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SOCIO-DEMOGRAPHIC FACTORS OF PUPILS WHO USE TOBACCO IN RANDOMLY-SELECTED PRIMARY SCHOOLS IN NAIROBI PROVINCE, KENYA
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ABSTRACT

Objective: To report the prevalence and socio-economic correlates of tobacco use among primary school pupils in Nairobi, Kenya.

Design: Cross-sectional school-based survey.

Setting: Ten primary schools in Nairobi, Kenya.

Subjects: A questionnaire was administered to 1198 primary school pupils aged 12 to 17 years and 1130 (response rate 94.3%) students responded under supervision in the classroom.

Results: A total of 31% (95% CI 27.5-34.5) had experimented with smoking, 9% (95% CI 7.1-11.5) with smokeless tobacco and 55% (95% CI 50.7-59.6) reported having friends who smoked. The rates of lifetime smoking were statistically significantly higher in urban than in suburban students (33% versus 25%, $p < 0.05$), whereas a higher proportion of suburban residents reported lifetime use of smokeless tobacco (8% versus 12%, $p < 0.05$). Among urban as well as suburban students, 15 years and above were significantly more likely than their counterparts aged 14 years and below to report lifetime smoking, lifetime use of smokeless tobacco, fathers' use of tobacco, and friend's tobacco use. The adjusted odds ratios, OR, and 95% confidence intervals, 95% CI, for students ever smoking were 2.2 (95% CI 1.3-1.8), 2.4 (95% CI 1.6-3.7), 1.8 (95% CI 1.1-3.2 and 2.6 (95% CI 1.7-4.1) for place of residence, gender, age and friend's use of tobacco.

Conclusion: Generally, the proportions of primary pupils using different forms of tobacco were low in Nairobi province, although the proportion of pupils who had smoked at least once in their lifetime amounted to 31%. Since primary school pupils live in an environment that makes them susceptible to smoking, preventive programmes should be introduced to avoid the development of nicotine addiction and regular smoking.

INTRODUCTION

It is becoming increasingly important to study health risk behaviour because a substantial proportion of the mortality from leading causes of death is attributed to behaviour patterns that are modifiable (1). Tobacco use, and especially smoking, is one such risk behaviour and is one of the main preventable causes of death in the world. Studies from both developed and developing parts of the world show that most adult smokers start this habit before they reach the age of 18 years and for much the same reasons (2,3). Early onset of smoking is undesirable from several perspectives. Any cigarette use places the individual at higher risk for subsequent use; and persons who start smoking at an early age are more likely to develop nicotine addiction than those who start later (4). Early smokers are less likely to quit, and are at higher risk of smoking attributable mortality (4). In addition to its well-documented impact on health, cigarette smoking might also represent a gateway substance for young persons and lead to further experimentation with illicit drugs (5).

Smoking among adolescents has been widely studied in industrialised countries (6,7). These studies reveal evidence of an increasing prevalence of smoking among adolescent females, which has even passed that of males in the same age group. However, some parts of Europe (6,8) and Israel (9) have reported that male students still smoke more than females. In spite of increasing smoking related research in recent decades, there are relatively few studies of the smoking habits of adolescents aged 12-13 years and younger. This is notable since many, in this age group, progress through the initial stage of the smoking onset process and moreover, few surveys of the smoking habits of young people focus specifically on high-risk populations; and there is even substantial evidence from industrialised countries of class-based differences in the smoking prevalence of adults (10).

Evidence suggests that one in every five children between 13 and 15 years of age in less industrialised and transitional countries smoke (3). In sub-Saharan Africa, tobacco related research has concentrated on secondary schools and institutions of higher education (11). From

Senegal's capital city, Dakar, a study done among 416 suburban youth aged 12 to 16 years reported a 14% current use of tobacco (12). From South Africa, the Global Youth Tobacco Survey (GYTS) studied 7,077 students 13-15 years old in 1999. Current smoking was reported at 17.6% and lifetime smoking at 44.2% (3). The same paper reported that current smoking in rural Zimbabwe (1,514 students) was 10% and lifetime smoking 20.4%; while in urban Zimbabwe (1,080 students) it was 10.7% and 26.5% respectively.

In the less industrialised parts of the world, some studies have shown that an adverse social circumstance following rapid urbanisation is accompanied by an increase in the prevalence of cigarette smoking among youth (13). In Zimbabwe, research carried out among 2,581 (1990) and 3,061 (1994) students of different socio-economic background, revealed evidence of an increase in ever smoking from 4.6% and 18% to 12% and 27% among girls and boys respectively from 1990 to 1994. This increase was attributed to increasing socio-economic status and accompanied changes in lifestyle (14). Figures from rural areas in Zimbabwe show a similar pattern but were marginally lower than the urban ones being 8% and 27% for the females and males, respectively (15).

In Kenya, anecdotal reports and a few small-scale surveys show that tobacco use may be increasing in the population and especially among youth. Due to differences in age groups studied and reported outcome variables; it is difficult to draw conclusions on possible time trends. In 1982, a study among 2,512 students, aged 12-23 years in five rural districts of Kenya reported that 20.6% of them were regular users of tobacco (16). A survey among secondary school students (14-20 years) reported that 16.1% of the 896 students investigated smoked more than three times every week (17). A recent study conducted throughout Kenya among 2,181 secondary school children reported that 48.2% of all students and 20% of the females smoked tobacco (18). Although smoking appears common in secondary schools in Kenya, less is known about the age at which tobacco use starts. Few if any surveys have focused on early tobacco use among primary school pupils resident in multiethnic and socio-economically diverse Kenyan communities. The purpose of this paper was therefore to estimate the lifetime prevalence and socio-economic correlates of tobacco use among primary school pupils in the Nairobi Province of Kenya. Increased understanding of the patterns and correlates of smoking and use of smokeless tobacco might contribute to the development of more effective prevention programmes targeted to high-risk adolescents.

MATERIALS AND METHODS

Setting: This study was conducted in Nairobi Province, which is also Kenya's capital city. In 2001 the province had 186 government-run, 41 private and 25 informal schools offering primary education. Eighteen of the private schools offered foreign-based curricula. Their class systems differed from the

official Kenyan model. The informal schools catered for mainly former street children and those from poor families and their curricula too differed from the official one in primary schools. They also had much older students.

Study design: Schools were sampled from both the government owned and private primary schools in Nairobi Province. Forty-three primary schools were excluded from the sampling frame because they had foreign curricula or were informal schools and thus had a distinctly different age bracket of final year students. The remaining 209 primary schools were included in the sampling frame. A total of 10 schools were sampled from 209 primary schools eligible for this study.

Schools in Nairobi Province are divided into eight divisions, and each division has two zones. A multistage cluster sampling design was used to select the schools. Firstly, five divisions were randomly drawn from the eight divisions in the province, giving a total of 10 zones. Each of the 10 zones had 15-18 primary schools and one primary school was randomly selected from each zone. This gave a total of 10 schools out of the 209 primary schools. All pupils attending the final year (Standard Eight) in the selected schools were invited to participate in the study. Predominantly, Nairobi Province is urban with rural provinces surrounding it. The schools that were located in the periphery of Nairobi Province, bordering the rural provinces, were classified as suburban in the analysis.

A total of 1198 final year students were enlisted to participate, of whom 1130 completed the questionnaire giving an overall response rate of 94.3%. Response rates were also high in the individual schools, ranging from 90.7% to 97.5%. The non-response was due to absence from school or class on the day and time of data collection. Absentees were not re-contacted. Though the students were free to decline participation even after consent from the school authorities, none declined. The age of the participants ranged from 12 to 17 years, with a mean of 14.1 years and a standard deviation of 0.9 years (Table 1). Ninety three percent were 13 to 15 years old. The boys were generally older than the girls with mean age of 14.2 and 13.9 years respectively ($p=0.001$). The gender distribution in both suburban and urban areas was similar but the suburban students were older than their urban counterparts with mean age of 14.5 and 13.9 years respectively ($p=0.001$). A larger proportion of urban than suburban participants had parents with higher education ($p<0.001$). Finally most of the Protestant participants were raised in urban areas whereas most participants having Muslim, Catholic, Hindu and other religious affiliations, were raised in suburban areas ($p<0.001$).

Data collection: Written informed consent to conduct the study was granted by the Kenyan research and education authorities in March 2001. Data collection took place between March and August 2001. Verbal consent was obtained from both the school authorities and the participating students. The education authorities advised that since the questions being asked were general and the answers to them anonymous, parental consent was not necessary. The principal investigator was assured that this was acceptable ethical practice before the students were given the questionnaire to complete. The questionnaire was constructed and completed in English, which is the language of instruction in all, formal academic institutions in Kenya. It collected data on socio-demographic characteristics, smoking, use of smokeless tobacco, oral health related behaviours (i.e. eating habits and tooth brushing). The pupils completed the questionnaire in their respective classrooms under supervision of the principal investigator and

trained research assistants who were recently graduated dentists undergoing internship. The exercise took place in the absence of the teachers to ensure confidentiality and reduce response bias. The allotted time for completion of the questionnaire was one hour and the pupils were free to ask clarification questions at any time during the exercise.

The survey instrument consisted of closed and open-ended questions. It was peer-reviewed for content validity and piloted in two randomly selected primary schools in Nairobi Province including a total of 219 students (on average 28 students per class). The response rate was 94.9% and the results were used to make minor changes in the original questionnaire.

Description of variables: Data on socio-demographic characteristics included the subject's date of birth, gender, place of residence where raised, religious affiliation and educational status of the father and mother. Parental education was measured by the following questions, "Up to what level did your father/mother go to school?" The response alternatives were "did not go to school" (1); "adult education" (2); "primary education" (3); "secondary education" (4); "college" (5); "university" (6) and "I don't know" (7). For analysis, each question was dichotomised yielding 0="secondary and below (lower)" and 1="higher education (higher)". A combined variable for parental education was constructed from the two dichotomised variables on mother's and father's education yielding 0="both parents, lower education", 1="only mother had higher education", 2="only father had higher education" and 3="both parents had higher education".

Pupils lifetime prevalence of smoking was measured by the question, "Have you ever tried to smoke cigarettes even once?" Current tobacco use was assessed by the question, "Have you smoked, sniffed, or chewed any tobacco product in the last 30 days?" Lifetime smokeless tobacco use was assessed by the question, "Have you ever tried to use any other tobacco product?" These three questions had the response categories "yes" (1) and "no" (0). Current smoking was determined by the question, "Which of these statements best describes you?" Six possible options were used in terms of, "I have never smoked, chewed or sniffed any tobacco product"; "I have only tried to smoke, chew or sniff tobacco once or twice"; "I don't smoke cigarettes but I use other forms of tobacco products"; "I smoke cigarettes but not every day"; "I usually smoke between one and five cigarettes every day" and "I usually smoke more than five cigarettes every day". A dummy variable was constructed yielding "I do not smoke" (0), which combined the first three options, and "current smokers" (1), which was made up of the last three options. Father's use of any tobacco product was assessed by the question, "Does your father chew, smoke or sniff tobacco?" Affirmative answers were coded as "1" and negative ones as "0". Friends' status regarding tobacco use was assessed using the following question, "How many of your friends do you believe smoke, chew or sniff tobacco?" There were six options including "none", "a few", "many", "all", "I don't know" and "I don't have any friends". These were dichotomised to (0) "don't use tobacco" and (1) "use tobacco". Children's onset of smoking was assessed by the question, "How old were you when you first started smoking?" Response categories ranged from (1) "I do not smoke" to (5) "15 years and above". Finally, the question, "During the last one month, how many times have you been offered a cigarette?" The six choices were "none", "once", "twice", "three times", "four times" and "more than four times". A dummy variable was constructed yielding the categories (0)"never" and (1) "at least once".

Statistical analysis: Analyses were performed using the Statistical Package for Social Sciences (SPSS) version 10.0 (SPSS Inc. Chicago, IL). Frequency distribution and 95% confidence intervals (CI) were computed for all variables on tobacco use. Cross-tabulation was used to estimate the proportions of lifetime smoking, lifetime use of smokeless tobacco, father's tobacco use and friend's tobacco use according to socio-demographic characteristics; and Pearson's X² test was used to assess the statistical significance between groups. Logistic regression coefficients were used to calculate unadjusted (univariate) and adjusted (multivariate) odds ratios (OR) for the effect of socio-demographic characteristics on lifetime smoking. Ninety five percent confidence interval are given for the odds ratios and indicate a statistically significant relationships if both values are greater or less than 1. From the Pearson's X² tests, a p value ≤ 0.05 was considered statistically significant.

RESULTS

Demographic Characteristics: As shown in Table 1, the proportions of boys (52%) and girls (48%) were equal in urban and suburban areas. Eighty percent of the students in the urban areas were 14 years or younger, compared with 57% in the suburban areas (p<0.001). There were more Protestant students (61%) resident in urban areas, compared to those in the suburban areas (36%) (p<0.001). Seventy two percent of fathers in the urban areas and 47% of the suburban ones (p<0.001) were described as having higher education. The corresponding figures regarding mother's education were 63% and 38% (p<0.001).

Table 1

Absolute (n) and relative (%) distribution of primary school children according to demographic characteristics

	Urban		Suburban	
	No.	%	No.	%
Gender				
Boys	433	52	147	52
Girls	406	48	136	48
Age (years)				
14 and younger	648	80	151	57
15 and older	161	20**	113	43
Religion				
Protestant	489	61	90	36
Other	310	39**	161	64
Father's education				
Higher	468	72	100	47
Lower	179	28**	112	53
Mother's education				
Higher	439	63	83	38
Lower	260	37**	137	62

** P<0. 001

Experience of tobacco use and socio-economic correlates: Table 2 shows the prevalence rates and 95% CI with respect to lifetime smoking, life time smokeless tobacco, current smoking, current tobacco use, father's tobacco use, friends' tobacco use and having been offered cigarettes by friends. A total of 31% (95% CI: 27.6-34.5) confirmed lifetime smoking whereas 6% (95% CI: 4.3-8.1) were current smokers. A total of 18% (95% CI: 15.0-20.9) of the children surveyed believed their fathers used tobacco. The corresponding figures regarding friends' use were 11% (95% CI: 8.9-13.7). A total of 13% of the participating school children reported to have tasted tobacco for the first time before the age of 10 years, whereas 10%, 3% and 1.2% reported to have started at the ages of 11-12 years, 13-14 years and 15 years, respectively.

Table 2

Percentage estimates of reported tobacco use and their 95% Confidence Intervals (CI)

Variable (n= base for calculation)	Estimate %	95% CI
Lifetime smoking (n = 1115)	31	27.6-34.5
Lifetime smokeless-tobacco use (n = 1124)	9	7.1-11.5
Current smoking (n = 1066)	6	4.3-8.1
Current tobacco use (n = 1122)	7	5.5-9.5
Father uses tobacco (n = 1081)	18	15-20.9
Friends use tobacco (n = 801)	55	50.7-59.6
Offered cigarettes by friends (n = 1124)	11	8.9-13.7

Table 3 shows the differences in lifetime smoking, lifetime use of smokeless tobacco, father's tobacco use and friends' tobacco use between urban and suburban residents, considering the respondents' age. While the

rates of lifetime smoking were statistically significantly higher in urban than in suburban students (33% versus 25%, $p < 0.05$) a higher proportion of suburban residents as compared to the urban ones, reported lifetime use of smokeless tobacco (8% versus 12%, $p < 0.05$). No significant differences were found with respect to reports on father and friends' tobacco use. Relatively high proportions of urban and suburban residents (55%) reported friend's use of tobacco. Among both urban and suburban residents, a higher proportion of older than younger students reported lifetime smoking, lifetime use of smokeless tobacco, father's and friends' tobacco use. Prior to inspection of any higher order interactions for statistical significance, stratified analysis indicates that the difference in smoking status between ages was greater in urban than in suburban areas.

Table 4 shows the difference in prevalence of reported smoking status between urban and suburban students, considering parental education. In the suburban areas, students having both parents with lower education were significantly more likely to report lifetime smoking (27.5% versus 23.0%, $p < 0.05$); and father's use of tobacco (24% versus 8%, $p < 0.05$) than their counterparts having both parents with higher education. A similar trend was seen with urban students for father's use of tobacco ($p = 0.032$) and friends' use of tobacco ($p = 0.002$).

Table 5 shows the crude and adjusted odds ratios for respondents lifetime smoking according to socio-economic correlates; and perceived parents' and friends' smoking status. The statistically significant predictors in the multivariate analysis were place of residence (OR=2.2, 95% CI 1.3-3.8), gender (OR=2.4, 95% CI: 1.6-3.7), age (OR= 1.8, 95% CI: 1.1-3.2) and friends' use of tobacco (OR=2.6, 95% CI: 1.7-4.1). Therefore, the risk (OR) of lifetime smoking was 2.2 for urban students when

Table 3

Percentage distribution of students according to own status of smoking and tobacco-use and the status of parents and peers as reported by primary school children by place of residence and age

	All (n) %	Urban (n=844)		Suburban (n=286)		
		≤14Yrs (n) %	≥15Yrs (n) %	All (n) %	≤14Yrs (n) %	≥15Yrs (n) %
Lifetime smoking	(271) 33	(194) 30	(67)** 42	(70) 25	(31) 21	(33) 30
Lifetime smokeless tobacco use	(67) 8	(44) 7	(18)* 11	(34)* 12	(14) 9	(16) 14
Father uses	(143) 18	(102) 16	(34)* 22	(49) 19	(22) 15	(18) 18
Friends use tobacco	(318) 55	(230) 52	(77)* 66	(120) 55	(54) 49	(54)* 58

* $p < 0.05$

** $P < 0.001$

Table 4

Percentage distribution of students according to own status of smoking and tobacco-use and the status of parents and peers as reported by primary school children by place of residence and parental education.

	Urban (n = 844)			Suburban (n=286)		
	All No. %	Both Low No. %	Both High No. %	All No. %	Both Low No. %	Both High No. %
Lifetime smoking	271 (33)	40 (29)	115 (32)	70* (25)	25 (27.5)	14* (23)
Lifetime smokeless-tobacco use	67 (8)	14 (10)	27 (8)	34* (12)	31 (14)	7 (11)
Father uses tobacco	143 (18)	30 (23)	46* (13)	49 (19)	21 (24)	5* (8)
Friends use tobacco	318 (55)	64 (68)	118* (48)	120 (55)	43 (59)	19 (43)

*p<0.05

Table 5

Logistic regression: Unadjusted and adjusted Odds Ratio (OR) and 95% confidence interval (CI) for respondents lifetime prevalence of smoking (0=never, 1=tried even once) according to socio-demographic characteristics, perceived parents' and friends' smoking status (n=522)

Independent Correlates	Crude		Adjusted	
	OR	95%CI	OR	95%CI
Urban vs. Suburban	1.4	1.0-1.9	2.2	1.3-3.8
Male vs. female	3.3	2.4-4.4	2.4	1.6-3.7
15+ yrs vs. 14 and below	1.2	1.2-2.4	1.8	1.1-3.2
Father's tobacco use VS. no use	1.9	1.3-2.7	1.4	0.8-2.3
Friends' tobacco use vs. none use	3.3	2.3-4.8	2.6	1.7-4.1
Mother's education high vs. both low	0.8	0.3-1.7	0.5	0.2-1.9
Father's education high vs. both low	0.6	0.4-1.1	0.5	0.2-1.2
Parents education both high vs. both low	1.1	0.8-1.6	1.4	0.7-2.3

compared to suburban ones; 2.4 for males compared to females; 1.8 for those 15 years and older when contrasted to 14 years and younger; and 2.6 for those with friends using tobacco if compared to those whose friends do not use tobacco.

Table 6 shows the adjusted odds ratios for lifetime smoking according to gender, age and friend's tobacco use among urban and suburban residents, separately. The association between lifetime smoking and friends'

tobacco use appeared to be stronger for suburban as compared to the urban residents, but the difference was not statistically significant. The risk of lifetime smoking if one had smoking friends was higher (OR= 5.8, 95% CI 3.3 -10.3) for students of Muslim, Catholic, Hindu and other religious affiliations, when compared to Protestants (OR=2.5, 95% CI: 1.5-3.8). Religious affiliation seems, therefore, to moderate the relationship between lifetime smoking and friends' smoking in this sample.

Table 6

Logistic regression. Unadjusted and adjusted Odds Ratio (OR) and 95% confidence interval (CI) for respondents lifetime prevalence of smoking (0=never, 1=tried even once) according to socio-demographic characteristics, and friends' smoking status. Urban (n=552) and suburban (n=198)

	Urban		Suburban	
	OR	95% CI	OR	95% CI
Independent Correlates				
Male vs. female	2.8	1.9-4.1	2.6	1.3-5.4
15+ yrs vs. 14 and below	1.4	0.9-2.2	1.4	0.7-2.8
Friends tobacco use vs. none use	2.8	1.9-4.2	5.1	2.3-11.5

DISCUSSION

The results of this study provide information about tobacco use among primary school pupils of different socio-demographic and cultural origin in Kenya. It is a baseline study, which might offer the opportunity for future trend studies and the identification of some predictors of tobacco use among children of this age.

A striking finding from this study is the relatively high proportion of primary school pupils, who confirmed having smoked for the first time at an age below 10 years (13%), and who had smoked at least once in their lifetime (31%). Whereas the results indicate that about one third of primary school pupils in Nairobi had experimented with smoking, only 9% had tried smokeless tobacco and about half of the respondents had friends who used tobacco. The results corroborate findings among adolescents in other parts of sub-Saharan Africa (3, 12) but are much lower than for similar age groups in industrialised countries (2, 6). They are also much lower than findings from older population samples in Kenya, which have ranged from 52% to 65% for lifetime smoking (20, 21). Cultural constraints appear to delay experimentation in Kenyan communities, but this is changing due to the fast pace of industrial development and urbanisation. These results reveal that the prevalence of lifetime smoking and lifetime use of smokeless tobacco increases with age so that 30.2% of respondents aged 14 years and younger; and 42% of those aged 15 years and older; and living in urban areas reported lifetime smoking. The corresponding figures among suburban residents were 21% and 30% respectively. Altogether, the present results indicate that the primary school pupils investigated are at risk of becoming regular users of tobacco, as they grow older. This may partly explain the high prevalence of current smoking of 48.2% smoking reported in secondary schools in Kenya (19). These results appear to imply that smoking intervention programmes are warranted as early as 10 years of age and probably even earlier.

When compared to their suburban counterparts, urban pupils were more likely to have experience with

experimental smoking. The current analysis did not address the reasons for this association between risk behaviour and place of residence. However, considering the adverse social circumstances following rapid urbanisation, the association between lifetime smoking and urban residence might be ascribed to a combination (if factors such as diminishing influence of extended family, increasing exposure to advertising, increasing depression associated with acute and chronic adversity and consequent reduced social skills to withstand peer pressure. On the other hand, the lifetime prevalence of smokeless tobacco use was highest among suburban residents. This is at odds with previous findings in the region (16). It may be due to the close proximity of these suburban areas to urban Nairobi and thus close contact of the suburban dwellers with urban lifestyles. As expected, boys had more experience with tobacco use than girls and this confirms that cultural and social sanctions still protect girls more than boys in Kenya. This is in contrast to findings from the west (2, 6), but similar to findings from Japan (21) and other less industrialised countries (3, 12). It also confirms a similar trend as reported by studies in older populations in Kenya (18, 19).

In the present study, indicators of family socio-economic status like parents' educational level was not associated with children's lifetime smoking status in multivariate analyses. Results from the multivariate logistic regression analysis (Table 5) provide evidence that even in this sample of young school children, peer influences are among the strongest correlates of lifetime smoking prevalence. Children who report that their friends use tobacco products are more likely to have tried smoking themselves. It has been suggested that peer and family influences on adolescents' smoking habits might vary by race and ethnicity. In the present study, peers' tobacco use seemed to be a more important predictor of lifetime smoking among Catholics, Hindus, Muslims and other groups as compared to the Protestant group. Collectively the data highlight the need for comprehensive smoking prevention programmes targeting the social and environmental influences of both the family and the community. Due to constraint of time and to the young age of the study subjects, the number of potential correlates of smoking and use of smokeless tobacco included in this study were restricted. Further predictors for smoking and tobacco use among primary school children need to be identified in future Kenyan studies.

In interpreting the results, some limitations need to be considered. The sample was predominantly urban with suburban being only 25.3% of the total, and all participants were students in primary school. It is thus possible that out-of-school adolescents of this age, and their counterparts in suburban areas proper may have different smoking and tobacco use patterns than those reported in this paper. However, the 10 schools selected for this study represent about 5% of the total number of primary schools in Nairobi province. They also represent a random sample of schools from this region. Hence, estimates of the smoking and

tobacco use prevalence might be generalisable to adolescents attending the final year in Nairobi province primary schools. These results therefore constitute an instructive example of adolescent smoking in Nairobi Province, an area currently undergoing sustained western influence. Future studies of adolescents' tobacco use in other areas of Kenya, predominantly suburban ones, could provide even more information on tobacco use among adolescents.

Since the results are based on students' self-reports, there is a possibility that students' reluctance to give socially undesirable responses might have resulted in under reporting of tobacco use habits. Caution should also be exercised in interpreting the data on age when cigarettes or other tobacco products were first used because young people may not have reached the developmental stage that permits accurate recall. Self-reporting has nevertheless been found to be a reliable method of investigating tobacco use and smoking among children and adolescents (20).

In conclusion, the proportion of young people in this age group having used tobacco products is higher than earlier reports from sub-Saharan Africa. Though current cigarette smoking is relatively low, the findings suggest that the uptake of this habit occurs at an early age and increases with increasing age and that it is not restricted to the urban areas as previously suggested. Friends' use of tobacco was independently and strongly related to ever smoking among the students, particularly in the suburban areas, suggesting that they live in an environment that makes them vulnerable to smoking.

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