SJ Pediatrics and Child Health Africa
Vol. 1 No. 8 (2024): August 2024 Issue
https://doi.org/10.51168/0gsexd46
Original Article

KNOWLEDGE, ATTITUDE, AND PRACTICES OF CAREGIVERS TOWARDS PREVENTION OF MALARIA AMONG CHILDREN UNDER FIVE YEARS ATTENDING KATAKWI HOSPITAL, KATAKWI DISTRICT. A CROSS SECTIONAL STUDY.

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Abstract

Background

Malaria is an acute febrile illness caused by several species of plasmodium parasites transmitted to humans through a bite by an infected female anopheles mosquito. The study aims to assess the knowledge, attitude, and practices of caregivers towards the prevention of malaria among children under five years attending Katakwi Hospital, Katakwi District.

Methodology

A descriptive cross-sectional design. A simple random selection technique was used in this study to give equal opportunity to all respondents and to reduce biases. The researcher considered 50 respondents.

Results

(42%) of the respondents were aged 15-24 years, more than half 40% of the respondents were married, and least (8%) were divorced. (50%) resided 15 or even more than 15 kilometres away from the facility with a few who stayed within 2kms away from the facility. (64%) cited the use of mosquito nets as a control measure for malaria, and the least (2%) immunization. (46%) respondents practiced home management, (42%) of them took their children to the health facility, (18%) used herbs and (14%) of the respondents bought drugs from the nearest drug shop.

Conclusion

The knowledge on different methods of malaria prevention among caretakers of children under five was generally good, although the practices were poor since many of them didn't practice routine and constant use of mosquito nets, also others still used traditional herbs as a control measure of malaria infection.

Recommendation

The Ministry of Health should increase the training of service providers to effect the prevention strategies to sensitize the community. This can easily be done through continuous mass community health education meetings and campaigns to sensitize malaria prevention.

Keywords: *Malaria, High temperatures, Kampala School of Health Sciences.*
Submitted:*2024-05-20* ***Accepted:*** *2024-07-29*

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Background of the study

Malaria is an acute febrile illness caused by several species of plasmodium parasites transmitted to humans through a bite by an infected female anopheles mosquito. Human malaria is caused by five species of the intraerythrocytic protozoan Plasmodium, including P. falciparum, P. vivax, P. ovale, P. malariae, and P. Knowles with Falciparum malaria being the most prevalent and severe form in the tropics accounting for over 90% of malaria cases (Lin H, 2021). Plasmodium species are always transmitted by the bite of Anopheles mosquitoes from an infected person to healthy subjects as the main way by which transmission occurs. Other transmission routines include vertical transmission from infected mothers to their unborn babies (congenital malaria), blood transfusion, and organ or tissue transplantation, due to asymptomatic reservoirs of Plasmodium (Lozano R et al., 2012.)

Globally, according to WHO malaria report of 2019, nearly half (45%) of all deaths among children under the age of 5 years can be attributed to malaria (8%), diarrhea (18%), and pneumonia (19%)which in total, accounted for over 41% of these preventable child deaths occur in sub-Saharan Africa. Malaria however is the third leading cause of death in children less than 5 years worldwide, after pneumonia and diarrheal disease, and accounts for almost one out of five deaths in children less than 5 years and claims the life of children every 2 minutes, particularly in sub-Saharan Africa (SSA). The trend in terms of malaria transmission and disease burden globally has not changed over the last two decades despite immense efforts by different stakeholders. In 2016, there were an estimated 216 million cases of malaria, with the WHO African Region accounting for 90% of the malaria cases and 91% of malaria deaths In areas with high transmission of malaria, more than two-thirds (70%) of all malaria deaths occur in children under 5 and this accounted for 285,000 deaths among under-5 in 2016. Compared with 2019, the estimated malaria cases and deaths increased to 241 million and 627,000,

respectively, in 2020, and approximately 95% of cases and 96% of deaths occurred in the WHO African Region (Koroma, 2022). In 2020, Africa contributed to 95%of the 241 million cases estimated globally with 77% being children under the age of five years mostly in Sub-Saharan Africa (Ralph Huits Davidson H, 2022)

Malaria, pneumonia, and diarrhea together account for 50% of all deaths in children in the age group of 1 to 59 months, in sub-Saharan Africa. In Uganda, malaria is responsible for approximately 15% of deaths in children in this age group, pneumonia for another 15%, and diarrhea for 10%.3 In addition, the prevalence of malaria, pneumonia, and diarrhea in children under 5 years admitted at health facilities in Uganda is 43%, 11%, and 5%, respectively. Over the last two decades, the incidence of mortalities following malaria infections has been reported to have reduced between 2000- 2020 with an estimated reduction from 60% in 2000 to 37% as of 2020. Following this achievement, WHO through the Global Technical Strategy 2016–2030 initiative adopted novel strategies to fast-track malaria prevention and reduce the disease burden by at least 90% by 2030, and its eventual elimination like the use of insecticide-treated mosquito nets, repellant creams, in-door residual spray (IRS), destruction of breeding sites for mosquitoes, public health massive sensitization. Despite previous global concerted efforts to control malaria that had been intensified in the previous two decades had been instituted globally and implemented by several health ministries and support agencies in many countries, with limited success in eliminating malaria, infection incidence was realized as its epidemiological burden had surpassed past incidences and that the prevention modalities used had stagnated evidenced by the global data firms that showed to malaria prevention has leveled off, and the disease burden had escalated in endemic settings with 11 million more cases as of 2019 with 228 million cases of malaria compared to 214million cases in 2015 however with a global decrease in the mortality incidence of children under 5years of age between the same period with 306,000 deaths in 2015 compared to 274,000 in 2019. The burden of malaria has remained unacceptably high with global values exceeding 50% mortality among children below 5 years across mainly the sub-Saharan region and these are largely dependent on several factors and challenges in the uptake of prevention measures by immediate caretakers

Methodology

Study design

The study adopted a descriptive cross-sectional design. It was descriptive because the goal was to assess a sample at a specific point in time, identify areas for further research, help in planning resource allocation, and provide formal information about the condition. It was cross-sectional because it compared different population groups at the same time and different variables at the same time.

Study area

The study was conducted at Katakwi General Hospital located in Katakwi town along Moroto road opposite the District headquarters, Katakwi District eastern Uganda.

Study population

The study population comprised of all caregivers of confirmed malaria patients under the age of five years attending medication from Katakwi general hospital during the research period.

Inclusion criteria.

1. Caregivers who fully consented to take part in the research.
2. Caregivers with patients who were not critically ill and required no close attention.
3. Caregivers who were present at the time of data collection.

Exclusion criteria

1. Caregivers who had critically ill patients for example convulsing patients who needed close monitoring.
2. Caregivers who were not present at the time of data collection.

Sample size determination

The sample was determined using Kish Leis's (1965) formula as below;

n

Where;

n- represents the sample size required.

d- Represents the precision of the study, a precision of 10% will be used due to limited resources (time and money)

z- Represents standard normal deviation corresponding to 95%confidence interval which is 1.96.

p- Represents proportional characteristics where no reasonable estimate is given. Therefore, 70% will be used.

q- Represents (1-p) which is (1-0.70)

$$n = \frac{1.962 \times 0.7(1-0.70)}{0.12}$$

$n = 80.67$

$n \approx 80$ Respondents

The sample size would therefore be 81 respondents but because of financial and time constraints, 50 were considered.

Sampling technique

A simple random selection technique was used in this study to give equal opportunity to all respondents and to reduce biases.

Sampling procedure

The researcher selected 10 days of the month. The sample size of 50 was divided equally in the 10 days resulting in five respondents per day. This was because the respondents needed to be guided to fill out the

questionnaire since most of them could not read and write. On each day, the researcher allocated numbers to all the present and willing caregivers, those numbers were written on small papers and folded then an independent volunteer was instructed to randomly select five numbers. The owners of the numbers selected participated for that day. The procedure was repeated for the remaining seven days to complete the process.

Data collection methods

A questionnaire method was used to collect data. A questionnaire was a set of questions to which the respondents would answer in writing.

Data collection tools

A self –administered questionnaire was used to collect data. It comprised demographic questions, closed questions, and multiple choice.

Data collection procedure

Having presented an introductory letter from the school and getting permission to conduct research from Katakwi Hospital, the researcher identified the population that met his selection criteria and explained the purpose of the research. Consent was obtained from all participants and the researcher administered questionnaires. The questionnaires were identified by use of codes without personal identification information. The researcher collected the questionnaires after being filled.

Quality control

To ensure that the right data was collected, the questionnaire was pre-tested on 05 respondents to find out if the questionnaire was easily understood and answered as required. Mistakes detected were corrected.

Data analysis

Data was analyzed using MS. Excel and the presentation of results was done in the form of tables, graphs, charts, frequencies, and cross-charts.

Ethical consideration

1. A letter was obtained from the Kampala School of Health Sciences introducing the researcher and asking for permission to collect data from Katakwi General Hospital.
2. The research ethics committee of Katakwi Hospital permitted the researcher to carry out his work and introduced him to the target respondents.
3. All respondents were consented before involving in the research.
4. All information obtained was treated with a high level of confidentiality.

Results

Table 4.1: Socio-demographic data

Age group	Frequency (f)	Percentage (%)
15-24	21	42
25- 34	16	32
35-44	10	20
45 and above	03	6
Total	**50**	**100**
Level of Education		
Nonformal	03	6
Primary	21	42
Secondary	16	32
Tertiary/University	10	20
Total	**50**	**100.0**
Marital status		
Single	18	36
Married	20	40
Widow	08	16
Divorced	04	8
Total	50	100.0
Religion		
Anglican	10	20
Catholic	27	54
Muslim	4	8
Born again	9	18
Total	40	100.0

Distance		
2 km	06	12
5km	09	18
10km	10	20
15km and above	25	50
Total	**50**	**100.0**

The majority 42% of the respondents were aged 15-24 years, more than half 40% of the respondent were married and at least (8%) were divorced, more than half 54% of respondents were catholic, and a small number 8% were Muslim by religion. The majority (50%) of the respondents resided 15 or even more than 15 kilometres away from the facility with a few who stayed within 2kms away from the facility.

Knowledge of malaria prevention among caregivers of children under five years in Katakwi General Hospital, Katakwi District.

Table 4.2: Distribution of respondents according to whether they have ever heard of malaria or not. (n =50)

Response	Frequency (f)	Percentage (%)
Yes	43	86
No	7	14
Total	**50**	**100**

Most of the respondents (86%) reported having heard about malaria but a small number of them (14) reported not to have heard of malaria.

Table 4. 3: Distribution of respondents according to the source they got information about malaria. (n = 43)

Source of information	Frequency (f)	Percentage (%)
Hospital	3	7
Radio or TV	9	21
Suffered	24	56
Family member	7	16
Total	**43**	**100**

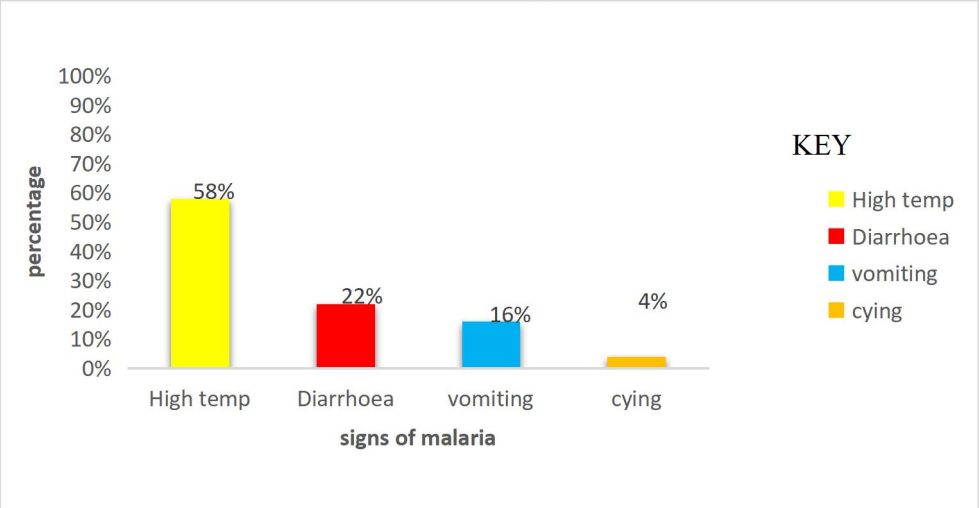
The majority (56%) of the respondents, got to know about malaria after suffering from it, a moderate number of them (21%) heard from a local radio station, (16%) heard about it from a family member and the least number of them (7%) heard about it from the health facility where they had gone for medical attention.

Table 4. 4: Distribution of respondents according to their knowledge about the cause of malaria. (n = 50)

Causes of malaria	Frequency (f)	Percentage (%)
Mosquito bite	38	76
Germs	2	4
Bushy Environment	6	12
Weakness	2	4
don't know	2	4
Total	**50**	**100**

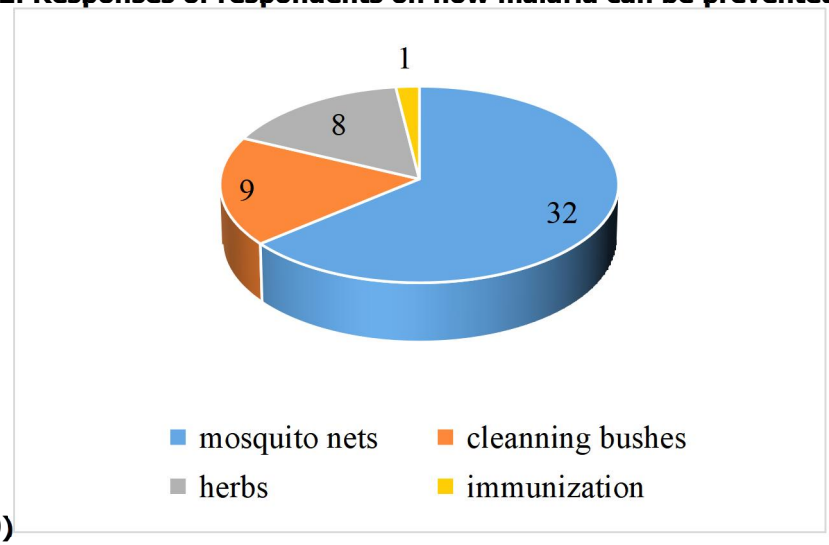
The majority of the respondents had good knowledge about the cause of malaria with (76%) citing mosquito bites as the major cause, (and 12%) mentioning bushy surroundings but a substantial number of them still had poor knowledge. (4%) said weakness causes malaria, (4%) cited germs as the cause and another (4%) did not know what exactly causes malaria.

Figure 4. 1: Distribution of respondents according to their knowledge of signs of malaria. (n = 50)



The majority of the respondents (58%) reported high temperature as a major sign of malaria, (22%) mentioned diarrhea, (16%) cited vomiting but (4%) reported crying as a sign of malaria.

Figure 4.2: Responses of respondents on how malaria can be prevented. (n = 50)



The majority of respondents 32 (64%) cited the use of mosquito nets as a control measure against malaria, 9 (18%) of them stated clearing bushes around homes, 8 (16%) reported the use of traditional herbs as a way of preventing malaria while a small number 1 (2%) mentioned immunization as a preventive measure.

Attitude towards prevention of malaria among caregivers of children under five attending Katakwi General Hospital Katakwi district.

Table 4. 5: Distribution of respondents according to their response on whether malaria can be prevented or not.

Response	Frequency (f)	Percentage (%)
No	14	28
Yes	36	72
Total	**50**	**100**

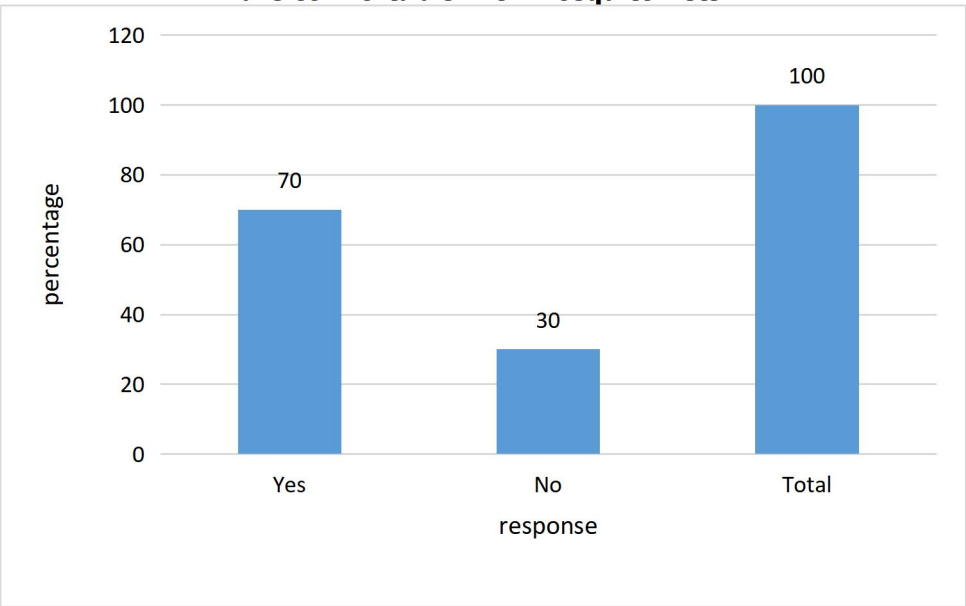
The majority (72%) agreed that malaria can be prevented but a reasonable number of them (28%) disagreed with the reasons that they have been implementing the preventive measures but their children still get malaria.

Table 4. 6: Distribution of respondents depending on their response on whether mosquito nets help in the control of malaria. (n = 50)

Response	Frequency (f)	Percentage (%)
Yes	38	76
No	12	24
Total	**50**	**100**

(76%) of the respondents affirmed that mosquito nets are of help in the prevention of malaria and a few(24%) disagreed and gave reasons that they have nets but still their children are getting malaria.

Figure 4. 3: Bargraph Showing the distribution of respondents according to whether they are comfortable with mosquito nets.



A high percentage of the respondents (70%) reported being comfortable with mosquito nets while a small number reported discomfort with mosquito nets.

Table 4. 7: Distribution of respondents according to their response on whether residual spraying helps to prevent malaria. (n = 50)

Response	Frequency (f)	Percentage (%)
Yes	26	52
No	24	48
Total	**50**	**100**

(52%) of the respondents agreed that residual spraying helps in the control of malaria and 48% of them disagreed with it.

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https://doi.org/10.51168/0gsexd46
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Table 4. 8: Distribution of the respondents according to whether they use mosquito nets every day.

Response	Frequency (f)	Percentage (%)
Yes	33	66
No	17	34
Total	**50**	**100**

The majority (66%) of the respondents said they were using mosquito nets daily, however, quite a number of them reported not using mosquito nets daily.

Table 4. 9: Distribution of respondents depending on their use of mosquito nets the previous night. (n =33)

Response	Frequency(f)	Percentage (%)
Yes	19	57
No	14	43
Total	**33**	**100**

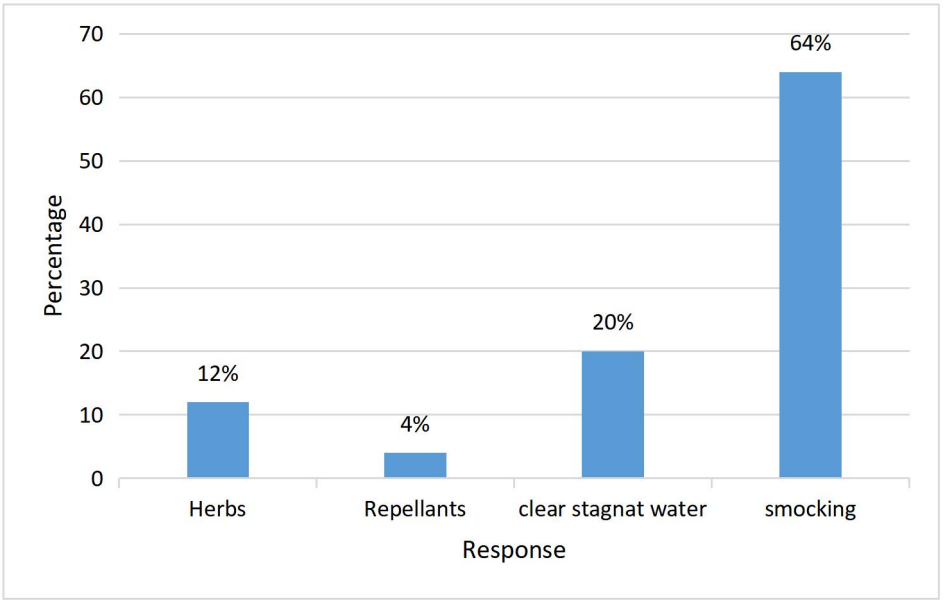
(57%) had slept under a mosquito net the previous night but still a good number of them (43%) had not used a mosquito net in the previous night. This still gives room for the spread of malaria.

Table 4. 10: Distribution of respondents depending on whether they cleared bushes around their homes.

Response	Frequency (f)	Percentage (%)
Yes	43	86
No	7	14
Total	**50**	**100**

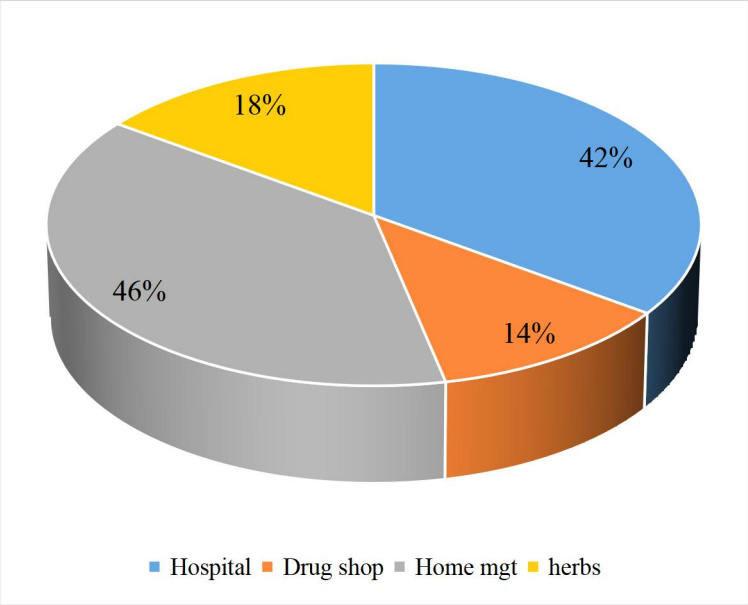
The majority (86%) of the respondents stated that they cleared bushes around their homes as a measure of controlling malaria, however, a small percentage of the respondents (14%) reported not clearing bushes around their homes.

Figure 4. 4: Distribution of responding according to other methods used to prevent malaria.



(64%) of the respondents used smocking as a way of preventing malaria, (20%) of them cleared stagnant water around their homes in an attempt to prevent malaria, (12%) used traditional herbs as both remedy and prevention of malaria and (4%) of them used mosquito replants to control malaria.

Figure 4. 5: Distribution of respondents to what they did in case their children fell sick of malaria



Almost half (46%) of the respondents practiced home management, (42%) of them took their children to the health facility, (18%) used herbs and (14%) of the respondents bought drugs from the nearest drug shop.

Discussion

Knowledge towards prevention of malaria among caregivers of children under five years attending Katakwi General Hospital, Katakwi District.

Research results showed that the majority of the respondents (86%) had ever heard of malaria but a small percentage (14%) did not have enough knowledge about malaria. This is in line with the results of a study done on KAPs of caregivers of children under 5 in the western area of Sierra Leone by JM Koroma et al (2022) which indicated that (10%) of the respondents did not know about malaria and its transmission. (56%) of the respondents got to know about malaria after having suffered from it, (21%) of them got information from the local radio stations, (16%) heard from a family member and (7%) heard about it from the hospital when they were attending to their sick relatives. All of the above show a gap in the sensitization of the community to malaria. (76%) cited an infected mosquito bite as the cause of malaria, (12%) mentioned a bushy environment but others reported germs (4%), weakness (4%), and a few of them (2%) did not know the cause of malaria. The above results are in line with a study by DT Jumbam et al (2020) on KAPs of caregivers in the prevention of malaria which found that in rural Zambia, (over 70%) of the respondents cited infected mosquitoes as the vector for malaria. These results are also in line with those of a study done by Ivan Mugisha et al (2022) on treatment-seeking and uptake of malaria prevention strategies among pregnant women and caregivers of children under five in western Uganda that showed that (53%) of the respondents associated malaria to poor sanitation implying that there is still some misconception and knowledge gap still exists.

Almost all respondents had an idea of symptoms of malaria with responses like high temperature (58%), diarrhea (22%), and vomiting (16%). However, a small number (4%) cited crying as a symptom of malaria. The above results are in line with those of a study by JM Koroma et al (2022) on KAPs of caregivers in the prevention of malaria in Sierra Leon which indicated that most of the respondents had reasonable knowledge of symptoms of malaria with responses like fever (71.1%), vomiting (42.9%), loss of appetite (30.9%), and body and joint pains (26.9%). Of 50 respondents 32 (64%) of the respondents cited sleeping under a mosquito net as a measure of preventing malaria, and 9 (18%) of them mentioned clearing bushes. However, 8 (16%) of the respondents reported the use of traditional herbs as a measure of prevention and 1 (2%) of them said immunization to be a measure of malaria prevention. These results are in agreement with those of a study done by Imituku, A Assefa (2017) that revealed that Generally, the vast majority (96.7) of participants knew that malaria is preventable by using bed net (91%), eliminating mosquito breeding sites (57.2%), DDT

spray (51.5%) and using personal protection (35.2%) as prevention methods while (11.4%) cited use of traditional herbs as a measure of malaria prevention. All this implies there is a need for sensitization on preventive measures of malaria.

Attitude towards prevention of malaria among caregivers of children under the age of five years attending Katakwi General Hospital, Katakwi district.

Over (70%) of respondents accepted that malaria can be prevented and also acknowledged sleeping under a mosquito net was helpful in the prevention of malaria. However, more than (20%) did not agree that malaria can be prevented and also reported that sleeping under a mosquito net does not prevent malaria. These results are in line with a study by AM Adebayo et al (2015) where 61% of participants disagreed with the statement that "ITN does not make any difference in malaria prevention." Over half of the participants (56.1%) agreed that "whether one uses mosquito net or not, those that will be infected with malaria will have it. This confirms that misconception on preventive measures still exists and it calls for interventions. Findings show that the majority of the respondents (70%) reported being comfortable with mosquito nets while a minority (30%) of the respondents reported being uncomfortable with mosquito nets. This implies that the majority of the respondents had positive attitudes toward the prevention of malaria, however, a remarkable number (30%) had poor attitudes. These results deviate a little from those of the study by KD Nyavor et al (2017) carried out in Hohoe Municipality, Ghana to study the ownership and use of (ITNs), where over (80%) of the respondents reported comfort with nets while small percentage (6.2%) reported discomfort. Furthermore, the results of my research showed that more than half (52%) of the respondents agreed that residual spraying helps in the prevention of malaria while (48%) stated that spraying does not help in control of malaria spread. This indicates that there is a big gap and misconception about spraying among caregivers. This is in line with a study by Imituku, and Assefa (2017) in western Ethiopia to determine caregiver's knowledge of malaria prevention where (51.8%) of the respondents agreed that spraying helps prevent malaria.

Practices towards malaria prevention among caregivers of children under five attending Katakwi General Hospital Katakwi district

Results show that more than half (66%) of the respondents affirmed to use of mosquito nets. This means that the remaining (34%) did not use mosquito nets which is a poor practice in the prevention of malaria. These results deviate from those of research done by OM Ebuehi (2017) in the western parts of Nigeria which showed that the majority (95.5%) of the respondents used nets while only (4.5%) of them did not use nets. Out of those who said that they use mosquito nets shows that (57%) of them had used them the previous night to the day of data collection but still, the remaining (43%) did not use them the previous night. This means that the majority of them were not consistent in the use of the nets which is a poor practice in prevention. Most of the respondents (86%) practiced clearing bushes around their residents, however, a few of them (14%) reported not to be clearing bushes around their residences. This indicates that there is still poor practice in the prevention of malaria. These results are in disagreement with a study done by AO Anita, A Amusu (2020) in Ogun state in Nigeria which that only (24.7%) of the respondents cleared bushes around their residences.

Respondents enumerated other methods of prevention of malaria that they practiced which included smocking their rooms and sitting around the fire (64%), draining stagnant water (20%), use of traditional herbs (12%), and use of mosquito repellants (4%). This confirms that the poor practice of use of herbs still exists. Almost all respondents sought medical attention in varied ways whenever their children developed symptoms of malaria. These ways included going to the hospital (42%), home management (46%), use of nearest drug shops (14%), and use of traditional herbs (18%). This shows that the culture of seeking medical attention from health facilities is still poor. These results are in close relationship with those of research by Peter O Sumba et al (2015) which showed that (20%) of the respondents practiced the use of local herbs, (and 19%) of them went to the nearest local drug shops and (66.9%) of them went to the hospital for medical attention. The results are also in line with a study by P Awor et al (2022) which revealed that (53%) of the respondents practiced home management which increased challenges in the prevention of malaria.

Study limitations

Limited funding since the researcher was not funded by any external body

Time also affected since the researcher took much time translating the questionnaire to the respondents who could not read.

Mal response also limited the research since respondents felt guilty about reporting themselves therefore diverting the researcher.

Conclusion

The knowledge of different methods of malaria prevention among caretakers of children under five was generally good. The overall attitude was negative in more than half of the respondents but a positive attitude was registered in a remarkable number of respondents since they reported that sleeping under a mosquito net helps to prevent malaria. The study findings also revealed that practices towards prevention of malaria were poor since many of them did not practice routine

and constant use of mosquito nets and also a big number was found to still use traditional herbs as a control measure of malaria infection.

Recommendation

The Ministry of Health should increase the training of service providers to effect the prevention strategies to sensitize the community. This can easily be done through continuous mass community health education meetings and campaigns to sensitize malaria prevention.

The MOH should audit service providers in charge of the distribution of ITNs and other preventive methods so that they are not mishandled. This will aim at effecting the malaria prevention methods among caretakers of children under five eventually kicking malaria out of Uganda The responsible officers should follow up with the government-provided ITNs to ensure that they are not misused.

Acknowledgment

I am grateful to the almighty God for his guidance, love, and care for enabling me to come to the end of my research. I have great pleasure in acknowledging the contribution made by the administration and staff of Kampala School of Health Sciences for preparing, guiding, and encouraging me during this hectic research. Special gratitude to my dedicated supervisor **Mr. Oluka Julius** for his patience, guidance, and professional input, God be with him. I also have the pleasure of acknowledging the patience, love, prayers, and support rendered to me by my wife **Mrs. Pule Grace**, and my sister **Mrs. Iculet Esther.** I pray that the almighty God rewards them with their most desires.

In addition, I want to acknowledge the cooperation and all contributions of the staff of Katakwi General Hospital especially the research comity for rendering me such wonderful necessary help. This was paramount and led to the successful formulation of this report. I thank God for all you did for me. I will not forget to forward my gratitude to my third-year classmates and all my friends at Kampala School of Health Sciences especially **Mr. Kisombo Derick, Opio David, Oronon Joseph, and Ojangole Simon who** were on my side in all times of my academic battle. May God be with you throughout your journey.

List of Abbreviations.

IRS: Indoor Residual Spraying
ITN: Insecticide-treated nets
KAPs: Knowledge, attitude, and practices
MOH: Ministry Of Health
SSA: Sub-Saharan Africa
UNICEF: United Nations International Children Emergency Funds
WHO: World Health Organization.

Source of funding

There is no source of funding reported.

Conflict of interest

There's no conflict of interest declared.

Author Biography

Igula Mosing, a student with a diploma in clinical medicine and community health at Kampala School of Health Sciences

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SJ Pediatrics and Child Health Africa
Vol. 1 No. 8 (2024): August 2024 Issue
https://doi.org/10.51168/0gsexd46
Original Article

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