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A cross-sectional descriptive study assessing knowledge, attitude and practice about Malaria, the mosquito and antimalarial drugs in a rural community

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Abstract
Aim: This study assessed the knowledge, attitudes, and practices (KAP) regarding malaria, mosquitoes, and antimalarial drugs in a rural community.
Materials and Methods: This study employed a cross-sectional descriptive design to assess the knowledge, attitudes, and practices (KAP) regarding malaria, mosquitoes, and antimalarial drugs in a rural community. The data was collected through structured interviews and questionnaires administered to a representative sample of the community. The study was conducted in a rural community; an area characterized by endemic malaria transmission. The community was selected due to its high malaria burden and limited access to healthcare facilities, making it an ideal setting for investigating KAP on malaria.
Results: A cross-sectional survey of 190 participants revealed that most were aware of malaria transmission through *Anopheles* mosquitoes (80.0%) and the effectiveness of insecticide-treated nets (ITNs) (82.1%). Despite this, 18.9% held misconceptions about malaria transmission, and 15.3% preferred traditional remedies over medical treatment. While 77.9% regularly used ITNs, 7.9% resorted to self-medication for malaria. Socio-demographic factors such as gender and age influenced malaria knowledge and treatment-seeking behavior.
Conclusion: The findings highlight the need for continued education to address misconceptions, promote proper treatment adherence, and strengthen trust in formal healthcare services to enhance malaria control in rural communities.

Keywords: Rural communities, mosquitos, Malaria

Introduction
Malaria remains a major public health threat, particularly in rural areas of sub-Saharan Africa, where it is a leading cause of morbidity and mortality. Transmitted through the bites of *Anopheles* mosquitoes, malaria continues to result in millions of cases and deaths worldwide, despite extensive global efforts for its control. In rural communities, where healthcare infrastructure may be inadequate, understanding local knowledge, attitudes, and practices (KAP) about malaria, mosquitoes, and antimalarial drugs is critical for designing effective malaria control strategies.
Knowledge about malaria's transmission, symptoms, prevention, and treatment is essential in encouraging protective behaviors such as the use of insecticide-treated bed nets (ITNs) and prompt medical treatment [1]. However, misconceptions about malaria's transmission-such as the belief that malaria is caused by factors other than mosquito bites-can hinder the adoption of appropriate preventive measures [2]. Barriers to healthcare access, such as cost and distance to health facilities, further exacerbate these challenges, leading to delayed treatment and non-adherence to prescribed drug regimens [3]. Socioeconomic factors, education, and environmental conditions also significantly affect individuals' practices and adherence to malaria control measures [4].
Additionally, cultural beliefs and the use of traditional remedies may delay individuals from

seeking proper medical care, thereby contributing to the spread of malaria in rural areas [5]. The effectiveness of malaria control programs is often influenced by these local beliefs and practices, which can be difficult to address through conventional health interventions alone [6].

KAP surveys are valuable tools in rural areas to identify knowledge gaps, misconceptions, and behavioral patterns related to malaria prevention and treatment [7]. This study aims to assess the knowledge, attitudes, and practices regarding malaria, mosquitoes, and antimalarial drugs in a rural community. By understanding these factors, we can identify potential barriers to effective malaria control and design more targeted health interventions to reduce the burden of malaria.

Methodology

This study employed a cross-sectional descriptive design to assess the knowledge, attitudes, and practices (KAP) regarding malaria, mosquitoes, and antimalarial drugs in a rural community. The data was collected through structured interviews and questionnaires administered to a representative sample of the community. The study was conducted in a rural community located in India, an area characterized by endemic malaria transmission. The community was selected due to its high malaria burden and limited access to healthcare facilities, making it an ideal setting for investigating KAP on malaria.

The target population for this study was adult residents of the rural community, aged 18 years and above. Both males and females from diverse socioeconomic backgrounds were included to ensure a comprehensive understanding of community-wide knowledge, attitudes, and practices. Individuals who were either sick with malaria during the data collection period or unwilling to participate were excluded from the study.

A multi-stage sampling technique was used to select participants. Initially, the community was divided into sub-villages, and then a random sampling method was used to select households within each sub-village. From each selected household, one adult participant was chosen, ensuring the sample was representative of the population's age, gender, and socio-economic status. Informed consent was obtained from all participants, who were assured of their right to confidentiality and the voluntary nature of participation. Participants were also informed about the purpose of the study and the use of the data solely for research purposes. Data was collected using a pre-tested structured questionnaire that was designed to capture key aspects of KAP regarding malaria, mosquitoes, and antimalarial drugs. The questionnaire was divided into three sections:

1. **Knowledge of Malaria:** Questions focused on transmission, symptoms, prevention methods (e.g., use of insecticide-treated nets, environmental control), and the community's understanding of antimalarial drugs.
2. **Attitudes toward Malaria Prevention and Treatment:** This section assessed beliefs and perceptions about malaria and its prevention, including the importance of medical treatment, the use of traditional remedies, and attitudes toward seeking care.
3. **Practices Regarding Malaria:** Questions explored the actual behaviors of community members, such as the use of mosquito nets, taking antimalarial drugs, and the timing and frequency of healthcare visits.

Trained enumerators fluent in the local language conducted face-to-face interviews with participants. The questionnaire was translated into the local language and pre-tested on a small sample from a neighboring community to ensure clarity and cultural relevance. Data was analyzed using descriptive statistics. Frequencies, percentages, and means were calculated for knowledge, attitudes, and practices related to malaria. Statistical significance was set at $p<0.05$.

Results

A total of 190 participants from the rural community were surveyed, with an equal distribution of 95 males and 95 females. The age distribution was as follows: 25.3% (n=48) were aged 18-29 years, 40% (n=76) were aged 30-44 years, and 34.7% (n=66) were aged 45 years and above.

Table 1: Age Distribution of Study Participants

Age Group (Years)	Frequency (n)	Percentage (%)
18 - 29	48	25.3%
30 - 44	76	40.0%
45 and above	66	34.7%
Total	190	100.0%

1. Knowledge of Malaria

Participants were assessed on their knowledge of malaria transmission, symptoms, prevention, and treatment. Overall, 80.0% (n=152) of participants correctly identified *Anopheles* mosquitoes as the primary vector of malaria, while 18.9% (n=36) thought malaria was transmitted through contaminated water. When asked about symptoms, 73.7% (n=140) correctly identified fever as the most common symptom, while 26.3% (n=50) mentioned other non-specific symptoms like headache or vomiting.

Regarding prevention methods, 82.1% (n=156) of participants correctly mentioned the use of insecticide-treated nets (ITNs) as a primary preventive measure, while 11.6% (n=22) cited the use of mosquito repellents and 6.3% (n=12) mentioned environmental control (e.g., draining stagnant water).

Table 2: Knowledge of Malaria Transmission and Prevention

Knowledge Aspect	Frequency (n)	Percentage (%)
Correctly identified *Anopheles* mosquito as malaria vector	152	80.0%
Identified fever as main symptom	140	73.7%
Correctly mentioned ITNs as prevention	156	82.1%
Mentioned environmental control methods	12	6.3%

2. Attitudes towards Malaria Prevention and Treatment

91.1% (n=173) of participants believed it was very important to seek medical treatment promptly after recognizing malaria symptoms. However, 15.3% (n=29) expressed doubts about the effectiveness of antimalarial drugs, believing that traditional remedies were equally effective. Additionally, 60.0% (n=114) expressed confidence in healthcare providers, while 22.6% (n=43) preferred traditional healers for malaria treatment.

Table 3: Attitudes towards Malaria Treatment

Attitude Aspect	Frequency (n)	Percentage (%)
Believed treatment is important	173	91.1%
Believed traditional remedies are effective	29	15.3%
Trust healthcare providers	114	60.0%
Preferred traditional healers	43	22.6%

3. Practices Regarding Malaria Prevention

In terms of malaria prevention practices, 77.9% (n=148) of participants reported using ITNs regularly, while 18.4% (n=35) claimed they sometimes used them, and 3.7% (n=7) did not use them at all. Regarding antimalarial drug use, 85.8% (n=163) stated that they would seek treatment if they suspected they had malaria, while 7.9% (n=15) reported using self-medication or relying on over-the-counter drugs without consulting a healthcare provider.

Table 3: Malaria Prevention Practices

Practice Aspect	Frequency (n)	Percentage (%)
Regular use of ITNs	148	77.9%
Use of ITNs sometimes	35	18.4%
Do not use ITNs	7	3.7%
Seek treatment if malaria is suspected	163	85.8%
Use self-medication	15	7.9%

A chi-square analysis showed that gender was significantly associated with knowledge of malaria prevention (p=0.03), with females demonstrating better knowledge of ITN use. Age was significantly associated with the attitude toward malaria treatment (p=0.02), with older participants more likely to trust healthcare providers.

Discussion

This study aimed to assess the knowledge, attitudes, and practices (KAP) regarding malaria, mosquitoes, and antimalarial drugs in a rural community. The findings highlight both positive aspects and areas for improvement in the community's malaria-related knowledge and behavior.

Gender and age influenced KAP outcomes. Women showed better knowledge of ITN use, likely due to their roles in household health decisions [8]. Older participants were more likely to trust healthcare providers, reflecting greater exposure to health interventions over time [9]. These findings suggest that targeted health education for different demographic groups could enhance malaria control efforts.

A majority of participants (80.0%) correctly identified *Anopheles* mosquitoes as the malaria vector, and 82.1% recognized ITNs as an effective prevention method. These results are consistent with studies showing improved malaria awareness through educational campaigns [10]. However, 18.9% still believed contaminated water spread malaria, suggesting a need for continued education to address misconceptions [8]. While most participants recognized fever as a key symptom (73.7%), some mentioned non-specific symptoms, which may delay early diagnosis and treatment [9].

Most participants (91.1%) understood the importance of seeking prompt treatment for malaria. However, 15.3% favored traditional remedies, and 22.6% preferred traditional healers over healthcare providers. These findings align with research showing that cultural beliefs often influence treatment-seeking behavior [11]. This underscores the need for integrating traditional practices with formal health services to improve treatment adherence.

The study found that 77.9% of participants regularly used ITNs, consistent with findings from other regions where ITN distribution programs have improved usage rates [12]. However, 3.7% did not use ITNs, highlighting barriers such as availability or discomfort [13]. Furthermore, while 85.8% sought medical treatment for malaria, 7.9% used self-medication, raising concerns about potential drug resistance [14]. Proper education and access to healthcare are critical to ensure correct treatment practices.

Conclusion

In conclusion, while the rural community demonstrates a good understanding of malaria transmission and prevention, misconceptions and reliance on traditional remedies remain challenges. Although ITN use is common, inconsistent practices and self-medication are concerns. Targeted education and strengthening trust in formal healthcare systems are essential for improving malaria prevention and treatment outcomes in the area.

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