

Original Research Article

Barriers to effective uptake of malaria prevention interventions in Ibadan, South West Nigeria: a qualitative study

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ABSTRACT

Background: Although control measures have achieved considerable success, malaria is still a major public health problem in Nigeria and sub-Saharan Africa. The malaria burden is more among vulnerable groups like pregnant women and under-five aged children. This study explored barriers affecting uptake of current malaria prevention interventions in Ibadan, Southwest Nigeria.

Methods: The study was conducted using qualitative research methods between May and August 2016 among community residents in Ibadan, Oyo state-Nigeria. Six focus group discussions (FGDs) and 16 in-depth interviews (IDI) were conducted with community members who were purposively selected and consented to participate in the study. The participants were grouped into six homogenous focus groups which included; pregnant women, mothers of under-five children, husbands, fathers, civil society members, and health staff such as hospital manager, nurses, pharmacist, medicine vendors, doctors, state program staff and national program staff. Data were transcribed, manually coded and analysed using content and thematic method. The Biomedical Research Ethics Committee (BREC), University of KwaZulu-Natal, South Africa and Oyo state Ministry of Health Ethics Committee, Nigeria both approved the study.

Results: Knowledge on malaria causality and symptoms, prevention strategies, beliefs, fear of side effects from current malaria preventive measures, corruption and difficulty in obtaining nets, and poor environmental hygiene were some of the themes which emerged as barriers to the effective uptake of malaria prevention intervention.

Conclusions: Strategies at the community level are urgently needed to address and improve within socio-cultural context uptake of current malaria prevention interventions.

Keywords: Barriers, Malaria prevention, Nigeria

INTRODUCTION

Malaria is a prevalent tropical disease, with high morbidity, mortality, and economic and social impact.¹ The latest World Health Organization (WHO) report released in 2017 showed that there were 216 million cases of malaria in 2016. The estimated number of

malaria deaths was 4,45,000 in 2016.² These epidemiological rates showed no reduction in the malaria burden when compared to previous years. The burden of malaria is mainly borne in Africa among pregnant women, their unborn babies and children under five years of age as the vulnerable groups with adverse health outcomes.^{2,3} In Nigeria, malaria is endemic with all year

round transmission of the malaria causing parasites by the mosquito *Anopheles species* as vectors.⁴ Nigeria is the most populous country in Africa with current population estimated at 182 million based on the population of 140 million recorded in the last census conducted in 2006, using an annual growth rate of 3.5% weighed against other variables.⁵ The economic implications of malaria in the country are high as morbidity and mortality contribute to loss of productivity and economic growth.^{4,6} Recognizing the need to hasten progress in reducing the burden of malaria, WHO developed the Global Technical Strategy for Malaria 2016–2030 (GTS), which sets out a vision for accelerating advocacy plan, action and investment to defeat malaria 2016–2030 (AIM).⁷⁻⁹

Since 2008, the Nigerian malaria control programme put in place a robust system for malaria control through three core interventions, which include; prevention of malaria transmission through integrated vector management (IVM) strategy; prompt diagnosis and adequate treatment of clinical cases at all levels and in all sectors of health care; prevention and treatment of malaria in pregnancy.^{4,6,9} In 2014, the malaria control program began implementation of a National Malaria Strategic Plan to achieve pre-elimination status (less than 5000 cases per 100000) and reduce malaria related deaths to zero by 2020.⁹ Currently, there are an estimated 57,300,000 (36,200,000–85,300,000) malaria cases and 100,700 (78,700–122,800) deaths due to malaria in the country.¹⁰ The uptake of malaria prevention and management interventions according to WHO and the national malaria control programme in by pregnant women and caregivers of children aged less than five years old has been documented to be unsatisfactory especially in Nigeria.^{11,12} According to the most recent malaria indicator survey conducted by the Nigerian national malaria program in 2015, ownership of long lasting insecticide treated net (LLINs) was 69 percent, of which 37 percent of the household slept under an LLIN the night before the survey. The survey results in addition showed that among women who attended antenatal care (ANC) for their most recent pregnancies, only 37 percent received two or more doses of Sulfadoxine-pyrimethamine (SP).¹³

On barriers and facilitators affecting malaria control in settings where malaria is endemic, a study conducted in Uganda reported misconceptions concerning malaria still exist as a barrier.¹⁴ Another study conducted among pregnant women in two Nigerian states found that systems-based challenges which includes essential medicine supplies stock outs, lack of provider knowledge on intermittent preventive treatment of malaria in pregnancy (IPTp) together with individual women's beliefs and lack of understanding of intermittent preventive treatment of malaria (IPT) contribute to low malaria intervention uptake and adherence.¹⁵ Also, Adebayo et al showed that the knowledge on malaria prevention was still low among female caregivers of

children aged less than 5 years and pregnant women in rural southwest Nigeria.¹¹

The findings of studies related to barriers affecting uptake of malaria preventive measures indicate that despite the efforts made towards the control of malaria, compliance and sustenance are still below expectations and policy implementation for prevention of the disease needs strengthening.¹⁶ In order to assess and understand possible factors affecting current malaria prevention intervention in Ibadan, South-West, this study was conducted to provide findings that could positively impact on national programme on malaria control policies and implementation in Nigeria and other malaria endemic settings.

METHODS

Study design

A descriptive qualitative study design was used to explore the barriers affecting current malaria prevention interventions in Ibadan, southwest Nigeria. Data was collected between May and August 2016.

Study setting

The study location - Ibadan is the largest city in Oyo state, southwest, Nigeria. Oyo state is divided into thirty-three (33) local government areas. It comprises largely the Yoruba speaking tribe and other ethnic groups. The estimated population is 2.6 million people.^{4,8} In Ibadan, the temperature throughout the course of the year is relatively constant with mean maximum temperature of 26.46°C and minimum 21.42°C while the average relative humidity is 74.55%.¹⁷ The above factors synergize to make Ibadan a high malaria transmission environment.^{7,18}

The Adeoyo Maternity Hospital (AMH), Ibadan is the study site where most of the participant enrolment into the study was conducted. The AMH is the oldest maternity hospital in Nigeria having been established in 1927. The facility provides both primary and secondary medical care and over 4000 deliveries are recorded each year.¹⁹ It is also currently the largest and key secondary hospital in Ibadan with high influx of pregnant women and mothers of under-five as clients.

Study population and sampling technique

The hospital from which the study participants were recruited was randomly selected from list of secondary hospitals providing healthcare. Within the selected hospitals, the obstetrics and gynaecology ward were purposively selected in order to easily enrol the malaria vulnerable groups, which include pregnant women and children residing in the community. Other Study participants such as the health care staff, vulnerable groups relatives and civil society organization members were community residents purposively selected from the

study location using quota sampling.²⁰ The study participants were grouped into quota/categories, which share similar in characteristics that are representative of these specific categories within the community. These categories include; pregnant women, mothers of under-five year old children, fathers of under-five year old children, spouses of pregnant women, civil society organization (CSO) members, and hospital health staff. Participants were eligible as long as they were in the specified categories and gave consent to participate in the study.

The participants selected into each six homogenous focus groups included; five fathers of under-five children; six pregnant women, six mothers of under-five children, six husbands of pregnant women, six civil society organization members, and six health staff such as hospital manager, nurses, pharmacist, medicine vendors, doctors, state program staff and national program staff.

Participants were assured that they would be made anonymous during analysis and information shared would be strictly confidential. Study participant were also informed that participation in the study was voluntary. Only signed written informed consent was obtained from the study participants.

Data collection

Data was collected using the interview guide developed by the researcher in line with the study objectives. The interview guide was designed in English and also translated to Yoruba. Both focus groups discussions and individual interviews were audio-recorded by trained research assistants while the researcher facilitated the focus group discussions. Six focus group discussions (FGDs) and 16 in-depth interviews (IDI) were conducted with community members who were purposively selected and consented to participate in the study. Participants for the in depth interviews were purposely selected from each focus group. They were identified according to their knowledge of the barriers of the current malaria prevention shared in FGD. This allowed for more in-depth exploration of themes emerging from the focus group discussions.

Summary of discussions were given at the end of both FGD and IDI for participants to provide further clarity on their shared information. Participants were also given time to ask further questions related to the study.

Transcription and data analysis

Voice recordings that were in the local dialect (yoruba) language were translated to English language for analysis after the data was de-identified. Manual analysis using multiple coloured pens for coding of data was used during thematic and content data analysis. Both MAXQDA12 and Nvivo 11 software were used for further management and organization of the codes and

themes generated from the transcripts during analysis. The data analysis process involved an inductive, iterative process, which included: 1) familiarization with data through reading and re-reading of transcripts; 2) coding using different coloured pens to identify sentences with similar meanings in barriers of current malaria prevention 3) identifying themes by grouping codes with similar meaning; 4) refining the themes by comparing and grouping codes with similar ideas and contrasting ideas separately according to content; and, 5) report writing. This process resulted in five themes and related raw data extracts were discussed with research supervisor and expert qualitative researchers for conformability.

Credibility, conformability, dependability, transferability principles were adhered to during data collection and data analysis for trustworthiness of the study.^{21,22}

RESULTS

Fifty-one (51) individuals participated within each of the six categories of respondents in this study. Overall, there were 35 participants in the six FGDs categories, each of which constituted of 5-6 participants. For IDIs, there were 16 participants in total and for each category, 2-6 individual interviews were conducted (Table 1). During the analysis, seven themes emerged that highlights barriers to the effective uptake of malaria prevention intervention. Each theme was identified from the codes extracted from the transcripts as quotes. The identified themes indicating barriers to malaria prevention intervention are explained below.

Beliefs

Despite the fact that malaria is an endemic illness for which there has been a lot of awareness campaigns carried out, there are still negative beliefs on what causes malaria. The CSO representatives were aware of these widely held misbeliefs.

"Some people say if the rain beats you, you will have malaria; at times they also say it is spiritual arrow from somebody that hates you" Participant in FGD 6.

"When they [children] walk under the sun and play in the sun it also causes this sickness of malaria" Participant in FGD 1.

"... at the community level, erroneous belief and misconceptions like ..., when you take oil [palm oil] too much, you get this [malaria]. Even there are some adages in Nigeria, where some people termed to be 'Omo ajepo' [taking red oil too much]... so they belief taking much oil causes malaria ..." Participant in FGD 6.

Knowledge of malaria symptoms

Although there was a high reporting of correct malaria symptoms like fever, loss of appetite, body pains and

headache, the tendency of confusing these symptoms with other ailments that could lead to poor management was reported. A participant during the focus group discussions recounted an experience about the possibility of confusing another ailment with malaria because of their similarities in symptoms. Other symptoms of malaria reported include discharge from the eyes, changes in the colour of both the eyes and urine.

“Typically the symptoms of malaria are similar with most ailments like typhoid for example. For example, in an instance when my wife was sick, I had assumed that it was malaria, but after a test was done it was not malaria but typhoid” Participant in FDG 4.

“.... you see something in their eyes like this ... i don't know how to put it, Yoruba call it ipin [yellowish mucus discharge from the eyes] ... something will begin to come out from the eyes” Participant in FDG 1.

Malaria preventive measures practiced

From the interviews conducted, use of ITNs and environmental hygiene was only mentioned as malaria preventive strategies widely practiced. There was no mention of use of indoor residual spray by the participants when asked to talk about the malaria preventive intervention they were aware of.

“Mosquito net use and... our environment should be clean” Participant in FDG 3.

Self-reported side effects from current malaria preventive measures

Reports on side effects from use of malaria preventive measures; based on the participants' own experiences and those they have heard from others were also provided by the participants.

Some will say they will never use it because immediately they use it, they have catarrh [phlegm from the nose],...” Participant in FDG 6.

“...I have seen one [ITN] that after we spread it, and then later used it..., in fact thank God that I woke up early. There were different chemicals we were inhaling, our body itching over and we had skin inflammation, body irritation. Maybe it is not all the nets, maybe they have put too much chemical that is not good, I don't know, but I just discovered that I can't use the one they gave me that day, I had to go and burn it because we have spread it and we even spread it for 3, 4 days before we used it then, we still had skin inflammation all over our body, thank God that there was no young child that slept under that net o...” Participant in FDG 3.

“.. well ... I missed a dose, because when I took the first dose, ehm I had to chatter a taxi to my house that day, I couldn't walk, I could take like 5 to 6 steps and I'll be very tired” Participant in FDG 5.

Mistrust for current malaria preventive measures

Interestingly, fear was voiced as a concern for non-uptake of ITNs as a preventive measure.

“Could remember when distributing mosquito net to the people, some people will say they want to use this one [ITN] to kill us, and they put it [ITN] under their bed instead of using it” Participant in FDG 6.

Corruption/inadequate medical supplies

As can be seen from the extracted quotes, professional malpractice and inadequate resources like ITN and SP stock availability were mentioned as barriers to the uptake of malaria prevention measures. The participants reported that there were instances where health care staff hoards essential medical supplies like the ITNs thus resulting in their unavailability. In addition, they report misuse of donor funds and power struggle as another factor affecting the current malaria prevention intervention.

“... We learn that they [WHO] are the one that brought all these nets [ITN] for us.... but what I just see ... is that those nurses and doctors that are in charge of these nets give it to their loved ones ... this is supposed to be given to everybody that need these things [ITN] but they give it to people they love” Participant in FDG 1.

“The issue of insecticide treated net availability..., a lot of NGO are coming with the nets but as the Yoruba saying goes, omin po ju oka won lo [water is much more than yam flour in the pudding] that is to say we have many more patients than available net” Participant in FDG 5.

“... not enough resources go around to attend to these patients. When we talk about the use of sulfadoxine-pyrimethamine for intermittent prevention of malaria in pregnancy, though we try to have supply which we give routinely or periodically, sometimes, it is not sufficient, to go round” Participant in IDI 5.

“The two devils we are having in this country is the politicians and the civil servants, in early 90s, donor agencies were passing through civil servants., a lot of embezzlement where discovered, there after the donor agencies started passing through the NGOs, the civil servants started working against the NGOs” Participant in FDG 6.

Environmental sanitation

The condition of the environment was highlighted as structural barrier to malaria prevention. The participants mentioned that a dirty environment poses a challenge to effective malaria prevention and control.

“Our garbage vehicles do not come regularly, and when they come, they will not get to some areas, so., if we

again burn refuse, they will say we are breaking the law because we are not to burn the refuse... I am now thinking that, how else can we prevent this malaria?"
Participant in FGD 3.

"One of our challenge is level of environmental sanitation in our environment, you see dirt here and there, you'll see stagnant water here and there,"
Participant in FGD 5.

DISCUSSION

This study showed that the effectiveness of preventive measures against malaria infection are challenged by knowledge gaps in what causes malaria, beliefs associated with the use of ITNs, perceived allergies experienced with the use of ITNs and SP by pregnant women. None of the study participants mentioned the use of insecticide sprays or indoor residual spray as preventive measure against malaria infection rather only used of ITNs, SP for pregnant women, and ensuring a clean environment. This finding correlates with findings from the most recent Nigerian national malaria indicator survey where, in the South West Zone, keeping the environment clean and using ITNs/LLINs were mentioned by a higher proportion of the women (47 percent and 49 percent, respectively).¹³ Sulphadoxine-pyrimethamine is exclusively reserved for the prevention of malaria during pregnancy and the use of ITNs is also highly recommended for protection against contact with *Plasmodium falciparum* parasite.^{24,25} One of the respondents in this study, an auxiliary nurse, reported said she experienced severe side effect each time she took the malaria preventive drug during the time she was pregnant and that made her discontinue use of the drug. With regards to ITN usage, another participant believed that the ITNs were a strategy for her to be killed. These aforementioned findings provide reasons why there is still poor adherence to the current prevention strategies recommended by both WHO and the country malaria programme especially at community level. Similar studies conducted in Nigeria, Kenya and Niger found that there was still beliefs held by the community residents on the causal factors for malaria which also influences the poor uptake of malaria preventive measures.^{12,15,26} Another study conducted in Papua New Guinea showed that the availability of ITNs and perceived discomfort of sleeping under the nets were important determinants of its usage.²⁷

There were also reports that ITNs were sold at high prices to people in some of the health care facilities. In another instance, health care staff was seen to hoard the ITNs for personal use. This professional malpractices observed by community residents is not in tandem with rules by the government, WHO and other funding partners who have stipulated that ITNs must be freely distributed and not sold.²⁸ Corruption involving misuse of government and donor funds was emphasised as a barrier to malaria prevention intervention. This corroborates with report

from Global fund in 2016, which uncovered fraudulent activities after an audit conducted in the national malaria elimination programme (NMEP) suggesting poor accountability and high corruption practices by government officials in the country.²⁹ Furthermore, poor environmental control that requires government intervention was pointed out as possible structural barriers to malaria prevention. The environmental and geographical conditions in the study location and all parts of the country are conducive for breeding of malaria vectors. The government needs to ensure that paid workers responsible for ensuring that the environment does not promote breeding sites for mosquito vectors are performing their jobs efficiently. The findings of this study corroborates with a recent quantitative study in Northern Nigeria which showed that one of the reasons reported for non-adherence with malaria preventive measures included low environmental sanitation.³⁰ Another study carried out in southern Nigeria attributed high prevalence of malaria to the prevailing environmental conditions such as urban slums, high rainfall and relative humidity, much surface water, septic ditches and stagnant pools all of which combine to encourage mosquito (malaria vector) breeding.³¹

There have been reported changes in epidemiology of malaria, which requires adaptation of interventions to address shifts in geographical, behavioural and demographic risk characteristics.^{32,33}

Study limitations

This study is a qualitative research and thus findings are more likely to be subjective and also not fully representative when compared to quantitative studies. Also, it was observed that when asked about current challenges and barriers to malaria control intervention, none of the participants mentioned the use of insecticides sprays or even cream. It may be possible these participants do not practice this type of preventive measure because of the financial implications that is usually involved. However, future research could explore barriers to the use of insecticide sprays and cream within socio-cultural context.

CONCLUSION

This study revealed that the effectiveness of preventive measures against malaria infection largely depend on various factors within a socio-cultural context. In addition health system and government barriers such as malpractice by health care staff, corruption with regards to misuse of funds and poor environmental sanitation measures by stakeholders is shown to impact negatively on the uptake of malaria prevention interventions. There is a need for intensive community participation and engagement by the government and relevant health stakeholders to improve uptake of current malaria prevention interventions. Government also needs to effectively monitor the implementation of malaria

prevention guidelines and policies. This would lead to alleviating the burden of malaria especially among the vulnerable groups in the study location and other endemic areas like other parts of the country Nigeria and globally. The government and future studies could explore cost effective interventions within socio-cultural context that would assist in ensuring malaria is successfully eradicated in malaria endemic areas.

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