Incidence Of Malaria Infection Among The Undergraduates Of University Of Benin (Uniben), Benin City, Nigeria.

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Citation

Abstract

This study aims to investigate the incidence of Malaria infections amongst undergraduates of the University of Benin (UNIBEN), Edo-state, Nigeria. The study utilized a retrospective descriptive design to analyze patients' records from June 2010 to May 2013. The checklist include information on frequency of attendance relating to malaria, drugs used for treating malaria in the health centre for the years under study and frequency for admitted and referral cases. The result from the analysis revealed that majority of the respondents who visited the university health centre for malaria infection were males. There was an upward shift in occurrence of malaria in the first year under study cases and more in the second year under study, which implies that the incidence of malaria among the students who visited the health centre was on the increase. Record shows that, there are eleven anti-malaria drugs given for the treatment of malaria at UNIBEN health centre in the years under study. Lumerten and Quinine tablets are the most common administered drugs to patients with malaria infections during the first year under study, while in the second year under study, there was an increase in the number of drugs dispensed. There seems to be equal mean days spent on admission in the two years under study.

In conclusion, the study revealed that malaria is a major public health problem among undergraduates of UNIBEN, BENIN, Edo-state, Nigeria.

INTRODUCTION

Malaria is a parasite disease caused by genus plasmodium, which is transmitted to man by species of infective anopheles mosquitoes. About four species of the plasmodium have been commonly found to affect man, namely plasmodium malariae, plasmodium vivax, plasmodium ovale and plasmodium falciparum. The principal symptoms of malaria include fever, headache, chills fatigue and nausea. All these symptoms are caused by the development of the malaria parasites in the red blood cells. Bassavanthappa (2007) posited that the anti-malaria measures used in endemic countries includes:

*Preventive of man/vector contact by using repellants, protective clothing, mosquito nets etc.

*Destruction of adult mosquitoes through the use of indoor residual spraying with aerosols.

*Destruction of mosquitoes by physical methods like peridomestic sanitation, intermittent drying of water containers, clearing of jungles, drainages and filling up containers. Gamma (2003) also included the use of larvicides through malaria

insecticides.

*Chemoprophylaxis and chemotherapy.

Malaria accounts for over 300 million cases and 2million deaths annually with majority of them in sub-Saharan Africa (Federal Ministry of Health 2008). Ajayi, Falade, Adeniyi and Abolaji (1995), stated that malaria is the number one killer of children and it accounts for about one million episodes annually with 1% mortality rate. Bassavanthappa (2007) explained that over 100 million of cases of malaria are reported annually, out of which 1million result in death. Greenwood and Mutabingwa (2002) said that malaria disease is a leading killer of children, accounting for 30% mortality rate. There has been an increase in human and financial commitments to the control of malaria nationally and internationally. It creates a major challenge and of public concern in Nigeria with a high prevalence rate. Federal Ministry of Health (2008) posited that malaria accounts for 110 million clinical cases annually. Ezugbo-Nwobi, Obiukwu, Uneanatu and Egbuchs (2011) described malaria as been holoendemic in Nigeria. The Federal Ministry of Health in Nigeria stated that malaria has great

impact on the nation's economy as about N132 billion is lost to malaria in form of treatment, cost, preventive and loss of man hours. Alaba and Alaba (2005) in their study on ''micro and macro linkage effect of malaria in Nigeria households'' revealed that malaria impair people's ability to work hard, compromising household/family resources by the way of stress/burden occasioned by treatment and inability to farm for food supply. It also leads to absenteeism from school, leading to poor performance. Ayele, Zewotir and Mwambi (2012) stated that records from the Ethiopian Federal Ministry of Health revealed that more than 75% of the total area of Ethiopia is malarious, making malaria the leading public health problem in Ethiopia.

This paper is to identify the incidence of malaria among the undergraduates in the University of Benin, Edo-state, Nigeria.

OBJECTIVES OF THE STUDY

The objectives of this study are to:

determine the incidence of malaria amongst students of the University of Benin, at UNIBEN health center.
find out the treatment modalities employed in the care of patients with malaria in UNIBEN health center.
establish the treatment outcome of malaria among students in UNIBEN health center.

Significance of the Study

Malaria poses a worldwide problem with about 143 countries being endemic. Over 100million cases of malaria are reported daily (Bassavanthappa, 2007). The disease may result in life threatening complications such as anaemia, cerebral malaria, renal disease, blackwater fever, pulmonary malaria and dysenteric malaria which may result in death. Malaria is of a major public health concern in Nigeria.

This study will provide baseline information on the trend of malaria among UNIBEN students, with emphasis on their treatment modality and treatment outcome over a period of two years which may be useful for research purpose or for future reference, and to plan strategy for control of malaria amongst UNIBEN students.

Limitation of the Study

This research work may be limited by the level of accuracy of data in the case files and other records of the students coming for treatment, admission and discharge from UNIBEN health center as secondary data will be employed for the purpose of this study.

METHODS

This study utilized a retrospective descriptive design. Patients' records from June 2010 to May 2013 were analyzed. The checklist include information on frequency of attendance relating to malaria, drugs used for treating malaria for the years under study and frequency for admitted and referral cases.

Study Area

This study is carried out in University of Benin, between June 2010 and 2012. Benin is in the tropical rain forest. The raining season stretches between March to October and dry season between November to February. The temperature in Benin during raining season ranges between 20 o to 36.5 oC and in dry season 27 o to 36.5 oC. The climatic conditions and the trailing vegetation at certain periods of the year create favourable breeding sites for Anopheles mosquitoes which are vectors for Plasmodium parasites.

The two campuses of the University of Benin are well laid out in Ekenwan and Ugbowo areas of Benin City. Although houses are not clustered together but, there are lots of natural vegetation around the halls of residence of students and the school areas. Most of the students resides off-campus around Ekosodin, Osasogie, Building Development Property Authority, University of Benin Teaching Hospital and University staff quarters. Most of roads are bad, having pot holes and accumulated stagnant waters. Similarly, the gutters are not well drained thus providing good breeding ground for mosquitoes.

Instrument

An observational check list was developed for manual collection of secondary data from the register, case notes and the admission and discharge records of patients. The checklist include information on the following; Age, frequency of hospitalization, drugs prescribed for the treatment of malaria,   incidence of malaria among students, complications associated with malaria , treatment modality and outcome of treatment.

Ethical Consideration
The ethical protocol received approval from the University

health center ethical committee. Further permission was taking from the Records Officer of the hospital before the patients' records could be retrieved.

RESULTS

Research question one:

What is the incidence rate of malaria among university of Benin undergraduate students in the year under study? Descriptive statistics (frequency count and percentages) were used to answer this research question, results is presented in table 1, 2 and figure 1 and 2.

Table 1

Frequency of attendance relating to malaria infection from June 2010 to May 2011 and June 2011 to 2012

Month	Attendance due to malaria infection June 2010 to May 2011			Percentage Distribution		Attendance due to malaria infection June 2011 to May 2012			Percentage Distribution	
	Male	Female	Total	Male	Female	Male	Female	Total	Male	Female
June	337	175	512	65.82	34.18	531	358	889	59.73	40.27
July	244	152	396	61.62	38.38	303	225	528	57.39	42.61
August	445	342	787	56.54	43.46	630	425	1055	59.72	40.28
September	653	439	1092	59.79	40.21	698	236	934	74.73	25.27
October	728	531	1259	57.82	42.18	371	278	649	57.16	42.84
November	51	58	109	46.79	53.21	122	138	260	46.92	53.08
December	23	31	54	42.59	59.70	116	97	213	54.46	45.54
January	26	32	58	44.83	55.11	38	31	69	55.07	44.93
February	50	26	76	65.79	34.21	64	46	110	58.18	41.82
March	119	80	199	59.80	41.20	350	290	640	54.69	45.31
April	126	132	258	48.84	51.18	447	289	578	77.34	22.66
May	326	208	534	61.06	38.95	547	382	929	58.88	41.12
Total	3118	2206	5334	58.68	41.35	4,059	2795	6854	59.22	40.74

Figures 1 and 2

Monthly percentage of prevelance of malaria in June 2010 – May 2011 and June 2011 – May 2012.
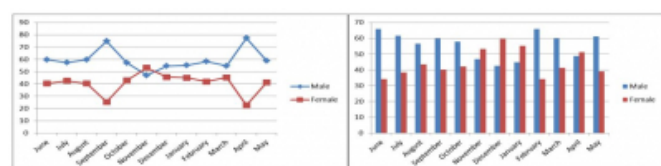
The result from the analysis revealed that majority of the respondents who visited the university health centre for malaria infection were males (n=3118) while the least were females (n =2206). Comparative analysis of frequency of occurrence of malaria infection from June 2010 to May 2012 revealed that, there was an upward shift in occurrence of malaria in the first year under study (May 2010–June 2011) n = 5334 cases to n = 6854 cases in the second year under study (may 2011–June 2012), this implies that the incidence of malaria among university of Benin students who visited the health centre was on the increase. The months with the highest recorded cases was from May to October in both years, but there was a decline from November to April in the

first year under study (May 2010– June 2011) while for the second year under study (May 2011–June 2012) it is in December to February. Though registered cases of malaria infection for male was highest in October for both gender. Male victims have the highest recorded cases in the first year under study (n=3118 as against 2206) while in the second year under study female victims have the highest number of recorded cases (n=6854 as against 4,059). It can be concluded that the peak of malaria infection was in the rainy seasons which span through April to November annually.

Research question two

What is the pattern of distribution of treatment modality employed in the case of university of Benin health centre in the year under study? Descriptive statistic (frequency count and percentage) were used to answer this research question, results are presented in table 2.

Table 2

Drugs used for treating Malaria from June 2010 to May 2011 and June 2011 to May 2011 their Impact on the Treatment 0n Malaria

Drugs	Number of Doses Per Year June 2010 – may 2011	Number of Doses Per Year June 2011-may 2012	Mean Days Spent On Admission	Percentage of Admission Rate Per Year
Farenax Tablets	1,500 doses	2000 doses		
Artesunate Amodiaquine Tablets (Govt subsidized brand)	600 doses	700 doses		
Lumerten Tablets	3,000 doses	38000 doses	For June 2010-may 2011 mean days spent on admission = 2 days	From June 2010 to May 2011 = 16. 36 percent.
Lonart Tablets	500 doses	600 doses		
Coarenat Tablets	200 doses	300 doses		
Camoquine Tablets	150 doses	120 doses		
Colart Tablets	160 doses	300 doses		
Quinine Tablets as follow up	100,000 Tablets for	10,0000 Tablets for		From June 2011 to May 2012 = 13. 86 percent.
To Quinine infusion treatment or as solo treatment.	667 complete doses	667 complete doses	For June 2011-may 2012 mean days spent on admission = 2 days	
Quinine injection infused to 10% dextrose in water.	1570 ampoules/day treatment 523	1600 ampoules/day treatment 533		
Artemether injection	570 complete doses	602 complete doses		

Result from table 2 shows that, there were eleven anti-malaria drugs given for the treatment of malaria in university of Benin health centre in the year under study, (May 2010 – June 2012). Records shows that Lumerten Tablets and Quinine Tablets are the commonest administered drugs of patients with malaria infections and the least is Camoquine Tablets (150 doses) during the first year under study while (120 doses) in the second year under study.

The result from table 2 also showed an increase in the number of drug dispensed for the treatment of malaria in the second year under study to make up for the increase of patients recorded for malaria infection. There seems to be equal mean as days spent on admission in the two years

under study; though there is a drop from 16.6 per cent admission rate to 13.86 per cent in the second year. This may be because of the effectiveness of treatment evidenced by early resolution of malaria symptoms.

Research question three

What is the outcome of malaria patient who visit University of Benin health centre in the year under study?

Descriptive statistic (frequency count and percentage) were used to answer this research question result is presented in table 3.

Table 3
Frequency for admitted and referral cases from June 2010 to May2011 and June 2011 to May 2012

Months	Admitted Cases			Average number of days spent on admission	Total No of referred cases	Admitted Cases			Average number of days spent on admission	Total No of referred cases
	Male	Female	Total			Male	Female	Total		
June	51	52	103	2	1	56	32	75	2	1
July	52	54	107	3	-	43	25	68	3	1
August	38	59	97	2	-	116	98	214	3	2
September	68	67	135	3	2	176	33	209	3	2
October	78	64	142	3	2	53	46	99	2	1
November	28	37	65	2	-	17	30	47	3	-
December	21	17	38	2	-	10	12	22	2	-
January	10	10	20	2	-	6	8	14	2	-
February	9	10	19	1	-	18	14	32	1	-
March	23	10	33	2	-	32	26	58	2	1
April	21	13	84	2	-	31	16	47	2	-
May	45	35	80	3	-	44	21	65	2	1
Total	444	429	873	2	5 (0.6%)	589	361	950	2	9 (1%)

The result from table 3 shows the admission pattern of malaria in the two years under study. The records show an increase in admitted cases in the university of Benin health centre during the second year under study (873 as against 950) respectively. There is also an increase in the number of malaria complicated cases in the second year under study (5 as against 9).

A close observation of the result shows that the average number of days spent on admission by malaria patients is (n = 2) in both years under study. The result also shows that the month with the highest admitted cases for the first year under study is October (n = 142) and the month with the least admitted cases is February of the same year. Whereas in the second year under study the month with the highest number of admitted cases was August (n = 214) and the month with the least admitted cases is January (n = 14). January of the second year under study had the least of admitted cases, this might be because students were just resuming from their long vacation.

DISCUSSION

The management of University of Benin has developed strategies related to human resource development, monitoring, and evaluation to control malaria and reduce the hardships it causes. However, the goals and targets set by the management are aimed at making UNIBEN low malaria transmission or malaria free or a near zero malaria transmission. The incidence of malaria in the University of Benin accounts for 75% of clinic attendance among students despite the fact that hostels are fumigated during holidays and environmental sanitation carried out often. This present study revealed that majority of the respondents who visited the university health centre for malaria infections were male undergraduates. This study conformed to the report of Kalu, Obasi, Nduka and Oko (2012) that gender-wise, males seem to be more infected than females in Umuchieze and Uturu Communities of Abia State, Nigeria. They posited that it could be due to the fact that the males expose themselves more than the females especially when the weather is hot, by moving about bare-bodied thereby exposing themselves more to malaria vector bites than the females. Comparative analysis of frequency of occurrence observed showed that the incidence of malaria infection among UNIBEN students is on the increase with the highest recorded cases in May to October in both years; but there is a decline from November to April in the first year under study while for the second year under study it is in December to February. It can be concluded that the peak of malaria infection is in the rainy seasons which span through April to November annually. These findings agree with the report of Kalu, Obasi, Nduka and Oko (2012) that the high prevalence of malaria in both rural areas used for their study, could be due to the effects of climatic factors such as temperature, humidity and rainfall which regulate the biology of development of both mosquito and parasite

From this study it was observed that, there are eleven anti-malaria drugs given for the treatment of malaria in UNIBEN health centre in the year under study. Record shows that lumerten tablets and quinine tablets are the most common administered drugs to patients with malaria infections and the least is camoquine. This may be due to that fact that many people react to anything quinine, such as itching. Findings of this study also showed an increase in the number of drug dispensed for the treatment of malaria in the second

year under study to make up for the increase of patients recorded for malaria infection. The study of Ezugbo-Nwobi et al (2011) recorded that students of Nnamdi Azikwe University used anti-malaria such as chloroquine, sulphonamides (maloxine, amalar, malareich, fansidar) and artesunate in the treatment of malaria. There seems to be equal mean days spent on admission in the two years under study. This may be because of the effectiveness of treatment evidenced by early resolution of malaria symptoms. The result also shows that the month with the highest admitted cases for the first year under study is October and the month with the least admitted cases is February of the same year. Whereas in the second year under study the month with the highest incidence of admitted cases was August and overall January of the second year under study had the least of admitted cases, this might be because students were just resuming from their long vacation. The number of referred cases to UNIBEN teaching hospital for further investigations and treatment in the two years under study were 0.6% and 1% respectively and no incidence of death was recorded. This could be attributed to the prompt attention given to patients by the health workers in the health centre.

CONCLUSION

Over the years, malaria has continued to pose serious health challenge to individuals and families across the world. It was observed in this study that the incidence of malaria infection is more common among the male students in UNIBEN. The peak of malaria infection is during the rainy season. The University health centre makes use of eleven types of anti-malaria drugs to treat the victims and only few undergraduates are referred to University of Benin Teaching Hospital for further treatment

Recommendation

It is better to protect oneself from malaria by use the following precautions:

 * Wearing of long sleeves and cover legs especially at night.

* Ensure the screening of windows and doors.

* Using effective mosquito repellent cream.

* Using a bed net that is effective correctly.

* Spraying of homes and surrounding with insecticide

* Prevent stagnant waters around the house.

* Clearing of shrubs and weeds around the house.

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