

Prevalence and Treatment Seeking Behaviour among Malaria Patients in Some Clinics Inmayo Belwa Local Government Area, Adamawa State, Nigeria.

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Prompt access to early diagnosis and effective antimalarial treatment at Health Facility (HF) is one of the major strategies for reducing the burden of malaria. The aim of the study is to assess the prevalence and treatment seeking behaviour among malaria patients attending Health Facilities (HFs) in Mayo belwa Local Government Area, Adamawa State, Nigeria. Health facility-based cross-sectional study was carried out in Mayo belwa L. G.A., between July-August, 2018. Blood samples of 400 patients attending four HFs for malaria diagnosis were examined; thick and thin films were made and stained using standard parasitological procedures. Structured Questionnaires were administered to ascertain the socio-demography, time interval between onset of malaria illness and treatment seeking. 59.3% of the total malaria cases was due to Plasmodium falciparum, Males (61.5%) and females (56.7%) but the difference was significant at $p < 0.05$. The age group 15-25 years (41.3%) had the highest prevalence followed by ≥ 41 years, 25.5%, 25-34 years, 19.3%, and ≥ 35 years, 13.9% the difference is statistically significant. About 29.8% of them came directly to HF without seeking treatment from any other source. While 32.0% used Aminoquinolines, Sulfonamides 22.5%, ACT 18.0% and local herds 15.0%. 25.5% of the patients visited the HFs within two days while the remaining 74.5% came to HFs three or more days after the onset of malaria illness. The main reasons cited for the delay were mild illness (44.2%), financial problems (19.2%) and thought of other diseases. A large proportion of malaria cases seek treatment at HFs three or more days after the onset of malaria illness after taking medications from other sources indicating an extreme delay in early diagnosis and treatment mainly due to mild illness, financial problems, and lack of access. Thus, malaria prevention and control program should focus these identified factors.

Keywords: Health facilities; onset; Treatment seeking behaviour; Prevalence; Burden; Strategies; Medication; Malaria.

Date of Submission: 08-06-2019

Date of acceptance: 25-06-2019

I. Introduction

Malaria is a life-threatening disease of man caused by parasite of the genus *Plasmodium*, which is transmitted from person to person, through the bite of infected female *Anopheles* mosquitoes. It is a killer and debilitating disease and remains a formidable health and socio-economic problem in the world (WHO, 2014).

Globally, an estimated 3.2 billion people in 97 countries and territories are at risk of being infected with malaria and developing disease and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). According to the latest estimates, 198 million cases of malaria occurred globally in 2013 and 584 000 deaths, representing a decrease in malaria cases of 47% and mortality rates of 28% since 2000-2013, respectively. World Health Organization also described it as the leading cause of death in the developing world. The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged less than 5 years, who account for 78% of all deaths (WHO, 2014)

Despite the amount of resources spent in the control of malaria for past ten years 82% of African population lives in areas at risk of malaria, but there is decrease in malaria infection from 2000 to 2010 and for now more than 100 million people lives in areas where malaria transmission is low, there is decrease in the prevalence of malaria infection in children from 40 out of the 44 countries in Africa from 2000 to 2010. There is success in the malaria control programmes in some African countries such as South African, Ethiopia e.t.c. these countries have joined other African countries where malaria can be eradicated. Countries of the world have increased the amount of resources they spent in malaria control programmes from 100 million dollars to

200 billion dollars last year. But there is need to increase effort in malaria control programmes especially in malaria treatment and distribution of free ITNs (WHO, 2014).

Nigeria is known for the high prevalence of malaria and it is a leading cause of morbidity and mortality in the country. Available records showed that at least 50 percent of Nigeria’s population suffers from at least one episode of malaria each year and it accounts for over 45 per cent of all outpatient visits to hospitals (Fagbenro *et al.*, 2007). The Federal Ministry of Health, (2015) reported that the disease account for 60% of outpatients visits and 30% of hospitalizations among children under-five and the leading cause of mortality. It is responsible for an estimated 300, 000 total death.

The Adamawa State Ministry of Health, (2015) reported that about 89% of the population in Mayo belwa LGA are residing in rural areas and the health service coverage is about 49%. The response to most episodes begins with home treatment usually with antimalarial drugs obtained from different sources and this may cause a delay in treatment seeking from the health facilities. Therefore, the purpose of this study was to investigate the prevalence and treatment seeking behaviour among malaria patients attending health facilities.

II. Methods

A health facility-based cross-sectional study was carried out in Mayo belwa L.G.A. of Adamawa State between July-August 2017 to determine the prevalence and treatment seeking behaviour among malaria patients attending four health facilities. One Cottage Hospital and nine Primary Health Care (PHC) in L.G.A. were identified. To avoid bias in the study, a simple random technique was used to determine the health facilities to carry out the research and four were selected (Anguwan fada PHC, Cottage Hospital, Ngorobi PHC and Ganfada PHC). The sample size was determined using a formula for estimating a single proportion. Taking an estimated prevalence of malaria illness of 50% with 5% marginal error, a total of 400 study subjects were found to be representative after adding 2% contingency.

The study subjects were microscopically confirmed of malaria in Cottage Hospital Mayo belwa and Anguwan Fada PHC. The required sample size was equally divided among the four health facilities (100 each). All patients of both sex and ages ≥ 14 to ≥ 35 years were microscopically examined using standard parasitological procedures. Patients critically ill and unable to respond for the interviewers were excluded from the study. Consent was obtained from the Executive Secretary PHC on the proposed study and from the medical officers’ in-charge of the health facilities.

A pre-tested structured questionnaire was used containing information on socio-demography, onset of illness and history of medications before visiting the health facilities. Data were collected by trained malaria community health workers; one person was assigned per health facility. Data thus collected were entered and analyzed using SPSS version 20 software package.

III. Results

The results showed that 59.3% of the study subjects were confirmed positive for malaria parasite infection, all were due to *Plasmodium falciparum* despite taking antimalarial drugs without prescription. The study patients consisted of 53.3% males and 46.7% females as shown in Table 1. The mean and median ages of the study subjects were 27.6 and 24 years respectively, with a SD of 17.9. Age group of 15-24 years showed the highest rate of infection (41.3%), followed by ≥ 14 years (25.5%), 25-34 years (19.3%), and the least were ≥ 35 years (13.9%) the difference was statistically significant at $p < 0.05$ (Table 2).

Table 1. Showing the Prevalence of Malaria with Respect to Sex

SEX	RESULT		Total (%)
	Negative (%)	Positive (%)	
Male	82 (38.5)	131 (61.5)	213 (53.3)
Female	81 (43.3)	106 (56.7)	187 (46.7)
Total	163 (40.7)	237 (59.3)	400 (100)

Table 2. Showing the Prevalence of Malaria with Respect to Age

AGE	Number Examined	RESULT	
		Negative (%)	Positive (%)
≥ 14	102 (25.5)	49 (48.0)	53 (52.0)
15-24	165 (41.3)	41 (24.8)	124 (75.2)
25-34	77 (19.3)	38 (49.4)	39 (50.6)
≥ 35	56 (13.9)	35 (62.5)	21 (37.5)
Total	400 (100)	163 (40.7)	237 (59.3)

Among the study subjects, farmers (39.4%), 37.3% students, 15.3% housewives, 8.9% unemployed, 6.6% merchants, 5.4% daily labourers and 14.8% government employees. Regarding educational status, 29% were illiterate, 39% primary and junior school level, and the remaining high school and above. About 47% and

46% of the respondents were never married and married individuals, respectively, and 7% being separated, divorced and widowed ($p < 0.05$).

Table 3: Respondents socio-demography

Variables	Frequency (%)
Religion	
Christians	204(51.0)
Muslims	196(49.0)
Occupation	
Farmers	116(29.0)
Students	110(27.5)
House wives	61(15.3)
Unemployed	36(8.9)
Merchants	26(6.5)
Daily labourers	22(5.5)
Government employee	29(7.3)
Marital Status	
Married	188(47.0)
Never married	184(46.0)
Others(separated, divorce and widow)	28(7.0)

Regarding the time interval between the onset of malaria illness and treatment seeking (diagnosis and treatment initiation), only 11.3% of them visited the laboratories within two days while the remaining 62.9% came to health centers after three or more days following the onset of illness. . The main reasons cited for the delay (three or more days) were mild illness, 28.5%; 23.4% financial problems, 22.3% Inaccessible health service and thought of other diseases 11.3%. (Table 4).

Table 4 : Time interval between onset of malaria illness and treatment seeking behaviour at the Health Care Centers, and reasons for delay to seek early treatment.

Variables	Frequency (%)
Time Interval	
<1 day	47 (11.8)
1 day	56(14.0)
2 day	45(11.3)
3-4 days	103(25.8)
> 4 days	149(37.1)
Reasons for Delay	
Mild illness/Fever	114 (28.5)
Financial problem	95 (23.4)
Thought other disease	45(11.3)
Inaccessible to health service	89 (22.3)
closed due to weekends Visited	26 (6.5)
Very sick to come	31 (7.8)

On interview about the use of antimalarial treatment before visiting health facilities, 70.8% ($n=283$) patients replied “yes” of these, 63.9% of them visited three or more days after the onset of illness. From the 283 patients, 32.9% bought and used drugs given to them by health workers, 41.7% bought without prescription with prior knowledge of the same drug for the same type of illness and 17.7% due to peer influence (Table 5).

Table 5: Utilization of antimalarial drugs and mode of prescription before treatment seeking at Health facilities

Variables	Response	Frequency (%)
Took drug before	Yes	283(70.8)
Coming to Health facilities	No	117(29.2)
Mode of prescription ($n=283$)	Health workers	93(32.9)
	Bought without prescription	118(41.7)
	Peoples advice	50(17.7)
	Other	22(7.7)

Regarding the types of antimalarial drugs, Aminoquinolines 32.0%, Sulfonamides 22.5%, Artemisinin combined therapy 18.0% and localherds 15.0% while others used antipyretics and antibiotics. About 40% of them obtained antimalarial drugs either from private pharmacies, drug shops. The rest mentioned other sources of antimalarial drugs such as malaria control services, health stations and already leftover drugs at home. The causes of illness for the all malaria patients who took prior medications before seeking treatments was *P.falciparum* the highest rate of infection was observed among patients that took Sulfonamides (59.4%) and

the lowest was observed among patients that used ACT (9.1%) Table 6.

Table 6: Treatment seeking before visiting Health facilities.

Variables	Total No. Of those using Drugs (%)	Result	
		Negative (%)	Positive (%)
Took Drugs (n=283)			
Aminoquinolines	118(32.0%)	52 (40.6)	66 (59.4)
Sulfonamides	100 (22.5)	58 (43.3)	42 (56.7)
Artemisinin Com. Therapy	33 (18.3)	30 (53.4)	3 (46.6)
Local herbs	22 (15.0)	11 (50)	11 (50.0)
No drugs (n=117)	117 (12.3)	12 (6.1)	105 (93.9)
Total	400 (100.0)	163 (40.7)	237 (59.3)

The data were further analyzed to assess the relationships between different socio-demographic and the time interval between onset of malaria illness and seeking treatment at health facilities and there were no statistically significant differences ($p>0.05$) duration between onset of illness and sex, educational status and religion Muslims and Christians in the duration of time between onset of malaria illness and treatment seeking (Table 7).

Table 7: Relationships of various socio-demographic factors with duration of treatment seeking behaviour

Variable	Duration between onset of illness and treatment seeking		
	≤ two days	>two days	OR (95% CI) ^a
Sex			
Female	82	105	1.15(0.62,1.62)
Male	26	187	1
Educational status			
Illiterate	33	119	0.65(0.35,1.14)
Literate	66	173	1
Religion			
Christian	56	148	1.16(0.54,2.31)
Muslim	49	147	1

IV. Discussion

This study has demonstrated that 59.3% of malaria patients confirmed by a positive blood film despite seeking treatment before coming to the laboratory for malaria diagnosis. The majority of malaria patients in the current study mainly prefer self medication before visiting Health centers⁷. The prevalence is slightly low to the overall prevalence of 59.9% reported in a study by Ojo and Mafiana (2005) among children under 15 years in Abeokuta, 59.5% reported by Epidi *et al.*, (2008) among blood donors in Abakaliki, and lower than the report by Chessed *et al.*, (2013). However the results are substantially higher than previous estimates from passive surveillance of suspected malaria case-patients, by Anumudu *et al.*, (2006) reported 17% prevalence in Eastern Nigeria while Umeaneato and Ekejindu (2006) reported 46% prevalence in Nnewi, Anambra State Nigeria.

Malaria affect humans at all age groups and both male and female sexes. Studies have also shown seasonal variations in the rate of infections and differences in the types of malaria parasite depending upon the climatic condition (Ghulam *et al.*, 2004). In this study, the males had relatively higher prevalence rate of 61.5%, compared with their female counterparts that had prevalence rate of 56.7%. Similar reports had indicated higher prevalence in males than females (WHO, 2005;Abdullahi *et al.*, 2009), but there is no scientific evidence to prove the higher prevalence being related to gender as susceptibility to malaria infection is not influenced by gender (Gilles and Warrell, 1993). The higher prevalence rate could just be by chance, or due to the fact that males engage in activities which make them more prone to infective mosquito bites as compare to their female counterparts that are mostly at home and protected from such infective bites, this further buttressed such claims made by (W.H.O., 2006).

However, it is difficult to generalize that availability of antimalarial drugs and laboratory services provided at the health care centers can guarantee an attractive option if people have to spend money on travel or other fares in case when the accessibility is difficult. 70.8% (n=283) of malaria patients who took medications from other sources such as pharmacies and drug shops and private drug vendors before seeking treatment at the Health facilities. This is in agreement with a study done in central Ethiopia that reported drug shops (42.3%) as the usual source of antimalarial drugs for mothers and treatment seeking of malaria patients in east shewa zone of Oromia, Ethiopia (Yeneneh *et al.*, 1993). The higher use of drug shops or rural drug vendors could be due to the ease in the accessibility of these sources. Buying and using antimalarial drugs prior to the visit to health facilities may enhance the promptness of antimalarial treatment although the dosage regimens remain uncertain.

The main disadvantage of seeking treatment at the health Care facilities after taking medications somewhere else is favoring the chance of false negatives, as the parasites can be inactive or scanty in the peripheral blood (Gill and Warrel, 1993). This can also potentially result in missed early diagnosis and delays in appropriate treatment that can further promote drug resistant *Plasmodium* strains (Gill and Warrel, 1993).

The results of the current study show that among the study subjects only 25.5% visited health Care facilities for diagnosis and treatment within two days after the onset of malaria illness with the majority of them being after three or more days. The main reasons cited for the delay in the visit of health facilities were mild illness, high workload, financial problems, thought of other diseases and inaccessible health facilities. The findings of this study agree with the results of other study carried out in Butajira District (Deressa *et al.*, 2000). The study indicated that 65% of the people with febrile illness most probably due to malaria visited health facilities after three or more days following the onset of illness. In a study conducted in Sri Lanka, about 67% of patients began to seek treatment after two days of the onset of malaria (Jayawardene, 1993). The delay in the treatment seeking may lead to the progress of severe and fatal malaria.

The level of malaria patients attending health facilities was poor(25.5%) compare to the study by Wakgari *et al.*, (2000) were majority of malaria patients in East Shewa Zone of Oromia, Ethiopia mainly prefer to visit malaria control laboratories (99.2%) (Oljira and Gebre-Selassie, 2001). This poor satisfaction among patients attending health facilities, might be particularly attributed to failure to get appropriate drugs, long waiting time in the health facilities and ill responses or negligence from the health professionals. Patient satisfaction towards the services and quality of care provided can substantially enhance the frequent utilization of health services as well a compliance with drug regimens and health workers advice.

In conclusion, the primary goal of the health facilities which include malaria treatment is to reduce morbidity and mortality from malaria through early diagnosis and prompt treatment. Unfortunately, a large proportion of malaria cases seek treatment three or more days on onset of malaria illness after taking medications from other sources indicating a delay in early diagnosis and treatment mainly due to financial problems, work overload and lack of access. Accordingly, more emphasis should be given on identifying innovative ways of ensuring easy access to health facilities and subsidized antimalarial drugs (especially ACT) for people in rural areas.

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Sekari Hickson. " Prevalence and Treatment Seeking Behaviour among Malaria Patients in Some Clinics Inmayo Belwa Local Government Area, Adamawa State, Nigeria." IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS) 14.3 (2019): 79-83.