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A Narrative Review of the Role of Caregivers of Under-Five in Bridging the Gap in Home-Based Malaria Management

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ABSTRACT

Malaria remains a leading cause of morbidity and mortality among children under five globally, with Nigeria accounting for a disproportionate 31% of global malaria deaths. Despite established World Health Organization (WHO) and national guidelines, a significant gap exists between policy and actual household practice, as only 20% of malaria cases in rural areas are treated in official health facilities. This study aimed to evaluate current home-based malaria management (HMM) practices, identify factors contributing to the high malaria burden, and define the specific roles of caregivers in bridging the management gap. A qualitative research approach was employed using a narrative review design. A total of fifty-four (54) literatures published between 2017 and 2025 was systematically synthesized from databases including PubMed, Google Scholar, and Scopus, alongside reports from the WHO and the Nigerian Federal Ministry of Health. Findings reveal that cases of malaria treated at home is significantly more than the cases of malaria treated in an official health facility. Home-based management is characterized by a high reliance on paracetamol monotherapy (45–69%), the use of herbal concoctions (22%), and widespread self-medication without diagnostic testing. These practices are driven by socio-economic barriers (poverty and high transport costs), cultural misconceptions (attributing fever to teething or witchcraft), and a lack of awareness regarding Rapid Diagnostic Tests (RDTs). The review establishes that caregivers are the primary "first responders" in the malaria control framework. Optimizing their role through health education, ensuring access to subsidized RDTs at community drug stores, and enforcing adherence to full ACT regimens is critical to reducing under-five mortality. The study concludes that achieving malaria elimination targets in Nigeria requires a strategic shift from facility-centric models to caregiver-inclusive, household-level interventions. Recommendations include the institutionalization of Integrated Community Case Management (iCCM) and the intensification of behavioral change communication to empower caregivers as active public health agents.

Keywords: *Malaria, Home-based malaria management, Role of caregivers, Under-fives*

INTRODUCTION

Malaria is a vector borne diseases caused by plasmodium parasites and transmitted by the female anopheles' mosquitoes. About 76% of deaths due to malaria occur among children less than five years of age, and usually within 48 hours of onset of illness (Adio et al, 2025; Ritesh et al., 2023). According to WHO (2023), only 20% of cases of malaria are reported to be treated in official medical facilities (WHO, 2023). More than two-thirds of malaria episodes in rural Africa are self-treated, compared to roughly half in urban areas (Kangwana, 2012; Hawbani, 2021). Home-based Malaria Management will help build on the common practice of home treatment of malaria, and increase access to effective treatment for uncomplicated malaria therefore reducing mortality in children living in endemic areas especially where the health care system is far/weak, where self-treatment is common, but often inappropriate according to RBM & WHO, (2002). However, the practice of inappropriate and incorrect home management of malaria still exists in many communities, despite the availability of National and WHO guidelines for management (WHO, 2024). Caregivers often treat malaria at home

without proper diagnosis and treatment (Chemison et al., 2021; Vander Pluijm et al., 2021). These practices often result in misdiagnosis, delays in seeking care, irrational drug use leading to drug resistance and even death (WHO, 2021). Therefore, it is necessary to equip caregivers with the right knowledge and necessary support to reduce mortality in under-fives and improve treatment outcomes.

1.2 Statement of the Problem

Malaria is one of the leading causes of morbidity and mortality among children under the age of five (Adio et al, 2025). In 2022 there was an estimate of 249 million cases of malaria globally which resulted in about 608,000 deaths out of which 75% of the deaths occurred in children under the age of five (WHO, 2023). Nigeria recently overtook India as the country contributing the largest number of under-five children's deaths globally, contributing about 844,000 deaths per year (UN IGME, 2021). Although there is a significant reduction in the death of under-fives, Nigeria still failed to achieve the Sustainable Development Goal 4 which is to reduce childhood mortality by two-thirds (Adio et al, 2025). Nigeria alone accounted for about 27 % of the global malaria cases and 31% of the deaths caused by malaria and the vast majority are children under the age of five. (WHO, 2023). One in every three malaria deaths globally occur in Nigerian children under the age of five (Adio et al, 2025; WHO, 2023). Every year, about 110 million clinically diagnosed malaria cases and about 300,000 malaria-related childhood deaths occur in Nigeria (WHO, 2020). Recent reports indicate that one child dies of malaria every 120 seconds (Sahabi et al., 2023). Despite the WHO "test-before-treat" guideline, only 20% of malaria cases in rural areas are treated in official health facilities (WHO, 2020). Most caregivers treat malaria at home using inappropriate methods such as paracetamol monotherapy, leftover drugs, or herbal concoctions. This leads to misdiagnosis, drug resistance, and high mortality. There is a significant gap between national policy and household practice.

1.3 Objectives of the Study

1. To evaluate current home-based malaria management practices among caregivers.
2. To identify factors and gaps contributing to the high malaria burden in under-fives.
3. To define the specific roles of caregivers in bridging the management gap.

1.4 Research Questions

1. What a current home-based malaria management practices among caregivers?
2. What are factors and gaps contributing to the high malaria burden in under-fives?
3. In what are the specific roles of caregivers in bridging the management gap?

LITERATURE REVIEW

2.1 Overview of Home-Based Malaria Management

Home-based malaria management involves treating febrile children at or near home, it focuses on what happens at household level from the moment a child develops fever, early recognition, testing whenever possible, prompt and correct treatment with ACTs. In many malaria-endemic regions, caregivers are the first to observe or recognize changes in child's health. Home-based management of malaria (HMM) was promoted as a strategy to increase early diagnosis of malaria, physical access to antimalarial drugs and use of malaria preventive treatment. HMM intervention plays a vital role to ensure the reach of public health services and helps in reducing under-five morbidity and mortality in high burden areas (WHO, 2021; Oliphant et al., 2021; WHO, 2025). Particularly for population living in rural, remote or hard-to reach areas, where there is limited access to healthcare infrastructures. Home-based malaria management enhances the access to prompt diagnostic testing in remote sites and contributes to effective treatment of uncomplicated malaria or other medical conditions. It alleviates the burden of preventable and treatable deaths and reduces the risk of transmission of malaria in the community. (WHO, 2021). Home-based malaria management intervention plays a vital role to ensure the reach of public health services, particularly for populations living in rural, remote, or hard-to-reach areas, where there is limited access to healthcare infrastructures. It allows proactive case detection and treatment via the scaling up of integrated community delivery platforms and supports a broader continuum of care for impoverished groups who often face disadvantage, discrimination and exclusion in health outcomes

2.2 Common Caregivers of Under-Five Practice in Home-based Management of Malaria

Caregiver of under-five often use different methods to manage malaria at home before seeking formal health care. These practices vary depending on the knowledge, cultural belief, socio-economic status and access to healthcare services. In many parts of Sub-Saharan Africa, caregivers are always the first line of response when a child under the age of five develops fever. Most of malaria symptoms begins at home and most decision that caregivers make at the first stage plays an important role in determining whether the child receives appropriate treatment or not. Several studies have shown that different practices exist showing a mix of cultural beliefs, access to healthcare services and exposure to health education campaigns (Ajayi et al., 2020).

One of the most common practices of caregivers of under-five is the use of paracetamol to relieve fever. This practice is known to provide immediate relief; however, it does not address the underlying disease. According to Nwaneri et al in a study that was carried out in under-five presenting in tertiary health institution in Nigeria, about 69.0% of the caregivers used paracetamol only as the first line of treatment of malaria in under-five at home (Nwaneri et al., 2017). Another study that was carried out among tertiary hospital attendees in Ondo revealed that 45% of caregivers of under-fives treated their under-fives at home with paracetamol only before presentation to the hospital (Ahmed et al., 2017). The researcher noted that this practice by caregivers of under-five contributes to children arriving with the fever and some other complications due to delay in seeking for healthcare services (Ahmed et al., 2017). Similarly, another study carried out by Brunner revealed that caregivers of under-five reported paracetamol as the most frequently administered medicine at home (Brunner et al., 2021). Although paracetamol can be used to reduce fever, there is need to use it concurrently with effective antimalarial therapy.

Another common practice among caregivers of under-five in the management of malaria at home is the use of leftover antimalarial drugs from previous prescription. A cross-sectional household survey conducted in Uganda revealed that 17.5% of drug kept at home is antimalarial (Kahssay et al., 2023). This shows that caregivers often keep leftover antimalarial drugs at home from previous illnesses. These stored medications often influence self-treatment behaviour and the reuse of leftover antimalarial drug for new fever episodes. In another study that was carried out by Diarra et al, it was noted that one of the factors affecting acceptability of SMC intervention is left over medication (Diarra et al., 2025).

In addition, many caregivers of under-five resort to the use of herbal concoction in the management of malaria in their under-five children at home. In a rural community in South-West Nigeria, a study conducted among community members and providers, the findings of the study noted that majority of the traditional healers believe herbal medicine are highly effective in treating severe malaria in under-five (Bamgboye et al., 2025). Similarly, in another study that was carried out among caregivers revealed that revealed that about 18.2% of caregivers uses herbal concoction at home before presenting their children at the hospital, this action has led to worse clinical outcomes in children (Eseigbe et al., 2012). In another study that was carried out in Southwest, the findings of the study revealed that only 33% of caregivers give drugs prescribed by doctors to their under-five children while about 22% use herbal concoction in treating malaria among their ward (Okunola et al., 2023). These studies show the prevalence and danger of traditional medicines which can delay effective treatment and contribute significantly to mortality.

Furthermore, many caregivers of under-five engage in self-medication through the purchase of over-the-counter antimalarial drugs most times without any diagnostic confirmation of malaria or prescriptions. These drugs are often bought from patent medicine stores or local chemist shops as the first line of action in managing malaria in under-five at home. A community-based survey carried out in Ekiti State among youth revealed that 44% of respondents used antimalarial drugs without prescription for self-treatment of febrile illnesses (Tosin et al., 2024). Comparably, in another study that was carried out in Ibadan among caregivers of under-five showed that 69% treat malaria at home rather than seeking formal healthcare services (Bamikole et al., 2023). Although the study did not reveal how many antimalarial drugs were purchased over the counter, but the self-treatment was suggestive of reliance on over-the-counter drugs.

2.3 Factors Influencing Caregiver Practices

Several factors are responsible for the common practices of caregivers in management of malaria in under-five at home. These factors include socio-demographic characteristics, knowledge and awareness, access to healthcare, cultural practices and economic factors. Caregivers' knowledge about malaria such as understanding the signs and symptoms of malaria, the need for diagnostic testing and the correct use of antimalarial influences the practice of caregivers in the management of malaria at home. Many caregivers believe every fever is malaria and thus rely on paracetamol or herbal medicine in treatment of malaria. A study carried out in Abia state to assess the knowledge of caregivers regarding management of malaria in under-five revealed that caregiver with better knowledge is more likely to administer appropriate treatments and seek timely medical care than their counterpart that has limited knowledge (Onyemachi et al., 2024). Comparably, another study carried out among caregivers across Nigeria revealed that caregivers with adequate knowledge of malaria symptoms were more likely to seek prompt care than their counterparts (Osinowo et al., 2025). According to Umeanaeto et al there is a significant association between level of education of caregivers and the choice of treatment of malaria at home (Umeanaeto et al., 2021). Several studies have shown that caregivers with higher level of education and better knowledge of malaria are more likely to adhere to proper treatment practices. In Kaduna State, Ajumobi et al, found out that only 5.3% of caregivers know that malaria should or could be diagnosed with a test (Ajumobi et al., 2017). In Nigeria Malaria Indicator Survey 2021 dataset, it was highlighted that caregivers with adequate malaria knowledge had higher odds of seeking prompt treatment for their under-fives (Osinowo et al., 2025). Another study carried out by Adeoti et al, further supported these findings as he noted that knowledge predicts appropriate care-seeking for childhood fever (Adeoti et al., 2022).

Access to healthcare services is another important factor that influence the treatment of malaria at home by caregivers. In many communities across Nigeria, factors such as high transportation cost, long distance to hospital, long waiting times at medical facilities, the attitude of healthcare workers and financial constraints often discourage caregivers from seeking formal healthcare services. Bamgboye et al, highlighted in a study that was carried out in Ibadan and Kano that Patronage of Informal Health Care Providers generally is driven by affordable treatment, perceived mildness of illness, and access to credit facilities (Bamgboye et al., 2025). Okeke & Uzochukwu noted that limited access to formal health facilities encourage caregivers to patronize informal healthcare service providers (Okeke & Uzochukwu, 2020). Abiodun et al, noted that financial constraint is a driver of delayed treatment (Abiodun et al., 2022).

Another key factor is cultural belief and perceptions of caregivers of under-five about febrile illnesses. Some caregivers of under-five tend to ascribe febrile illnesses to teething in infants or some spiritual problem, some caregivers even belief that malaria is a simple illness that can be managed at home. Bello & Rehal noted in a study that was carried out in Southwest Nigeria that most mothers perceived malaria as a simple illness and hence believed can be managed at home with herbal medicine or religion intervention rather than seeking formal healthcare services (Bamgboye at al., 2025). Similarly, Akogun & John noted that caregivers of under-five belief child illnesses stem from witchcraft and some are from another world and this has influenced the healthcare seeking behaviour among caregivers of under-five in treatment of malaria (Akogun & John, 2022).

Additionally, another factor that influences caregivers' practices is poverty. Caregivers with low income often lack funds to afford diagnostic tests, ACTs or even transportation to health facilities. These issues forces caregivers to seek cheaper remedies or even result to herbal concoction. Caregivers living in poor households usually face financial constraints that limits their ability to access quality health services. In a study that was carried out revealed that economic hardship is one of the leading reasons caregiver's delays seeking prompt treatment for their under-five children with febrile illnesses (Sheward et al., 2025). Similarly, another study highlighted poverty as a key factor that influenced treatment choices, prompt health seeking behaviour and patronizing informal healthcare service providers, as poorer caregivers uses cheaper and less effective antimalarial drug rather than the recommended artemisinin-based combination therapies (ACTs) (Nwaneri et a., 2017). In another study, the findings revealed that children from poor households had a lower odd of receiving prompt and appropriate malaria treatment compared to their counterparts in a wealthier household (Chukwuoch et al., 2020). In addition, poverty also reduces the likelihood of completing treatment regimens thereby increasing the risk of drug resistance and treatment failure (Chukwuocha et al., 2020). Poverty affects caregivers' treatment options by limiting affordability, accessibility and adherence to recommended treatment practice

2.4 Identified Gaps in Home Treatment of Malaria

Gaps in the treatment of malaria at home is the difference between ideal practices and the real-life practices among caregivers. One major gap is that caregivers often delay taking children to a health facility. A study carried on in Benin City revealed that 37.3% of children with severe malaria were brought to the hospital after more than three days of illness onset (Okonji et al., 2022). Similarly, research in Igabi Local Government, Kaduna State, showed that mothers in rural areas were 2.8 times more likely to delay seeking care for fever beyond 48 hours (malaria journal, 2020). These practices directly contradict WHO and Nigeria's guideline, which recommended prompt diagnosis and treatment within 24-48 hours of fever onset.

Another Identified gap is the low use of rapid diagnostic tests (RDTs) before administering antimalarial drugs. The WHO guideline emphasizes test before treat but in practice, many caregivers treat fever as malaria without confirmation. In Kaduna, mothers without formal education were four times more likely to treat children without testing (Babalola et al., 2020). This exposes children to inappropriate treatment, increases drug resistance and delays the management of other possible cause of fever. Caregivers often use outdated drugs or inappropriate medications in the management of malaria in their under-five at home. For example, a study carried in Nigeria on home-based management of malaria reported that 15.8% of caregivers used recommended ACTs, while many relied on paracetamol, chloroquine or herbal medicine (Oguonu et al., 2017). This gap persists despite clear WHO and national recommendation that ACTs are the only first-line treatment for uncomplicated malaria.

Even when caregivers use ACTs, they often not complete the dose of the ACTs recommended. Caregivers often stop giving the drug once the fever subsides while some caregiver use under dose because of financial constrain. A study described home-based treatments as almost universally inappropriate, with many children receiving incomplete doses (Oguonu et al., 2017). This gap is dangerous because incomplete treatment often leads to drug resistance and increases the risk of relapse and sometimes complications. Preventive measures, such as sleeping under insecticide-treated nets (ITNs) are poorly practiced among caregivers of under-five children. A study on caregivers' vector control practices found that although 53.8% of caregivers possessed ITNs, only about 25% of under-five children regularly slept under them (Ajayi et al., 2017). Similar results were reported in military barracks communities in Lagos, where awareness was relatively high but consistent usage was low (Adebayo et al., 2022). This gap reflects differences between proper utilization despite WHO insistence on universal ITN coverage for children under five.

Caregivers' knowledge of malaria symptoms and causes is often incomplete. revealed that although caregivers recognized mosquitoes as the cause of malaria, their knowledge of other transmission-related factors and key symptoms was only fair (Hassan et al., 2014; Koroma et al, 2022;). Misconceptions, such as attributing malaria to excessive sun exposure or contaminated food remain common. These knowledge gaps limit caregivers' ability to follow guidelines, especially when deciding on timely diagnosis and treatment.

2.5 Current effort in prevention and control of Malaria in Nigeria

The National Malaria Strategic Plan (NMSP 2021–2025) provides the national framework for reducing malaria burden and achieving pre-elimination status by 2025. The plan outlines six key intervention areas that guide malaria prevention and control efforts in Nigeria (Federal Ministry of Health [FMoH], 2021; U.S. President's Malaria Initiative [PMI], 2024). These include:
Vector Control:

a. Distribution and continuous replacement of Long-Lasting Insecticidal Nets (LLINs) to achieve at least 80% population coverage.
b. Implementation of Indoor Residual Spraying (IRS) and Larval Source Management (LSM) in high-transmission areas.
c. Example: The Malaria Consortium distributed over five million LLINs across Jigawa and Yobe States between 2021–2022, aligning with NMSP targets (Malaria Consortium, 2022).
Chemoprevention and Case Management:

a. Provision of Seasonal Malaria Chemoprevention (SMC) for children under five, especially in the Sahel and northern regions.
b. Expansion of Integrated Community Case Management (iCCM) programs to ensure access to diagnosis and treatment at community level.
c. Promotion of Rapid Diagnostic Tests (RDTs) and Artemisinin-based Combination Therapies (ACTs) to enforce the 'test-before-treat' policy.
d. Example: The introduction of malaria vaccines in Nigeria in October 2024 marked a milestone under this intervention area (UNICEF, 2024).

Surveillance, Monitoring, and Evaluation:
a. Strengthening malaria data systems to capture 80% of all cases reported in health facilities and communities.
b. Expansion of digital data reporting platforms for real-time tracking of malaria incidence.
c. Example: The Nigeria Malaria Indicator Survey (NMIS 2025) was launched to assess national progress in achieving NMSP goals (National Population Commission, 2024).

Advocacy, Communication, and Social Mobilization:
a. Development of continuous Behavior Change Communication (BCC) campaigns to promote ITN use, early testing, and treatment adherence.
b. Engagement of community and religious leaders to enhance public participation in malaria prevention programs (Koroma et al., 2022).
c. Health System Strengthening and Partnership Coordination:
d. Collaboration between federal, state, and local governments with partners such as WHO, UNICEF, and PMI to ensure policy alignment and resource mobilization.
e. Establishment of the Advisory on Malaria Elimination in Nigeria (AMEN) to mobilize private sector investment and multisectoral partnerships (Federal Ministry of Information, 2023).

Although Nigeria's National Malaria Strategic Plan (2021–2025) provides a robust framework for prevention and control, several critical gaps persist in its implementation. These include weak caregiver engagement, inadequate behavioral change communication, poor access to RDTs and quality ACTs, unequal coverage of community health interventions, and heavy dependence on external funding. The plan's success depends not only on distributing commodities but also on ensuring caregivers' understanding and consistent home-based application of malaria management guidelines. Bridging this gap between policy design and household practice remains essential for achieving malaria elimination targets in Nigeria.

2.6 Role of Caregivers in Bridging the Gap

Caregivers, particularly mothers and female guardians, remain the first responders when a child under five develops fever, the most common symptom of malaria, because of this central role, caregivers are uniquely positioned to bridge the gap in malaria management. Their actions often determine whether the child receives early, correct treatment as recommended by WHO and Nigeria's national malaria guideline. Their role in bridging the gap lies in recognizing symptoms early, administering the correct medicine, enforcing preventive measures, spreading accurate health knowledge and ensuring timely referrals.

2.6.1. **Early recognition and Prompt Action**

Caregivers are the first to observe changes in a child's health. In endemic areas fevers is the most common sign of malaria yet many caregivers mistake it for other illnesses and often wait till the symptoms worsen before seeking treatment. WHO emphasizes that treatment should begin within 24 hours of fever onset and caregivers play a decisive role in recognizing early symptoms such as fever, chills, vomiting and loss of appetite. A study carried out in Kaduna State showed that delayed care-seeking is common, but where caregivers were knowledgeable, children were taken for testing and treatment within the recommended time frame (Babalola et al., 2020). Caregivers can help bridge this gap by responding quickly to signs of illness and avoiding delays.

2.6.2. **Adhering to Diagnostic guidelines**

The guideline "test before treat" can only be realized if caregivers demand and accept testing before antimalarial drugs are given. A study in Benin City highlighted that many caregivers skipped diagnostic tests, relying on fever alone as confirmation (Okonji et al., 2022). By insisting on RDTs or facility-based testing, caregivers can help reduce the misuse of ACTs, prevent resistance and ensure that children with non-malarial fevers are correctly treated

2.6.3. **Correct drug use and adherence**

One of the major challenges in malaria management is appropriate use of medicines. Some caregivers administer incomplete doses, use leftover drugs, or rely on monotherapies that are no longer effective. Even when ACTs are not available, the effectiveness of treatment depends on caregivers giving the correct dose for the correct duration. Research in Enugu showed that inappropriate dosing and treatment were widespread when caregivers lacked clear instructions on the correct use of malaria drugs (Oguonu et al., 2017). Caregivers play a major by ensuring children receive the right dose and at the right time ensuring the full 3-day ACT regimen is completed even if symptoms subside.

2.6.4. **Promoting prevention practices**

Prevention is the cornerstone of malaria control and the caregivers are responsible for implementing preventive measures in the home. These include ensuring children sleep under long-lasting insecticide treated nets, eliminating stagnant water around the house, covering water containers and encouraging indoor spraying where available. Studies show that households where caregivers consistently use insecticide treated nets report significantly fewer malaria cases among children (Oladepo et al., 2021). By prioritizing prevention, caregivers close the gap between national malaria prevention strategies and household practices.

2.6.5. Early Referral

Not all malaria cases can be managed at home. Severe malaria requires urgent referral to health facilities for advance care. Some caregivers delay seeking professional help due to financial barriers, cultural beliefs or distance to facilities. Caregivers who recognize danger signs such as persistent vomiting, convulsion or loss of consciousness play a crucial role in ensuring timely referral. The link between households and health systems helps align community-level practices with national treatment protocols (Chukwuocha et al., 2022).

2.6.6. Health Education and Peer Influence

Caregivers' actions do not only influence their immediate households but also influence caregivers and households in their community. Consistently practicing early treatment, completing medication courses and enforcing preventive behaviours create a culture of responsibility and wellness. Over times, the consistency helps sustain community-wide adherence of malaria guidelines and bridges the gap between policy and practice (Abdulraheem & Ibrahim, 2024).

2.7 Strategies to Overcome Identified Gaps in Home-Based Malaria Management

Several gaps exist in the effectiveness of treatment of malaria in under-fives at home and these includes poor caregiver knowledge, delay treatment, low adherence to National and WHO guidelines, cultural belief and socio-economic barriers. Addressing these gaps requires specific strategies that empowers caregivers and improve accessibility to quality malaria treatment.

2.7.1. Knowledge and awareness. Health education through community health workers, radio, religious and community gatherings. In addition, the use of pictorial and simplified education materials especially for caregivers with low literacy. A study carried out noted an increase in the use of current and effective antimalarial drugs and a reduction in use of herbal concoctions as a result of increase of awareness on the management of malaria (Fatungase et al., 2012). Similarly, another study carried out among caregivers of young children in a rural community in Southwest noted improvements in awareness and treatment knowledge as a result of face-to-face education and printed materials (Oreagba et al., 2008).

2.7.2. Provision of affordable or free RDT kits at community pharmacies and drug shops, in addition, Pharmacist and pharmacy technicians should be trained on RDT use. Early and accurate confirmation of malaria is critical as many caregivers still treat fever without testing (Ezenwaka et al., 2022). Since community pharmacy and drug shops are the first point of care for many households, provision of subsidized or free RDTs will increase uptake and appropriate malaria treatment. A study carried out highlighted that provision of free RDTs increased the uptake and appropriate malaria treatment among caregivers (Ajayi et al., 2021). Similarly, another study noted that free RDTs reduced unnecessary use of ACT by about 40% (Rutebemberwa et al., 2021)

2.7.3. Enforcing drug regulation to remove chloroquine tablet and fake drug from circulation. Nigeria banned chloroquine for malaria treatment in 2005 yet it remains available in drug stores (Okeke at al., 2021). According to WHO, circulation of fake and substandard drugs contributes to resistances and treatment failure (WHO, 2023). Studies showed that about 15% to 30% of antimalarial drugs in circulation are fake or substandard (Nwokike et al., 2020; Newton et al., 2022). A study carried out noted that strengthening regulatory surveillance significantly reduced the circulation of fake medicines (Ozoh et al., 2023). Therefore, implementation of national enforcement strategy combining seizures, digital verification, border control and public awareness is necessary to eliminate chloroquine and fake malaria drugs in circulation.

2.7.4. Establishment of community drug distribution point closer to household for improved malaria management. Many households in rural and peri-urban area faces long distance to health facilities hence the delay in seeking of medical care for their under-fives. According to WHO, community drug distribution points can provide timely access to ACTs and RDTs thereby reducing morbidity and mortality (WHO, 2023). A study carried out in Uganda and Nigeria revealed that community-based distribution of ACTs increased early treatment by 25 – 40% in both countries. Community drug distribution points will be being life-saving medicines closer to households reducing delay in seeking medical care.

2.7.5. The use of long-lasting insecticide-treated nets are one of the most effective and affordable ways of preventing transmission of malaria especially among children under the age of five. Studies carried out has shown that the use of insecticide treated nets reduces malaria incidence and death due to malaria (Eisele et al., 2020). A study carried out in Nigeria revealed that mass insecticide treated nets campaign have been associated with substantial increase in household use of insecticide treated nets thereby reducing malaria infection. There is gap in the consistent use of the net and the replacement when the nets worn out.

RESEARCH METHOD

This study aimed to provide a comprehensive narrative review of the role of caregivers of under-five children in bridging the gap in home-based malaria management, focusing on the public health implications, prevailing treatment practices, and various contributing factors to the disease burden. A qualitative research approach was employed to collect, evaluate, and synthesize existing literature related to this critical public health strategy in the Nigerian and Sub-Saharan African context.

3.1 Research Design

The research followed a narrative review design, facilitating a systematic and in-depth synthesis of the relevant literature surrounding home-based malaria management (HMM) and caregiver practices. The primary objective was to critically analyze and summarize findings from studies published primarily between 2017 and 2025. This timeframe was selected to capture the evolution of malaria control strategies from the early Roll Back Malaria initiatives to current National Strategic Plans, thereby offering insights into historical trends, persistent challenges, and the potential of caregivers to improve health outcomes in this demographic.

3.2 Data Collection

Data collection for this review involved utilizing multiple sources, primarily comprising peer-reviewed journal articles, government reports, and publications from reputable health organizations such as the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the Federal Ministry of Health (FMoH) in Nigeria. Additional sources of grey literature, including National Malaria Strategic Plans, thesis dissertations, and surveillance reports focusing on malaria morbidity and mortality, were also incorporated. The search for relevant literature was conducted using databases such as PubMed, Google Scholar, African Journals Online (AJOL), and Scopus. A combination of keywords, including "Malaria," "home-based malaria management," "caregivers," "under-fives," "Nigeria," "treatment practices," "herbal medicine," and "public health," was employed to identify pertinent studies. Inclusion criteria prioritized studies that specifically addressed caregiver knowledge, attitude, and practices regarding malaria treatment in children under five. Studies not meeting these criteria, or those failing to focus on the Sub-Saharan African context, were excluded.

3.3 Sampling Technique

Due to the nature of this narrative review, traditional probability sampling techniques were not applicable. Instead, the selection of literature was based on a purposive approach, ensuring relevance to the research objectives. Only those studies that directly addressed home-based malaria management, caregiver health-seeking behaviors, and the gap between policy and practice were included in the analysis. This methodology ensured that the review encompassed a comprehensive perspective on the key issues surrounding malaria management in this vulnerable population.

3.4 Sample Size

As a literature review, the concept of "sample size" did not apply in a conventional statistical sense. However, the study aimed to include a sufficient number of studies approximately 54 peer-reviewed articles and reports to ensure a broad and representative analysis of the main themes associated with caregiver roles in malaria management. The number of studies incorporated depended on the availability of relevant, high-quality literature that conformed to the established inclusion criteria and provided robust data to answer the research questions.

3.5 Data Analysis

The data analysis process for this review involved a qualitative synthesis of the selected literature. Following the retrieval of relevant articles and reports, a thematic analysis approach was employed to organize and interpret the findings. Information extracted from the selected studies was categorized into key themes aligned with the research objectives, such as prevailing home-based treatment practices, socio-economic and cultural determinants of health-seeking behavior, and specific gaps in adherence to national malaria guidelines. This analytic strategy allowed for the identification of recurring patterns, contradictions, and trends across different geographic zones in Nigeria and Sub-Saharan Africa. The synthesized data were then used to construct narrative arguments and summary tables, providing a coherent answer to the research questions regarding the pivotal role of caregivers in malaria management.

3.6 Ethical Considerations

Since this study is a narrative review relying exclusively on secondary data available in the public domain, ethical clearance for human subject participation was not required. There was no direct contact with human participants or handling of private, identifiable medical records. However, strict adherence to academic integrity and ethical standards for research was maintained throughout the study. All sources of information, including journal articles, organizational reports, and policy documents, were properly cited and referenced to acknowledge the intellectual property and contributions of the original authors. Furthermore, care was taken to accurately represent the findings of the reviewed studies without distortion, and plagiarism was rigorously avoided to ensure the credibility and originality of the review.

RESULTS AND DISCUSSION

The review identifies that caregivers are the primary "doctors" for under-fives in Nigeria. However, their efficacy is hindered by systemic and educational barriers

Research Question 1

What a current home-based malaria management practices among caregivers?

The review identifies that the prevailing practices among caregivers are largely inconsistent with WHO guidelines. The most dominant practice is the management of fever with paracetamol alone or herbal concoctions, often resulting in delayed presentation to health facilities. Self-medication using drugs purchased over-the-counter is widespread, driven by the convenience of patent medicine vendors, but is rarely accompanied by diagnostic testing (RDTs). The storage and reuse of leftover antimalarials further complicate effective case management.

Table 1: Current Home-Based Malaria Management Practices Identified in Literature

Prevailing Practice	Statistical Findings / Observations	Implications	Source
Monotherapy (Paracetamol Use)	69.0% of caregivers used paracetamol only as the first-line treatment. In Ondo, 45% treated with paracetamol before hospital presentation.	Delays effective parasite clearance; treats symptoms but ignores the underlying infection.	Nwaneri et al. (2017); Ahmed et al. (2017); Brunner et al. (2021)
Use of Herbal/Traditional Medicine	22% of caregivers in Southwest Nigeria use herbal concoctions; 18.2% use them before presenting at hospitals.	High risk of toxicity; lacks dosage precision; significantly delays seeking formal care.	Okunola et al. (2023); Eseigbe et al. (2012); Bamgboye et al. (2025)
Self-Medication via Patent Medicine Stores	44% of youths/caregivers bought antimalarials without a prescription. 69% prefer treating at home over formal health facilities.	Increases risk of purchasing substandard drugs; promotes drug resistance due to misuse.	Tosin et al. (2024); Bamikole et al. (2023); Bamgboye, Ogunwale et al. (2025)
Use of Leftover Medications	17.5% of drugs kept at home are antimalarials.	Encourages under-dosing and use of expired or inappropriate medications for new fever episodes.	Kahssay et al. (2023); Diarra et al. (2025)
Presumptive Treatment (No Testing)	High tendency to treat all fevers as malaria without RDT confirmation. Mothers with no formal education were 4x more likely to treat without testing.	Leads to wastage of ACTs and mismanagement of non-malarial fevers (e.g., pneumonia).	Babalola et al. (2020); Okonji et al. (2022)

Research Question 2

What are factors and gaps contributing to the high malaria burden in under-fives?

The high burden of malaria in under-fives is sustained by a complex interplay of factors. Socio-economically, poverty is a primary barrier, forcing caregivers to choose cheaper, less effective treatment options. Culturally, deep-seated beliefs about the spiritual origins of fever prevent early medical intervention. Systemically, the difficult access to formal primary healthcare and the loose regulation of drug markets (allowing fake drugs) create an environment where adherence to guidelines is difficult. These gaps collectively result in children presenting late with severe malaria, increasing mortality rates.

Table 2: Factors Contributing to Gaps in Home-Based Management and High Malaria Burden

Factor Category	Specific Determinant	Gap Created	Influence on Malaria Burden	Source

Socio-Economic	Poverty / Financial Constraints	Inability to afford ACTs, RDTs, or transportation to facilities.	Children from poor households have significantly lower odds of receiving prompt treatment, leading to higher mortality.	Chukwuocha et al. (2020); Abiodun et al. (2022); Sheward et al. (2025)
Cultural	Misconceptions & Beliefs	Attributing fever to teething, witchcraft, or spiritual causes.	Results in the use of ineffective spiritual or traditional remedies instead of medical care, delaying treatment beyond the critical 24-hour window.	Akogun & John (2022); Bello & Rehal (in Bamgboye et al., 2025)
Systemic	Poor Access to Healthcare	Long distance to facilities, long waiting times, and poor staff attitude.	Drives caregivers toward informal providers (PPMVs) where quality of care and diagnosis is often unregulated.	Okeke & Uzochukwu (2020); Bamgboye et al. (2025)
Knowledge	Low Health Literacy	Lack of awareness regarding the "Test, Treat, Track" guideline.	Caregivers fail to recognize danger signs early; only 5.3% in a Kaduna study knew malaria requires a diagnostic test.	Ajumobi et al. (2017); Osinowo et al. (2025); Adeoti et al. (2022)
Regulatory	Circulation of Fake Drugs	Availability of banned Chloroquine and substandard ACTs.	15-30% of circulating drugs may be fake, leading to treatment failure and persistent parasitemia.	Ozoh et al. (2023); Newton et al. (2022); Okeke et al. (2021)

Research Question 3

In what are the specific roles of caregivers in bridging the management gap?

To bridge the gap between national guidelines and household reality, the caregiver's role must evolve from a passive observer to an active manager of health. The review suggests that optimizing the caregiver's role involves three key shifts: 1) shifting from presumptive treatment to demanding diagnostic testing at the point of care, 2) moving from symptom relief (monotherapy) to curative adherence (full ACT course), and 3) transforming from inconsistent prevention to strict nightly use of ITNs. When caregivers are empowered to perform these roles supported by community drug distribution and education treatment outcomes improve significantly, and unnecessary drug use drops by approximately 40% (Rutebemberwa et al., 2021).

Table 3: Optimized Roles of Caregivers in Bridging the Policy-Practice Gap

Optimized Role	Specific Action to Bridge Gap	Expected Outcome	Source
First-Line Diagnostician	**Early Recognition:** Identifying fever/danger signs and seeking care within 24 hours.	Reduces the progression to severe malaria and cerebral complications.	Babalola et al. (2020); Osinowo et al. (2025)
Advocate for Testing	**Demand RDTs:** Refusing to buy antimalarials at drug shops without a rapid test.	Bridges the gap between presumptive treatment and the "Test before Treat" policy; reduces drug resistance.	Ezenwaka et al. (2022); Ajayi et al. (2021)

Treatment Supervisor	**Strict Adherence:** Ensuring the full 3-day course of ACT is completed, even if the child feels better.	Eliminates residual parasites and prevents recrudescence (relapse).	Oguonu et al. (2017); Chemison et al. (2021)
Preventive Gatekeeper	**Utilization of ITNs:** Moving from net ownership to actual nightly usage for under-fives.	Closes the gap between vector control distribution and actual protection from bites.	Adebayo et al. (2022); Ajayi et al. (2017)
Community Agent	**Peer Influence:** Educating other mothers to reject herbal concoctions for fevers.	Shifts community norms and reduces the influence of harmful cultural beliefs.	Abdulraheem & Ibrahim (2024)
Care Seeker	**Timely Referral:** Immediate transport to facilities upon observing danger signs (convulsions, unconsciousness).	Connects home-based care with advanced clinical management for survival.	Chukwuocha et al. (2022); Okonji et al. (2022)

Discussion of Findings

5.1 Prevailing Home-Based Management Practices

The review established that home-based management is the most common response to childhood fever, yet it is largely inconsistent with WHO guidelines. The high reliance on paracetamol monotherapy (45–69%) as reported by Ahmed et al. (2017) and Nwaneri et al. (2017) indicates that caregivers prioritize symptomatic relief over parasite clearance. Furthermore, the widespread practice of self-medication without diagnostic testing (Bamikole et al., 2023) and the use of herbal concoctions (Okunola et al., 2023) suggest a significant departure from the "test-before-treat" policy. These practices contribute to delayed facility presentation and increased risk of complications.

5.2 Factors and Gaps Influencing Malaria Burden

The persistent gaps in malaria management are driven by a triad of socio-economic, systemic, and cultural factors. Poverty remains the most significant barrier, as financial constraints directly lead to delayed treatment and the patronage of cheaper, informal healthcare providers (Abiodun et al., 2022; Bamgboye et al., 2025). Systemically, the circulation of substandard drugs and low awareness of Rapid Diagnostic Tests (RDTs) exacerbate the burden (Ozoh et al., 2023). Culturally, the misattribution of malaria symptoms to "teething" or "witchcraft" (Akogun & John, 2022) creates a psychological barrier that prevents timely medical intervention, highlighting a critical gap in health literacy among caregivers.

5.3 Optimization of Caregiver Roles to Bridge the Gap

The findings underscore that caregivers are the primary stakeholders in the malaria control value chain. Their role as "First Responders" is pivotal; however, optimization requires a shift toward diagnostic-led home care. The success of community-based RDT programs in drug shops (Rutebemberwa et al., 2021) proves that when tools are accessible, caregivers can effectively bridge the gap. By acting as "Adherence Monitors" and ensuring children complete the full three-day ACT regimen, caregivers mitigate the risk of drug resistance (Oguonu et al., 2017). Ultimately, empowering caregivers transforms them from passive observers into active public health agents, which is essential for reducing under-five mortality (Abdulraheem & Ibrahim, 2024).

5.4 Public Health Implications

The findings imply that current malaria strategies are overly facility-centric. To achieve the goals of the National Malaria Strategic Plan (2021–2025), interventions must focus on Caregiver Empowerment. Shifting the focus to the household level through subsidized RDTs, behavioral change communication, and community drug distribution is the most viable path to closing the management gap and achieving malaria elimination in Nigeria.

RECOMMENDATION

1. Home-based management of malaria (HMM) is a promising strategy to improve public access to prompt and effective management of uncomplicated malaria for reducing the disease burden. Hence, Government policies should prioritize home-based malaria management as an essential component of national malaria control strategies.
2. Community drug distribution points should be institutionalise to bring ACTS and RDTs closer to households in rural and peri-urban areas.
3. Integrate malaria control into maternal and child health, nutrition and environmental sanitation programms.
4. Community radio should be used for reminders, education and monitoring of drug adherence.
5. Community and religious leaders should be engage to correct misconceptions and endorse guideline-adherent practices.
6. Long-term impact of caregiver empowerment programs on treatment adherence and child outcomes should be evaluated.
7. Research on care-givers decision making and acceptance of RDTs should be carried out.

CONCLUSION

Based on the results of this review, it is concluded that while home-based malaria management is currently undermined by inappropriate self-medication and socio-economic barriers, caregivers remain the most critical stakeholders in the treatment chain. Therefore, optimizing their role from passive observers to informed, diagnostic-led first responders is the essential strategy required to bridge the gap between national guidelines and household reality to reduce under-five mortality.

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