjusted odds ratio [aOR] = 3.89; 95% confidence interval [CI]: 2.17–7.20), current smokeless tobacco use (aOR = 2.63; 95%CI: 1.04–6.65), and permissiveness towards tobacco industry sponsorship activities in school (aOR = 2.27; 95%CI: 1.37–3.78). Complete smoke-free school policies were associated with lower odds of current cigarette smoking (aOR = 0.42; 95%CI: 0.23–0.74), but were not significantly associated with current smokeless tobacco use. Among lifetime any tobacco users, there was a significant association between the presence of tobacco outlets on school premises and use of combustible (aOR = 2.03; 95%CI: 1.09–3.75) and smokeless (aOR = 3.85; 95%CI: 1.51–9.81) tobacco products on campus within the past year.

Conclusions. Policies limiting the distance of tobacco outlets from schools, coupled with complete tobacco-free school policies may reduce tobacco use among school personnel.

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Introduction

The proximity (location) and density (number) of tobacco outlets in relation to schools may influence exposure to point-of-sale tobacco advertisements and smoking susceptibility among members of the school workforce, especially young adults (U.S Department of Health and Human Services, 2012). School personnel who use tobacco products on school premises may be visible to students, for whom they are supposed to be role models (Huang et al., 2014). Such pro-tobacco social influence from teachers could instill normative beliefs about tobacco use in students—a strong predictor of smoking initiation (U.S Department of Health and Human Services, 2012).

The public health benefits of school campuses being completely free of tobacco use and points-of-sale cannot be overemphasized considering that the school is a unique work-learning environment where school personnel are in close interaction with students (US

Department of Health and Human Services, 2006). Complete tobacco-free work environments have been shown to encourage quit attempts among tobacco users (Glasgow et al., 1997; Nagelhout et al., 2014). Even among school personnel who may not completely quit tobacco use, the opportunity to abstain from tobacco products during school hours or on school premises out of compliance with school policies, or even simply because of difficulty accessing tobacco products within the school vicinity, could potentially reduce daily tobacco consumption (Glasgow et al., 1997; Osinubi and Slade, 2002). In contrast, easy physical accessibility of tobacco products within or around school, coupled with non-existent or weakly enforced tobacco-free policies, may result in continued tobacco use during school hours.

Addressing tobacco retail marketing around schools is particularly a paramount issue in sub-Saharan Africa considering the targeted marketing of tobacco products in this region by the tobacco industry in recent years, with the retail environment constituting an important domain (World Health Organization, 2013; Agaku et al., 2013a). In addition, the presence of relatively lax tobacco control laws in several African countries creates an enabling environment for the tobacco industry to target certain population niches with tobacco products. For

* Corresponding author at: Center for Global Tobacco Control, Department of Social and Behavioral Sciences, Harvard School of Public Health, USA.
E-mail address: iagaku@post.harvard.edu (I.T. Agaku).

example, according to the 2013 WHO MPOWER report, only 17 of 46 countries identified in the African region have bans on free distribution of tobacco products at retail outlets and other media (World Health Organization, 2013). Marketing studies have shown that free product samples not only increase the likelihood of subsequent purchasing behavior, but also promote experimentation (Bawa and Shoemaker, 2004).

To date, no study has assessed the impact of the proximity of tobacco retail outlets to schools on tobacco use behavior and attitudes among school personnel. To fill this gap in knowledge, this study used data from the Global School Personnel Surveys in 19 sub-Saharan African countries during 2006–2011 to explore the impact of the proximity of tobacco retail outlets to schools, on tobacco use and permissiveness towards tobacco industry promotional activities among school personnel.

Methods

Data source/sample

The Global School Personnel Survey is a school-based survey of school personnel sampled from schools that participated in the Global Youth Tobacco Survey, a survey of adolescent students aged 13–15 years. The sampling frame of the Global Youth Tobacco Survey comprised all schools (public and private) in the selected country or region (World Health Organization, 2010). This study was based on self-reports from school personnel (not adolescent students).

The current secondary analysis was performed on datasets of the Global School Personnel Survey collected during 2006–2011 from 19 countries in the WHO African region. Only countries that had nationally representative data were included in our study, whereas all sub-national data such as provincial, city or state level data were excluded to allow direct comparisons of country-level data. Data were unavailable for several countries in the WHO African region, while a few countries (Zimbabwe, Cameroon, Central African Republic, and the Democratic

Republic of Congo) had only sub-national data (World Health Organization, 2010), and so were excluded from our analyses. Countries included in the study were: Namibia; Swaziland; South Africa; Lesotho; Burkina Faso; Ghana; Mauritania; Niger; Senegal; Togo; Guinea Bissau; Sierra Leone; Republic of the Congo; Malawi; Uganda; Eritrea; Seychelles; Mauritius; and Rwanda. Overall response rates ranged from 35.9% (Lesotho), to 100.0% (Rwanda). The sample sizes and other survey characteristics are shown in Table 1.

As all analyses were performed on de-identified publicly available data, this secondary analysis was deemed as exempt from the Harvard School of Public Health, Institutional Review Board, with protocol number 14-0346.

Definitions

Proximity of tobacco retail outlets to schools

The proximity of tobacco retail outlets to school was assessed with the following two questions: “Can cigarettes or tobacco products be purchased inside your school buildings?” and “Can cigarettes or tobacco products be bought within 100 m of your school buildings?” Categorical response options for both questions were “Yes” or “No”.

Lifetime tobacco use

Lifetime use of cigarettes; other smoked tobacco products (bidis, cigars, or pipes); and smokeless tobacco (SLT) was defined as a “Yes” response to the following respective questions: “Have you ever smoked cigarettes?”; “Have you ever smoked bidis, cigars, or pipes?”; and “Have you ever used chewing tobacco or snuff?” Lifetime use of any combustible tobacco product was defined as having ever smoked cigarettes, bidis, cigars, or pipes. Lifetime use of any tobacco product was defined as having ever used cigarettes, bidis, cigars, pipes, or SLT products.

Lifetime tobacco users were further categorized as: 1) exclusive users of combustible tobacco products; 2) combined users of combustible and SLT products (dual users); and 3) exclusive users of SLT products.

Table 1

Characteristics of the participants of the Global School Personnel Survey in 19 sub-Saharan African countries, 2006–2011 ($n = 12,201$).

Country	Survey characteristics				Tobacco use prevalence		
	Survey year	Number of school personnel	Class teachers %	Females %	Lifetime any tobacco use ^a % (95%CI)	Current cigarette smoking ^b	Current Smokeless tobacco Use ^c
Burkina Faso	2009	862	90.3	29.9	38.5 (25.0–52.0)	9.1 (6.2–11.9)	0.6 (0.0–1.5) ^e
Eritrea	2006	1446	91.7	36.4	15.9 (12.9–18.9)	7.2 (5.9–8.5)	3.6 (2.4–4.7)
Ghana	2009	391	85.1	32.5	23.7 (16.0–31.4)	0.9 (0.0–2.0) ^e	3.9 (1.0–6.9)
Guinea Bissau	2008	555	96.0	31.9	12.1 (n/a)	6.0 (n/a)	0.8 (n/a)
Lesotho	2008	103	90.3	67.0	20.4 (n/a)	3.0 (n/a)	2.0 (n/a)
Malawi	2009	276	89.2	40.1	22.1 (10.9–33.2)	3.5 (0.9–6.0)	1.0 (0.0–3.0) ^e
Mauritania	2009	505	83.0	54.3	52.2 (46.3–58.1)	7.9 (4.3–11.6)	2.0 (0.9–3.2)
Mauritius	2008	863	97.2	55.6	41.5 (35.6–47.4)	10.9 (7.3–14.5)	10.2 (7.2–13.3) ^d
Namibia	2008	746	89.5	55.6	30.2 (24.1–36.4)	9.7 (5.7–13.7)	0.8 (0.1–1.5) ^e
Niger	2009	624	92.7	77.3	58.2 (52.5–63.9)	9.4 (7.5–11.3)	0.3 (0.0–0.6) ^e
Republic of the Congo	2009	453	82.3	24.1	42.7 (33.6–51.7)	4.9 (1.6–8.3)	18.8 (10.2–27.3)
Rwanda	2008	200	91.8	21.1	22.0 (13.7–30.4)	1.8 (0.0–3.6) ^e	0.7 (0.0–1.6) ^e
Senegal	2007	619	93.9	19.6	47.4 (42.3–52.6)	15.5 (8.9–22.1)	1.2 (0.2–2.1) ^e
Seychelles	2007	516	75.8	54.4	50.3 (45.0–55.7)	10.1 (7.1–13.0)	0.6 (0.2–1.0)
Sierra Leone	2008	914	93.5	75.7	35.6 (30.0–41.2)	9.3 (6.6–12.0)	0.5 (0.0–1.0) ^e
South Africa	2011	1485	94.2	62.7	26.8 (22.5–31.0)	4.8 (2.9–6.7)	2.4 (0.2–4.6) ^e
Swaziland	2009	473	95.2	58.4	15.0 (10.8–19.1)	3.7 (1.9–5.6)	4.1 (2.2–6.0)
Togo	2007	488	92.3	8.2	28.4 (22.6–34.1)	4.6 (1.4–7.8)	1.8 (0.1–3.4) ^e
Uganda	2011	682	88.8	48.5	16.2 (10.7–21.8)	4.7 (1.8–7.5)	0.5 (0.0–0.9) ^e

Note: CI = confidence interval; n/a = not applicable (both upper and lower confidence limits identical to point estimate since a complete census of school personnel was taken, yielding final survey sampling weight = 1 for all respondents).

^a Lifetime any tobacco use was defined as having ever used cigarettes, bidis, cigars, pipes, or smokeless tobacco during a lifetime.

^b Current cigarette smokers were persons who reported smoking 100 cigarettes or more during their lifetime and smoked daily or occasionally at the time of the survey.

^c Current smokeless tobacco users were persons who reported using chewing tobacco or snuff daily or occasionally at the time of the survey.

^d Smokeless tobacco use was not assessed separately. Estimate includes current use of smokeless tobacco, as well as cigars, cigarillos and pipes.

^e Estimates with relative standard error $\geq 40\%$.

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