

Knowledge Of and Attitudes toward Cigarette Smoking Among Male In-School Adolescents in Ibadan South-East Local Government Area, Oyo State, Nigeria

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ABSTRACT

Background: Smoking usually begins in adolescence, and what young people know and believe about cigarettes influences whether they start. Local evidence from Ibadan South-East Local Government Area (LGA), Oyo State, Nigeria, is scarce. Objectives: To determine the level of knowledge about the harmful effects of cigarette smoking and its association with socio-demographic characteristics, and to assess attitudes toward cigarette smoking among male in-school adolescents. Methods: We conducted a descriptive cross-sectional survey of 400 male students aged 10–19 years from 10 secondary schools, selected through a three-stage sampling procedure. Data were collected with an interviewer-supported structured questionnaire and analysed in SPSS version 23 using frequencies, percentages, and Pearson's chi-square test (significance at $p < 0.05$). Results: The mean age was 16.27 ± 1.74 years. Most respondents knew that smoking causes nicotine addiction (92.5%), premature aging (91.0%), lung cancer (90.5%), respiratory problems (88.5%), heart disease (87.3%), and stroke (79.0%). Only 34.0% linked smoking to tooth decay, 50.8% believed that stopping brings no benefit to chronic smokers, and 40.8% considered occasional smoking harmless. Overall, 60.3% had good knowledge and 58.5% had a positive attitude toward smoking prevention. Although 87.5% would refuse a cigarette offered by friends, 61.0% saw smoking as a personal choice that harms no one else. Support was high for banning smoking in public places (89.8%) and in schools (87.0%) and for higher cigarette taxes (81.3%). Knowledge was significantly associated with class ($\chi^2 = 15.648$, $p = 0.001$), with only 24.0% of SSS 3 students having good knowledge, but not with age, religion, or family type. Conclusions: Male in-school adolescents in Ibadan South-East know the major harms of smoking but hold persistent misconceptions about cessation, occasional smoking, oral health and second-hand smoke. School-based tobacco education should target these specific gaps, with particular attention to final-year students.

KEYWORDS

Cigarette smoking, adolescents, knowledge, attitude, school health, Nigeria

I. INTRODUCTION

A. Background and magnitude of the problem

Tobacco is the largest single preventable cause of death in the world. The World Health Organization (WHO) links it to more than 8 million deaths every year, over 7 million of them

among people who use tobacco directly. Cigarettes are the most common form of use. A burning cigarette releases smoke containing more than 7,000 chemicals, at least 70 of which cause cancer. Heart disease, stroke, chronic obstructive pulmonary disease, and cancers of the lung, mouth, larynx, and pancreas are the best-documented consequences, and few organ systems escape harm. The habit is almost always acquired young. Most tobacco use starts in adolescence, and an early start brings earlier dependence and more years of exposure. WHO estimates that 43.8 million adolescents aged 13 to 15 years (12%) worldwide use some form of tobacco, and that prevalence in this age group averages 11% to 13% in low- and middle-income countries (World Health Organization, 2019). For a boy of 14 or 15, then, the question is rarely whether tobacco is within reach but whether he understands what it will cost him.

The global picture is uneven. Smoking among adults has fallen in much of Europe, North America and the Western Pacific, where tobacco control has been pursued for decades, while rates appear to be rising in parts of the Middle East and Africa. A Demographic and Health Survey analysis of 30 sub-Saharan African countries found smoking among men as high as 37.7% in Sierra Leone. Africa's young and growing populations, limited regulation, and the industry's aggressive marketing make the continent an attractive market for tobacco companies (Lee et al., 2012), and transnational firms, including British American Tobacco Nigeria and Japan Tobacco International, operate in Nigeria.

The numbers for Nigeria are sobering. Tobacco-related disease kills more than 16,100 Nigerians each year, and about 748,800 adults and more than 25,000 children aged 10 to 14 years use tobacco every day. A systematic review and meta-analysis of 64 studies ($n = 54,755$) put the pooled prevalence of current smoking at 10.4% (95% CI 9.0–11.7) and of ever smoking at 17.7% (95% CI 15.2–20.2), with a median age at initiation of 16.8 years. Behind those averages lies a steep geographic gradient: current smoking ranged from 5.4% in the North-West to 32.1% in the North-East, and urban and rural residents smoked at similar rates (10.7% and 9.1%). A national average, however carefully pooled, says little about a particular school in a particular city. Nigeria has responded with the National Tobacco Control Act of 2015 (Federal Republic of Nigeria, 2015); what the law has done for the knowledge and beliefs of adolescents themselves is much less clear.

National tracking of adolescent tobacco use has been thin. The Global Youth Tobacco Survey was run in Nigeria only twice, in 2000 and 2008, in one state and four major cities that included Ibadan. A school-based survey of students aged 11 to 18 years in Ibadan in 2021 found that 1.4% currently smoked cigarettes, 1.1% used smokeless tobacco, and 2.0% used any tobacco product. An earlier study of public secondary schools in Ibadan North reported a smoking prevalence of 32.1%, and almost all of the students who had ever smoked (97.3%) were current smokers. A gap that wide in a single city probably reflects differences in sampling frames, case definitions, and school type's as much as real differences in behaviour, and it leaves planners without a dependable local figure. Knowledge and attitudes are where most school-based prevention work begins, because they are what a program can realistically change. Adolescents who understand the hazards of smoking and who hold firm attitudes against it are better equipped to resist peer pressure. Misconceptions do the opposite. The belief that occasional smoking is safe, for example, makes a first cigarette look like a small risk. Prevention messages can only be aimed at the right gaps if those gaps have first been measured among the boys the messages are meant to reach. Ibadan is the

third most populous city in Nigeria, and Ibadan South-East is one of its urban local government areas. Boys there grow up in a densely settled setting where cigarettes are sold openly by petty traders at motor parks, bus stops, and street corners. The one local study we identified looked at passive smoking and found that 82.2% of in-school adolescents had poor knowledge of it. How much boys in this area know about the harms of active smoking, and how they feel about it, has not been described.

Adolescence is a sensitive period for nicotine. Dependence can develop within a short time of first use, and adolescents who start early are more likely to become established smokers. Peer groups, family members, and advertising shape whether a first cigarette is tried, and the pattern of use set in the teenage years tends to persist. Schools are therefore a natural place to intervene, since they reach large numbers of adolescents at the age when habits form. Most school-based programs work by changing what students know and how they feel about smoking, and surveys of knowledge, attitude and practice (KAP) are the standard way of finding out where to begin. KAP studies have been used among adolescents and young adults in Nigeria and abroad to identify the gaps that education should address. Their value lies in the details: a program that repeats what students already know wastes time, while one that corrects a widespread myth can make a measurable difference. In Ibadan South-East, however, those details are missing.

The environment in which Nigerian adolescents grow up adds to the difficulty. Tobacco advertising has been shown to influence smoking behaviour among adolescents in Nigeria, and social media now carries tobacco-related content to teenagers directly. The National Tobacco Control Act sets out restrictions on sale, advertising, and smoking in public places, but a law is only as effective as the understanding that supports it. Adolescents who do not see smoking as harmful to others, or who believe that quitting is pointless, are unlikely to take enforcement seriously or to support their peers in avoiding tobacco.

Knowledge gaps of this kind have been documented in Nigerian adolescents, one topic at a time. Studies report poor awareness of the oral health effects of tobacco, of the dangers of second-hand smoke and of the benefits of cessation, as well as the belief that social or occasional smoking carries little risk. What is missing is an assessment that brings these topics together in the same students, alongside their attitudes. Without it, health educators in Ibadan South-East cannot tell whether the main weakness is a general lack of awareness or a handful of specific misconceptions, and the two call for very different programs. Statement of the problem. Cigarettes are easy to buy in Ibadan South-East, yet there is little published evidence on what male in-school adolescents in the area know about the harms of smoking or how they feel about it, so school and community programs are being planned without local data.

B. Review of Literature

Knowledge. Studies of adolescents' knowledge about smoking usually find good awareness of the headline diseases and a thinner grasp of everything else. In New Zealand, 78% of adolescents recognized that smoking can cause serious illnesses such as lung cancer and heart disease. Among medical students in Bahawalpur, Pakistan, 99% recognized that smoking is harmful and 94% that it is addictive, although students of medicine are hardly

typical adolescents and their figures are best read as an upper bound. Nigerian studies show the same pattern with more gaps. Most out-of-school adolescents in Sokoto had good knowledge of the hazards, and 72.8% of public secondary school students in Ibadan North had good knowledge, with 67.9% correctly naming nicotine as a constituent of cigarettes. Other work reports that many Nigerian adolescents do not understand the long-term effects that they believe occasional smoking is safe or that smoking relieves stress, and that they know little about its oral health effects. In Ibadan South-East itself, 82.2% of in-school adolescents had poor knowledge of passive smoking.

Attitudes. Attitudes toward smoking are more divided. Qualitative work in Nigeria describes adolescents who associate smoking with stigma and poor health alongside others who see it as a sign of maturity or rebellion. Elsewhere, young people have linked smoking with maturity and independence, and 35% of adolescents in one survey believed that it improves social interaction. Some regard it as a way of coping with stress and anxiety. Against this, anti-tobacco campaigns and school education appear to improve attitudes, especially when messages are tailored to the experiences of young people, and adolescents who understand the harms tend to back restrictions on tobacco more strongly.

Gap. These studies differ in age range, instruments, and the way “good” knowledge or a “positive” attitude is defined, which makes direct comparison difficult. What is still missing is a local picture that measures knowledge and attitude together, with the socio-demographic profile of the respondents, in a single sample of boys in Ibadan South-East.

Objectives. This study set out

- To determine the level of knowledge about the harmful effects of cigarette smoking and its association with socio-demographic characteristics, and
- To assess attitudes toward cigarette smoking among male in-school adolescents in Ibadan South-East Local Government Area, Oyo State, Nigeria.

II. METHODS

A. Study design

We carried out a descriptive, school-based, cross-sectional survey in Ibadan South-East LGA, Oyo State, south-western Nigeria. This paper is one of two reports from the same survey; the companion paper addresses smoking practice and the relationship between knowledge, attitude, and practice. The LGA has its administrative headquarters at Mapo and is one of the smallest in the state, covering roughly 17 km², with 266,457 residents at the 2006 population census. It has 38 secondary schools, 14 public and 24 private.

B. Study population

The study population was male students aged 10 to 19 years in Junior Secondary School 3 (JSS 3) and Senior Secondary School 1 to 3 (SSS 1–3) in the selected schools. Students were excluded if they were absent on the day of data collection, declined to take part, fell outside the 10–19-year age range, or did not have permission from a parent or guardian.

C. Sample size and sampling procedure

The minimum sample size was calculated with the single-proportion formula, $n = Z^2pq/d^2$, at the 95% confidence level ($Z = 1.96$), with a 5% margin of error ($d = 0.05$) and an expected smoking prevalence of 32.1% taken from an earlier study in Ibadan (Adijat et al., 2020). This gave 335 students. Adding 10% for non-response raised the figure to 368, and 400 students were enrolled.

Sampling had three stages. First, 10 of the 38 secondary schools were chosen by simple random sampling, in a private-to-public ratio of 6:4 to approximate the distribution of schools in the LGA. Second, the four eligible classes (JSS 3 and SSS 1–3) were selected in each school by balloting. Third, eligible students who gave consent were chosen within the selected classes by systematic random sampling, taking one in every five students, until the target sample was reached.

D. Instrument and measures

Data were collected with a structured questionnaire developed from the published literature on adolescent smoking. It had four sections: socio-demographic characteristics (age, class, religion and family type); ten yes/no items on the harmful effects of cigarette smoking; ten agree/disagree items on attitude toward smoking; and nine items on smoking practice, which are reported in the companion paper. Face and content validity were established through a review of the literature and a critique by the project supervisor. The questionnaire was pretested on 10% of the sample size (about 40 students) drawn from a similar population outside the study area, and items were adjusted in light of the results.

Each correct knowledge response scored 1 and each incorrect response 0. Two items were worded so that “No” was the correct answer (Table 2). Total knowledge scores were classified as good or poor. Attitude items were scored in the same way, and respondents were classified as having a positive or negative attitude toward smoking prevention.

E. Data collection

Two research assistants who speak both English and Yoruba were trained for three days on the aims of the study, the questionnaire, and ethical conduct, and then administered the questionnaire in the schools. Data were collected between January 2026 and March 2026.

F. Data analysis

Data were entered and analysed in the Statistical Package for the Social Sciences (SPSS) version 23. Categorical variables are summarized as frequencies and percentages, and age as mean and standard deviation. Associations between knowledge category and socio-demographic characteristics were tested with Pearson’s chi-square test, and an exact p-value is reported for the 2×2 age comparison. The null hypothesis was that there is no significant relationship between knowledge of the harmful effects of cigarette smoking and respondents’ socio-demographic characteristics. A p-value below 0.05 was considered statistically significant.

G. *Ethical considerations*

The study was approved by the University of Medical Sciences Health Research Ethics Committee, Ondo (reference UNIMED-HREC/Apv/2025/292; approved 31 May 2025). Parents or guardians gave permission for their sons to take part, and the students gave informed consent. Participation was voluntary; students could decline any question, and responses were kept confidential.

III. RESULTS

A. *Knowledge about the harmful effects of cigarette smoking*

Table 1: Respondents' knowledge about the harmful effects of cigarette smoking (N = 400)

Item	Yes, n (%)	No, n (%)	Correct response
Cigarette smoking is dangerous to health	338 (84.5)	62 (15.5)	Yes
Smoking cessation in chronic smokers is not beneficial because of irrevocable health damage	203 (50.8)	197 (49.3)	No
Cigarette smoking is a major cause of heart disease	349 (87.3)	51 (12.8)	Yes
Cigarette smoking can cause lung cancer	362 (90.5)	38 (9.5)	Yes
Cigarette smoking increases the risk of respiratory tract problems	354 (88.5)	46 (11.5)	Yes
Cigarette smoking can lead to premature aging	364 (91.0)	36 (9.0)	Yes
Cigarette smoking can lead to nicotine addiction	370 (92.5)	30 (7.5)	Yes
Cigarette smoking increases the risk of stroke	316 (79.0)	84 (21.0)	Yes
Occasional smoking is not injurious to health	163 (40.8)	237 (59.3)	No
Cigarette smoking is a major risk factor for tooth decay	136 (34.0)	264 (66.0)	Yes

Source: Field Survey, 2026

Percentages are row-independent proportions of N = 400 and may not sum to exactly 100 because of rounding.

Table 1 shows responses to the ten knowledge items. Most respondents (84.5%) agreed that cigarette smoking is dangerous to health. Awareness of specific diseases was high: nicotine addiction (92.5%), premature aging (91.0%), lung cancer (90.5%), respiratory tract problems (88.5%), heart disease (87.3%), and stroke (79.0%).

The picture was less encouraging on three items. Just over half of the respondents (50.8%) believed that stopping smoking is of no benefit to chronic smokers because the damage cannot be reversed; 40.8% thought occasional smoking is not harmful, and only 34.0% knew that smoking is a risk factor for tooth decay.

B. Attitudes toward cigarette smoking

In all, 234 respondents (58.5%) had a positive attitude toward smoking prevention and 166 (41.5%) a negative one. Table 2: Overall, 241 respondents (60.3%) had good knowledge and 159 (39.8%) had poor knowledge

Table 2: Overall levels of knowledge and attitude (N = 400)

Category	n	%
Knowledge about the harmful effects of smoking		
Good knowledge	241	60.3
Poor knowledge	159	39.8
Attitude toward smoking prevention		
Positive attitude	234	58.5
Negative attitude	166	41.5

Source: Field Survey, 2026

Table 3 Respondents' attitudes toward cigarette smoking (N = 400)

Item	Agreed, n (%)	Disagreed, n (%)	Favourable response
Cigarette smoking is a sign of maturity	119 (29.8)	281 (70.3)	Disagree
Smoking cigarettes helps to relax and reduce stress	74 (18.5)	326 (81.5)	Disagree
Cigarette smoking is a bad habit that should be avoided	262 (65.5)	138 (34.5)	Agree
Smokers are more attractive and popular	113 (28.3)	287 (71.8)	Disagree
I would consider smoking cigarettes if offered by friends	50 (12.5)	350 (87.5)	Disagree
Cigarette smoking is a personal choice and does not harm others	244 (61.0)	156 (39.0)	Disagree
Adults should avoid smoking in the company of adolescents	219 (54.8)	181 (45.3)	Agree
There should be high taxes on cigarette packets to reduce patronage	325 (81.3)	75 (18.8)	Agree
Cigarette smoking should be banned in public places	359 (89.8)	41 (10.3)	Agree
Smoking should be banned at educational institutions	348 (87.0)	52 (13.0)	Agree

Source: Field Survey, 2026

C. The last column shows the response that favours smoking prevention.

Table 3 shows the attitude items. Most respondents rejected the ideas that smoking is a sign of maturity (70.3%), that it helps people relax and reduces stress (81.5%), and that smokers are more attractive and popular (71.8%). Some 87.5% said they would not consider smoking if friends offered a cigarette, and 65.5% agreed that smoking is a bad

habit that should be avoided. Two responses stand out. Three in five respondents (61.0%) regarded smoking as a personal choice that does not harm others, and 45.3% disagreed that adults should avoid smoking in the company of adolescents. Support for tobacco-control measures was strong: 89.8% favoured a ban on smoking in public places, 87.0% a ban in educational institutions, and 81.3% high taxes on cigarette packets.

D. Knowledge and socio-demographic characteristics

Table 4: Association between knowledge about the harmful effects of cigarette smoking and socio-demographic characteristics

Characteristic	Poor knowledge, n (%)	Good knowledge, n (%)	χ^2	df	p
Age (years)					
12–15	33 (35.1)	61 (64.9)	1.106	1	0.336 ^a
16–19	126 (41.2)	180 (58.8)			
Class					
JSS 3	42 (38.9)	66 (61.1)	15.648	3	0.001
SSS 1	51 (34.2)	98 (65.8)			
SSS 2	47 (39.8)	71 (60.2)			
SSS 3	19 (76.0)	6 (24.0)			
Religion					
Islam	74 (39.8)	112 (60.2)	0.273	2	0.873 ^b
Christianity	82 (39.4)	126 (60.6)			
Traditional	3 (50.0)	3 (50.0)			
Family type					
Monogamous	59 (37.1)	100 (62.9)	6.250	3	0.100
Polygamous	74 (41.3)	105 (58.7)			
Divorced	14 (60.9)	9 (39.1)			
Separated	12 (30.8)	27 (69.2)			

Source: Field Survey, 2026

Percentages are row percentages. Poor knowledge, n = 159; good knowledge, n = 241. A Fisher's exact test (two-sided); the Pearson p-value was 0.293. B Two of six cells (33.3%) had an expected count below 5.

Table 4 cross-tabulates knowledge with socio-demographic characteristics. Knowledge was significantly associated with class ($\chi^2 = 15.648$, df = 3, p = 0.001), and the difference came from the final-year group. Only 6 of 25 SSS 3 students (24.0%) had good knowledge, compared with between 60% and 66% in the other classes (JSS 3, 61.1%; SSS 1, 65.8%; SSS 2, 60.2%). Knowledge did not rise steadily with class. It was not significantly associated with age ($\chi^2 = 1.106$, p = 0.336), religion ($\chi^2 = 0.273$, p = 0.873) or family type ($\chi^2 = 6.250$, p = 0.100). Because only six respondents practiced traditional religion, two of the six cells in the religion cross-tabulation had expected counts below five, so that result should be read with caution. Table 6 summarizes the decisions on the null hypothesis: it was rejected for class and retained for age, religion, and family type.

Table 5: Decisions on the null hypothesis: knowledge about the harmful effects of cigarette smoking and socio-demographic characteristics

S/N	Variable	χ^2	p-value	Decision
1	Age	1.106	0.336 (Not significant)	Do not reject the null hypothesis
2	Religion	0.273	0.873 (Not significant)	Do not reject the null hypothesis
3	Family type	6.250	0.100 (Not significant)	Do not reject the null hypothesis
4	Class	15.648	0.001 (Significant)	Reject the null hypothesis

Source: Field Survey, 2026

The null hypothesis states that there is no significant relationship between knowledge and the socio-demographic characteristics.

IV. DISCUSSION

In this sample of 400 male in-school adolescents in Ibadan South-East, six in ten had good knowledge of the harms of smoking and a similar share held attitudes favourable to smoking prevention. The headline figures hide specific blind spots that matter for program design. Many boys did not know that quitting helps, thought occasional smoking was harmless, did not connect smoking with dental disease, and saw smoking as a private matter with no effect on other people.

Knowledge. Awareness of the major diseases was high, with more than nine in ten respondents naming nicotine addiction, premature aging, or lung cancer. This is in line with the 72.8% of students with good knowledge in Ibadan North, with good knowledge reported among adolescents in Sokoto and with awareness among adolescents elsewhere (Glover et al., 2019). It contrasts with reports that Nigerian adolescents often lack a full understanding of long-term effects. We cannot attribute the high awareness to any single cause. National campaigns and school health lessons may have contributed, and so may the fact that lung cancer, heart disease, and addiction are the harms most often publicized. Awareness fell where messages are less familiar or counterintuitive. Half of the respondents (50.8%) endorsed the idea that stopping is pointless once damage has been done, and similar misconceptions about cessation have been reported among Nigerian youths. Four in ten (40.8%) thought occasional smoking was not harmful, echoing reports that adolescents distinguish “social” smoking from the real thing. Only a third (34.0%) knew that smoking raises the risk of tooth decay, which supports calls to include oral health in tobacco education. These are precisely the beliefs that can make a first cigarette seem low-risk.

Class and knowledge. The association between knowledge and class was driven by the final-year group. Only a quarter of SSS 3 students had good knowledge, compared with 60% to 66% in the other classes, so more years of schooling did not translate into better knowledge. We did not anticipate this, and our data cannot explain it. SSS 3 was also the smallest group ($n = 25$), which makes the estimate imprecise. One possibility is that final-year students, who are preparing for external examinations, have less exposure to school health activities; this was not tested. The lack of association with age, religion, and family type suggests that,

at least in this sample, knowledge was fairly evenly spread across these groups, even though religion and family background are often cited as shaping adolescents' health behaviour.

Attitudes. Most boys rejected the beliefs that glamorize smoking: 70.3% disagreed that it signals maturity, 81.5% that it relieves stress and 71.8% that smokers are more attractive. Even so, between roughly one in five and three in ten agreed with each of these statements. That fits studies describing smoking as a symbol of maturity, confidence or rebellion and as a means of coping with stress. The 87.5% who said they would refuse a cigarette from friends is encouraging and compatible with evidence that adolescents who know the hazards are less susceptible to peer pressure. The 12.5% who might accept are the group that peer-resistance training should reach first.

A less comfortable finding is that 61.0% saw smoking as a personal choice that does not harm others, and 45.3% did not think adults should avoid smoking around adolescents. Together, these answers suggest that second-hand smoke is not taken seriously. They are consistent with the poor knowledge of passive smoking previously found in this LGA and in Lagos, and with the view of smoking as a personal rather than a social risk. By contrast, support for regulation was strong: 89.8% for bans in public places, 87.0% for bans in schools and 81.3% for higher taxes, in line with reports of adolescent support for restrictions. That support is an asset for policy. Adolescents are not an obstacle to tobacco control, and they can be enlisted as advocates for it.

Strengths and limitations. The study provides local data from an LGA with little published evidence, and it used a multistage design with trained bilingual interviewers. Its limitations should be kept in mind. The cross-sectional design rules out causal inference. The sample was restricted to boys in one LGA, so the results cannot be generalized to girls, to out-of-school adolescents, or to other areas. Responses were self-reported and may be affected by social desirability. Knowledge and attitude were measured with brief dichotomous items, and the cut-offs used to define good knowledge and positive attitude influence the proportions reported. Students absent on the day of the survey were not included.

V. CONCLUSION

Male in-school adolescents in Ibadan South-East know the major harms of smoking and mostly hold attitudes that favour prevention, but important misconceptions persist about cessation, occasional smoking, oral health, and second-hand smoke, and final-year students had markedly weaker knowledge. Based on these findings, we recommend that:

School tobacco education should move beyond naming diseases to correcting specific misconceptions, including the benefits of quitting and the harm of occasional smoking.

RECOMMENDATIONS

- Oral health and second-hand smoke should be added to tobacco education content for adolescents.
- Refresher sessions should be arranged for SSS 3 students, whose knowledge was weakest.

- Peer-resistance and refusal-skills training should be provided, using interactive methods such as drama, debates, and peer education.
- The strong adolescent support for bans and taxes should be used to involve students in tobacco-control advocacy, alongside enforcement of existing restrictions on sales near schools.
- Future studies should include girls and out-of-school adolescents and combine surveys with qualitative methods to explain the weak knowledge among final-year students.

A. *Declarations*

Ethics approval and consent to participate:

Approved by the University of Medical Sciences Health Research Ethics Committee, Ondo. Parental permission and participant consent were obtained.

B. *Data availability:*

The data supporting the findings are available from the corresponding author on reasonable request.

C. *Acknowledgments:*

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