Knowledge On Malaria Among University Students From Nigeria Living In Dhaka

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ABSTRACT

Malaria remains a public health concern in Nigeria and it is endemic in many regions. University students in Nigeria and diaspora are at risk of malaria due to inadequate knowledge and practices of malaria. This study aimed to assess and describe knowledge, attitudes and practices of malaria prevention among university students from Nigeria living in Dhaka city. A quantitative descriptive cross-sectional study was conducted, using a pretested questionnaire to collect data from 152 university students in Dhaka city. Data were analysed with a Statistical Programme of Social Sciences (SPSS). The overall response rate was 75% (89) from a total of 152 respondents. Mean age was 30.4 years, respondents comprised of 19 (64.9%) females and 70 (35.1%) males. Almost all respondents (94.5%) know that malaria is transmitted by mosquitoes and 80% of respondents indicated that malaria is preventable. Clearing of bushes was the most commonly known preventive measure, indicated by 78 (87.6%) of respondents. It was concluded that university students from Nigeria living in Dhaka city have good knowledge on malaria prevention measures. Although there were some misconceptions noted, especially on the identification of complications of malaria, the attitudes on malaria prevention are generally satisfactory. However, the knowledge and attitudes do not reflect in the students' practices. The findings reveals that about most of the respondents (25%) had moderate level of knowledge about malaria, followed by poor (10%) and the rest had good level of knowledge. The study also reported that there was significant association between University, qualification and level of knowledge about malaria.

Keywords. Malaria, Knowledge, SPSS, Plasmodium,Mosquitoe, students, Nigeria

1 INTRODUCTION

Malaria is one of the most serious health problems facing the world. The World Health Organization (WHO) reported that over 300million cases of malaria arise a year with approximately 2-3million death resulting from complications (Roll Back Malaria, 2012). Malaria has continued to be a major threat to the world's community posing its huge toll of morbidity and mortality in sub-Saharan Africa. The malaria morbidity and mortality statistics in Nigeria has been an issue of great concern, Nigeria contributes 25% of the malaria burden in Africa and losses up to ₦12 billion annually in form of treatment costs, absenteeism at work and loss of productivity (Greenwood, Bojangk Whitty, & Targett, 2005). Malaria is a disease that is deadly but preventable, the most severe and life threatening form of Malaria is the prevalent parasitic endemic disease in Africa causing various problems such as increased morbidity and mortality which is preventable, treatable and curable, yet it remains one of the major health issues in Nigeria.

The disease is transmitted by female Anopheles mosquitoes which carry infective sporozoite stage of Plasmodium parasite in their salivary glands (Okowa *et al.* 2012).Malaria spread has been linked to environmental changes, malaria vector dynamics, host immune status and individual or community factors such as the socio-economic status, knowledge of malaria and the protective behaviour (Kinung'hi *et. al*. 2010). The burden of malaria or estimated cases of malaria is reported worldwide to be between 350 –550 million, with over 80% occurring in Africa (W.H.O, 2010). The most effective strategy for Plasmodium falciparum infection is the use of artemisinins in combination with other antimalarial, which reduces the ability of the parasite to develop resistance to any single drug component (W.H.O, 2010).

However, the practice of malaria preventive measures has been related to the knowledge and belief of people. 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. The year 2011 Roll Back Malaria report (RBM, 2011) noted significant success in malaria control effort worldwide, with the anticipation of "near-zero malaria death in the next decade if the efforts are sustained". A study on the knowledge, attitudes and practices about malaria and its control in Tanzania, reported that artemether-lumefantrine was the most common antimalarial therapy used and health facilities were the first option for malaria treatment as said by 47.3% respondents (Mazigo et. al. 2010).The findings from a study on the attitude, knowledge and practices regarding malaria prevention and treatment showed that the respondents had partially correct understanding of malaria transmission, treatment and prevention. The outcome of another research work on the knowledge and practices on malaria treatment measures in Abeokuta, Nigeria revealed 65% of the participants had three to four episodes of malaria per year.

This aim of this study is to assess the knowledge, perceptions and practice of malaria management among Nigerian students living in Dhaka City .The scientific benefit of this study is thus to find out if there are truly misconceptions about this disease and its management among this group of people.

2 MATERIALS AND METHODS

2.1 Research Setting

This study was carried out in various universities located in Dhaka where Nigerian students are currently studying.

2.2 Study Design

The cross-sectional survey study utilizing quantitative method of data collection was conducted at various higher institutions across DHAKA, Bangladesh. Names of participants were not included in the information requested. Data for the study was collected from February 2019 till April 2019 (a period of three months). The semi-structured questionnaire was administered to students from Nigeria living in Dhaka in each of the institutions.

2.3 Study Population

The target populations were registered students of various universities within Dhaka city during the period of this study.

2.4 Eligibility of Respondents

Inclusion Criteria

- All registered students from Nigeria of Universities within Dhaka.

Exclusion Criteria

- All sick students were exempted from the study.

2.5 Sample Size Estimation

A minimum sample size was determined using the sample size determination formula for cross-sectional study.

$$n=\frac{Z^2pq}{d^2}$$

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 88.8%.

q is the complementary probability 1-p (1-0.888 = 0.112).(Sabin *et.al*. 2000).

d is the precision of the study set 0.05.

$$\frac{1.96^2 \; x \; .888 \; x \; 0.112}{0.05^2}$$

According to this formula the minimum sample size was calculated as 152.9. However due to lack of time and availability of students, only 89 samples were collected.

2.6 Sampling Technique

The researcher used purposive sampling technique

2.7 Data Collection Procedure

A semi structured administered questionnaire comprising of three sections namely demographic characteristics, knowledge of malaria and its preventive method was used in this study, after taking written inform consent from the participants.

2.8 Research Instrument

A set of structured questionnaires developed by the researcher were used in this study.

2.9 Method of data analysis

After collection of data, all interviewed questionnaires were checked for completeness, correctness and internal consistency to exclude missing or inconsistent data and those were discarded. Corrected data was entered into Statistical Package for Social Sciences (SPSS) statistical software version 20 for the analysis.

2.10 Ethical considerations

The study proposal was sent to "FAHS Research Ethics Committee, DIU" Daffodil International University for approval. Written consent was taken from the study subjects before data collection. The anonymity of the respondents was kept confidential and study subjects were informed that they can be able to leave the program at any stage of data collection.

2.11 Study Area

The study was conducted in Dhaka city of Bangladesh.

Table 1: Distribution of the respondents according to age

Age (years)	Frequency	Percent
18-25	27	30.3
26-35	39	43.8
36-45	23	25.8
Total	89	100
Mean± SD	30.4±7.1	

Table 2: Distribution of the respondents according to sex

Gender	Frequency	Percent
Male	70	78.7
Female	19	21.3
Total	89	100

Table 3: Distribution of the respondents according to Educational Level

Educational Level	Frequency	Percent
PhD	2	2.2

Master's Degree	48	53.3
Bachelor's Degree	19	21.1
Diploma	2	2.2
Undergraduate	19	21.1
Total	89	100

3 RESULTS

3.1 Socio-demographic characteristics

Majority (43.8%) of the respondents were in the age group 26-35 years, followed by 18-25 (30.3%) (Table 1). About 25.8% of the respondents were in the age group 36-45 years and the mean age of the respondents was 30.4 years. While the majorities (78.7%) of the respondents were male and the rest of the respondents were female. About (53.3%) of the respondents had Masters level of education, followed by B.Sc. (21.1%) while (2.2%) had PhD and diploma and the rest were undergraduates (Table 3).

3.2 Knowledge on Malaria

The general knowledge of respondents on malaria could be adjudged to be satisfactory. All the respondents have seen a mosquito as well as mosquito bite. Also all the respondents 89 (100%) knew that malaria is a disease while 40(45.6%) mentioned malaria as a major cause of mortality among people.

Table 4: General Knowledge on malaria among respondents

Variables	**N**	%
Malaria is caused by the male mosquitoe		
True	22	25.6
False	67	74.4
Have you seen mosquito before?		
Yes	89	100
No	0	0
Have you seen mosquito bites?		
Yes	88	98.9
No	1	1.1
Have you heard the word 'malaria' before ?		
Yes	88	98.8
No	1	1.1
What is malaria?		
Animal	0	0
Disease	89	100
Person	0	0
Food	0	0
Is malaria a major cause of mortality among people?		
Yes	40	45.6
No	36	40
Don't Know	13	14.4

3.3 Knowledge on malaria preventive measures

Regarding the knowledge of malaria preventive measures, clearing of bushes was the most commonly known preventive measure, indicated by 78 (87.6%) of respondents. The least known malaria preventive measure is the usage of mosquito repellent. The figure below shows malaria preventive measures known by the university students.

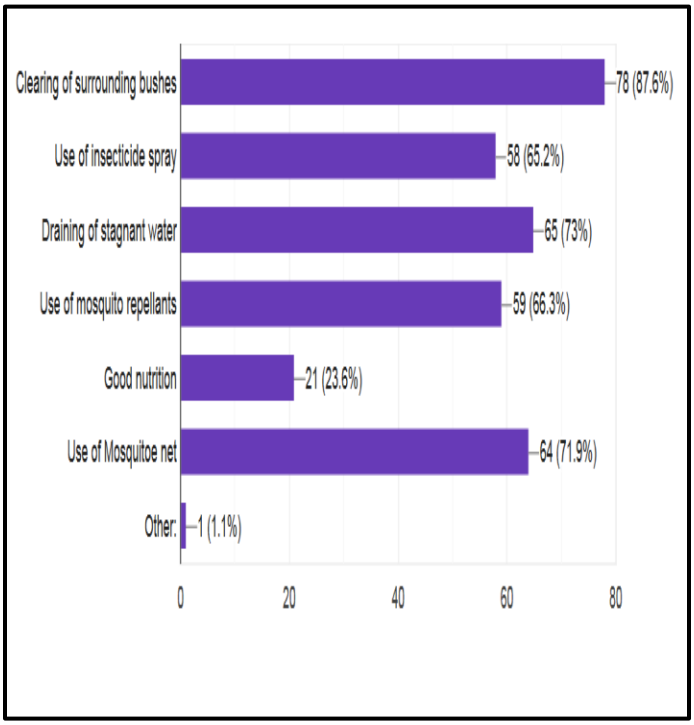

Figure 1: Preventive measures

3.4 Knowledge on complications of malaria

The research shows an appreciable number of respondents have sufficient knowledge of the complications of malaria. About 56.5% of the respondents to liver failure and jaundice as complications of malaria while others mentioned shock, hypoglycemia, kidney failure which represents 31.8%, 22.4% and 31.8% respectively.

Table 5: Knowledge on complications of malaria among respondents

Variables	Frequency	Percent
Liver Failure and Jaundice	48	56.5
Shock	27	31.8
Hypoglycemia	19	22.4
Kidney Failure	27	31.8
Swelling and Rupturing of the Spleen	23	27.1
Dehydration	24	28.2
Premature Birth/Still Birth	9	10.6
Anaemia	16	18.8

3.5 General Knowledge on perception on

Seventy (78.9%) of the study participants mentioned stagnant water as breeding sites for mosquitoes and only forty (44.4%) of study participants knew that malaria can be completely eradicated. 34 (38.9%) had reported mosquito bites human beings at night time and only 75 (85.2%) of the respondents knew that malaria is caused by microscopic organisms (plasmodium species). 65 (73.3%) indicated that malaria can be treated using anti-malaria drugs while 82 (92.1%) agreed that malaria can affect the performance of students. Unfortunately 46 (51.1%) of the respondents reported lack of sensitization program by their various University.

Table 6: General perception on malaria among respondents

Variables	N	%
Mosquito breeding place		
Stagnant water	70	78.9
Bushes	17	18.9
Walls	0	0
Don't Know	2	2.2
Mosquito biting time		
Day	11	12.2
Night	34	38.9
Anytime	43	47.8
Don't Know	1	1.1

Can malaria be completely eradicated?		
Yes No Don't Know	40 34 15	44.4 38.9 16.7
Malaria can be treated same as other diseases		
True False	66 24	73.3 26.7
What is the best form of malaria treatment		
Injection Anti-malarial drugs Don't Know	17 65 7	18.9 73.3 7.8
Does malaria affect the performance of students		
Yes No Don't Know	82 1 6	92.1 1.1 6.7
Does your university organize any malaria sensitization program?		
Yes No Don't know	31 46 13	34.4 51.1 14.4
Malaria is a preventable disease		
True False	84 5	94.4 5.6
The correct causative agent ; being a protozoa		
True False	77 12	85.9 14.1
Malaria can be detected by laboratory test only?		
True False Don't know	61 19 9	67.8 21.1 11.1
Malaria parasites belong to the genus plasmodium		
True False	75 14	85.2 14.8

3.6 Average Knowledge

The research showed that the majority of the respondents (25%) had moderate level of knowledge about malaria, followed by poor (10%) and the rest had good level of knowledge (65%).

Table 7: Average Knowledge Score

Grade	**Level of Knowledge n (%)**
Good	65
Moderate	25
Poor	10
Total	100

4 DISCUSSION

The study showed that the majorities (43.8%) of the respondents were in the age group 26-35 years and the mean age of the respondents was 30.4 years. There was no difference revealed on knowledge of malaria among students of different age groups in this study. This is against the results of Yin *et al.*, (2013) who reported significant differences of awareness of malaria prevention among different age groups. The majorities (78.7%) of the respondents were male and the rest of the respondents were female. Respondents' knowledge on transmission of malaria was assessed and the following were identified: it was found that most respondents (91.7%) rejected male mosquitoes which confirmed that female anopheles mosquitoes transmit malaria.

Furthermore, it was gathered that 20.2% (18) of the respondents agreed that malaria can be transmitted from an infected person to another uninfected person. Of the 89 respondents that were interviewed for their views on the possible mode of transmission of malaria, 98.9% identified mosquito bites as the means of transmission of malaria disease. 2.2% thought sexual intercourse could cause malaria. Other modes of transmission of malaria were attributed to blood transfusion from infected person (20.2%), and mother to fetus transmission (13.5%). The study further indicated that three commonly mentioned manifestations of malaria were Regular fever 53(59.6%), shivering 48 (53.9%) and headache 55 (61.8%). The study indicated that the loss of appetite, joint pain and vomiting

were mentioned by 37.1%, 38.2%, and 44.9% of study participants as major manifestations of malaria.

However, an appreciable number of respondents have sufficient knowledge of the complications of malaria. About 56.5% of the respondents to liver failure and jaundice as complications of malaria while others mentioned shock, hypoglycemia, kidney failure which represents 31.8%, 22.4% and 31.8% respectively. Regarding the knowledge of malaria preventive measures, clearing of bushes was the most commonly known preventive measure, indicated by 78 (87.6%) of respondents. The least known malaria preventive measure is the usage of mosquito repellent. The general knowledge of respondents on malaria could be adjudged to be satisfactory.

This is similar to the study that was conducted in Cameroon which revealed correct measures of preventing malaria such as: use of mosquito bed nets and insecticidal sprays, keep the environment clean, drain stagnant water and clear bushes around homes (Aderaw & Gedefaw, 2013). Positive attitudes were reported by students on most of the preventive measures of malaria. This finding is also similar to Essé *et al.,* (2008) who found that majority of respondents claimed to be using measures to avoid mosquito bites including insecticide sprays, bed nets and fumigation with burning coils for malaria prevention in Côte d'Ivoire. Compared to a study conducted at a tertiary institution in west Africa where malaria cases are also high, students were reported to buy combined anti malaria drug as a preventive measures (Adeyemo, Okpala, Oyana, & Imoukhuede, 2014); however the use of malaria drugs were not reported in this study. Limited use of repellent coils in the current study is quite surprising because they are available from the local markets at affordable prices in comparison to insecticide sprays which are expensive.

All the respondents have seen a mosquito as well as mosquito bite. Also all the respondents 89 (100%) knew that malaria is a disease while 40(45.6) mentioned malaria as a major cause of mortality among people. Seventy (78.9%) of the study participants mentioned stagnant water as breeding sites for mosquitoes and only forty (44.4%) of study participants knew that malaria can be completely eradicated. 34 (38.9%) had reported mosquito bites human beings at night time and only 75 (85.2%) of the respondents knew that malaria is caused by microscopic organisms (plasmodium species). 65 (73.3%) indicated that malaria can be treated using anti-malaria drugs while 82 (92.1%) agreed that malaria can affect the performance of students. Unfortunately 46 (51.1%) of the respondents reported lack of sensitization program by their various University

6 CONCLUSION

The findings from this study indicates that knowledge of malaria among University students from Nigeria living in Dhaka was good indicating that this might be attributable to an increased practice of malaria prevention, treatment and control. Although there were some misconceptions noted, especially on the identification of complications of malaria.

- It also revealed that of the 89 respondents that were interviewed for their views on the possible mode of transmission of malaria, 98.9% identified mosquito bites as the means of transmission of malaria disease
- The study revealed that the majority of the respondents (25%) had moderate level of knowledge about malaria, followed by poor (10%) and the rest had good level of knowledge (65%).
- It also reported that there was significant association between University, qualification and level of knowledge about malaria.

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