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Community-related factors contributing to the increased cases of malaria among children below five years in Arua regional referral hospital, Arua district. A cross-sectional study.

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ABSTRACT

Background

Uganda and the entire Sub-Saharan Africa have one of the highest global burdens of malaria cases. This study aimed to identify the community-related factors contributing to the increased cases of malaria among this age group in Arua regional referral hospital.

Methodology

The study employed a descriptive cross-sectional study with a purposive sampling technique, which was used to collect data from 50 respondents according to the specific objectives. The data was later analysed by using Microsoft Word and Excel, then presented in tables and figures.

Results

Half of the respondents (50%) had attained primary school, and 52% were peasant farmers. Community-related factors noted were that the location of respondents' homes had an impact on the increased malaria cases, as (54%) of homes were surrounded by vegetation, poor housing infrastructures since (48%) had semi-permanent houses, and poor waste management by (28%) who kept solid wastes at home in open heap garbage places.

Conclusion

Location of the respondent's homes, poor housing infrastructures, and poor waste management behaviour were the major factors contributing to an increase in the number of malaria cases among children below five years.

Recommendations

The government of Uganda, through the Ministry of Health, should ensure interior spraying is available to all households at no cost.

***Keywords**: Community-related factors, cases of malaria, children below 5 years, The Arua Regional Referral Hospital.*
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Background

Uganda and the entire Sub-Saharan Africa have one of the highest global burdens of malaria cases. The WHO reported that there are an estimated 13 million malaria cases (Jacklin F, 2021). At the Global technical strategy for malaria 2016–2030 (GTS) baseline of 2015, there were 224 million estimated malaria cases, the proportion of cases due to Plasmodium Vivax reduced from about 8% (18.5 million) in 2000 to 2% (4.5 million) in 2020, malaria case incidence (i.e. cases per 1000 population at risk) reduced from 81 in 2000 to 59 in 2015 and 56 in 2019, before increasing again to 59 in 2020. The increase in 2020 was associated with disruption to services during the COVID-19 pandemic. Twenty-nine countries accounted for 96% of malaria cases globally, and six countries – Nigeria (27%), the Democratic Republic of the Congo (12%), Uganda (5%), Mozambique (4%), Angola (3.4%) and Burkina Faso (3.4%) – accounted for about 55% of all cases globally (World malaria report, 2021). The WHO African Region, with an estimated 228 million cases in 2020, accounted for about 95% of cases. Between 2000 and 2019, case incidence in the WHO African Region reduced from 368 to 222 per 1000 population at risk, but increased to 232 in 2020 (World malaria report, 2021).

In Moyo general hospital, about the factors in the community contributing to increased cases of malaria among children below five years, obtained from 50 respondents, revealed that almost all respondents reported villages as the location of their home place and such locations were surrounded by gardens and forest, which were also acting as breeding sites for mosquitoes (Tamale et al, 2022). Some communities have been found with households that have at least one mosquito net, closed their windows before 6:00 pm, and a number of households had stagnant water in their compound (Musoke, 2018). In Logoba health centre III, findings showed that garbage management in the community was one of the factors contributing to the increased malaria cases. Respondents who kept garbage heaps far from their houses would reduce the breeding places for mosquitoes, hence reducing the number of mosquitoes (Edebuga et al, 2022). The risk of malaria infection is (36%) lower (odds ratio=0.64; 95% CI=0.57–0.71) among children

living in richer households, compared to children living in the poorest households (Anjorin et al,2023). The aim of the study is to assess the community-related factors contributing to increased cases of malaria among children below five years.

Methodology

Study design

A quantitative descriptive cross-sectional study was undertaken. The design was used because it helped the researcher to collect quantitative data in the shortest time possible.

Study setting

The study was conducted in Arua regional referral hospital, which is located in the city of Arua, Arua district, West Nile sub-region, in the northern Region of Uganda. It is located approximately 496 kilometres by road northwest of Kampala. The coordinates of Arua Regional Referral Hospital are: 03º01'10.0"N, 30º54'45.0"E. The study took one month, from June 2023 to July 2023. The hospital was established by the government of the Republic of Uganda and is under its full control to provide health services to the population of Arua District and the surrounding districts. The hospital is situated at approximately the Centre of Arua city, and thousands seek medical care at the facility. The hospital has the following departments/clinics: OPD, eye clinic, Antenatal Clinic, dental, orthopaedic, accident and emergency, wards that include children's ward, maternity ward, gynaecology and obstetrics ward, medical ward, surgical ward, minor and major theatres, plus nutritional department.

Study population

The study population comprised children below five years, both male and female, who were at risk of being infected with malaria.

Sample size determination

The sample size was determined by using the Kish and Lisle (1967) formula, which states that;

N=a2bc/x2

Where N=desired sample size, **a=** standard normal deviation usually set at 1.96, where it corresponds to 95% confidence level, **b=** proportion of survey population with particulars under investigation, and where its unknown 50% is used, **c=** probability that the researcher will get a certain amount of error. 50% is considered to cater for that.

X degree of accuracy, which ranged from 0.01 to 0.1

Therefore, it's; (1.96)2x0.52x0.52÷0.092

=128 respondents

However, due to financial and time constraints, a sample of 50 respondents was used.

Sampling technique

A simple random sampling technique was employed to choose the participants for the study. This sampling technique gives all participants an equal chance of being selected in the study, and the participants were selected randomly by giving each participant a number that was chosen randomly.

Definition of variables.

Dependent variables.

The dependent variables in this study were community-related factors.

Independent variables.

The independent variables for the study were the increased cases of malaria.

Data collection tool.

Data was collected using a questionnaire, which was defined as a predetermined, written list of questions and typed in English, which were answered by the respondents without a supervisor or explanation by the interviewer; therefore, this helped the researcher to reduce the possibility of bias from the respondents. A structured type of questionnaire was designed to allow the respondents to write responses, and they completed them on time. It further enabled the researcher to collect data from a large population in a short period of time.

Data collection procedure.

An introductory letter was obtained from the principal Kampala School of Health Sciences and it was taken to Arua regional referral hospital where the hospital director granted permission to proceed with the data collection at the facility and was required at every department where permission was granted to collect data from there. After the exercise, participants were thanked for their contribution to the study, and the researcher checked through the data filled in the questionnaires.

Pretesting of the questionnaire.

Before undertaking data collection, the questions were piloted on 10 respondents from the Ewuata community in order to identify problems with the data collection process and areas of improvement; hence, necessary modifications were made.

Data management procedure.

After the data was collected, it was checked for completeness and accuracy. The questionnaires that were filled out were completed before the respondents left the health facility. The questionnaires were locked in the cupboard and were accessed by the research team only.

Data analysis.
The data was analysed manually using A4 sheets and then fed into Microsoft Excel to generate bar graphs, tables, and pie charts for easy presentation.

Ethical consideration.
The researcher introduced the topic and the purpose of the study to the respondents, and then thereafter he/she signed the consent form before participating in the study. The respondents were assured of confidentiality as no names were to appear on the questionnaire. No participant was forced to participate in the study, and all study materials used during the interview were safely kept in a locked and key-locked cupboard.

RESULTS
Demographic data

Table 1. Shows the distribution of respondents according to demographic information
(N=50)

Description	Frequency (F)	Percentage (%)
Age		
0-2 years	36	72
3-5 years	14	28
Total	**50**	**100**
Sex		
Female	28	52
Male	22	48
Total	**50**	**100**
Education level		
Primary	25	50
Secondary	15	30
Tertiary	8.5	17
None	1.5	3
Total	**50**	**100**
Occupation		
Peasant farmer	26	52
Business	10.5	21
Civil servant	5	10
Student	4.5	9
Others	4	8
Total	**50**	**100**
Mothers of the children		
Yes	41.5	83
No	8.5	17
Total	**50**	**100**
Religion		
Catholic	20	40
Protestant	16.5	33
Muslim	9	18
Born again	4.5	9
Total	**50**	**100**

Table 1 shows that the majority (72%) of the children were within the age group 0-2 years, whereas 28% of the children were within the age group 3-5 years.
More than half of the respondents (52%) were female, whereas the minority were male.
(48) were male by sex.
Half of the respondents (50%) had attained primary school, whereas a minority (3%) had not attained any education level.
More than half of the respondents (52%) were peasant farmers, whereas a minority (8%) were doing nothing.
The majority of the respondents (83%) were the mothers of those children, whereas a minority (17%) were not the mothers of the children.
Almost half of the respondents (40%) were catholic, whereas the least (9%) were born-again Christians.

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Figure 1: Shows the distribution of respondents according to the type of house they had lived in

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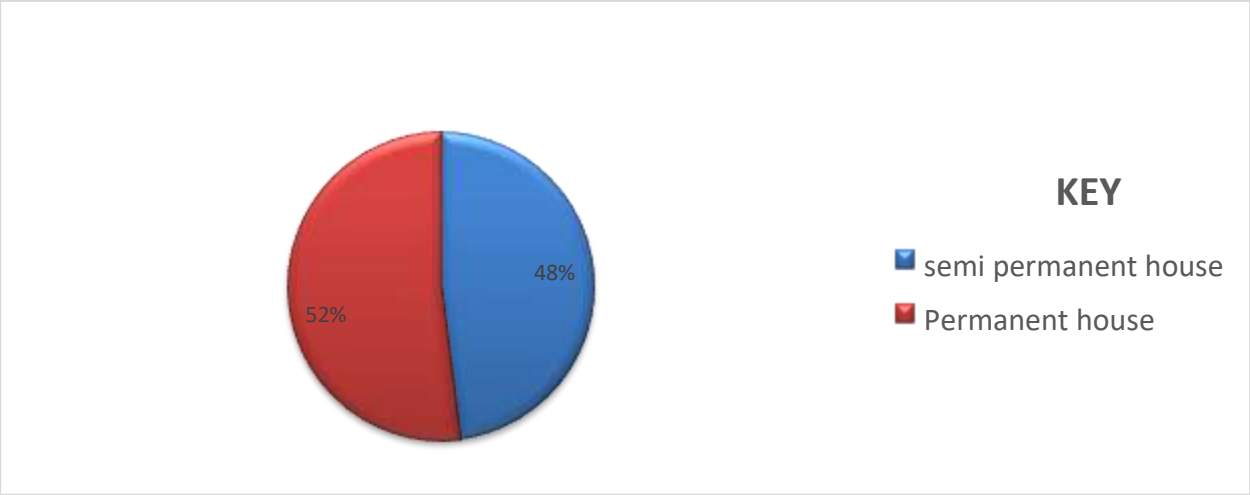

Figure 1 shows that more than half of the respondents (52%) lived in permanent houses, whereas almost half (48%) lived in semi-permanent houses**.**

Table 2: Shows the distribution of respondents according to how they managed waste or garbage.

Responds	**Frequency (F)**	**Percentage (%)**
A. Yes B. No	36 14	72 28
Total	**50**	**100**

Table 2 shows that the majority (72%) of the respondents kept rubbish in bins or pits, whereas a minority (28%) disposed in the compound**.**

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Figure 2: Shows the distribution of respondents according to whether their homes were surrounded by bush or vegetation

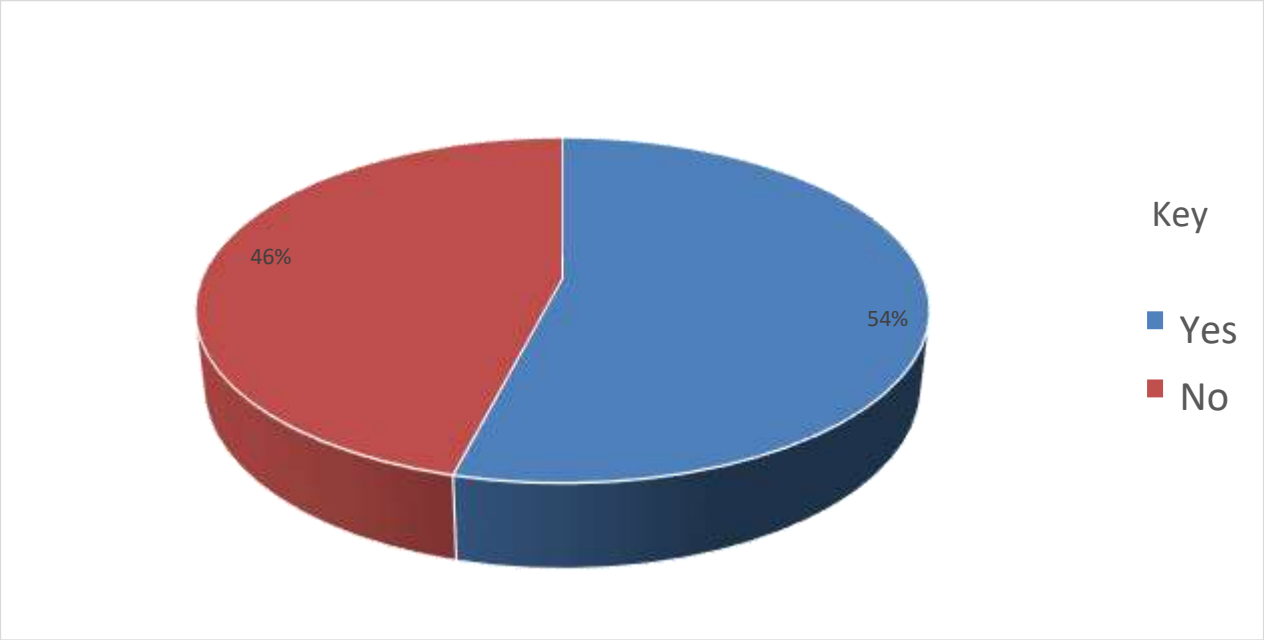

Figure 2 shows that more than half (54%) of the respondents' homes were surrounded by bush or vegetation, whereas almost half (46%) of the respondents' homes were not surrounded by bush or vegetation.

Table 3: Shows the distribution of respondents according to whether malaria is high during the rainy season.

Responds	**Frequency (F)**	**Percentage (%)**
A. Yes B. No	41 9	82 18
Total	**50**	**100**

Table 3 shows that the majority (82 %) of the respondents answered that malaria is high during the rainy season, whereas a minority (18%) answered that malaria is not high during the rainy season.

Discussion

Findings obtained from the respondents (48%) had semi-permanent houses due to factors such as low socio-economic status, as most of the respondents were unemployed. The study results were in line with Kituyi (2018), where findings showed that (49.2%) of respondents had semi-permanent houses. Given the study findings, 28% of respondents kept solid waste at home in open heap garbage places. This would be attributed to the fact that most people lack adequate and reliable waste collection and disposal services, which may force them to keep their waste at home or dump it in open spaces, and also a lack of awareness about the benefits and the methods of proper waste management. The study results were consistent with Abossie et. al. (2020), where findings showed that (38.2%) of malaria infection was observed in children who lived near mosquito breeding sites in this study, such as swamps and open garbage heap places.

Results obtained from the respondents do determine whether their homes or compounds surrounded by bush or vegetation revealed that (54%) of the respondents' homes were surrounded by bush, and this implies that people had little knowledge of the dangers of homes being surrounded by bushes or vegetation. The current study findings were in agreement with a study in western Nigeria, where individuals residing close to gutters and bushes were most susceptible to Plasmodium infection (Ibrahim, 2022).

Conclusion

Location of the respondent's homes, poor housing infrastructures, and poor waste management behavior were the major factors contributing to an increase in the number of malaria cases among children below five years.

Recommendations.

The government of Uganda, through the Ministry of Health, should ensure interior spraying is available to all households at no cost.

Arua regional referral hospital, in partnership with the city council and the village health teams

Should sensitize the community to embrace interior spraying.

Limitations of the study.

The main study limitation was bias in answering the questions due to the social, cultural, and religious differences among the participants. Some participants found it hard to answer some of the questions, and therefore, some respondents intentionally or unintentionally did not give the right information. Some respondents were not cooperative and lacked general knowledge on the use of anti-malarial drugs and treated mosquito nets.

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List of abbreviations

GTS: Global technical strategy
WHO: World Health Organization
OPD: Outpatient department

Source of funding

The study was not funded.

Conflict of interest

The author did not declare any conflict of interest.

Data availability

Data is available upon request.

Author contribution

James Lopia collected data and drafted the manuscript of the study.
Alex Katwe supervised the study.

Author biography

James Lopia Peter Okenyi is a student of a diploma in public health at Kampala School of Health Sciences.
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REFERENCES

1 Abossie, A., Yohanes, T., Nedu, A., Tafesse, W., & Damitie, M. (2020). Prevalence of Malaria and Associated Risk Factors Among Febrile Children Under Five Years: A Cross-Sectional Study in Arba Minch Zuria District, South Ethiopia. Infection and drug resistance, 13, 363-372. https://doi.org/10.2147/IDR.S223873

2 Anjorin. (et al.,2023). How does income level affect or contribute to the increasing cases of malaria among children below five years of age? Malaria journal, 25.

3 Edebuga. (2022). Individual factors leading to increased cases of malaria, prevalence of malaria and associated and associated risk factors among febrile children under five years: a cross-sectional

study in Arba Minch Zuria District, South Ethiopia, Infection and Drug. Student's health journal, 13.

4 Ibrahim, Azeez & Bello, Ibrahim & Shabi, Olabode & Omonijo, Adejumoke & Ayodapo, Abayomi & Afolabi, Babatunde. (2022). Malaria infection and its association with socio-demographics, preventive measures, and co-morbid ailments among adult febrile patients in rural Southwestern Nigeria: A cross-sectional study. SAGE Open Medicine. 10. 10.1177/20503121221117853. https://doi.org/10.1177/20503121221117853

5 Jacklin F, M. e. (2021). Malaria Progress Report. The African continent is not on track to eliminate malaria by 2030. Africa did achieve its target of reducing malaria incidence and mortality by 40% by 2020 13.

6 Kituyi Irene Rose (2018). Malaria prevalence and associated factors among children below the age of five years attending Nakaloke Health Centre III in Nakaloke Town Council, Mbale district.

7 Musoke, E. A. (2018). Factors contributing to the increased cases of malaria among children of age below five years old, poor use of mosquito nets and semi-permanent which are not built according to the required standard, with a lot of gaps and windows that are not closed at evening or night.

8 Tamale M, 2. (2022). Institute National Statistics Mail & ICF (2019). 2018 Mali Demographic and Health Survey key findings. Rockville, Maryland, USA, INSTAT and ICF.

9 WHO. (2021). Tracking progress against malaria, SWorld malaria report 2021 - reflections from the Director of the Global Malaria Programme. open source, 23.

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