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Full Length Research

Perception of Malaria, Impact and Practices Among Students in Lagos State University

*Okwa O.O., Onyeghala C.I., and Baruwa S.M.

Parasitology and Public Health Unit, Department of Zoology and Environmental Biology, Faculty of Science, Lagos State University, Lagos State, Nigeria.

*Corresponding Authors' Contact Detail: E-mail Addresses ✉: omolade.okwa@lasu.edu.ng; omoladeokwa@gmail.com; Phone Number ☎: Tel: +2349098617307; 08028313362

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Malaria contributes to school absenteeism and low academic performance. Gaps remain in the perception and control of the disease among students. Structured questionnaires were administered to 125 randomly selected students across 6 faculties in Lagos State University of which 90% were 16-25 years. Among the participants, 66% perceived malaria as a deadly disease and 70% were aware of the role of mosquitoes in the transmission. On the contrary, 34% disagreed that malaria is a deadly disease while 30% had misconceptions about the cause. 73% of mostly science students were familiar with the symptoms of malaria. 47% reported missed lectures due to malaria while 59% claimed they had malaria after exams. 74% indicated they had malaria during exams while 46% reported that they had been hospitalized due to malaria. In control practices, 58% reported that they slept under mosquito nets, 49% used mosquito repellants while 23 % used chemoprophylaxis. Self-medication was 65% while 59% reported ever visiting a health facility for malaria. The right perception of malaria was not translated to the right practices. Intensified health education on environmental management, use of bed nets, malaria chemoprophylaxis, early reporting of symptoms and dangers of self-medication should be incorporated into students' orientation programs.

Key words: Malaria, Mosquitoes, Perception, Practices, Self-medication, Students.

INTRODUCTION

Malaria is caused by parasitic protozoa of the genus *Plasmodium* and is transmitted by the female *Anopheles* mosquito. In Nigeria, 97% of the population is at risk for malaria as only 3% of the population lives in the malaria free highland zones (Okeke and Okafor, 2008). Malaria ranks among the five commonest cause of childhood deaths and is responsible for 25% to 30% of deaths of children under five years and among pregnant women in Nigeria (Nigeria Malaria Fact Sheet, 2011).

Malaria accounts for much of the disease burden in Nigeria, claiming thousands of lives and causing massive economic losses (Onwujekwe et al., 2000). The disease is a very big threat to social, political, educational and economic development. The effect on investment in education should not be

undermined as the disease is one of the causes of student's absenteeism and low academic performance (Okwa and Ibidapo, 2010; Okwa, 2011). Apart from the incapacitating effect of malaria attack, the direct economic cost that results from absence from school and treatment are enormous and should not be underestimated (Okwa, 2021).

However, the problem of poor perception of malaria may lead to less concern about its prevention and treatment seeking among students. Understanding people's perceptions of malaria and the factors which influence the perceptions must be a central part of mounting successful interventions to control malaria (Arholu et al, 1997). Beliefs that differ from the scientific explanation of malaria may lead to inaction and delay in seeking treatment (Espino et al*.,* 1997). Misconceptions about malaria had adversely affected practices of people across various strata in preventing the disease (Anene-Okeke et al., 2018). Harun et al*.*, (2019) reported that University students are at risk due to inadequate knowledge and practices and that within Nigeria, surveys of residents revealed a lack of knowledge and many misconceptions about the transmission and treatment of malaria, which could adversely affect malaria control measures and anti-malarial therapy.

This study was premised on the fact that malaria constitutes a threat to the academic performance of students. To this end, we investigated the perception of malaria, impact on academic activities and practices of selected undergraduate students towards malaria in a university community.

METHODOLOGY

Lagos State, a former capital of Nigeria is the smallest in area of the 36 states and located in the southwestern part of the country but is a major financial centre in the country. It is the most populous city in Nigeria with a population of over 15,000,000 and the Yoruba's are the dominant ethnic group (Lagos Bureau of Statistics, 2021). This study was carried out in Lagos State University (LASU), a multi-campus, collegiate and non-residential University owned by the Lagos State government. LASU Ojo campus is located along coordinate 6.4652°N 3.2009°E along Lagos-Badagry express way (Plate 1). The Ojo campus has 6 faculties and two schools and there is a well-equipped primary health facility which caters for medical needs of staff and students. The university environment is characterized by various floras such as thick grasses, shrubs and tall trees. The vegetation is largely affected by human activities such as farming. In the rainy season, stagnant pools, swampy soils with footprints characterize environmental conditions in untiled parts of the campus. The University caters for a population of over 35,000 students (https: //.lasu.edu.ng).

A total number of 125 students which included both males and females were randomly selected by informed consent for this study. The participants were selected across six faculties: Faculties of Arts (FOA), Sciences (FOS), Education (FOE), Management Sciences (FMS), Social Sciences FSS) and Law (FOL).

A minimum sample size was determined using the sample size determination formula for cross-sectional study according to Harun et al., (2019);

n=$Z2pqld2$. Where n is the minimum sample size.

Z is the standard normal deviate at 95% confidence interval which is 1.96.

P is the proportion of respondents from a previous similar study who know malaria and method of prevention of malaria, which will be taken as 86.6%.

q is the complementary probability 1-p (1-0.866 = 0.134)

d is the precision of the study set at 0.05.

According to this formula the minimum sample size was calculated as 122.9.

Hence, 125 participants were selected.

Data collection tools were coded structured questionnaire which were pretested and validated. The questionnaire had an introductory part which informed on the purpose of the study. The participants were required to tick their preferred options and this design was adopted because of its specificity and appropriateness for the study. The questionnaire consists two parts which includes the respondent data and 12 questions which covers the perception of malaria, impact of malaria on academic activities and practices associated with malaria (Table 1).

After the administration, the questionnaires were checked for completeness and consistency and those with missing or inconsistent data were discarded. The answers were extracted from the questionnaires and represented as table and figures with the result expressed as percentages (%). Data analysis was performed using SPSS for Window version 11.0 (SPSS inc, Chicago, USA) while one-way ANOVA was used as test statistics. Profile of

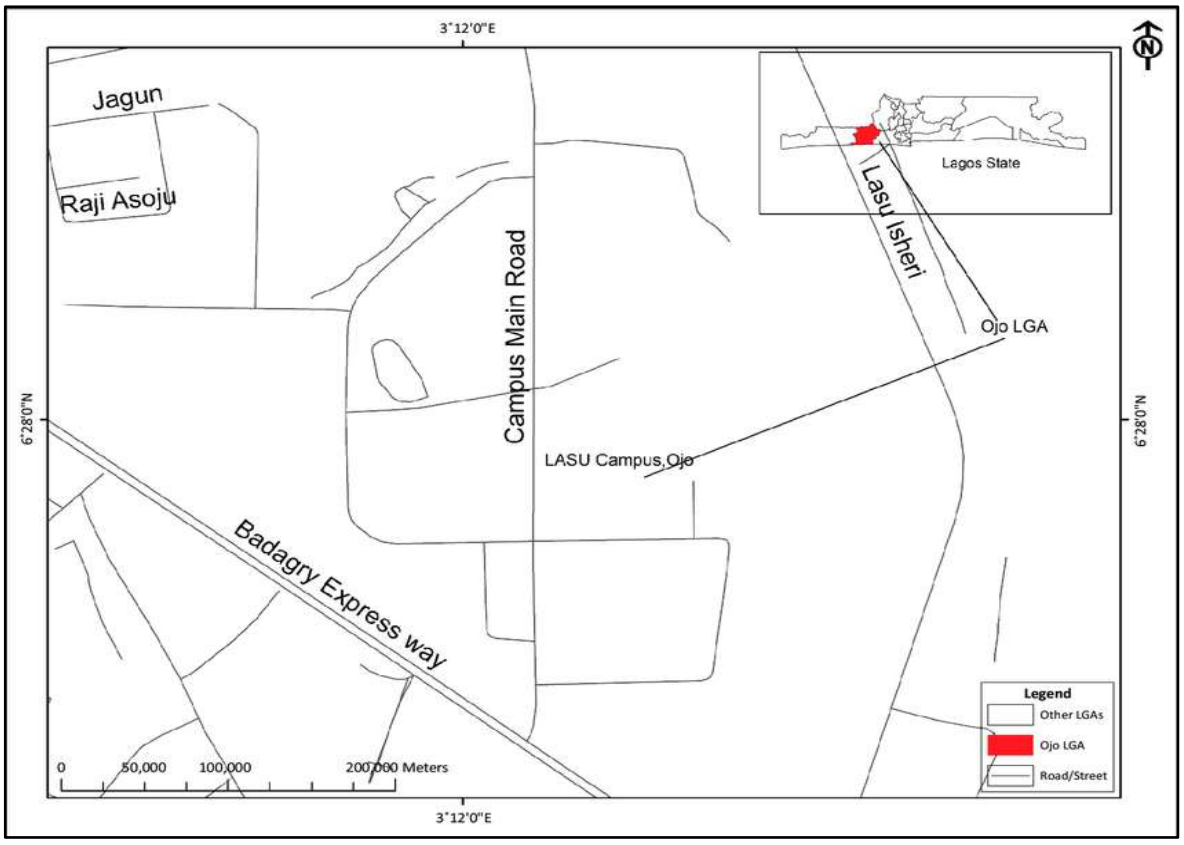

Plate 1: Map showing the location of LASU in Ojo LGA of Lagos State in Nigeria.
Source: Lagos Bureau of Statistics (2021).

respondents compared were gender differences in reported malaria cases, genotype, blood group, and age. Chi square ($\chi 2$) was used to determine statistical differences in results. Level of significance was estimated at 5% with 95% confidence interval (C.I). Probability (p value) was determined by $p< 0.05$ as significant and $p> .05$ as not significant.

RESULTS

A total of 125 students participated in this study across 6 faculties of the University. The distribution of the students across the faculties is shown in Table 2. Overall, 65% of the participants were mainly in the higher levels (years 3-4). The participants were mainly of the age range of (16-25 years). Overall, 51 % of the respondents were females while 49% were males with FOA had the highest number of males while FOS had the highest number of females requited into the study. The marital status indicated that only 5 % were married and 95% were single ($p<0.05$). The data collected on the blood group revealed that 61% of the participants were of blood group O and the least (1.5%) were in blood group AB ($p<0.05$). The demographic profile of the participants across the faculties is shown in Table 2.

The perception of malaria among the participants selected from the six faculties of LASU is shown in Figure 1. A proportion of 66 % of the participants agreed that malaria is a deadly disease with 26 % participants from FOS. Moreover, 70% of the participants agreed that malaria is spread by mosquitoes with 27 % participants from FOS. It was observed that 73% of the participants were familiar with headache, fever and chills as the common symptoms of malaria and this was the highest correct perception observed in the study. This implied that 34%, did not agree that malaria is a deadly disease and 30% had misconceptions about the cause and

Table 1. Sample Questions.

Questions	Options		
1. Is malaria a deadly disease?	Yes	No	Uncertain
2. Do you believe that Mosquitoes transmit Malaria?			
3. Are you familiar with the symptoms of malaria, if yes name them?			
4. Have you ever missed lectures due to Malaria?			
5. Have you ever been ill due to malaria during exams?			
6. Have you ever been ill due of malaria after exams?			
7. Have you ever been hospitalized due to malaria during exams?			
8. Do you use malaria chemopreventives?			
9. Do you practice self-medication when ill with malaria?			
10. Do you visit any health facility when ill with malaria?			
11. Do you sleep under mosquito nets?			
12. Do you use mosquito repellants?			

27% were uncertain about the symptoms.

The impact of malaria on academic activities is shown in Figure 2. Almost half of the participants (47%), claimed to have missed lectures due to malaria in the past with 31% of the participants from FMS. Majority, (74%), claimed that they had fallen ill due to malaria during exams periods and this was the highest impact observed. However, over half (59%) reported falling ill due to malaria after the exams. Furthermore, 46% of the participants indicated having been hospitalized due to malaria during exam periods.

The practices of the participants towards malaria control within the six faculties are shown in Figure 3. Only 23% of the participants reported the use of malaria chemoprophylaxis while 65% indicated that they practiced self-medication whenever they have malaria with (28%) being FOA participants. Of the 59%, that claimed that they visited health centers when they felt the symptoms due to malaria, FOE participants were the highest (31%). To prevent mosquito bite, 58% of the participants reported that they slept under mosquito nets with FMS having 25 % while 48% of the participants indicated that they used mosquito repellants.

DISCUSSION

Malaria is a disease with public health challenges affecting everyone irrespective of sex, age, blood group or marital status and the root lies so deep in human communities (Spielman, 2003). As Espino et al., (1997) had noted, improving or increasing knowledge of people does not necessarily result in changes in perception or behavior because behavior is not just a consequence of knowledge and belief. However, behavior may increase malaria risk.

This study showed that 34% of the students did not belief that malaria is a deadly disease and 30% had misconceptions about the cause and (27%) uncertain of the symptoms. The result of this present work corroborated a preliminary survey in LASU carried out by Okwa and Ibidapo (2010) who examined the malaria situation among students. In the study, 41.7% of the students still had erroneous perceptions

Table 2. Profile of respondents from the six faculties.

Profiles	FOE N(%)	FOS N(%)	FOA N(%)	FMS N(%)	FOL N(%)	FSS N(%)	Total N(%)	P values
Levels								
Year 1-2	9(45)	3(12.5)	11 (50)	8(36)	10(40)	3(25)	44(35)	P<0.05
Year 3-4	11(55)	21(87.5)	11(50)	14(64)	15(60)	9(75)	81(65)	
Age Range								
16-25 yrs	17(85)	23(96)	22(100)	21(95)	18(72)	12(100)	113(90)	P<0.05
25-30 yrs	3(15)	1(14)	0(0)	1(5)	7(28)	0(0)	12(10)	
Gender								
Male	8(40)	8(33)	18(82)	11(50)	11(44)	5(42)	61(49)	P>0.05
Female	12(60)	16(67)	4(18)	11(50)	14(56)	7(58)	64(51)	
Mar. Stat								
Single	20(100)	23(96)	21(95)	20(91)	25(100)	11(92)	120(95)	P<0.05
Married	0(0)	1(4)	1(5)	2(9)	0(0)	1(8)	5(5)	
Bld. Grp.								
A	6(30)	6(25)	3(13)	2(9)	7(28)	6(50)	30 (24)	
B	3(15)	3(12)	1(5)	3(13)	4(16)	3(25)	17 (14)	P< 0.05
O	11(55)	15(63)	17(77)	17(77)	13(52)	3(25)	76 (61)	
AB	0(0)	0(0)	1(5)	0(0)	1(4)	0(0)	02 (1.5)	
Population	**20**	**24**	**22**	**22**	**25**	**12**	**125**	

Key: FOE-Faculty of Education, FOS-Faculty of Law, FOA-Faculty of Arts
FMS- Faculty of Management Science, FOL-Faculty of Law, FSS-Faculty of Social Science
N (%)- Number (Percentage), Mar. Stat-Marital Status, Bld. Grp.- Blood Group

about the cause of malaria. The students had the habit of tolerating malaria symptoms and embarking on self-medication, until they become critically sick. Another study on malaria perception in two tertiary institutions in Lagos, showed that fever was the most recognized symptom of malaria and self-medication was quite popular among students (Okwa, 2011). In Ibadan, Oyo State, Nigeria Morenikeji (2009) in a study among students also reported some erroneous beliefs about the cause of malaria with 47% practicing self-medication and only 21 % using bed nets. A study by Adeyemo et al. (2014) concluded that the prevalence of malaria infection amongst students was very high but many of the students were misinformed.

In this present study, it was also observed that the students had average knowledge of malaria as a deadly disease (66%). FOS had the highest knowledge of malaria, which may be because the knowledge of the malaria life cycle is scientific. There was adequate knowledge on the symptoms of malaria as 73% were quite conversant with the symptoms. These observations are similar to the study of Oluyemi and Oluyemi (2017) in Ondo State, Nigeria where students had the right perception of malaria, the cause and the symptoms but the wrong attitudes in prevention in terms of lack of use of mosquito nets and seeking medical interventions. The survey revealed that malaria impacts on academic activities as 74% of students reported they felt ill due to malaria during exams and this meant low performance. Students become more vulnerable to malaria during exams because of the habit of exposing themselves to mosquito bites when they study late at night. However, 46% had been hospitalized before due to malaria during an exam period which is tantamount to absenteeism. Vitor-Silva et al., (2009) had also reported that malaria was associated with poor school performance which potentially contributed to underdevelopment in an endemic area in Brazilian Amazon. Similarly, Odera (2018) in a study in Kenya reported that malaria had negative effects on academic performance and ultimately slows down economic development.

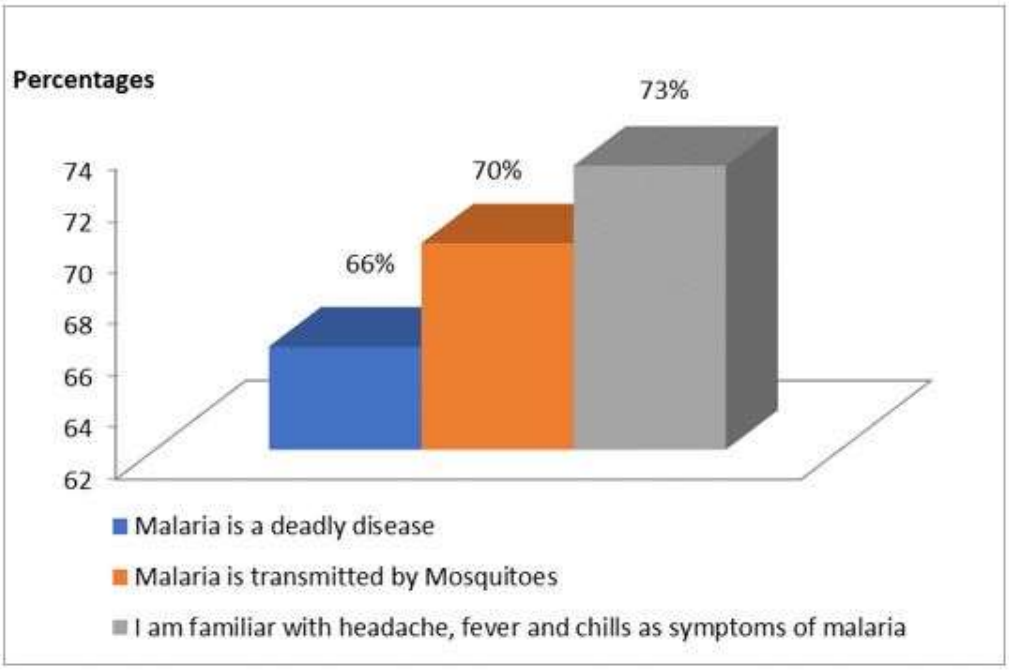

Figure1. General Knowledge of Malaria among Respondents.

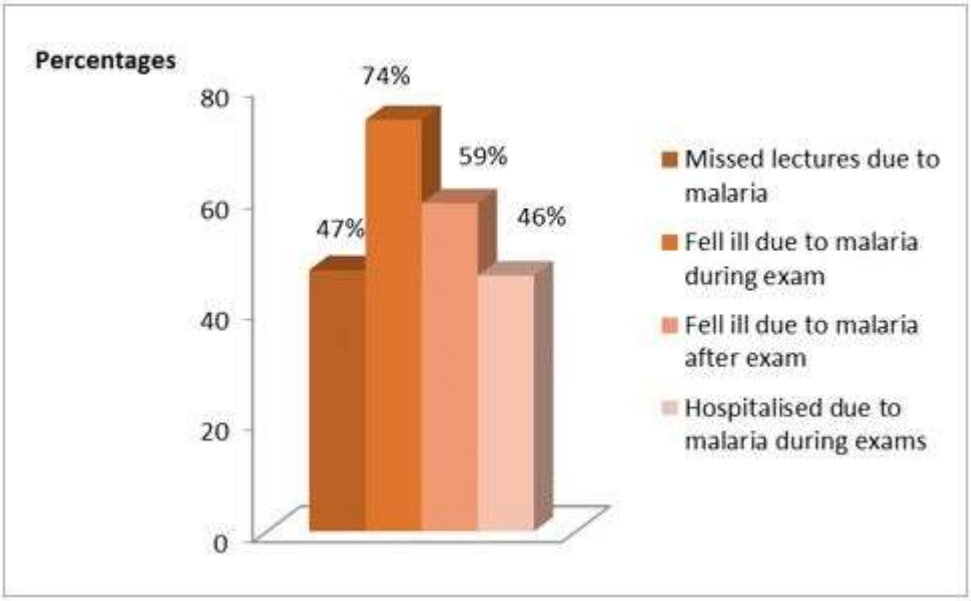

Figure 2. Malaria and School performance.

Naejera and Hempel (2006) reported further that school absenteeism due to malaria was as high as 70%. and that a Nigerian school child missed an estimated 3-12 school days per year. One would expect the right attitude in preventing malaria with the above average perception of the disease but the

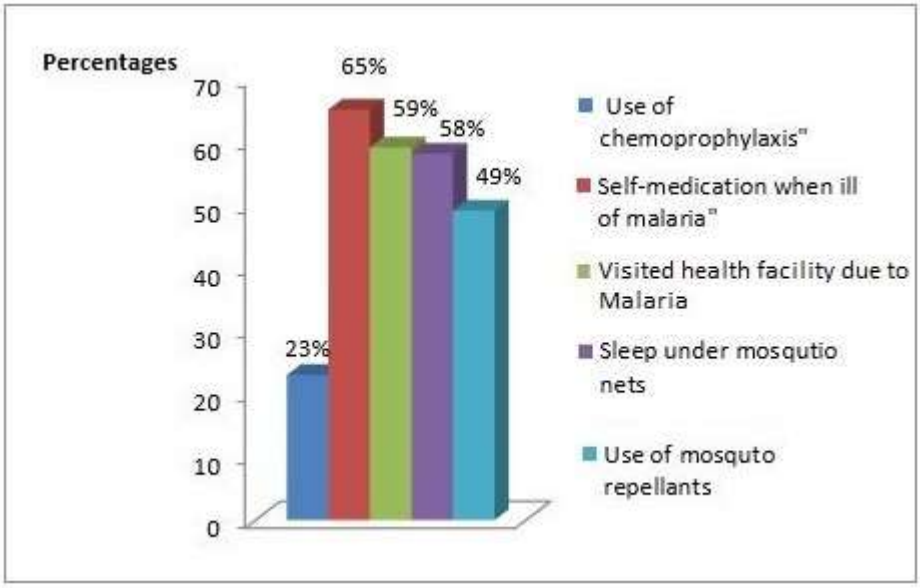

Figure 3: Attitudes and Practices associated with malaria among respondents.

general use of chemoprophylaxis, use of mosquito nets and repellant was unsatisfactory. Moreover, (59%) of the students visited a health centre when they felt the symptoms of malaria. The practice of self-medication was 65% because the students prescribed anti-malaria drugs for themselves any time, they felt ill. Self-medication during illness should be discouraged as this may have negative consequences as malaria symptoms overlap with other ailments such as Typhoid fever, Dengue fever, Yellow fever, Lassa fever and Pneumonia (Kallander et al., 2004; DeCapua, 2015). However, malaria chemoprophylaxis is laudable and should be encouraged in endemic areas (World Health Organisation, 2019).

In this study, perception of malaria as a deadly disease was not translated to the right practices in terms of preventing mosquitoes and seeking treatment. The socioeconomic effects of malaria should be incorporated in health education strategies to increase compliance with preventive methods such as the use of integrated bed nets. Efforts must be made by the major players in the health sector to make the net readily available at low prices to enable students purchase it. In order to improve timeliness of treatment, the service consequently needs to be closer to the students' environment. Regular fumigation of the school environment against mosquitoes will enable students' study and write examinations in a healthy and conducive environment.

CONCLUSION

We recommend that irrespective of their academic backgrounds, students should always have regular and intensified health education on risks associated with malaria incorporated into their school orientation programs. A re-echoed awareness program for students which will focus on environmental management, preventing mosquitoes, early reporting of symptoms, proper diagnosis, and proper use of malaria drugs during their medical registration on admission is necessary. Educational institutions should enlighten students on improving hygienic conditions and clearing bushes and stagnant pools around their hostels.

There is the need for a strong collaboration among major stakeholders including the Government and Non-Governmental Organizations to sensitize students on Malaria and developing wholistic and effective methods for prevention and control of the disease. An improved accessibility to health facilities

and government support is imperative to achieve the goal of malaria elimination.

ACKNOWLEDGEMENT

We thank the students who consented and participated in the study.

CONTRIBUTIONS

O.O. Okwa designed the survey and developed the manuscript. Onyeaghala C.I., and Baruwa S.M., administered the questionnaires, worked on the data analysis and the interpretation of results. All authors read and approved the final manuscript.

ETHICAL CONSIDERATION

Ethical principles based on human rights and the protection of respondents during this survey such as voluntary participation, respect of persons was considered. Confidentiality and anonymity of information was strictly ensured. Informed consent and approval were obtained from students who participated in the study.

COMPETING INTERESTS

The authors have no competing interests.

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