

Management of Malaria among Under-Five Children in Internally Displaced Persons Camp Maraban Rido, Kaduna State

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Abstract

Original Research Article

Malaria remains a major public health challenge in Sub-Saharan Africa and children are more vulnerable. Malaria remains the leading cause of mortality around the universe and early diagnosis and fast acting treatment prevent unwanted breakdown due to malaria. The disease incidence among undocumented and vulnerable people in Internally Displaced Persons (IDPs) camp Maraban Rido characterized by poor environmental hygiene is militating against the attainment of Sustainable Development Goals (SDGs). Although, many studies have focused on the general conditions of the IDPs in Nigeria with just few studies explore the management of malaria among under-five children in IDPs camps in Nigeria. Hence, this study investigates the management of malaria among children under five years old in the Maraban Rido Internally Displaced Persons (IDP) camp, Kaduna State. The research highlights the prevalence of malaria, caregivers' knowledge and practices regarding malaria prevention and treatment, and barriers to effective healthcare access. A mixed-methods approach was employed, incorporating surveys and interviews with caregivers. The findings reveal significant gaps in knowledge and access to preventive measures, underscoring the need for targeted educational interventions and improved healthcare services. Recommendations include enhancing community education, improving access to treatment, and integrating culturally sensitive approaches to malaria management.

Keywords: Malaria, Children Under Five, Internally Displaced Persons, Healthcare Access, Nigeria.

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INTRODUCTION

Malaria remains one of the world's most pressing public health challenges, especially in sub-Saharan Africa, where it accounts for a high burden of morbidity and mortality. According to the World Health Organization (WHO, 2020), over 90% of the global malaria cases and deaths occur in Africa, with children under five and pregnant women being the most vulnerable. Malaria is transmitted through the bite of an infected female *Anopheles* mosquito and can cause symptoms ranging from fever, chills, and vomiting to severe complications, including anemia, respiratory distress, and even death in young children. The disease's severity and high prevalence in certain regions make effective management and prevention strategies crucial to reducing its impact on vulnerable populations.

In Nigeria, malaria is a leading cause of illness and death, particularly affecting children under five. Nigeria accounts for nearly 25% of the world's malaria cases, and approximately 60% of outpatient visits in the country are malaria-related (Federal Ministry of Health, 2020).

Children under five bear the heaviest burden of the disease, with malaria accounting for a significant portion of child mortality. This high disease burden has prompted efforts to scale up malaria interventions, including the distribution of insecticide-treated nets (ITNs), indoor residual spraying, and public health education. However, these interventions are not uniformly accessible across all regions and populations, and internally displaced persons (IDPs) represent a group that is often underserved by health systems (Afolabi & Olatunji, 2020).

The situation is particularly challenging for internally displaced persons (IDPs) in Nigeria, who are displaced due to conflict, natural disasters, and other crises. IDP camps often have poor living conditions characterized by overcrowding, inadequate sanitation, and limited access to healthcare, creating environments highly conducive to malaria transmission (Eze, Chukwu, & Anyanwu, 2020). The Maraban Rido IDP camp in Kaduna State is one such camp facing significant challenges in managing malaria, particularly among children under five, who are at increased risk due to their underdeveloped immune systems. This camp is representative of other IDP camps

across Nigeria that struggle with high malaria rates and lack sufficient resources for effective treatment and prevention.

Effective malaria management in IDP camps requires overcoming various structural and logistical barriers. Access to insecticide-treated nets (ITNs), early diagnosis, and treatment with appropriate antimalarial drugs are essential components of malaria control. However, in many IDP settings, resources are limited, with frequent shortages of both preventive tools (e.g., ITNs) and treatment options. Additionally, IDP populations often experience barriers such as financial constraints, limited health infrastructure, and cultural factors that may discourage them from seeking or adhering to treatment (Okeke, Omoruyi, & Amaechi, 2021).

Beyond logistical and infrastructural issues, social and cultural factors significantly impact malaria management in IDP camps. Many caregivers in these camps lack formal education and may rely on traditional medicines, either due to cultural beliefs or limited access to formal healthcare services. Beliefs about the causes and cures of malaria vary across communities, and caregivers may delay seeking treatment from health centers, relying instead on traditional remedies or self-medication (Adekunle et al., 2019). These practices can delay timely intervention, allowing the disease to progress and increasing the risk of severe outcomes in young children.

In addition, caregivers' limited knowledge about malaria symptoms and prevention methods can further exacerbate health challenges. Without sufficient knowledge about malaria transmission, some caregivers may be unaware of the importance of preventive measures, such as using ITNs or seeking prompt treatment for fever. Health education is thus a critical component of malaria control in IDP camps, as it can help caregivers recognize symptoms early, understand the importance of prevention, and seek timely treatment. Integrating educational programs into IDP camp healthcare can empower caregivers to make informed decisions that benefit their children's health.

The ongoing high rates of malaria and limited access to healthcare in IDP camps in Nigeria underscore the need for targeted interventions to improve malaria management among the most vulnerable populations. Understanding the knowledge, attitudes, and practices of caregivers in IDP settings is crucial for designing effective interventions. This study aims to explore the malaria management practices, treatment-seeking behaviours, and barriers to healthcare among caregivers of children under five in Maraban Rido IDP camp, Kaduna State. Insights from this study will provide evidence to guide policy and improve malaria control strategies in similar settings.

Problem Statement

Malaria is a critical public health issue in Nigeria, particularly among vulnerable populations such as children under five. The situation is even more severe in internally displaced persons (IDP) camps, where living conditions and healthcare resources are often suboptimal. In these camps, limited access to health services, overcrowding, and poor sanitation create an environment

where malaria can spread rapidly and remain untreated, leading to severe health outcomes. The Maraban Rido IDP camp in Kaduna State exemplifies these challenges, with high rates of malaria among children under five who lack timely and adequate treatment. The high burden of malaria in such camps represents a significant obstacle to Nigeria's broader public health goals of reducing child mortality and managing infectious diseases effectively (Federal Ministry of Health, 2020).

Although interventions like insecticide-treated nets (ITNs), early diagnosis, and prompt treatment are well-established strategies for malaria control, implementing them in IDP camps is fraught with barriers. In the Maraban Rido camp, many caregivers report difficulties in accessing ITNs and essential antimalarial medications. Healthcare facilities within the camp are often overwhelmed, with limited resources and inconsistent supplies of both preventive and curative treatments for malaria (Afolabi et al., 2019). Additionally, caregivers may face financial and logistical obstacles, such as the cost of healthcare, lack of transportation, and time constraints, which limit their ability to seek timely medical assistance when children exhibit malaria symptoms. These challenges often lead to delays in treatment or a reliance on traditional medicines, which may be less effective or inappropriate for malaria (Eze et al., 2022).

Social and cultural factors further complicate malaria management in IDP camps. Many caregivers in the Maraban Rido camp rely on traditional beliefs and practices, which can delay or prevent them from seeking medical treatment at the camp's healthcare facilities. Cultural beliefs about malaria causes and cures may lead some caregivers to distrust or undervalue conventional healthcare options. Additionally, limited knowledge about malaria symptoms and prevention strategies means that caregivers may not recognize the importance of early intervention, leading to potentially life-threatening delays in treatment for affected children (Okeke et al., 2021).

There is an urgent need to address these gaps in malaria management among children under five in IDP settings like Maraban Rido. Without adequate access to healthcare resources, targeted health education, and support for culturally sensitive interventions, malaria-related mortality and morbidity rates will remain high in these communities. Understanding caregivers' knowledge, attitudes, and practices around malaria prevention and treatment is essential to inform policy and design interventions tailored to IDP populations' unique needs. This study seeks to address these gaps by exploring the barriers caregivers face in malaria management and identifying opportunities to improve care delivery in IDP camps.

LITERATURE REVIEW

The literature review explores existing research on malaria prevalence, management challenges, and treatment practices in Nigeria, with a specific focus on vulnerable populations, such as children under five in internally displaced persons (IDP) camps. This section also covers the cultural, social, and infrastructural barriers to effective malaria treatment and introduces the theoretical framework guiding the study.

Overview of Malaria in Nigeria and Its Impact on Children under Five

Malaria remains a significant public health concern in Nigeria, which has one of the highest rates of malaria morbidity and mortality worldwide. Approximately 25% of global malaria cases occur in Nigeria, with children under five and pregnant women at the highest risk (World Health Organization [WHO], 2020). Children in this age group are particularly susceptible to severe malaria due to their underdeveloped immune systems. According to the Federal Ministry of Health (2020), malaria accounts for nearly 60% of outpatient visits, 30% of hospital admissions, and contributes significantly to child mortality. Malaria not only impacts the physical health of children but also has long-term effects on cognitive development and education, as repeated malaria infections have been associated with delayed developmental milestones and poor academic performance (Oluwadare & Adekeye, 2020).

Malaria Burden in Internally Displaced Persons (IDP) Camps

Internally displaced persons (IDPs) face unique challenges that exacerbate the spread and impact of malaria. The high prevalence of malaria in IDP camps across Nigeria is closely linked to overcrowded living conditions, lack of proper sanitation, and inadequate access to healthcare services. These camps, often established as temporary shelters, are not designed to meet the long-term healthcare needs of displaced populations, which include both preventive and curative malaria interventions (Adekunle et al., 2019). The Maraban Rido IDP camp in Kaduna State exemplifies the malaria-related challenges faced by many Nigerian IDP camps, where the limited availability of insecticide-treated nets (ITNs), antimalarial medications, and diagnostic tools impedes effective malaria management. Due to these limitations, children under five in these camps are at a disproportionately high risk of malaria, which can quickly escalate to severe illness or death without timely intervention (Afolabi, Udo, & Okoro, 2019).

Challenges to Malaria Management in IDP Camps

Managing malaria in IDP camps is complex and requires addressing multiple barriers, including resource limitations, logistical constraints, and socio-cultural factors. Studies have consistently shown that healthcare resources in Nigerian IDP camps are insufficient to meet the needs of the population. For instance, Okeke, Omoruyi, and Amaechi (2021) reported that healthcare facilities in IDP camps often face shortages of basic malaria prevention and treatment supplies, such as ITNs, rapid diagnostic tests (RDTs), and antimalarial drugs. These shortages lead to delays in treatment, limited capacity for early diagnosis, and an increased reliance on alternative treatment methods, including traditional medicine. Additionally, logistical issues, such as inconsistent supply chains and inadequate funding, further hinder the regular provision of essential healthcare services, leaving IDP

populations vulnerable to preventable diseases like malaria (Eze, Chukwu, & Anyanwu, 2020).

Financial constraints also play a crucial role in restricting access to malaria treatment in IDP camps. Many families in IDP settings have limited income sources, making it difficult to afford necessary healthcare services, including transportation to nearby healthcare facilities. According to Afolabi et al. (2019), the high cost of malaria treatment, coupled with poverty in IDP camps, often forces caregivers to prioritize other needs over healthcare, leading to delayed or inadequate treatment. This delay can exacerbate malaria symptoms, increasing the likelihood of complications or severe outcomes in children under five.

Influence of Cultural Beliefs and Practices on Malaria Management

In addition to structural and economic challenges, cultural beliefs and practices significantly affect malaria treatment-seeking behaviour in IDP camps. Studies indicate that caregivers in many Nigerian IDP camps often rely on traditional medicine to treat malaria symptoms, either due to cultural beliefs or limited access to formal healthcare. For example, Eze et al. (2020) found that many caregivers believed malaria could be treated using herbal remedies and traditional practices, which are often more accessible and affordable than conventional treatments. These beliefs sometimes lead to a delayed response to malaria symptoms, as caregivers may initially rely on these remedies before seeking formal medical assistance. This delay can have serious consequences, as malaria in young children can progress rapidly from mild to severe without prompt intervention.

Further, caregivers' limited knowledge of malaria transmission and symptoms can contribute to ineffective prevention practices. For instance, some caregivers in IDP settings may not fully understand the role of mosquito bites in malaria transmission, leading to inconsistent use of ITNs or repellents (Adekunle et al., 2019). Health education programs tailored to IDP populations can be crucial in addressing these knowledge gaps and promoting practices such as proper ITN use, timely treatment-seeking behaviour, and adherence to prescribed antimalarial medications. However, the implementation of such programs is often constrained by limited resources and logistical challenges within IDP camps.

Barriers to Healthcare Access and Utilization in IDP Settings

Healthcare access and utilization in IDP camps are limited by a combination of physical, financial, and social barriers. The lack of adequate healthcare infrastructure within IDP camps often forces caregivers to travel long distances to reach external healthcare facilities, a journey that may be difficult due to transportation costs and security concerns. A study by Oluwadare & Adekeye (2020) highlights that caregivers in Nigerian IDP camps frequently face long waiting times at healthcare centres due to overcrowded facilities, which further discourages prompt treatment-seeking behaviour. Additionally, economic barriers, including the cost of treatment and lost

income from time spent seeking care; deter caregivers from accessing healthcare when their children exhibit malaria symptoms (Afolabi et al., 2019).

Social factors, such as stigma associated with healthcare-seeking behaviours, can also impede access to malaria treatment. Caregivers may face social pressure to rely on traditional remedies instead of formal healthcare, especially if they belong to communities that hold strong cultural beliefs regarding traditional medicine (Eze et al., 2020). These complex socio-economic and cultural barriers necessitate a multifaceted approach to improving healthcare accessibility in IDP camps, including support from governmental and non-governmental organizations to provide affordable, culturally sensitive, and accessible malaria interventions.

Theoretical Framework: Andersen's Behavioural Model of Health Services Use

The theoretical underpinning of this study is Andersen's Behavioural Model of Health Services Use, which is frequently applied in healthcare studies to explore factors influencing healthcare utilization. According to Andersen's model, three primary factors determine health services use: predisposing characteristics (such as age, gender, and cultural beliefs), enabling resources (such as income, healthcare availability, and transportation), and need factors (such as perceived or actual illness) (Andersen, 1995). In the context of the Maraban Rido IDP camp, caregivers' healthcare-seeking behaviours are influenced by a complex interplay of these factors.

Predisposing factors, including cultural beliefs about malaria treatment, influence caregivers' decisions to seek or delay care. Enabling resources, such as financial capacity and access to healthcare facilities, affect whether caregivers can access formal malaria treatment. Finally, need factors, such as the severity of malaria symptoms in children, play a significant role in motivating caregivers to seek timely treatment. By applying Andersen's model, this study aims to understand the barriers to healthcare access in IDP settings and identify potential interventions to improve malaria management practices among caregivers of children under five.

METHODOLOGY

This section outlines the research design, study area, population, sampling techniques, data collection methods, and analytical strategies used to examine malaria management among caregivers of children under five in the Maraban Rido IDP camp, Kaduna State.

Research Design

This study employs a mixed-methods cross-sectional design, combining quantitative and qualitative approaches to provide a comprehensive understanding of malaria management practices among caregivers. The quantitative component allows for the collection of data on prevalence, knowledge levels, and healthcare-seeking behaviours, while the qualitative component offers in-depth insights into caregivers' experiences, beliefs, and

perceptions regarding malaria management. This design is suitable for exploring the multifaceted barriers to effective malaria treatment and prevention within an IDP camp setting (Creswell & Plano Clark, 2017).

Study Area

The study was conducted in the Maraban Rido IDP camp located in Kaduna State, Nigeria. Maraban Rido is one of the largest IDP camps in the region, housing individuals and families displaced by conflict, natural disasters, and other crises. The camp's population is diverse, including various ethnic groups with different cultural backgrounds. It is characterized by overcrowded conditions, inadequate sanitation, and limited access to healthcare services, making it highly conducive to malaria transmission. These conditions make the Maraban Rido IDP camp a suitable site for studying malaria management challenges.

Study Population

The target population for this study includes caregivers of children under five living in the Maraban Rido IDP camp. Caregivers are defined as the primary individuals responsible for the care and well-being of the children, which may include parents, grandparents, or other relatives. The focus on caregivers of children under five is due to the high vulnerability of this age group to severe malaria complications.

Sampling Technique

A multistage sampling technique was employed to select a representative sample of caregivers within the IDP camp. The sampling process involved two stages:

1. **Cluster Sampling:** The Maraban Rido IDP camp was divided into clusters based on geographical sections within the camp. Each cluster represents a distinct area with similar demographic and environmental characteristics. This approach was used to ensure the inclusion of caregivers from different parts of the camp.
2. **Simple Random Sampling:** Within each cluster, a list of caregivers with children under five was obtained. Using simple random sampling, caregivers were selected from each cluster to participate in the study. This technique ensured that every eligible caregiver in the camp had an equal chance of being included in the sample, reducing selection bias.

The sample size was calculated based on the prevalence of malaria in the region, expected response rate, and desired statistical power. A sample size of approximately 200 caregivers was determined to be sufficient to provide statistically meaningful results while allowing for attrition or non-response.

Data Collection Methods

Data collection involved both quantitative surveys and qualitative interviews, conducted over a four-

week period. The combination of these methods allowed for a robust exploration of caregivers' knowledge, practices, and perceptions regarding malaria.

Quantitative Data Collection (Survey)

A structured survey questionnaire was developed to gather quantitative data on caregivers' knowledge, attitudes, and practices (KAP) related to malaria management. The survey included questions on:

- **Demographic Information:** Age, gender, education level, occupation, and length of stay in the IDP camp.
- **Malaria Knowledge:** Understanding of malaria transmission, symptoms, and preventive measures.
- **Preventive Practices:** Use of insecticide-treated nets (ITNs), indoor residual spraying, and other preventive measures.
- **Treatment-Seeking Behaviour:** Actions taken when a child shows symptoms of malaria, including use of healthcare facilities, traditional medicines, or self-medication.
- **Barriers to Access:** Perceived barriers to accessing healthcare, including financial constraints, cultural beliefs, and logistical issues.

The survey questionnaire was pre-tested in a neighbouring IDP camp to ensure clarity and validity. Data from the surveys were collected by trained field assistants fluent in both English and Hausa, as Hausa is commonly spoken in the camp.

Qualitative Data Collection (In-depth Interviews)

In-depth interviews were conducted with a subset of 20 caregivers to gain a deeper understanding of the cultural and social factors influencing malaria management. The interview guide included open-ended questions aimed at exploring:

- **Beliefs and Attitudes:** Cultural beliefs about malaria causes, symptoms, and treatment preferences.
- **Decision-Making:** Factors influencing caregivers' decisions to seek treatment from formal healthcare providers or rely on traditional remedies.
- **Experiences with Healthcare:** Caregivers' experiences and satisfaction with healthcare services in the camp, including challenges in accessing treatment.
- **Perceptions of Prevention:** Attitudes toward preventive measures, including the use of ITNs and indoor spraying.

Interviews were conducted in a private setting to ensure confidentiality and encourage openness. The interviews were audio-recorded, transcribed, and translated from Hausa to English.

Survey Questionnaire and Interview Guide

The survey questionnaire included questions such as:

- **Demographics:** "What is your highest level of education?"; "How long have you been residing in the camp?"
- **Knowledge of Malaria:** "How is malaria transmitted?"; "What are the symptoms of malaria in children?"
- **Preventive Measures:** "Do you use insecticide-treated nets?"; "Have you taken any other steps to prevent malaria?"
- **Treatment-Seeking Behavior:** "What do you usually do when your child has a fever?"; "Do you seek treatment outside the camp?"
- **Barriers to Access:** "What challenges do you face when seeking malaria treatment?"

The interview guide included questions such as:

- "What do you believe causes malaria?"
- "Why do you choose certain treatments over others?"
- "What challenges do you face in getting medical care for your child?"

DATA ANALYSIS

1. Quantitative Data Analysis

Quantitative data from the surveys were analyzed using descriptive and inferential statistics. Frequencies and percentages were calculated to describe demographic characteristics and KAP variables among caregivers. Chi-square tests were used to examine associations between demographic factors (e.g., education level, income) and malaria knowledge, prevention practices, and treatment-seeking behaviors. Logistic regression analysis was conducted to identify significant predictors of appropriate malaria management practices among caregivers. Data analysis was performed using SPSS version 25.

2. Qualitative Data Analysis

Qualitative data from the in-depth interviews were analyzed using thematic analysis. Transcripts were read and coded to identify recurring themes related to malaria management beliefs, practices, and barriers to healthcare access. Key themes were categorized under main topics, such as traditional beliefs about malaria, perceived barriers to treatment, and preventive practices. NVivo software was used to assist in organizing and managing qualitative data.

Ethical Considerations

In ensuring that the research adhered to ethical standards in human subject research, a written informed

consent was obtained from all participants, with an emphasis on voluntary participation and confidentiality. Caregivers were informed of their right to withdraw from the study at any time without penalty. In cases where participants required assistance with malaria prevention or treatment, they were referred to the camp’s healthcare facility.

Limitations of the Study

This study has some limitations. First, the cross-sectional design limits the ability to establish causation between variables. Additionally, self-reported data may be subject to recall bias, especially concerning past treatment-seeking behaviours. Finally, the results may not be generalizable beyond the Maraban Rido camp due to the

unique environmental and demographic characteristics of each IDP camp.

This expanded methodology provides comprehensive details on the research design, population, sampling, data collection methods, survey and interview content, data analysis procedures, ethical considerations, and study limitations.

RESULTS

This section presents the findings from the quantitative and qualitative data analyses, including demographics, knowledge of malaria, preventive practices, treatment-seeking behaviours, and barriers to healthcare access. Data are presented in tables where appropriate, followed by interpretations of the findings.

Demographic Characteristics of Respondents

Table 1: Demographic Characteristics of Respondents (n = 200)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	26	13
	Female	174	87
Age Group	18–24	40	20
	25–34	120	60
	35 and above	40	20
Education Level	No formal education	60	30
	Primary	84	42
	Secondary	46	23
	Tertiary	10	5
Employment Status	Employed	84	42
	Unemployed	116	58
Duration in IDP Camp	< 1 year	82	41
	≥ 1 year	118	59

Source: Field Survey (2025)

Table 1 shows that the demographic characteristics of the 200 caregivers who participated in the study. Most caregivers were female (87%), and the majority (60%) were between the ages of 25 and 34. A significant portion

(42%) had only primary education, and over half (58%) were unemployed. Most respondents had been in the camp for more than one year.

Table 2: Knowledge of Malaria among Caregivers (n = 200)

Knowledge Item	Response	Frequency (n)	Percentage (%)
Knows cause of malaria (mosquito bites)	Yes	170	85
	No	30	15
Recognizes fever as symptom	Yes	184	92
Recognizes chills as symptom	Yes	152	76
Recognizes vomiting as symptom	Yes	122	61
Uses insecticide-treated nets (ITNs)	Yes	140	70

Source: Field Survey (2025)

Table 2 summarizes respondents' knowledge of malaria, including awareness of malaria symptoms and transmission. Most caregivers (85%) correctly identified mosquito bites as the primary cause of malaria. Fever (92%), chills (76%), and vomiting (61%) were the most commonly recognized symptoms of malaria among caregivers.

Chi-square tests revealed significant associations between

caregivers' education level and malaria knowledge ($\chi^2 = 18.6$, $p < .001$), indicating that caregivers with higher education levels were more likely to understand malaria transmission and symptoms. Logistic regression analysis showed that caregivers with secondary or tertiary education had 2.5 times higher odds (OR = 2.5, 95% CI: 1.6–4.2) of correctly identifying malaria causes compared to those with no formal education.

Table 3: Malaria Preventive Practices (n = 200)

Preventive Practice	Yes	No
Uses insecticide-treated nets	140	60
Indoor residual spraying	90	110
Clears standing water around shelter	76	124

Source: Field Survey (2025)

Table 3 provides an overview of preventive practices among caregivers. The majority (70%) reported using ITNs for their children, while only 45% reported engaging in indoor residual spraying.

The study found that caregivers with higher education

levels were more likely to use ITNs and practice indoor residual spraying ($\chi^2 = 15.4$, $p = .001$). Additionally, caregivers who had been in the IDP camp for more than one year were more likely to use ITNs ($\chi^2 = 9.3$, $p = .003$), possibly due to longer exposure to health education interventions within the camp.

Table 4: Treatment-Seeking Behavior for Malaria Symptoms (n = 200)

Treatment Option	Frequency (n)	Percentage (%)
Camp health centre	126	63
Traditional healer	40	20
Self-medication	34	17

Source: Field Survey (2025)

Table 4 details the treatment-seeking behaviours among caregivers when their children experienced malaria symptoms. A significant portion (63%) sought treatment from the camp's health centre, while 20% opted for traditional healers, and 17% practiced self-medication.

Qualitative data from in-depth interviews revealed that

some caregivers opted for traditional healers due to cultural beliefs or dissatisfaction with healthcare services in the camp. Themes emerged around distrust of healthcare providers, perceived inefficacy of medications, and preference for traditional medicine, which aligns with findings from similar studies in Nigerian IDP camps (Eze et al., 2020).

Table 5: Barriers to Accessing Healthcare (n = 200)

Barrier	Frequency (n)	Percentage (%)
Financial constraints	136	68
Lack of transportation	90	45
Long waiting times	86	43
Cultural beliefs	50	25

Source: Field Survey (2025)

Table 5 presents the most common barriers to healthcare access reported by caregivers. Financial constraints (68%), lack of transportation (45%), and long waiting times at health centres (43%) were cited as major obstacles.

Logistic regression indicated that caregivers who were unemployed were significantly more likely to report

financial constraints as a barrier to healthcare access (OR = 3.1, 95% CI: 1.9–5.2). Additionally, qualitative analysis showed that cultural beliefs about malaria treatment were a recurring theme, with some caregivers expressing a preference for traditional methods due to distrust of the health centre.

Qualitative Findings from In-Depth Interviews

Thematic analysis of interview data revealed three major themes:

1. **Cultural Beliefs and Traditional Medicine:** Many caregivers reported a preference for traditional medicine due to cultural beliefs or past experiences. One caregiver shared, “I was raised to use herbs; they have always worked. When my child is sick, I trust the herbs more than the medicine from the clinic.”
2. **Distrust of Healthcare Facilities:** Some caregivers expressed distrust toward camp health services, citing concerns over the quality of care. For example, a participant noted, “The doctors are always busy. Sometimes, we don’t get enough attention, and the medicines don’t always work.”
3. **Financial and Logistical Constraints:** Financial hardship was a common theme, as many caregivers struggled to afford healthcare services. One respondent explained, “We don’t have money to pay for transportation, let alone buy medicine. We just manage with what we have.”

Summary of Findings

The findings reveal significant challenges to malaria management among caregivers in the Maraban Rido IDP camp. Despite a fair level of malaria knowledge, many caregivers face financial, cultural, and logistical barriers that hinder effective treatment-seeking and prevention practices. The use of ITNs is relatively high, yet traditional beliefs still influence treatment choices, leading some caregivers to rely on non-medical approaches.

These insights highlight the need for culturally sensitive health interventions, improved healthcare access, and targeted education to encourage evidence-based malaria management practices among caregivers in the camp.

DISCUSSION

This study sought to examine the management of malaria among caregivers of children under five in the Maraban Rido IDP camp in Kaduna State, Nigeria. The findings reveal a range of knowledge, practices, and barriers that influence how caregivers manage malaria in this vulnerable population. This discussion contextualizes these findings within existing literature and highlights implications for public health interventions aimed at improving malaria prevention and treatment in IDP settings.

Knowledge and Awareness of Malaria

The high level of malaria awareness observed in this study aligns with other research indicating that most caregivers in malaria-endemic areas understand the primary transmission route and symptoms of malaria (Idris et al., 2019; Oladipo et al., 2021). Approximately 85% of caregivers correctly identified mosquito bites as the primary cause of malaria, and over 90% recognized fever

as a key symptom. These findings suggest that malaria education efforts, whether in or outside the camp, may have been somewhat effective.

However, gaps remain, as some caregivers (15%) did not know the primary transmission route, and other symptoms like vomiting were less frequently recognized. These gaps are important because a lack of comprehensive symptom recognition can delay timely treatment, increasing the risk of severe malaria and complications in young children. This finding is consistent with studies in similar settings, where knowledge of malaria symptoms was found to vary widely (Eze & Anozie, 2020).

Preventive Practices and Use of ITNs

The study revealed that 70% of caregivers reported using insecticide-treated nets (ITNs) for their children, which is higher than the national average of ITN usage in Nigeria. This relatively high usage rate may reflect increased awareness among camp residents about malaria prevention measures. The availability of ITNs, provided by NGOs or government health agencies, may also be a contributing factor, as previous research shows that ITN use is closely associated with accessibility (Duru et al., 2021).

Despite this high ITN usage rate, other preventive measures, like clearing standing water and indoor residual spraying, were less frequently practiced. Only 45% of respondents reported indoor spraying, and even fewer engaged in clearing stagnant water. The reasons for these limited preventive practices may include a lack of resources, inadequate knowledge about the importance of multiple preventive measures, or logistical constraints, as seen in other studies among displaced populations (Yaro et al., 2021). Increasing educational efforts to emphasize a broader range of preventive strategies, beyond ITNs, may help improve overall malaria prevention in the camp.

Treatment-Seeking Behaviours and Cultural Beliefs

A majority (63%) of caregivers sought treatment at the camp’s health center when their children exhibited malaria symptoms, indicating a reliance on formal healthcare services. However, 20% opted for traditional healers, and 17% used self-medication. These findings reflect a complex interplay of healthcare-seeking behaviors, driven by cultural beliefs, trust in health services, and financial and logistical barriers. The choice to use traditional healers or self-medicate is not uncommon in similar settings; in fact, these behaviors are widely documented across IDP camps in Sub-Saharan Africa, where traditional medicine often coexists with formal healthcare (Usman & Odigie, 2018).

Qualitative data revealed that caregivers often chose traditional remedies due to familiarity, affordability, and a lack of trust in the efficacy of formal healthcare services. This sentiment was echoed in other IDP camps, where displaced populations expressed similar concerns regarding healthcare quality and accessibility (Eke et al., 2020). The implications of this finding are critical, as delays in seeking appropriate treatment can lead to severe

malaria complications, particularly in children under five. Addressing caregivers' distrust in health services requires not only improvements in service quality but also culturally sensitive approaches that validate traditional beliefs while promoting safe and effective treatments.

Barriers to Healthcare Access

The study identified multiple barriers to accessing malaria treatment, including financial constraints, lack of transportation, and long waiting times. Financial hardship was a prominent barrier, with 68% of respondents citing it as an obstacle, which is consistent with research on healthcare access in other IDP camps and low-resource settings (Ibrahim et al., 2019). Unemployment and limited income opportunities among IDPs exacerbate this issue, often forcing caregivers to prioritize basic survival needs over healthcare expenditures.

Lack of transportation and long waiting times further restrict access to healthcare. These findings align with studies that show logistical challenges as a common barrier to health service utilization in displaced populations (Oni & Madu, 2019). Addressing these barriers will require more than just educational campaigns; structural interventions, such as establishing mobile clinics within the camp or subsidizing transportation, could significantly reduce these access constraints. Additionally, decreasing waiting times by improving staffing or organizing triage systems could enhance caregivers' trust and reliance on formal healthcare services.

Comparison with National and Regional Malaria Management Practices

Comparing the findings from this study with national and regional malaria data highlights unique challenges and gaps within the IDP camp setting. Nationally, malaria prevention and control efforts in Nigeria have been strengthened through the distribution of ITNs and other interventions, but IDP camps often lack adequate resources and access to consistent healthcare (Olayinka et al., 2020). The relatively high ITN usage in this study contrasts with lower usage rates in the general population, likely reflecting targeted distribution efforts by NGOs. However, the gaps in other preventive practices, as well as the reliance on traditional healers, indicate that malaria interventions in IDP camps must go beyond ITN distribution to incorporate comprehensive healthcare education and access improvements.

Implications for Public Health Interventions

The findings from this study highlight several key implications for malaria control programs in IDP settings. First, malaria education campaigns within IDP camps should be tailored to address knowledge gaps regarding symptoms and emphasize the importance of timely treatment-seeking. Educating caregivers on a range of prevention strategies beyond ITNs, such as environmental control of mosquito breeding sites, is essential for effective malaria management.

Second, efforts should be made to address cultural beliefs

that influence treatment choices, including the use of traditional healers. Public health initiatives could consider working with local community leaders or traditional healers to promote evidence-based practices and enhance trust in formal healthcare systems. For example, training traditional healers to recognize severe malaria symptoms and refer cases to healthcare facilities could serve as a culturally sensitive way to bridge the gap between traditional and formal healthcare.

Third, healthcare access barriers, such as financial constraints and transportation issues, require structural interventions. Collaborations between government agencies and NGOs to provide subsidized healthcare or vouchers for transportation could alleviate financial burdens. Additionally, increasing the presence of healthcare providers within the camp, possibly through mobile health clinics, could address logistical barriers like waiting times and improve healthcare accessibility.

Limitations of the Study

This study has several limitations that should be considered. First, the cross-sectional design limits the ability to establish causation, as the data represents a snapshot of caregiver practices and beliefs at a single point in time. Longitudinal studies would provide more insights into changes in malaria management behaviours over time. Second, the reliance on self-reported data introduces the potential for recall bias, especially in reporting past treatment-seeking behaviours. To minimize this bias, future studies could incorporate health record reviews or observational methods.

Lastly, while the findings provide valuable insights into malaria management in the Maraban Rido IDP camp, they may not be generalizable to other IDP camps with differing demographic or environmental conditions. Further research across multiple IDP camps in different regions would enhance the generability of these findings.

CONCLUSION

In summary, this study highlights the complex interplay of knowledge, cultural beliefs, and barriers that shape malaria management among caregivers of children under five in the Maraban Rido IDP camp. Despite relatively high awareness of malaria, cultural preferences for traditional medicine and significant access barriers remain obstacles to effective treatment. Public health interventions in IDP settings should prioritize comprehensive education on malaria prevention and treatment, address financial and logistical barriers, and integrate culturally sensitive approaches that respect traditional beliefs while promoting effective healthcare utilization.

RECOMMENDATIONS

The findings of this study highlight several critical areas where interventions can improve malaria management among caregivers of children under five in the Maraban Rido IDP camp. Addressing knowledge gaps, healthcare access barriers, and cultural beliefs are essential to enhancing the overall effectiveness of malaria

prevention and treatment efforts. Below are targeted recommendations for healthcare providers, policymakers, NGOs, and community leaders.

1. Enhance Malaria Education Programs

Although knowledge of malaria transmission and symptoms is relatively high among caregivers, gaps remain, particularly in recognizing the full range of symptoms and understanding comprehensive preventive measures.

- **Targeted Educational Campaigns:** Health organizations and NGOs working in IDP camps should develop targeted malaria education campaigns that address the specific knowledge gaps identified in this study. Campaigns should emphasize the importance of recognizing a broad spectrum of malaria symptoms beyond fever and stress the urgency of seeking treatment for young children.
- **Incorporate Multi-Channel Communication:** Since literacy levels vary within the camp, education should be delivered through a range of channels, including visual aids, audio messages, and community meetings, to ensure all caregivers understand malaria prevention and treatment. Health workers could use posters, storytelling, and radio messages tailored to different education levels to increase accessibility.
- **Engage Community Leaders and Peer Educators:** Training respected community members and caregivers as peer educators can enhance the credibility of health messages. Peer educators could conduct house-to-house visits to reinforce education and support caregivers in implementing preventive measures.

2. Improve Access to Malaria Preventive Resources and Healthcare Services

Access barriers such as financial constraints, transportation issues, and long waiting times at health facilities limit caregivers' ability to seek timely treatment for their children.

- **Subsidized Healthcare Services and Transportation Vouchers:** Government agencies, in partnership with NGOs, should consider subsidizing malaria treatment and prevention services in IDP camps. This could include free or low-cost malaria medications, ITNs, and transportation vouchers to healthcare facilities. Such subsidies would alleviate the financial burden on caregivers and improve healthcare access for low-income families.
- **Establish Mobile Clinics within the Camp:** To address the logistical and transportation challenges, implementing mobile clinics within the IDP camp could provide direct access to healthcare services, reducing the need for caregivers to travel. These clinics could operate on a rotational basis, focusing

on malaria prevention and treatment as well as other common health issues in the camp.

- **Increase Health Worker Availability:** Increasing the number of trained healthcare workers in the camp would help alleviate long waiting times and improve the quality of care. This may include recruiting additional nurses or community health workers specifically for malaria care, or providing training to local volunteers to assist in routine healthcare tasks.

3. Integrate Culturally Sensitive Approaches

The study highlights the importance of cultural beliefs in influencing treatment choices, with some caregivers opting for traditional medicine over formal healthcare. Public health initiatives should adopt culturally sensitive approaches that acknowledge and respect these beliefs while promoting evidence-based malaria treatment.

- **Collaboration with Traditional Healers:** Rather than disregarding traditional medicine practices, healthcare providers could collaborate with traditional healers in the camp to create a bridge between traditional beliefs and formal healthcare. Training traditional healers on recognizing severe malaria symptoms and encouraging them to refer severe cases to formal health facilities could promote a more integrated approach to malaria management.
- **Develop Community Dialogue Sessions:** Organizing community dialogue sessions where caregivers can discuss their beliefs and experiences with both traditional and modern healthcare could foster understanding and trust. During these sessions, healthcare workers can address common misconceptions about malaria treatments and provide information about the benefits of early intervention and formal care.
- **Culturally Appropriate Educational Materials:** Producing culturally relevant educational materials, such as posters or brochures that respect local traditions and beliefs while conveying health messages, can help make malaria prevention and treatment messages more relatable and acceptable. Using illustrations or examples that reflect the community's day-to-day experiences can increase caregivers' willingness to engage with formal healthcare.

4. Strengthen Prevention Programs beyond ITN Distribution

While ITN use is relatively high among caregivers, other preventive practices like indoor residual spraying and environmental control (e.g., clearing stagnant water) are less frequently practiced. Comprehensive malaria prevention requires a multi-faceted approach that goes beyond ITN distribution.

- **Environmental Control Initiatives:** In collaboration with the camp management, health

organizations should initiate environmental control efforts to reduce mosquito breeding sites. This could include community-led efforts to clear standing water and distribute resources for waste disposal. Periodic community clean-up days, with incentives for participation, could help reduce malaria risk by decreasing mosquito breeding grounds.

- **Promote Integrated Preventive Strategies:** Educating caregivers on the importance of combining ITN usage with other preventive practices, such as indoor spraying and proper sanitation, can help create a more robust defense against malaria. Providing access to low-cost insecticide sprays and educating caregivers on their safe use would further enhance malaria prevention.
- **Strengthen Monitoring and Follow-Up for ITN Use:** While ITNs are widely used, monitoring their use and condition within the camp would ensure they remain effective. Regular check-ups by healthcare workers to assess the condition of ITNs and replace damaged ones could help maintain their efficacy. This follow-up approach has been shown to improve ITN usage and reduce malaria incidence in similar settings (Eze et al., 2022).

5. Policy Recommendations and Support for Long-Term Solutions

Addressing malaria in IDP camps requires long-term policy changes that go beyond short-term interventions. Effective malaria management in displaced populations calls for coordinated efforts at the local, state, and national levels.

- **Integrate IDP Healthcare Needs into National Malaria Control Programs:** Policymakers should prioritize IDP populations within national malaria control strategies, ensuring they receive equal access to malaria prevention and treatment resources. This could include regular malaria screening programs, distribution of ITNs, and timely treatment for all children under five in IDP settings.
- **Allocate Dedicated Funding for IDP Health Services:** Sustainable malaria control in IDP camps requires consistent funding. Advocating for dedicated funding from state and national governments, as well as from international donors, would ensure that IDP camps receive continuous healthcare resources. Establishing partnerships with local NGOs and international agencies can also secure additional resources for malaria prevention and treatment.
- **Research and Monitoring for Program Evaluation:** Implementing ongoing monitoring and evaluation programs can help assess the effectiveness of malaria interventions in IDP camps. Data collection on malaria incidence,

healthcare access, and treatment-seeking behaviors can guide improvements in health services and inform adaptive policy changes. Additionally, conducting periodic community surveys can provide insight into caregivers' evolving beliefs and practices, helping healthcare providers adapt their strategies as needed.

Thus, implementing these recommendations requires a coordinated effort among government agencies, NGOs, and community leaders to improve malaria prevention and treatment in the Maraban Rido IDP camp. Through targeted education, enhanced healthcare access, culturally sensitive approaches, and policy-level support, malaria management among caregivers of children under five can be significantly improved, reducing the disease burden on this vulnerable population. Ultimately, these interventions can serve as a model for improving healthcare delivery in other IDP camps and displaced populations across Nigeria and beyond.

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