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ASSESSMENT OF COMMUNITY PERCEPTION AND CHALLENGES OF MALARIA PREVENTION STRATEGIES IN MKAR COMMUNITY

Joseph Odo* **and Nsirimobu Ichendu Paul**

Africa Center for Public Health and Toxicological Research, University of Port Harcourt

Corresponding Author email: joseph_odo@uniport.edu.ng

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Abstract

Background: Knowledge about *malaria prevention* was high amongst the respondents. This study aimed to assess community perception and Challenges of Malaria Prevention Strategies in Mkar Community.

Method: A descriptive survey research design was adopted for the study. Four hundred and fourteen (414) residents of Mkar community were selected from the total population of 6600, using the Taro Yamane sample size determination formula. A structured questionnaire was used to collect data for the study. The instrument was validated by experts in the field. The test-retest reliability method was employed to determine the reliability of the instruments, and a reliability index of 0.85 was obtained. Descriptive statistics were used as the data analysis method. Measures of central tendency and simple percentages were used to answer the research questions, while chi-square statistics were used to test the null hypothesis at the 0.05 level of significance.

Result: The age group 26-30 was dominant, making up 29% of the total sample, while 25% of the total sample fell within the 36-40 age group. Gender-wise, the sample was predominantly female at 54%, with only 46% male. Malaria research findings thus revealed that Insecticide-Treated Nets (ITNs) and IRS (Mean = 2.52, SD = 0.58) are moderately known in the community, while environmental management practices like the excavation of stagnant water seemed to be faintly noticeable. Whereas the community knew little about malaria, its prevention, and ITNs (Mean = 2.81, SD = 0.35), indoor residual spraying (IRS) (Mean = 2.52, SD = 0.92), a couple of challenges were identified. High cost of tools for malaria prevention (Mean = 2.82, SD = 0.11), inconsistency in their distribution (Mean = 2.56, SD = 0.13), and mythical beliefs (Mean = 2.72, SD = 0.09).

Conclusion: The study concluded that there is a moderate level of awareness, perception, and challenges related to malaria prevention practices in the Mkar community; hence, there is indeed an urgent need for focused and culturally sensitive health education programs to redress misconceptions related to malaria prevention methods.

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Introduction

Malaria is a severe public health issue in sub-Saharan Africa that greatly affects children under the age of five and pregnant mothers (World Health Organization [WHO] 2023). Of the 249 million cases of malaria reported around the world, almost 94% were accounted for by Africa, which is responsible for about 95% of malaria deaths (WHO 2023). Nigeria accounts for nearly 27% of the malaria caseload and over 30% of all deaths-a clear reflection of the monstrous operation of malaria in the country with the highest malaria morbidity and mortality (WHO 2023). Located on the Middle Belt of Nigeria, Benue State stands as a high-transmission area, while some neighboring areas such as Mkar in Gboko LGA of Benue State are being hit hard by the disease even though they have experimented with different ways of control (Adebusuyi, 2024).

Different forms of prevention of malaria exist, and although they are the subject of intense publicity by local and international health groups, they include: long-lasting insecticide-treated nets (LLINs), indoor residual spraying (IRS), intermittent preventive therapy in adults, community mobilization, and environmental sanitation (Akinleye, 2019). Among others, partners like the Global Fund and U. S. President's Malaria Initiative (PMI) have supported Nigeria's National Malaria Elimination Programme (NMEP) to distribute millions of nets, scale advocacy for support implementation within the endemic societies (Nigeria Federal Ministry of Health, 2015). Yet with all these concerted efforts, malaria prevalence stands staring-at-face in several parts of the country, thereby questioning the public perception of these strategies and barriers to their effectiveness (Atser, 2025). The community's perceptions are pivotal to the actual acceptance, adoption, and sustainability of malaria control interventions (Olawuyi et al., 2021).

The degree to which malaria is understood as caused, transmitted, and prevented among individuals and households often determines their health-seeking behavior and hence the possibilities of being successful with protective measures (Eke et al., 2021). Malaria myths, such as its attribution to unknown supernatural and/or divine environmental causes and not to mosquito bites, hamper the acceptance of all evidence-based ATHNs such as bed nets and indoor spraying (Sonibare et al., 2020). Adding to that, cultural beliefs about anti-malaria interventions, significant levels of mistrust of any campaign run by the public health departments/marketers, and extremely low levels of health literacy would further diminish community efforts and compliance (Adebusuyi, 2024).

Several factors like stagnant water, poor waste disposal, and seasonal rainfall patterns provide a commendable breeding habitat for numerous mosquito species (Oni, 2024). Furthermore, the low socioeconomic levels of poverty and limited health education inhibit the residents from proactively engaging in activities for the prevention of malaria (Sriramesh & Vercic, 2012). Uche and Danjuma (2022) argue that these are factors that maintain malaria transmission in communities that have had one too many interventions. However, despite the concern for community participation in malaria control, there is hardly any empirical work that has been carried out to understand how those residing in Mkar perceive the existing prevention strategies and the challenges inhibiting their adoption (Eke et al., 2021).

Perceptions on the part of the community in other parts of Nigeria influencing public health outcomes have been written about, albeit fairly limitedly for the area of Mkar (Adjei et al., 2019). Thus, policymakers and healthcare practitioners miss the context-specific insights required to design culturally acceptable and community-friendly intervention programs (Akanbi et al., 2019). Importantly, to achieve Nigeria's ambitious goal of malaria prevention by 2030, a systematic approach to understanding the barriers to effectively preventing malaria would be of great relevance, encompassing the evaluation of logistical and infrastructural constraints as well as behavioral and socio-cultural determinants (WHO, 2021). The WHO Global Technical Strategy for Malaria (2021–2023) emphasizes that targeted and community-centered approaches-somehow, for transmission reduction and epidemiological suppression-should be a definite focus, especially in high-risk settings like Benue State (WHO, 2021).

The study is encouraged by the ongoing healthcare system reform efforts in Nigeria (Breman et al., 2017), wherein nurses acting as frontline workers have their unique roles in the delivery of health education services, community-based engagement in personal lifestyle practices, and evaluating the effectiveness of the strategies in communities (Ayobami et al., 2020). Through a comprehensive understanding of community perception and challenges in malaria prevention, the research will contribute significantly to an academic discourse, but also pave the way for an improvement in nursing practice and public health policy (Sonibare et al., 2020). It is, therefore, necessary for this study to analyze Mkar community perception of how other measures work in preventing malaria and gainsay challenges facing the processes in effect (Sriramesh and Vercic, 2012).

Methodology

Research Design

This mixed-method study design combined quantitative and qualitative data analysis to thoroughly review the

perceptions of the community and the obstacles to fully engaging in the use of malaria prevention strategies in Mkar. Community-based adult population of Mkar consisted primarily of 18 and above age groups, which comprised the varied assortments of people derived from its community including household heads, caregivers, pregnant women, the youth, community leaders and other adult persons actively participating in malaria prevention and decision-making at the household level. This tremendous pool of different demographic groups was particularly advantageous in terms of the assessment of any possible changes that malaria control exerted on them directly or indirectly. Mkar, as a semi-urban community, houses around 9,000 people, with about 60% of these being adults. Assuming the entire population to be 6600 people, participants ranged at roughly 6600 and were drawn using Taro Yamane sample size determination in favour of both quantitative and qualitative studies. The multi-stage sampling method was employed for this study to generate a composite of a probability and non-probability approach, resulting in practical representativeness along with the depth of assessing community perceptions and the challenges restraining the complete commitment of the community to malaria prevention in the Mkar community. A sampling frame was built using lists of households that were provided by community leaders. If these did not exist, a mini *ad hoc* household listing was drawn from the spot to determine potential subjects. Data were collected with the self-structured questionnaire developed by the researcher and an interview guide. The questionnaire was divided into two (2) parts. Section A included personal data, and Section B included items pertinent to the objectives of the study. Hence, the researcher was fully in charge of distributing the instruments to the respondents and also collected them later after filling by the respondent, this lasted for three (3) weeks. Focus group discussions further involved stratification regarding common knowledge and actions toward malaria prevention strategies. FGD participants were selected to cover the diversity of age, sex, and occupation in order to record their different perspectives. Research assistants went through training on the objectives of the study, ethical issues, and instrument administration. Interviewees were carefully scrutinized as to their knowledge of the form and substance. Testing the test-retest method for the instrument reliability revealed strong agreement among investigators. To produce consistent results, the researcher distributed 40 copies of the instrument to a particular set of the non-participatory respondents in the study area and, subsequently, after two weeks, the same instrument was distributed to the same persons. Two different sets of responses were gathered and matched through the use of Pearson Product Moment correlation. A reliability index of 0.85 was obtained from the analysis, affirming reliability. Descriptive statistics were employed, entailing the use of measures of central tendency: frequency, percentage, and tabular columns that were generated to answer research questions.

Results

Indications based on the data in Table 1 are that the most extensive age group is 26-30 years, comprising 29% of the respondents, followed by the 36-40 years age group at 25%. Other age groups had about an equal distribution, whereby 18-20-year-olds represented 12%, and the 21-25 and 31-35 age group classes were represented by 14% and 19%, respectively. More females, totaling 54%, were in this sample, while 46% were male. The highest education level they obtained was tertiary in 36% of the cases, with no education at all for 32% of them. Here, respondents do not follow democratic sharing, as only 17% offer the highest preference for primary school, against a very low 14% for secondary school education. Approximately 39% of the respondents are married and represent the largest group in marital status. The group with the second-largest number is widowed (23%), while single and divorced people are 19% each of the sample. With regards to the occupation of the respondents, most of them practice their employment life. This group would be 42% of the sample. The students have 22%, while the unemployment rate is 19%; the remaining is the 'Other' group of 17%, involving an occupation other than the ones listed.

Table 1: Sociodemographic data

Variable	Options	Frequency	Percentage
Age	18-20 years	50	12
	21-25 years	60	14
	26-30 years	120	29
	31-35 years	80	19
	36-40 years	104	25
	Total	**414**	**100**
Gender	Male	190	46
	Female	224	54
	Total	**414**	**100**
Educational Level	Primary	70	17
	Secondary	60	14
	Tertiary	150	36
	None	134	32
	Total	**414**	**100**
Marital Status	Single	80	19
	Married	160	39
	Divorced	80	19
	Widowed	94	23
	Total	**414**	**100**
Occupation	Student	90	22
	Employed	175	42
	Unemployed	80	19
	Other (Specify)	69	17
	Total	**414**	**100**

Table 2: Different Malaria Prevention Strategies in Mkar Community.

S/N	Malaria Prevention Strategy	N	Min.	Max.	Mean	Std. Deviation
1	Use of Insecticide-Treated Nets (ITNs)	414	1.00	2.00	2.60	.48972
2	Indoor Residual Spraying (IRS)	414	1.00	2.00	2.52	.57745
3	Environmental Management (clearing stagnant water)	414	1.00	2.00	2.93	.63134
4	Public Health Education (awareness campaigns)	414	1.00	2.00	2.50	.81272
5	Regular use of Insecticide-Treated Nets (ITNs)	414	1.00	2.00	3.11	.96587
6	Participating in IRS programs	414	1.00	2.00	2.61	.84144
7	Engaging in environmental sanitation practices	414	1.00	2.00	2.83	.83684
8	Encouraging the community to clear mosquito breeding sites	414	1.00	2.00	2.94	.74945
9	Attending malaria prevention health education sessions	414	1.00	2.00	3.77	.48972
10	Regular follow-up to ensure consistent use of malaria prevention measures	414	1.00	2.00	2.81	.57745
	Mean and SD				**2.862**	**0.6972**

The analysis of data in Table 2 examined community perceptions of various malaria prevention measures in Mkar. The use of insecticide-treated mesh (ITNs) had a mean rating of 2.60 and a standard deviation of 0.49, meaning there was moderate agreement that ITNs were effective; yet there was still some spread in individual responses. Indoor Residual Spray (IRS) was slightly contrary, with a mean score of 2.52 and a higher standard deviation of 0.58. This means that although IRS is considered to be an important malaria prevention method, the community agrees less on its effectiveness compared to ITNs. The agenda brought forth on environmental control, concerning activities in drainage cleaning and eliminating stagnant water, showed the highest consensus with a mean of 2.93 and a standard deviation of 0.63. Even moderate net agreement took place, thereby implying variability in community engagement on the issues. Public health education campaigns received greater variation in ratings, with a mean of 2.50 and a standard deviation of 0.81, showing a constituency that was quite divided on its awareness and engagement in such activities. ITNs emerged as the most approved choice, giving the highest mean score of 3.11 and, notably, being endorsed by the community. Some deviation of frequency was acknowledged; however, the level of acceptance was attested to by the IRS program recorded a mean score of 2.61, marginally in agreement, deviating between 0.84. Various snakebites were participants in a level of environmental sanitation in the area to curtail breeding sites. A mean score of 2.83 marked it and was not followed by tendencies in community action to discourage malaria breeding, in contrast with quite divergent group initiatives that had a mean score of 2.94 and marginally diverging towards 0.75. The involvement of the resident in weekly teaching and learning on malaria prevention scored 3.77, which had low variance (standard deviation of 0.49), thereby knitting with the whole community and spreading engagement towards learning, resulting in minimal variance. The strategy of taking regular follow-up to ensure the consistent use of malaria prevention measures raised a mean score of 2.81 with a standard deviation of 0.58. Thus, the follow-up had at least some support, although there were complaints about its inherent strictness.

Table 3: Level of knowledge of malaria prevention strategies among community members in Mkar

S/N	Statement	N	Min.	Max.	Mean	Std. Deviation
1	I am aware that the use of insecticide-treated nets (ITNs) helps in preventing malaria.	414	1.00	2.00	2.81	.35
2	I know that indoor residual spraying (IRS) is used to reduce malaria transmission.	414	1.00	2.00	2.52	.92
3	I understand the importance of clearing stagnant water to prevent mosquito breeding.	414	1.00	2.00	2.84	.66
4	I know that malaria can be prevented through proper environmental sanitation practices.	414	1.00	2.00	2.97	.75
5	I am aware that malaria is transmitted by mosquito bites.	414	1.00	2.00	2.78	.64
6	I am knowledgeable about the symptoms of malaria, such as fever, chills, and headaches.	414	1.00	2.00	2.86	.69
7	I know the correct way to use insecticide-treated nets (ITNs) to protect myself from malaria.	414	1.00	2.00	2.51	.20
8	I understand that indoor residual spraying (IRS) must be done regularly to remain effective.	414	1.00	2.00	2.80	.07
9	I am familiar with the role of health education programs in promoting malaria prevention.	414	1.00	2.00	2.84	.69
10	I know where to seek help or obtain malaria prevention resources, such as ITNs and IRS, in my community.	414	1.00	2.00	2.58	.20
	Mean and SD				**2.751**	**0.517**

The data presented in Table 3 analyze the Mkar community's knowledge level about malaria prevention strategies. Here, the awareness level about insecticide-treated nets (ITNs) is perceived to be high, with a mean

score of 2.81 and a low standard deviation of 0.35, thereby showing that more people in the community are concerned with the need to keep the nets for the prevention of malaria. However, knowledge about indoor residual spraying (IRS) has a mean score of only 2.52 with a higher standard deviation of 0.92, proving it to be rather low and Variable among community members and suggesting less agreement about its effectiveness. Knowledge about environmental management, such as clearing stagnant water, type of water, etc., showed a mean of 2.84 and a standard deviation of 0.66, as a good show of community understanding with some variation in responses. Information about environmental sanitation practices for malaria control gave a mean of 2.97 and a standard deviation of 0.75, thus acknowledging a notion that the community has a better understanding, but with a little variation. The community's knowledge of mosquito-biting malaria transmission obtained a mean of 2.78, with a standard deviation of 0.64, meaning moderate knowledge with some gaps. Another average awareness level of 2.86, with a standard deviation of 0.69, was acquired regarding the recognition of symptoms of malaria such as fever, shivering, and headaches, and this shows that the community in general knows the symptoms of malaria, although it is quite variable.

Speaking to the correct use of ITNs, a gap was noticed, coming out at an average of 2.51 with a low standard deviation of 0.20. This speaks to the knowledge of the proper use of ITNs; awareness exists but is rather feeble. On the other benchmark, indoor residual spraying (IRS) has only proven effective if conducted regularly with an average of 2.80 and a very proportionately small 0.07-rated standard deviation, which, too, would show a high degree of acceptance with slight variance depending on their perception and understanding. The community has a relatively good level of understanding of the health-education-program effectiveness, showing an average of 2.84 and a standard deviation of 0.69; however, discrepancies exist among their perceptions. The average score of malaria prevention knowledge concerning resource availability (example, ITN and IRS?) is moderate (2.58) with a less proportion of the standard deviation (1 = 0.20), which is rather giving a lot of points over a great variance when it comes to knowledge of how, where, and to what extent the participant(s) can access malaria-prevention resources.

Discussion

Different Malaria Prevention Strategies in Mkar Community

The study observed that the most practiced malaria prevention strategy in the Mkar community is ITN use, with environmental management and breeding site management as the next major practice. They noted some reasonable acceptance of the indoor residual spraying program and public awareness campaigns. The mean value of ITNs was 2.60 (thus showcasing the responsible role of people between ITNs and their acceptance) and 2.93 for the environmental sanitation practices (this is good compared to the mosquito breeding site) associated with some low-level defense of mosquito breeding sites. These findings corroborate the observation made by Agomo and Oyibo (2019) that many pregnant women in Lagos still do not use ITNs despite the availability of these resources. They acknowledged that environmental sanitation practices tended to be either sporadic or nonexistent because some inhabitants were not always ready to take a collective stance against environmental misuse. In the same vein, an Ethiopian study on malaria prevention in urban settings found that though community-based sanitation initiatives can have a positive impact, they mostly encountered low-level participation and the marginal strength of sporadic efforts (Sonibare et al., 2020).

The study systematically indicated that health promotion education programs are essential but were not applied to their fullest. The average of 2.50 for awareness campaigns suggests relative knowledge of their importance yet underutilization in that aspect. Therefore, the work of Olasehinde et al. (2016), as seen in a study, legitimizes the importance of malaria education and accentuates the 'how' of these promotions. Yet the trick lies in the fact that the transmission of the right malaria knowledge to the people does not have much follow-up to make it work. Because of the lack of uniform awareness among the public, malaria prevention and control methods are still not well maintained. The study reveals that malaria diagnostic testing in the area still needs improvement, and as a result, many community-dwelling persons are still undiagnosed and untreated. This study has also unveiled some common challenges in three ways: the need for quality health-education awareness campaigns, the importance of follow-ups, and the sustenance of awareness and delivery of health-care programs in such areas.

Level of knowledge of malaria prevention strategies among community members in Mkar

Knowledge of malaria prevention strategies among community members in Mkar was found to be in the medium range. Respondents showed a fair knowledge of the importance of the prevention measures of malaria; their highest mean score was 2.97 assigned to the statement: "I know that malaria can be prevented through better environmental sanitation practices," suggesting an understanding of the importance of management of the environment. It was followed by 2.86 mean score for the statement "I am knowledgeable about the symptoms of malaria such as fever, chills, and headaches," suggesting that they were familiar with the symptoms of malaria. There was little variation in the knowledge of the proper way of using ITNs, with an average score of 2.51 for the statement "I know the correct way to use insecticide-treated nets (ITNs) to protect myself from malaria." These findings were similar to those by Agomo and Oyibo (2019), which concluded that the prevalence of symptoms relating to malaria was relatively high, with the knowledge of the use of ITNs often low. Deressa and Ali (2019) also made similar findings, where there was an understanding of general malaria prevention methods, and gaps were noted in the actual application of those strategies, for instance, in terms of environmental sanitation and the use of insecticide-treated nets.

The average awareness score of 2.51 fit closely with the findings of Adebusuyi (2024), where many people in rural Nigeria knew about ITNs yet lacked the knowledge of how to use ITNs correctly for the purpose of preventing the transmission of Malaria. The apparent gap in proper deployment of the ITNs is attributed to insufficient training in this area, further underscoring the need for targeted educative interventions in this direction. Also, the study found moderate IRS awareness and its role in preventing malaria, yielding an average of 2.80 for the statement "I understand indoor residual spraying (IRS) must be done regularly to remain effective." It is consistent with the study by Ahorlu et al. (2006), who discovered that while IRS might be considered an effective Malaria control method, the level of information regarding regular application and effectiveness might not be so high in the rural peasant society.

Conclusion

It is safe to say that the Mkar community has a discerning knowledge and perception of the effectiveness and challenges faced during the implementation of malaria preventive strategies. The community has negligible awareness of malaria control measures, including the use of insecticidal nets, indoor residual spraying, environmental management, and the like. Even with some knowledge and acknowledgment about the control processes popularized vis-à-vis malaria, barriers such as cultural beliefs, poor economic support, and lags in coping with resources have consistently inconvenienced them.

Conflict of Interest

The authors declare no conflict of interest.

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