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RESEARCH ARTICLE

Parents' and caregivers' attitudes towards malaria, and health care seeking practices for their febrile children in a hospital in north-eastern Nigeria

Mohammed Abba Mustapha[1] Ahmed Dahiru Balami[2*]

Abstract: Despite the very high burden of malaria among children in Borno state, the proportion of those who receive standard treatment has been very low. This study aimed to determine malaria knowledge, attitude towards prevention, and health care seeking behaviours of parents or caregivers of children presenting with fever at the paediatric clinic of a secondary-level hospital in Maiduguri, Borno state, Nigeria. A cross-sectional study design was used to obtain information from the respondents. Data were collected using a structured questionnaire, from the parents or caregivers of children presented to the Paediatric clinic with history of fever, and analysed in SPSS. A total of 331 respondents were finally recruited into the study. The ages of the children ranged from one to fourteen years. Some of them (15.3%) were internally displaced persons (IDPs). As many as 90.7% and 91.9% of the respondents believed that malaria is a life-threatening illness, and ITNs could prevent malaria, respectively. Less than a half of them (42.3%) had immediately brought their children to the hospital once they detected the fever. At the hospital, only 202 (60.7%) of the children had had malaria parasite test done on them, of which 89.1% tested positive. Permanent residents were more likely to promptly take their children to the hospital, one they detected fever, compared to IDPs (χ^2=12.401, *df*=1, *p*=0.002). There is the need for promoting early presentation of febrile children to health centres, and also promoting routine malaria tests for febrile persons.

Keywords: malaria, attitudes, health care seeking behaviour, fever, children

1 Introduction

Malaria is the second leading cause of infectious disease-related death after tuberculosis.[1] According to the Nigerian National Population Commission (NPC), it accounts for about 60% of all visits to a health care facility in the country.[2] Malaria infection is also associated with high mortality as it accounted for 3,934 deaths in the year 2007 in Borno State alone.[3] A survey of 440 asymptomatic *Almajirai* in Maiduguri aged between 3 to 12 years revealed that 10.7% were positive.[4] Even among voluntary blood donors in a tertiary hospital in north-western Nigeria, 46.5% of them were positive.[5] Many studies have shown an increasing prevalence with increasing age group and also a predominance of infection by the *Plasmoduim falciparum* specie.[6,7]

In Nigeria, the most vulnerable groups to malaria infection are pregnant women and children.[8] Among children aged 2 to 11 years presenting at the emergency unit of a tertiary hospital in north-western Nigeria, 52.4% were positive for malaria.[9] In a city in north-central Nigeria, 48.06% of children under 5 years of age had malaria parasitaemia.[10] In Maiduguri, north-eastern Nigeria, 27.2% of severely ill children were positive for malaria parasite.[11] At a secondary-level health centre in the same city, 61.6% of its paediatric out-patients were positive for malaria parasite;[12] and of all admissions into its Paediatric ward, 22.4% had a presumptive diagnosis of malaria while 13.5% had been confirmed by thick blood film microscopy.[13] Malaria had also accounted for 44.8% of admissions into the Emergency Paediatric Unit of a tertiary health centre in north-eastern Nigeria and also was also the cause of 49.6% of deaths occurring in the unit.[14] Malaria infection in children has also been reported to be a risk factor for anaemia.[15]

Despite these serious consequences of malaria in-

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*Correspondence to: Ahmed Dahiru Balami, Department of Community Health, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia; Email: ahdahiru@yahoo.com

[1] Department of Paediatrics, State Specialist Hospital, Maiduguri, Borno state, Nigeria

[2] Department of Community Health, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

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fection and its very high prevalence among children, findings from the Nigerian National Demographic and Health Survey (NDHS) show that only 11.3% of children under 5 years in Borno state were sleeping under any type of mosquito net (either an insecticide-treated net or a plain net); and only 4% of children with a fever had received Artemisinin-based Combination Therapy (ACT) on the same day or the next.[16] The results of this study, would apart from bringing into light the magnitude of the problem, also increase on our existing knowledge health care seeking behaviour by parents and care givers for children. It would also serve as baseline data to guide public health interventions on malaria prevention. This study aimed to determine malaria knowledge, attitude towards prevention, and health care seeking behaviours of parents/caregivers of children presenting with fever at the paediatric clinic of a secondary-level hospital in Maiduguri, Borno state, Nigeria.

2 Materials and methods

This study was conducted in Maiduguri, the Borno sate capital, located in north-eastern Nigeria. The study location was the Paediatrics out-patient clinic of the State Specialist Hospital, Maiduguri; the biggest secondary-level hospital in Maiduguri. The study utilised a cross-sectional study design, with the study population comprising all children presenting at the hospital's paediatric out-patient clinic with history of fever. Residency in Maiduguri (internally displaced persons inclusive) was an inclusion criteria. Neonates and severely ill patients who needed emergency care were excluded from the study. The respondents were recruited using a systematic random sampling technique. The first respondent was selected randomly from the first two patients, and subsequent respondents were selected chronologically according to their seating arrangements, by skipping every next eligible patient. Where a potential respondent had declined, the sequence was still be maintained by skipping the next patient.

The minimum required sample size was calculated using the one-proportion formula,[17] substituting 61.6% for prevalence of malaria among paediatric out-patients,[12] which gave a total of 364 respondents. Face-to-face interviews using a structured questionnaire were used to collect data from the respondents. Questions regarding attitudes towards malaria, and health care seeking behaviour, were developed based on some constructs of the Health Belief Model (HBM) which were: perceived severity; perceived benefits; cues to action and self-efficacy.[18] The data obtained were analysed descriptively, using Statistical Package for Social Sciences (SPSS) version 22. Permission to conduct the research, and ethical clearance, were obtained from the Ethical Committee of the State Specialist Hospital, Maiduguri (SSH/GEN/641/Vol.1). Informed consent was also obtained from each participant prior to the interviews. Respondents who reported poor preventive practices or poor health care seeking practices, were counselled appropriately by the researchers.

3 Results

3.1 Socio-demographic characteristics of the respondents

Data was collected from the 24^{th} of February, to the 3^{rd} of March, 2017. A total of 331 respondents finally participated in the study, which was 90.93% of the estimated required sample size. The socio-demographic characteristics of the patients are presented in Table 1. As shown in the table, their ages ranged from one to fourteen years, with Kanuris being the predominant ethnicity, and 64.6% were not in school. Also, while only 4.8% of the fathers were unemployed, 69.7% of the mothers were unemployed.

3.2 Patients' presenting symptoms

The patients' presenting symptoms are presented in Table 2. All the patients had reported having fever. Feeling unwell (malaise), was the next commonly reported symptom (45.3%). Only 5.1% and 3.0% reported paleness and jaundice, respectively.

3.3 Parents'/Caregivers' attitudes and experiences regarding malaria

Parents'/caregivers' attitudes and experiences regarding malaria are shown in Table 3. As much as 90.7% and 91.9% believed that malaria is a life-threatening illness, and ITNs can be used to prevent malaria respectively. Over a quarter (25.8%), said it was either hard or very hard for them to bring their children to the hospital once fever starts.

3.4 Parents'/caregivers' lines of actions once the child started fever

The actions of the parents'/caregivers' are presented in Table 4. Less than a half of them (42.3%) had immediately brought their children to the hospital once the fever started. For those who had not taken them to the hospital, 54.7% had gotten drugs from the nearby patent medicine store, while 23.1% had given the child tepid sponging. Table 5 presents malaria preventive prac-

Table 1. Respondents' socio-demographic characteristics

Socio-demography	Freq. (%), n = 300	
	n	%
Age		
Median ± IQR	5 ± 5	
Range	1-14	
Ethnicity		
Kanuri	118	35.4
Hausa	57	17.1
Babur	48	14.4
Shuwa	34	10.2
Marghi	25	7.5
Fulani	29	8.7
Others	22	6.6
Total	333	100.0
Education status		
Not in school	215	64.6
Primary	111	33.3
Secondary	7	2.1
Total	333	100.0
Residence type		
Permanent	282	84.7
IDP	51	15.3
Total	333	100.0
Family type		
Monogamy	216	64.9
Polygamy	117	35.1
Total	333	100.0
Father's occupational status		
None	16	4.8
Self-employed	183	55.0
Government employed	111	33.3
Private employed	20	6.0
Student	3	0.9
Total	333	100.0
Mother's occupational status		
None	232	69.7
Self-employed	58	17.4
Government employed	38	11.4
Private employed	3	0.9
Student	2	0.6
Total	333	100.0

Table 2. Patients' presenting symptoms

Symptom	n	%
Fever		
Yes	333	100.0
No	0	0.0
Total	333	100.0
Headache		
Yes	134	40.2
No	199	59.8
Total	333	100.0
Shivering		
Yes	103	30.9
No	230	69.1
Total	333	100.0
Loss of appetite		
Yes	103	30.9
No	230	69.1
Total	333	100.0
Vomiting		
Yes	144	43.2
No	189	56.8
Total	333	100.0
Joint pains		
Yes	39	11.7
No	294	88.3
Total	333	100.0
Feeling unwell		
Yes	151	45.3
No	182	54.7
Total	333	100.0
Bitter taste		
Yes	34	10.2
No	299	89.8
Total	333	100.0
Nausea		
Yes	42	12.6
No	291	87.4
Total	333	100.0
Seizures		
Yes	144	43.2
No	189	56.8
Total	333	100.0
Jaundice		
Yes	10	3.0
No	323	97.0
Total	333	100.0
Paleness		
Yes	17	5.1
No	316	94.9
Total	333	100.0

tices reported by respondents. Mosquito net (any type), mosquito coils and insecticidal spray use were reported by 75.4%, 40.2% and 24% respectively, though at varying frequencies of use. Of those using mosquito nets, only 55.8% were using insecticide treated nets.

Table 6, which presents the results of laboratory investigations done on the patients, shows that only 150 (45.3%) of the respondents had had their haematocrits measured, while only 202 (60.7%) had had malaria parasite test, of which 89.1% tested positive. Only 33.9% had had Widal tests, out of which 62.8% had significant titres.

More of permanent residents displayed better attitudes towards malaria, and were also more prompt in taking their children to the hospital compared to IDPs, as shown in Table 6. Also more of the children permanently resident in town had some form of education (χ^2=8.912, df=2, p=0.012), and more of their fathers had some form of employment (p<0.001), but with no significant difference in mother's occupational status (p=0.079).

4 Discussion

This study had an adequate number of respondents, as over 90% of the estimated sample size was obtained. The predominance of the Kanuri ethnicity in Maiduguri, was similarly reflected in this study, where they also formed the predominant ethnicity. The study also points to the low level of women empowerment in the area, even lower than the overall proportion of women in Borno state who were employed (28.5%).[16] Most respondents in this study (91.9%) were aware that ITNs could prevent malaria, which was higher than a previous study, were only 75% of the parents were aware of that.[19] That almost a quarter (23.4%) had lost a family member, points

Table 3. Parent's/Caregiver's attitudes and experiences regarding malaria

Attitudes and Experiences	n	%
Malaria is life threatening		
Yes	302	90.7
No	31	9.3
Total	331	100.0
ITNs can prevent malaria		
Yes	306	91.9
No	27	8.1
Total	331	100.0
Early presentation can prevent complications		
Yes	278	83.5
No	9	2.7
I don't know	46	13.8
Total	331	100.0
Ease or difficulty of presenting to the hospital once child starts fever		
Very hard	20	6.0
Hard	66	19.8
Easy	192	57.7
Very easy	53	15.9
Missing	2	0.6
Total	331	100.0
Ever lost a family to malaria		
Yes	78	23.4
No	255	76.6
Total	331	100.0
Transfusion for family member due to malaria		
Yes	60	18.0
No	273	82.0
Total	331	100.0

Table 4. Parents'/caregivers' lines of actions once the child started fever

Line of action	**n**	**%**
Brought child to the hospital immediately fever started		
Yes	141	42.3
No	187	56.2
Missing	5	1.5
Total	333	100.0
First line of action		
Ignored	2	0.9
Watchful waiting	11	5.2
Prayed	24	11.3
Tepid sponging	49	23.1
Got drugs from patent store	116	54.7
Invited a health personnel home	10	4.7
Total	212	100.0

Table 5. Malaria preventive practices

Preventive practices	n	%
Mosquito net use		
Never	82	24.6
Seldom	6	1.8
Sometimes	25	7.5
Often	33	9.9
Almost always	187	56.2
Total	33	100.0
Mosquito coil use		
Never	199	59.8
Seldom	32	9.6
Sometimes	35	10.5
Often	17	5.1
Almost always	50	15.0
Total	333	100.0
Insecticidal spray use		
Never	253	76.0
Seldom	29	8.7
Sometimes	19	5.7
Often	9	2.7
Almost always	23	6.9
Total	333	100.0

to the devastating effects, malaria has had, on the populace of Maiduguri.

Even though less than a half (42.3%) of them immediately took their wards to the hospital once fever started, this was still higher than findings in a study among a tribal community of West Bengal, India, where 40.6% went to the hospital immediately fever started.[19,20] The very high rate of unemployment among the mothers could have probably contributed to the low level of early presentation to the hospital. This is because in the absence of the fathers, who are by norm in this part of the country, the breadwinners, the mother who have no source of income, are likely to resort to other measures before the male parents are back from work. The lower level of education among the internally displaced persons (IDPs), was probably responsible for their poorer attitudes towards malaria. Also, less proportion of the IDP fathers were employed, and since taking their child to the hospital would incur some cost, they were more likely to try out other measures first.

The lines of actions of those who did not immediately take their wards to the hospital reveals the important role played by patent medicine stores in patient management, as they were the resort of many. There is as such, the need to provide them with training programmes, and also closely regulate their practices, so as to avoid patient mismanagement and public health problems like drug resistance due to drug misuse. Also, considering the usefulness of tepid sponging in the management of fever[21,22] and the very low level of its use by the caregivers (23.1%), it could be inferred that most care givers are unaware of this important anti-pyretic measure. The high level of net use among the respondents is a probable indicator of some of success over the years, of malaria elimination programmes, such as the Roll Back Malaria Initiative, the Millennium Development Goals (MDGs), and the new Global Malaria Strategy for 2016-2030.[23,24]

Malaria screening coverage of only 45.3% for patients presenting with fever was greatly sub-optimal, considering the Federal Ministry of Health's (FMOH) recom-

Table 6. Laboratory findings of patients

Laboratory findings	n	%
Haematocrit		
Median ± IQR	28 ± 6	
Range (n=150)	11 to 45	
Malaria test		
Positive	180	54.1
Negative	22	6.6
Not done	131	39.3
Total	331	100.0
Widal		
Significant	71	21.3
Not significant	42	12.6
Not done	220	66.1
Total	333	100.0

mendation of at least 80% parasitological diagnosis.[25] A high but lesser prevalence of malaria (61.6%), had been reported among asymptomatic children at the same study location two years prior.[?] The pattern of malaria-typhoid co-infection in this study (89.1% and 62.7% respectively), appeared similar to that of a previous study among asymptomatic children in a community in south-eastern Nigeria, were 50.67% and 42.67% tested positive for malaria and typhoid respectively.[26] However, the likely reason for the higher prevalence of positive malaria and typhoid tests in this study, was because it was conducted among patients with fever, a very cardinal feature of both malaria and typhoid infection.

In conclusion, malaria remains a disease with high prevalence among children in Maiduguri. There is a generally lukewarm attitude towards rushing children to the hospital once fever is noticed, and the practice of tepid sponging seems very poor among care givers. The practice of laboratory testing for malaria parasites in the health centre was also sub-optimal. As such, there is the need to sensitise the general public on the importance of early presentation to a health centre once fever is detected. Efforts should also be in place to ensure that malaria testing is accessible and affordable to all children presenting to a health centre with history of fever.

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