

Assessment of Practice of Malaria Prevention Strategies among Mothers of Under-Five Children in North Central Zone, Nigeria

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Abstract

This study adopted a survey research design to assess practice of malaria prevention strategies among mothers of under-five children in North Central Zone of Nigeria. A sample of 768 mothers of under-five children in North-central zone was selected from a population of 3,641,445, using multi-stage sampling procedures of simple random sampling and proportionate sampling. The instrument used for the study was researchers' structured questionnaire with a reliability coefficient of 0.833 established using Cronbach Alpha. Out of the 768 copies of questionnaire distributed, 765(99.6%) were valid for analyses. Inferential statistics of one sample t-test was used to test the formulated hypothesis at 0.05 level of significance. The results revealed that practice of malaria prevention strategies among mothers of under-five children in north-central zone was not significant ($p = 0.7$). Based on the result, it was concluded that mothers of under-five

children do not practice malaria prevention strategies in North-central zone. Based on the conclusion, it was recommended that health educators should conduct periodic symposiums and conferences for mothers of under-five children and women of child-bearing age so as to educate the mothers, as this will help them to understand the need to apply their knowledge into healthy practices for malaria prevention.

Keywords: children, malaria, mothers, practice, prevention

Introduction

Malaria has continued to be a leading cause of mortality particularly among under-five year's children and pregnant women in tropical African countries. The estimate showed that 3.3 billion people were at risk of contracting the disease worldwide (World Health Organization (WHO), 2015; Ahmed, Haque, Haque, & Hoissan, 2009). In Africa, malaria is known to be a disease of the poor and severe cause of poverty (Roscoe, 2012). This was revealed in a recent economic analysis of 150 countries where 44 countries with intensive malaria transmission grew 1.3 per cent less per year than countries without high levels of malaria. The study further revealed that a 10 per cent reduction in malaria was associated with 0.3 per cent higher economic growth. Thus, malaria reduces a country's productivity through loss of investment and reduced income from tourism (Gallup & Sachs, 2001; Guyatt & Snow, 2014).

In Nigeria, malaria is responsible for around 60% of the out-patient visits to health facilities, 30% of childhood death, 25% of death in children under one year and 11% of maternal deaths (Noland et al., 2014). Similarly, about 70% of pregnant women suffered from malaria, which contributes to maternal anaemia, low birth weight, stillbirths, abortions and other pregnancy-related complications (Federal Ministry of Health Abuja, 2015). The financial loss due to malaria is estimated to be about 132 billion Naira annually in form of treatment costs, prevention costs and loss of man-hours (World Health Organization, 2012a).

Malaria, a debilitating febrile and life-threatening illness, is caused by a parasite called Plasmodium. Its route of transmission still remains as bites from infected female anopheles mosquitoes. Environmental factors and behavioural patterns of vectors and human populations combine to provide favourable conditions for malaria transmission (Boutin, Pradines, Pages, Legros, Rogier, & Migliani, 2005). Proven effective options to reduce morbidity and mortality include early diagnosis, combined with prompt effective therapy and malaria prevention through reduction of human-vector contact, especially with the use of Insecticide Treated Nets (ITNs) (World Health Organization, 2007). Perceptions about malaria illness, particularly households' perceived susceptibility and beliefs about the seriousness of the disease, are important preceding factors for decision-making concerning prevention and curative actions (Rakhshani, Ansari Moghadam, Alemi, & Moradi, 2003). The understanding of the possible causes, modes of transmission, and individual preference and decision-making about the adoption of prevention and control measures vary from community to community and among individual households. There have been a considerable number of reports about

knowledge, attitude, and practice relating to malaria and its control from different parts of Africa. These reports concluded that misconceptions concerning malaria still exist and that practice for the control of malaria has been unsatisfactory (Laver, Wetzels & Behrens, 2001; Obol, Lagoro, & Garimoi, 2011).

According to WHO (2014), there are four types of malaria parasites: falciparum, vivax, malariae and ovale. Plasmodium falciparum is responsible for most malaria deaths, especially in Africa. The infection can develop suddenly and produce several life-threatening complications; Plasmodium vivax is the most geographically widespread of the species, and produces less severe symptoms. Plasmodium malariae infections not only produce typical malaria symptoms but also can persist in the blood for very long periods, possibly decades without ever producing symptoms. A person with asymptomatic (no symptoms) P. malariae, however, can infect others, either through blood donation or mosquito bites. Relapses, however, can occur for up to 3 years, and chronic disease is debilitating; and Plasmodium ovale is rare, can cause relapses, and generally occurs in West Africa (WHO, 2015). Distinction on the basis of clinical symptoms is difficult without laboratory examination. Falciparum parasite produces the most fatal form of malaria (WHO, 2014).

Malaria is a major cause of child mortality in Nigeria with approximately 100 million episodes in children under-five years of age every year (Federal Ministry of Health (FMOH), 2005). The mortality rate among children under-five years is 143 per 1,000 live births in the country (World Health Organisation, 2012b) and deaths among this category of children often occur within two days of developing symptoms of malaria (Diallo, De Serres, Beavogui, Lapointe & Viens, 2011). Malaria increases susceptibility to other infections and retards growth and development in children. It is associated with considerable economic burden including direct loss to government productivity. Malaria kills Nigerian children every 30 seconds, hence, pregnant women and their unborn children are also vulnerable to malaria which serves as a major cause of maternal anaemia and prenatal death (Davidson, 2010). Attempts at different periods by governments and concerned organizations in these regions aimed at control and eradication have not been satisfactory. This perhaps informed the shifts in campaign from eradication to control. Findings have shown that good knowledge, attitude and practice of any public health disease by individuals and communities seem necessary if effective prevention measures are to be realistic (Ahmed, Haque, Haque & Hoissan, 2009; Iwueze, Ezugbo-Nwobi, Umeanaeto, Egbuche & Anaso, 2013).

Practice is an action or behaviour that an individual engages in and it is normally induced by attitude either consciously or unconsciously. It can also be referred to as behaviour, specifically referring to a behaviour that a person engages in (Williams, 2015). Despite the urgent need for the eradication of malaria, the practice of its prevention measures remains a major challenge in Nigeria especially with respect to the three-pronged prevention measures recommended by Roll Back Malaria (RBM) for under-five children. The practice of prevention of malaria has been globally accepted as a significant aspect

of malaria control but majority of mothers of under-five often do not learn the tenets of prevention (Falade, Ogundiran & Bolaji, 2016; Obrist, Mayumana, & Kessy, 2010). Falade et al. (2016) found out in their study that many of the mothers do not even believe malaria can be prevented because of series of myths and misconceptions they associated with fever in children; that practice of prevention measures like screening of windows and doors with nets, spraying the house with insecticides aerosol, application of insecticide repellent cream, wearing of long-sleeved clothes and destruction of mosquito breeding sites are not common.

Erhun, Agbani and Adesanya (2005) in their study which was conducted at Ile-Ife, Nigeria reported that poor practices of malaria preventive strategies exist among mothers. Atulomah, Farotimi, and Atulomah, (2014) in their study in Sagamu, reported that malaria preventive practice varied among participants across demographic characteristics such as age and educational attainment. In agreement to Atulomah et al. (2014), Kio, Agbede, Olayinka, Omeonu, and Yewande (2016) in their study among mothers of under-five children in Ogun State reported that older women show less interest in the prevention of malaria. Although mothers' income and frequency of malaria episode increases the probability of the respondents using one or more preventive measure to control malaria, an understanding of mother's perceptions and practice on malaria is crucial for policymakers to incorporate disease preventions into the socio-cultural dimensions of the affected communities (Afolabi, 2016; Obi, Nwanebu, Okangba & Nwanebu, 2012). Knowledge, attitude and practice (KAP) studies are also essential in establishing epidemiological and behavioural baselines and may be used to identify indicators for monitoring malaria control programmes.

Achieving sustainable control of the disease depend on extensive public health promotion programmes which focus on current and proven methods of malaria prevention and management. While much is known about vector biology and behaviour and the malaria parasites, the importance of human behaviour in malaria transmission has not been critically evaluated. Studies focusing on the current practice of malaria prevention and treatment options in the population are sparse. Thus, it is expedient to evaluate current knowledge of malaria prevention practice and management options as well as the uptake of the management options. In most high-burden countries (including Nigeria), Insecticide Treated bed Nets (ITN) coverage is still below agreed targets (Minja & Obrist, 2005). This may be related to the perception of its use among the community members. The knowledge about prevention measures of malaria is an important preceding factor for the acceptance and use of ITN for malaria control by the community members (Minja, Schellenberg, Mukasa, Nathan, Abdulla, Mponda, & Obrist, 2001). Therefore, it becomes necessary to assess knowledge, attitude and practice of malaria prevention strategies among mothers of under-five children in North-central zone, Nigeria.

Malaria prevention strategies have been implemented in the recent past and intensified as an effort to attain the World Health Assembly, Roll Back Malaria, and Millennium Development Goals universal targets with the aim of reducing and interrupting disease

transmission in Nigeria. North-central zone is one of malaria endemic area in Nigeria, in which malaria prevention strategies such as the use of Insecticide Treated bed Nets (ITNs), Indoor Residual Spraying of Insecticide (IRS), use of repellent, use of door net, use of window net, electric mosquito zapper and health education on knowledge, attitudes and practice for the high risk population especially the under-five children have been implemented by government and non-governmental organizations. Despite all these efforts, the overall prevalence of malaria infection remains high among under-five children. This is possible because mothers of under-five children still do not practice malaria prevention strategies in North-Central Zone. Thus the researchers were motivated to assess the practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria.

Research question

1. What is the practice of malaria prevention strategies among mothers of under-five children in North Central Zone, Nigeria?

Hypothesis

Ho1: Practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria is not significantly high.

Methodology

To achieve the purpose of this study, a survey research design was adopted for this study. The population of the study comprised of Three million, six hundred and forty-one thousand, four hundred and forty-five (3,641,445) mothers of under-five children in North-central zone, Nigeria. A sample size of seven hundred and sixty-eight (768) respondents who are mothers of under-five between the ages of 18 – 49 years was used for the purpose of this study. A multi-stage sampling technique which involved simple random sampling, proportionate sampling technique and purposive sampling were used for this study. The instrument that was used for the purpose of data collection was researchers-structured questionnaire with 34 items. To score the responses of the respondents a 4-point modified Likert scale rating was used (strongly agree 4 points, agree 3 points, disagree 2 points and strongly disagree 1 point). Thus, to score any response a mean score of 2.5 or more is considered positive while any mean score below 2.5 is considered negative.

In order to establish the face and content validity of the instrument, the questionnaire was vetted by five (5) experts in the Department of Human Kinetics and Health Education, Nursing Sciences and Community Medicine, Ahmadu Bello University, Zaria for comment, observations, corrections and suggestions. After incorporating all the suggestions made by the experts, the final copy of the questionnaire was pilot tested to further validate the instrument. To test the reliability of the instrument, a pilot study was conducted, the Cronbach Alpha reliability test was used. The results revealed that the Cronbach Alpha reliability is 0.833 which is reliable. Descriptive statistics of mean scores and standard deviations were used to describe the demographic characteristics of the

respondents, and to answer the structured research questions; while inferential statistics of one sample t-test was used to test the formulated hypothesis at 0.05 alpha level.

Presentation of results

Research question: What is the practice of malaria prevention strategies among mothers of under-five children in North Central Zone, Nigeria?

Table 1: Mean scores of the practice adopted by mothers of under-five children towards malaria prevention strategies in North Central Zone, Nigeria

S/N	Item	Mean	Std. Dev.
1	I wear protective cloths (long pants and long sleeve shirt) to prevent mosquito bites	2.22	0.90
2	I use window nets to prevent mosquitoes	1.53	0.66
3	I cut bushes around the house to prevent mosquitoes' breeding	2.23	1.04
4	I dispose empty containers harbouring water to avoid breeding of mosquitoes	2.24	0.80
5	I use door net to prevent the entrance of mosquitoes to my room	3.01	1.19
6	I use insecticide-treated mosquito net to prevent mosquito bites	2.12	1.32
7	I use indoor residual spraying of insecticide to prevent mosquitoes	2.23	0.53
8	I use insect repellent to prevent mosquitoes from biting my child	1.32	0.41
9	I use electric mosquito zapper to kill mosquitoes from biting my child	2.76	1.01
10	I use mosquito coil to prevent mosquitoes from entering my room	1.61	0.71
11	I use electric mosquito zapper to prevent mosquitoes bite	3.25	0.61
Aggregate Mean		2.23	0.84

Table 1 shows the mean score of the responses on the practices adopted by mothers of under-five children towards malaria prevention strategies. Some mothers practiced use of electric mosquito zapper to prevent mosquitoes bite (3.25; SD=0.61), use door net to prevent the entrance of mosquitoes to my room (3.01; SD=1.19) and use electric mosquito zapper to kill mosquitoes from biting my child (2.76; SD=1.01). The practice of disposing empty containers harbouring water to avoid breeding of mosquitoes (2.24; SD=0.80), use of indoor residual spraying of insecticide to prevent mosquitoes (2.23; SD=0.53), cutting bushes around the house to prevent mosquitoes breeding (2.23; SD=1.04), wearing protective cloths (long pants and long sleeve shirt) to prevent mosquito bites (2.22;

SD=0.90), using insecticide-treated mosquito net to prevent mosquito bites (2.12; SD=1.32), use of mosquito coil to prevent mosquitoes from entering my room (1.61; SD=0.71), using window nets to prevent mosquitoes (1.53; SD=0.66) and use of insect repellent to prevent mosquitoes from biting my child (1.32; SD=0.41) had mean scores of less than 2.5. The aggregate mean score of the items is 2.23 which was found to be less than the fixed mean score of 2.5. This implies that the practices adopted by mothers of under-five children towards malaria prevention strategies were poor or they do not practice malaria prevention strategies.

Ho1: Practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria is not significantly high.

Table 2: one-sample t-test analysis on practice of malaria prevention strategies among mothers of under-five children

Variable	Aggregate Mean	Std	df	t-value	P value
Practice	2.23	0.84	764	1.074	0.2

t-critical (764)= 1.960 > 0.05

Observation of table 2 shows that practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria was not significantly high with p-value of 0.2. The t-value of 1.074 is less than t critical 1.960 at 764 degree of freedom (df); and p-value of 0.2 is greater than 0.05. With these observations, therefore, the null hypothesis which states that practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria is not significantly high was accepted, revealing that the respondents do not practice malaria prevention strategies in North-Central zone.

Discussion of the findings

This study was conducted to assess the practice of malaria prevention strategies among mothers of under-five children in north-central zone, Nigeria. This study reported that mothers of under-five children in North Central Zone, Nigeria do not significantly practice malaria prevention strategies. The findings of this study agree with the findings of the study conducted by Erhun, Agbani and Adesanya (2005) in Ile-Ife, Nigeria. They reported that “what respondents will do first” during malaria attack showed that 35.5%, 0.9% and 13.4% of respondents will use synthetic anti-malaria, consult a herbalist and use local herb, respectively, while 27.3%, 1.7% and 18.2% will go to the hospital, take spiritual/ritual waters for cure and just pray, respectively, with 3.0% of the respondents indicating that they will ignore the signs. The findings of this study agrees with a study conducted by Falade et al., (2016) in south-west Nigeria who found out in their study that many of the mothers do not even believe malaria can be prevented because of series of myths and misconceptions they associated with fever in children; and that practice of prevention measures like screening of windows and doors with nets, spraying the house with insecticides aerosol, application of insecticide repellent cream, wearing of long-

sleeved clothes and destruction of mosquito breeding sites are not common among the mothers of under-five children.

The findings of this study is also in line with the study conducted by Atulomah, Farotimi, and Atulomah, (2014) which was conducted among pregnant women attending antenatal clinic at Olabisi Onabanjo University Teaching Hospital (OOUTH), Sagamu, Nigeria. They reported that malaria preventive practice of all the participants varied across demographic characteristics such as age and educational attainment. Using one-way Analysis of Variance (ANOVA) showed that participants for the different age groups show significant difference ($F = 21.90, p < 0.0001$) with the age group of 33 to 37 years ($N=11$) scoring the highest (Mean=19.27, $SD=1.01$), while the lowest score was reported for age group of 18 to 22 years (Mean=11.33, $SD=3.15$). Similarly, when preventive behaviour scores for malaria was compared among the respondents based on their level of education, it was also found that participants with non-formal education ($N=13$; Mean =10.15, $SD=1.52$) scored the lowest compared with participants having more than secondary education who scored the highest ($N=44$; Mean=13.07, $SD=2.48$; $F(3, 133) = 11.89, p < 0.0001$). Thus malaria preventive practices across educational level showed significant difference; ($F(3, 133) = 11.89, p < 0.0001$). The findings of the present study revealed that demographic characteristics have less influence on the practice of malaria prevention strategies. The findings is also in consonance with a similar study conducted by Kio, Agbede, Olayinka, Omeonu, and Yewande, (2016) among mothers of under-five regarding prevention of malaria in children in Ogun State, Nigeria. The regression result showed that out of all independent variables, the coefficient of the age of the mothers ($p < 0.5$), income level ($p < 0.05$) and frequency of malaria episode ($p < 0.05$) were significant with appropriate signs. This implies that mothers' income and frequency of malaria episode increases the probability of the respondents using one or more preventive measure to control malaria. The coefficient for the age of the respondents ($p < 0.5$) was significant with a negative sign showing an inverse relationship between age and the probability of the respondents taking preventive measure. This implies that older women show less interest in the prevention of malaria.

Conclusion

On the basis of the findings, it is concluded that mothers of under-five children do not practice the malaria prevention strategies in North Central zone of Nigeria.

Recommendations

On the basis of the conclusion drawn, the following recommendations were made:

1. Health educators should carry out awareness campaigns through health talks which would help to further sustain the already existing knowledge of malaria prevention strategies among the mothers of under-five children in North-Central Zone, Nigeria.
2. The Federal Ministry of Health in collaboration with the Ministry of Information and Culture should create jingles, plays and programmes focused on educating mothers of under-five children across the country on the need to utilize malaria prevention strategies so as to reduce the disease burden and promote optimal health among them.

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