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Determinants of Malaria Treatment Seeking Behaviour among Urban and Rural Households in North Central Nigeria

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Background: Malaria is a major cause of morbidity and mortality in Nigeria accounting for a significant proportion of household expenditure in treatment and prophylaxis. Nigeria account for 25% of global clinical cases and mortality and also has the highest malaria burden in sub Saharan Africa. In most cases of malaria illness, treatment takes place at the community level and only few serious cases are taken to healthcare facilities. A number of cultural, socioeconomic, patient related and health service provider variables often in a complex interplay are known to influence treatment seeking behaviour, though the relative importance of variables differ widely between settings.

Objectives: To identify where households receive malaria treatment services as well as prevalence of malaria related hospitalization. Also to identify the most common factor(s) that most influence malaria treatment behaviour.

Methods: This is a cross section study using multistage sampling method for household survey. This study was carried out during the rainy months of June and July 2016. Six towns with high urban and rural population density in Benue State were purposely selected for survey. A total of

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1705 completed household administered questionnaires were found usable for analysis. The data was entered into SPSS version 20 for descriptive and inferential analysis. Factor analysis using principal component analysis, varimax rotation with KMO normalization was carried out. Factor loadings lower than 0.4 was suppressed. Mean item scores with high factor loading and mean total extracted component score were used for further analysis. P values ≤ *0.05* was considered significant.

Ethical Issues: Ethical approval was sought and obtained from health research ethic department of Benue State Ministry of health and human services (Ref.no.MED/261/VOL./540).

Results and Discussion: The average malaria prevalence in rural areas was twice that of urban areas, though the rates of hospitalization were similar. About 50% of households in both rural and urban areas reported at least one episode of malaria within the study period reflecting persistence of high malaria transmission. Many variables have been shown to influence treatment behaviour.

Conclusion: Malaria cases and malaria related hospitalization remain high and while public health facilities play more dominant roles, while in rural areas private providers dominates the landscape. Treatment seeking behaviour is largely influenced by many variables relating to availability, accessibility, affordability and perceptions of household healthcare decision makers.

Keywords: Malaria; treatment behaviour; determinants; household.

1. BACKGROUND

Malaria" is a major cause of morbidity and mortality in Nigeria particularly in pregnant women and children below five years [1] The disease is estimated to be directly responsible for 20 – 40% of global hospital out-patient consultations in malaria endemic countries. In sub Saharan Africa malaria is estimated to be responsible for 10 – 15% of hospitalizations primarily due to complications [2]. Globally, prevalence of malaria among populations at risk declined by 21%, mortality also fell by 29 among all age groups and for children below five years the decline was about 35% [3]. Nigeria being the most populous country in sub Saharan Africa is expected to contribute to most of the 76% malaria prevalence and 75% of global mortality. The average national prevalence of malaria was 45.1% though the number of cases in rural areas more than doubles that in urban areas [4].According to federal ministry of health an estimated 60% of all outpatient hospital visits, 36% of all hospital admissions and 11% of maternal mortality in Nigeria is due to malaria. Over 110 million cases of clinical malaria is diagnosed annually in Nigeria, though there have been concerns about over diagnosis [5]**.** Malaria is estimated to cause an annual economic loss of about $132 billion in treatment, prevention and loss of productivity [6].

A nationwide malaria indicator survey reported that prevalence was between 24 – 58% across the country [4], however several studies reported much higher prevalence of malaria [7] reported prevalence of 70.8%, [8] (73.9%) and [9] (81.9%). The national malaria treatment policy recognized several shortcomings in malaria management practices when it noted that 80% of malaria is poorly managed at the community level, laboratory confirmation is low and up to 40% of patients with malaria die for lack of proper care.

Despite many interventions in the last decade malaria remains a major public health problem. The participation of community and households in detection and treatment of malaria has been vigorously emphasized in most malaria control programmes. The behaviour of households and other care givers in the community to febrile illness has been noted to be an important factor in prevention of complications and reductions in mortality. While the concept of treatment seeking behavior is complex, multifaceted and multidimensional; behavioural model proposed by [10] has been widely used in literature. A number of other models have been proposed to explain treatment seeking behaviour, however many variables of the models frequently overlap, thus producing inconsistent results with wide variations between settings [11].

The generally held belief that patients are passive participants in healthcare decisions has been challenged by the work of [12] in which he noted that, though patients cannot influence treatment or less likely to challenge it, they exercise considerable power is choice of where and how to access healthcare services. There is often a complex interplay between patient related and provider variables [13] and determinants may vary due to language problems [14], long

travel times [15], ease of transportation [16], waiting time at healthcare facility [17] and quality of care provided [18].

A systematic review [19] concluded that low cost of services, proximity, confidence in treatment methods and positive attitude of healthcare personnel are strong predictors of behaviour. Other determinants of treatment seeking behaviour reported included friendliness of staff [20], cultural factors [21], family size [22] and educational status [23].

The complexity of determinants of malaria treatment seeking behaviour and wide variability in results is a source of much debate. However continuous evaluation of determinants in different settings is critical to developing appropriate strategies to effectively reach communities, households and decision makers with information that will inform malaria control policy implementation efforts.

1.1 Objectives

- To identify the most common factors that influence malaria treatment behaviour
- To determine malaria prevalence and malaria related hospitalizations.
- To determine where households access malaria treatment services.

2. METHODS

2.1 Setting

This study was carried out in Benue State North central Nigeria. The State comprises 23 local government areas and is populated by many ethnic groups with diverse cultures. The major languages spoken in the State are Tiv, Idoma and Igede and agriculture is the major occupation of the people. The State capital Makurdi is about 270 km south east of Abuja the federal capital.

2.2 Study Design

This was a cross sectional survey of selected households across the State. The study was carried out during the rainy season June and July 2015.

2.3 Selection of Survey Areas

Survey areas were by multistage sampling method. In the first stage three major towns (Makurdi, Gboko and Otukpo) and three rural areas (Oju, Aliade and Yandev) were purposely selected across the state such that major ethnic groups were represented. In stage two, four major residential districts were randomly selected using information from State town planning department. Stage three involved random selection of four streets in each selected residential district. All houses in the selected streets were numbered serially and every other household was surveyed.

2.4 Data Collectors

Data collectors included pharmacists and nurses were recruited among staff of private and public healthcare State facilities. At least one individual in the data collection team was fluent in the local language spoken in the area. A three day field training on all aspects of data collection was carried out after which data simulation collection exercise was conducted in a few selected households.

2.5 Sample Size

The sample size of 1639 was determined using the formula

$N = 4PQ/l^2$

Where

N = sample size

P = Prevalence (49.4%)

Q = 1 – P

l^2 = Permissible error of P (5%)

2.6 Questionnaire Design

The questionnaire was a seventeen item five point Likert scale instrument and was administered in randomly selected households in Makurdi. The Cronbach alpha was 0.822 which is an indication of high internal consistency of the instrument. The questionnaires used for pre-testing the instrument were not included in the final data analysis.

2.7 Informed consent

The purpose and the right of refusal were explained to respondents after which consent for participation was sought and obtained either orally or in writing. Informed consent was also deemed to have been given when respondents voluntarily accepted to fill the questionnaire. Participation was completely free and there was no penalty for non-participation.

2.8 Questionnaire Administration

Two thousand questionnaires were distributed between urban and rural areas in the ratio of 2:1. Houses previously marked for survey were visited by a pair of data collectors and one identified healthcare giver was given the questionnaire after informed consent have been obtained. Those who have difficulties reading or writing were assisted by data collectors either to interpret or enter the response of respondents. Where respondents in pre-selected houses declined participation, an extra household in the same area was surveyed as replacement.

2.9 Data Analysis

A total of 1705 questionnaires were found suitable for analysis giving a retrieval rate of 85.2%. The data were collated, checked for errors and entered into Microsoft excel and subsequently loaded into SPSS version 20 for descriptive and inferential analysis. Factor analysis using principal component analysis and varimax rotation with KMO normalization was performed. Factor loading less than 0.4 was suppressed. Mean item score and total mean score for extracted components with high factor loading were extracted and used for further analysis.

2.10 Ethical Approval

Ethical approval was sought and obtained from health research committee of Benue State ministry of health (Ref. No. MED/261/vol1/540).

3. RESULTS

3.1 Distribution of respondents (n = 1705)

A total of 2000 questionnaires were administered across the six survey areas and 1705 were found usable for analysis giving an overall return rate of 85.2%. The distribution of respondents across survey areas is shown below. The return rate of questionnaires ranged between 89.7 – 91.5% in urban areas and 72.4 – 81.8% in rural areas. Urban areas had about twice the number of respondents compared to rural areas due to higher population density (Fig. 1).

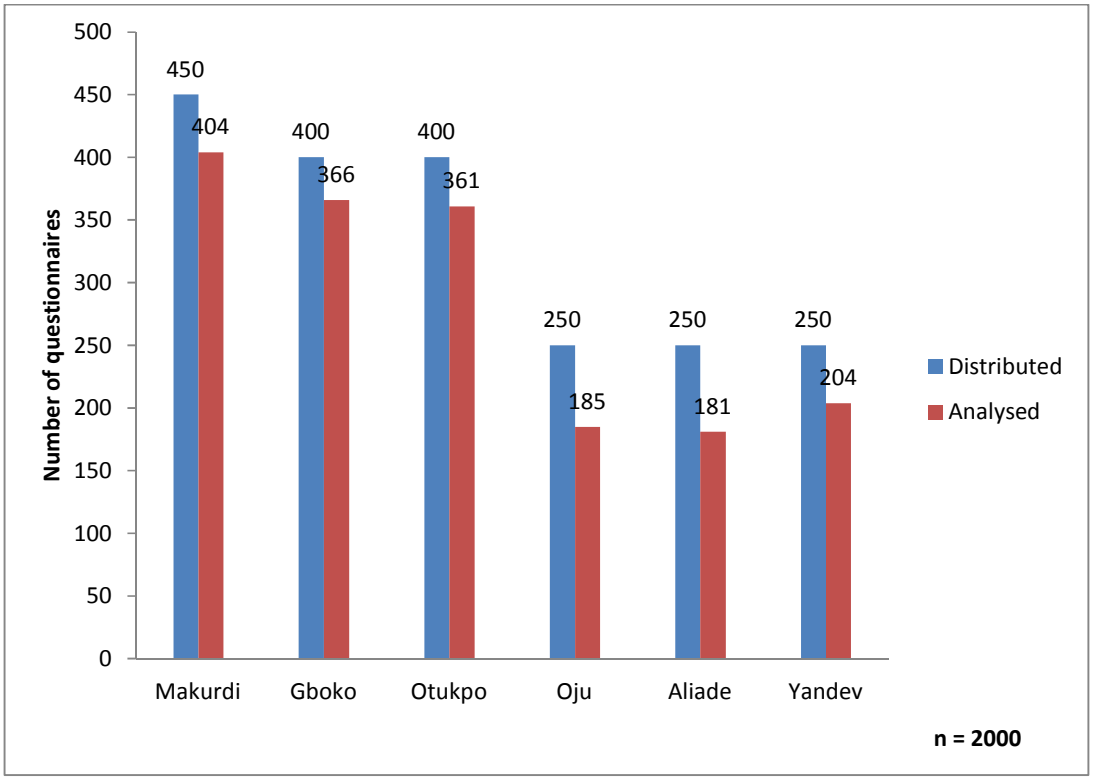

Fig. 1. Distribution of respondents

3.2 Demographic Characteristics of Respondents (n = 1705)

3.2.1 Gender distribution

The results showed that about half of all respondents are either males or about 48.3% of them are married. A significant number of respondents (42.5%) were single (Figs. 2 and 3). There are no significant differences between males and females (P = 0.132) and marital status (P = 0.128).

3.2.2 Occupation

Majority of respondents were either civil servants (37.6%) or self-employed (34.2), the rest are either farmers or students (Fig. 4). There is significant difference between respondents who are either civil servants or self-employed and others (P = 0.035).

3.2.3 Educational status

Majority of respondents (66.7%) had tertiary education accounting for about 66.7%, only about 10% had primary level education (Fig. 5).

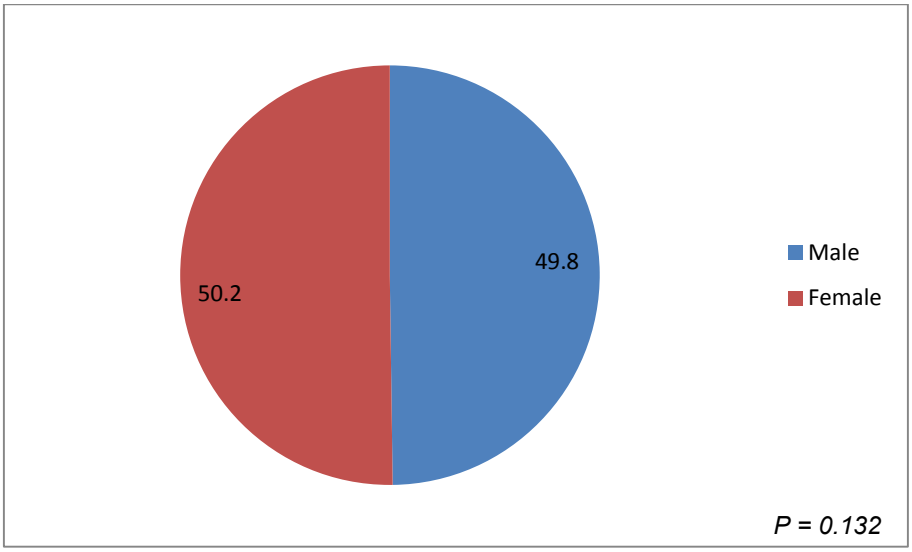

Fig. 2. Gender

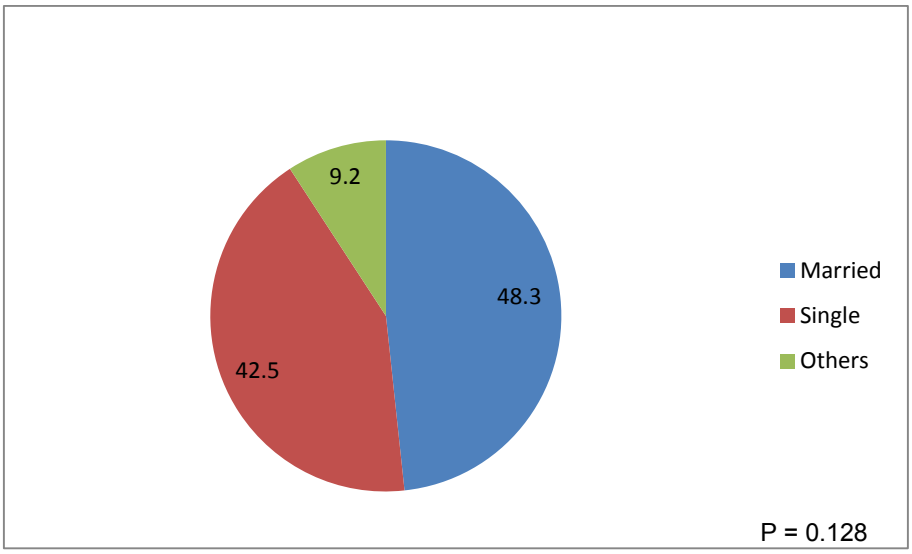

Fig. 3. Marital status

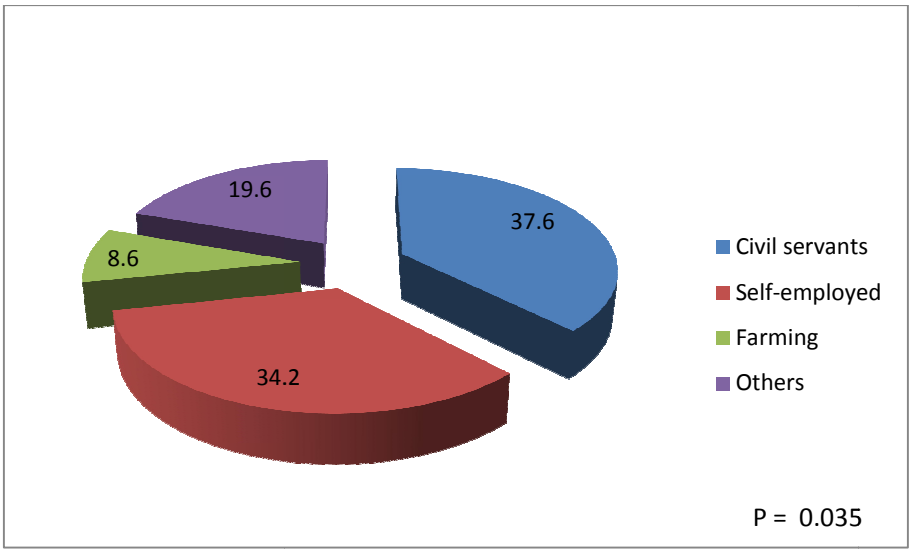

Fig. 4. Occupation of respondents

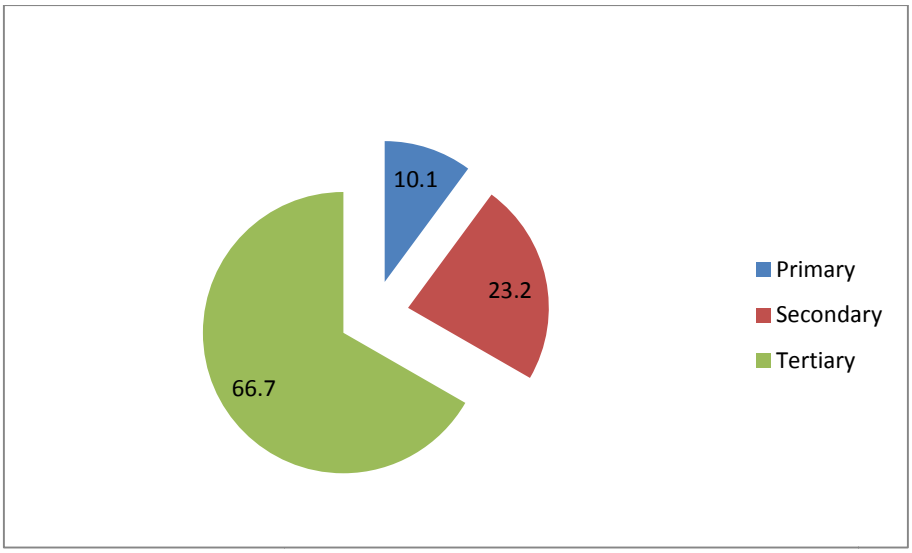

Fig. 5. Educational status of respondents

3.3 Comparism of Demographic Data between Urban and Rural Areas

The mean age of respondents was 42.8±12.9 and 40.4±9.2 in urban and rural areas respectively (P <0.001). There are also significant differences between urban and rural areas with respect to household size (P = 0.001), distance to nearest point of care (P = 0.022), cost of add - on medications (P = 0.016) and monthly income (P = <0.001) Table 1.

3.4 Malaria Cases Reported in Survey Areas

Respondents in urban areas reported 2 – 4 times as many malaria cases as in rural areas. A total of 2973 cases of malaria were reported across the six survey areas; the State capital Makurdi accounted for more than a third of all cases, followed by Gboko with 26.9%. In rural areas however reported cases ranged between 4 – 9% which is significantly lower than in urban areas (Fig. 6).

Table 1. Other demographic data

	Urban	Rural	P value
Mean age of respondents (yrs.)	42.8±12.9	40.4±9.2	< 0.001
Household size (n)	5.5±2.9	4.7±2.8	0.001
Distance to healthcare facility (km)	7.7±5.5	9.5±5.3	0.022
Antimalarial drug cost / unit ($)	2.41±1.56	2.34±1.28	0.139
Other drugs / Prescription ($)	2.31±2.08	2.64±1.35	0.016
Consultation cost / case	2.54±1.48	2.42±1.26	0.161
Laboratory test cost /case	2.79±1.48	2.91±1.24	0.138
Monthly income ($)	135.6±2.99	121.3±87.5	<0.001
Number of reported malaria cases	1982	991	
Average number of malaria cases/family	1.5	2.6	
Average number of hospitalization/family	2.3	2.2	

1 US$ is equivalent to N315

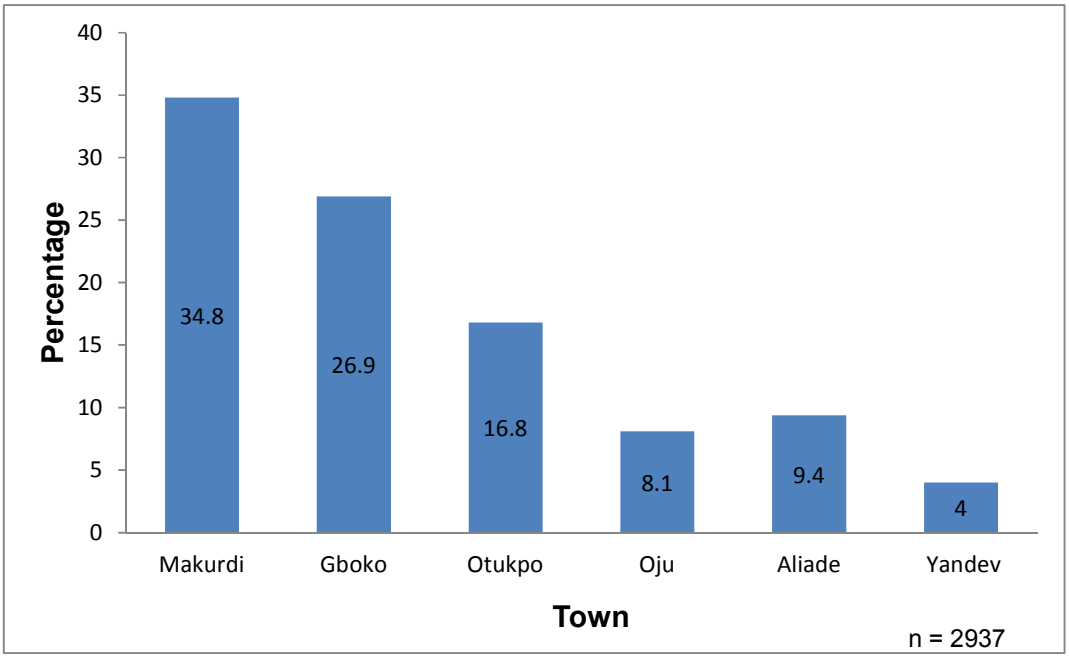

Fig. 6. Percentage of malaria cases

3.5 Malaria Related Hospitalization in Survey Areas

The overall incidence of malaria related hospitalization ranged between 28 – 31% across survey areas. The number of hospitalizations in each survey area is represented below. There was no significant difference in rates of hospitalization between urban and rural areas. The highest percentage of 31.2% was reported in Makurdi and the lowest figure of 24.1% was reported in Oju. In both urban and rural areas between 67.1 – 79.1% of all malaria cases were treated on an outpatient basis across all healthcare facilities with no significant difference between urban and rural areas (Fig. 7).

3.6 Malaria Related Hospitalization per Household

A total of 539 cases of malaria resulted in hospitalization in urban areas compared to 286 cases in rural areas. Almost half of all respondents in urban areas reported at least one malaria related hospitalization in the family, though slightly lower in rural areas (41.2%). Hospitalizations in urban area was twice as many compared to rural areas. Over fifty percent of all respondents reported between 2 – 5 malaria

related hospitalizations in both urban and rural areas (Fig. 8).

3.7 Source of Antimalarial Medications

The number of respondents in each of the study areas is shown below; analysis of results indicated that majority of respondents (50 – 83%) in urban areas sourced their antimalarial medications from government health facilities as against 60 – 81% of respondents in rural areas that sourced their drugs in private healthcare facilities. Most respondents (60 – 81%) in rural areas obtained their medications from privately owned health facilities (Fig. 9).

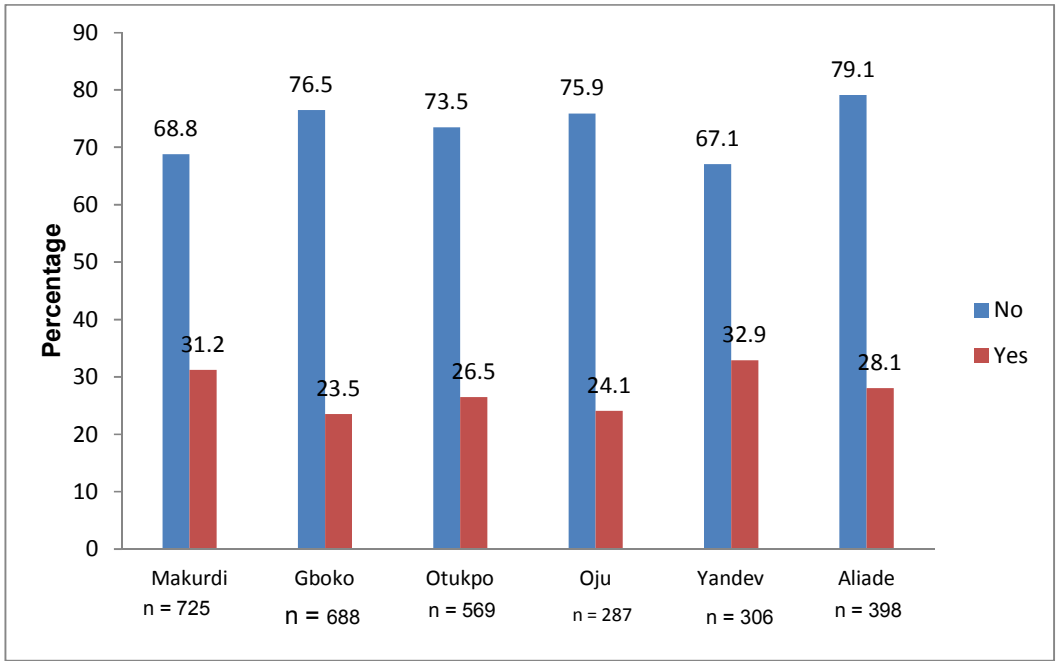

Fig. 7. Hospitalization per survey area

Key: Yes = Malaria resulted in hospitalization, No = Malaria did not result in hospitalization

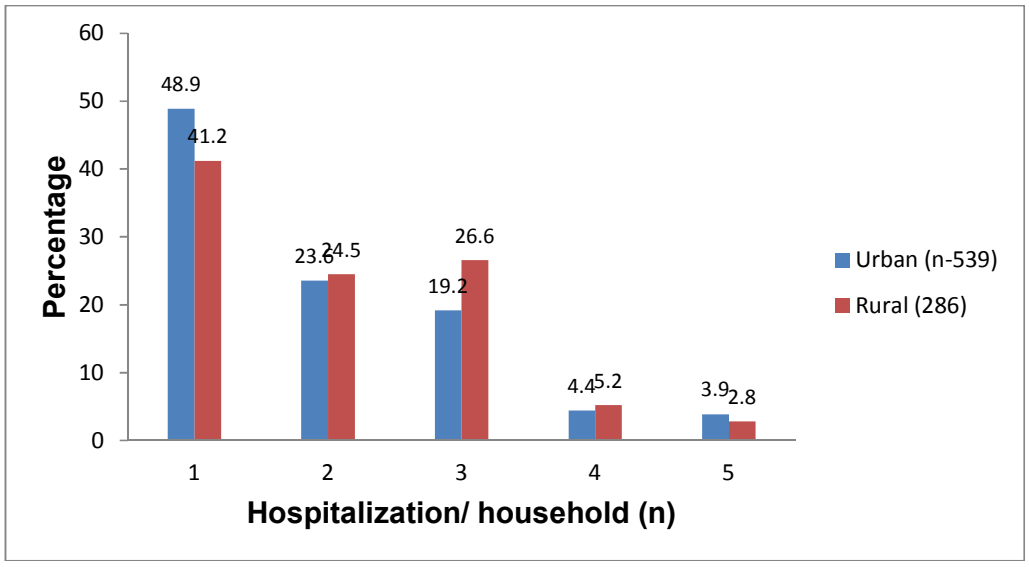

Fig. 8. Hospitalization rate per household

Table 2. Distribution of components and mean scores (n=1705)

Items	Factor loading	Mean score + SD
Component 1 availability		
Laboratory services available	0.704	2.27±1.24
Staffs are courteous and friendly	0.798	2.20±1.25
Personnel are experienced	0.756	2.10±1.25
Services are of high quality	0.610	2.20±1.25
	Subtotal mean score	**2.19±1.25**
Component 2 accessibility		
Waiting time is acceptable	0.689	2.44±1.30
Working hours is convenient	0.714	2.42±1.34
Familiarity with facility/staff	0.730	2.72±1.31
	Subtotal mean score	**2.53±1.32**
Component 3 affordability		
Private or public ownership	0.693	2.67±1.32
Cost of services	0.532	2.59±1.27
Transport cost to facility	0.609	2.58±1.23
Prior cost experience with facility	0.568	2.53±1.35
	Subtotal mean score	**2.59±1.29**
Component 4 perception		
Presence of co-morbidities	0.713	2.23±1.06
Overall health status	0.722	2.26±1.08
Influence of family/friends	0.719	2.46±1.28
Severity of malaria attack	0.722	2.60±1.30
Closeness of facility to my residence	0.533	2.50±1.29
Facility is clean and looks attractive	0.543	2.20±1.23
	Subtotal mean score	**2.37±1.21**

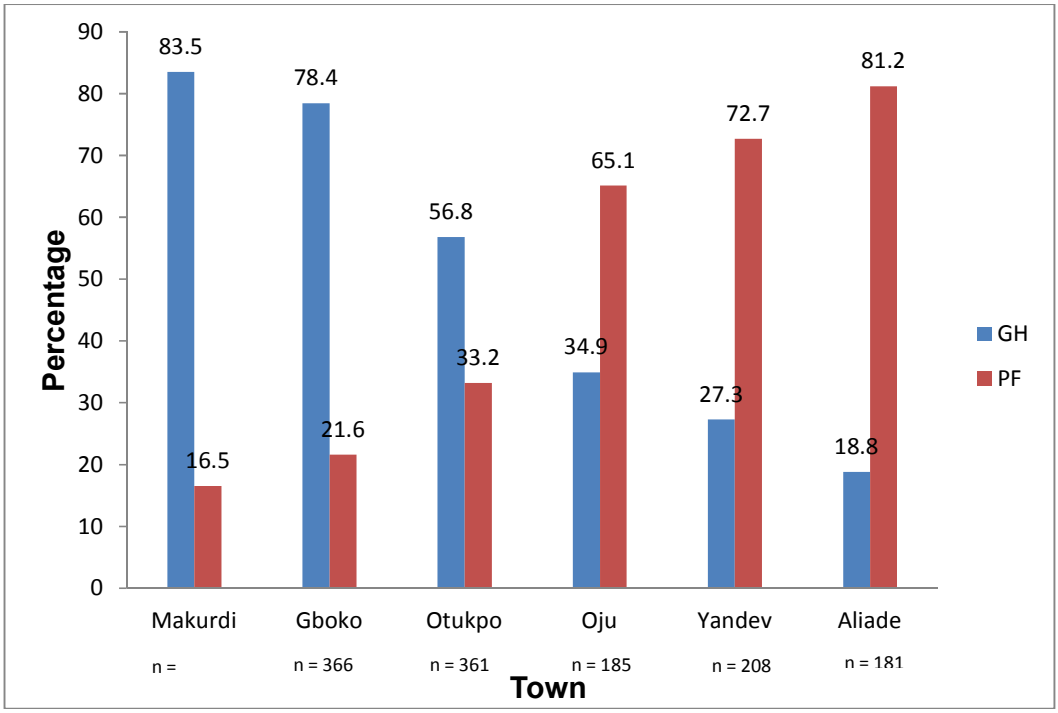

Fig. 9. Source of antimalarial drugs
Key: GH = Government hospitals, PF = Private health facilities

4. DISCUSSION

Demographic data of respondents indicated that females were more than female respondents than males (Fig. 1). Majority of respondents were married and most were either civil servants or unemployed (Figs. 2, 3 and 4). The average number of persons per household in urban areas is higher than in rural area and the difference is significant. This is largely because of rural urban migration particularly of children living with relatives in the urban areas. Other differences between urban and rural areas exist in distance to healthcare facilities; the distance is longer in rural areas, mean age of respondents and monthly income (Table 1). Respondents in urban areas reported cases of malaria more than twice as frequently as those in the rural areas overall. Households in both urban and rural areas that reported at least one malaria episode were more than double the number of families that reported more than one malaria cases within the study period (Fig. 6). While significant percentage of respondents across the survey areas reported at least one malaria case per household the rate is higher in urban areas (Fig. 8). This may be due to the fact that detection of malaria symptoms, treatment and preventive behavior is considered to be much better among the urban educated elite compared to rural dwellers. It is apparent from the data that about a third of urban dwellers and a tenth of rural dwellers reported malaria episodes indicating clear differences in knowledge and response to episodes of malaria. Lack of appropriate knowledge and treatment practices may often cause most rural dwellers to mistake malaria for other common local ailments and ignore probable early symptoms of malaria.

Overall malaria related hospitalization was about a quarter or above of all malaria cases across survey areas (Fig. 7). Malaria related hospitalization was much higher in urban areas compared to rural areas. In about half of households in both urban and slightly less in rural areas, there was at least one hospitalization of family member due to malaria within the study period (Fig. 8). Similar pattern was observed in households with more than one malaria related hospitalization across the survey areas. This result is similar other studies [24,25]; although these studies further noted that the rate of hospitalization is higher during the wet season and decreases with increasing age. Malaria related hospitalization found in this study is lower than 60% earlier reported [26].

Most respondents in urban areas obtained their antimalarial medications from government health facilities (Fig. 9). However in rural areas profit oriented private healthcare facilities are the major source of malaria medications for the greater percentage of respondents there. This trend is reflective of the dominance of government healthcare facilities urban areas as against privately owned facilities widely found in every nook and cranny of rural landscape.

Malaria treatment seeking behaviour is complex and multifaceted and the relative strength of determinant is again dependent on other variables. The findings of this study reveal that four components including availability, accessibility, affordability and perceptions of patients were the major determinants of malaria treatment seeking behaviour. The high factor loading and mean item scores on a five point Likert scale (strongly agree to strongly disagree) all indicate that these variables strongly influence treatment seeking behaviour. The response to variables represent the opinion of respondents with the mean score providing a measure of how strongly there is agreement or otherwise. Mean scores less than 3.0 imply strong influence on malaria treatment seeking behaviour (Table 2). These determinants explained by associated variables have earlier been reported earlier [27,28]. In many parts of Benue State, government healthcare facilities in rural areas are few and far in between, healthcare personnel are few, poorly trained and accessibility is limited. This created the opportunity for profit - oriented private facilities to dominate healthcare services in the rural areas; this has obvious negative consequences for financial accessibility.

Perception is among the variables that strongly influence malaria treatment seeking behaviour in this study. This was earlier reported [29]; they also noted that provision of laboratory services was perceived to be an important determinant of choice of providers. Other studies [30] also concluded that perception of experience of healthcare personnel in a facility was a strong determinant. While perception and its relative importance in treatment behaviour may vary widely within and between patients of different socioeconomic status, it is recognized that positive perception is a strong indicator of future use of the healthcare facility. Perception of malaria severity and presence of co-morbidities has been noted as an influencer of treatment seeking behaviour. Many households often practice home management first and only when

that either fail, or they perceive that the symptoms are severe, do they refer to a healthcare facility for management. Other studies [31,32] also noted that perception of health status, severity of symptoms and presence of other diseases determines treatment seeking behaviour of patients. Several studies [33,34] similarly included perception of proximity to facility and waiting times as influencers of treatment behaviour.

Affordability of malaria treatment costs was found in this study to be a predictor of treatment seeking behaviour among households (Table 2). The costs associated with malaria treatment such as transportation to point of care, laboratory tests, consultations, drugs etc. are entirely borne by households. The results of this study showed that malaria treatment costs range between US$3.9 - $9.8 depending on whether the facility is public or it's privately owned. There are no significant differences between direct cost of malaria medications and laboratory test between urban and rural areas (Table 1). The cost of treatment in public facilities is comparable to US$3.52 reported [35]; although US$12.46 reported as malaria treatment cost in private facilities was higher than that found in this study. When treatment cost is considered against the $1.9 daily wage of the least paid unskilled government employee, malaria treatment remains unaffordable to majority of households. This expectedly will have a huge impact on treatment behaviour. Most households in the urban areas largely patronize public facilities where costs are comparatively cheaper, except in areas where options are limited. A combination of lower costs and ease of access in urban areas encouraged the higher patronage of public healthcare facilities observed in this study; however in rural areas patronage may perhaps largely be driven by costs, availability of facilities and ease of access among others.

Accessibility was found in this study to influence of treatment seeking behaviour. This finding was earlier reported [34] and later confirmed by other studies [36,37,38]. Generally public hospitals provide round the clock healthcare services as well as a few well-funded private facilities, however waiting times are considered long in public facilities. While the economically well off may choose private facilities where they receive immediate attention, the waiting times in public hospitals can be a significant source of patient dissatisfaction.

5. CONCLUSION

"Malaria" incidence remains high across the State with household reports of incidence appear to be higher than the national average. Malaria treatment behaviour is strongly influenced by availability of healthcare facilities, ease of access, cost of malaria treatment services as well as perceptions of their experience with healthcare services. Majority of households in the urban areas access malaria treatment services in public health facilities as against privately owned ones in rural areas.

6. LIMITATIONS

Data used for this study were obtained entirely from questionnaires. There is possibility of errors as there was no independent verification of information provided by respondents.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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