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Factors influencing the uptake and adherence of malaria preventive strategies among pregnant women aged 15-49 years attending ANC in HRRH. A cross-sectional study.

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ABSTRACT

Background:

The study aimed to identify the factors influencing the uptake and adherence of malaria preventive strategies among pregnant women aged 15-49 years attending ANC in HRRH.

Methodology:

A cross-sectional descriptive study was conducted at Hoima Regional Referral Hospital ANC among pregnant women aged 15–49 years. A sample of 77 was determined using the Kish-Leslie formula and selected through systematic random sampling. Data were collected using semi-structured questionnaires and analyzed using Microsoft Excel. Quality was ensured through piloting and SOP adherence. Ethical approval and informed consent were obtained, ensuring confidentiality, voluntary participation, and the right to withdraw.

Results:

A total of 77 pregnant women participated. Regarding ANC attendance, 32(42%) had 3-4 visits, 25(32%) more than four, and 20(26%) had 1-2 visits. IPTp uptake varied: 21(27%) received two doses, 20(26%) one dose, 17(22%) three doses, 12(16%) four or more, while 7(9%) received none. Most, 66(86%), received IPTp during ANC, and 69(90%) had ever received IPTp-SP. ITN ownership was 60(78%), but consistent use was low: 28(36%) used nightly, 20(26%) most nights, 12(16%) occasionally, and 17(22%) not at all. Knowledge levels were moderate: 27(35%) good, 25(33%) average, 11(14%) excellent and 14(18%) poor. About 44(57%) correctly identified monthly IPTp use. Health facilities were the main information source for 35(45.5%), and the most trusted providers for 38(49%). Accessibility was high 55(71%), though only 47(61%) were satisfied with care.

Conclusion:

Adherence influenced by knowledge, information sources, and service accessibility among pregnant women.

Recommendation:

Enhance ANC counselling, address IPTp misconceptions, reduce waiting time, and improve patient-health provider communication.

Keywords: *Malaria preventive strategies, Healthcare accessibility, Patient satisfaction, Antenatal care, Health education.*
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BACKGROUND OF THE STUDY

Factors influencing the uptake and adherence to insecticide-treated nets (ITNs) and intermittent preventive treatment in pregnancy (IPTp) are complex and multifactorial. Knowledge and awareness play a critical role, as pregnant women who understand the benefits and safety of these interventions are more likely to use them consistently. However, gaps in knowledge remain a major challenge. For example, a study in Nigeria found that 68.5% of pregnant women did not know who should take IPTp-SP, while 58.5% were unaware of the correct timing and dosage (Grace & Mergan, 2022). Similarly, in Ethiopia, 68.9% of pregnant women had poor knowledge of malaria prevention methods (Sisay et al., 2024).

Socioeconomic and demographic factors also significantly influence adherence. Women with lower levels of education and income are less likely to utilize malaria preventive measures effectively. In Ghana, women with no formal education were significantly more likely to develop malaria compared to those with higher education, while younger women aged 17–25 years were also at higher risk (Abu Bonsra et al., 2025). Housing conditions, family size, and proximity to stagnant water further increase exposure to

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malaria and limit effective prevention (Sisay et al., 2024; Bardoe et al., 2024).

Healthcare system factors equally affect adherence. Challenges such as inadequate supply of ITNs and IPTp drugs, poor quality of counseling, and limited training of healthcare workers contribute to low uptake. In Ghana, stock-outs of preventive commodities and confusion among health workers regarding IPTp initiation led to missed opportunities for prevention (De-Gaulle et al., 2022). In Somalia, only 30.7% of healthcare workers had been trained on malaria guidelines, contributing to poor adherence to recommended practices (Mohamoud, 2022).

Cultural beliefs, misconceptions, and sources of information also shape behavior. In Ghana, most pregnant women relied on family and friends (43.4%) for malaria information rather than healthcare providers (Abu Bonsra et al., 2025), which may contribute to misinformation and poor practices. Poor utilization of ITNs has been strongly associated with increased malaria prevalence across several studies, with significantly higher infection rates among women who do not consistently use nets (Cheru Kore Sifir & Biru, 2023; Balcha et al., 2023).

The study aimed to identify the factors influencing the uptake and adherence of malaria preventive strategies among pregnant women aged 15-49 years attending ANC in HRRH.

METHODOLOGY

Study Design and Rationale

The research utilized a cross-sectional descriptive study design to collect data at a single point in time without following up on participants. It was suitable because it allowed the simultaneous collection of data on exposure and outcome at the same time.

Study setting

The study was conducted at the ANC of Hoima Regional Referral Hospital, located in Hoima city, Western Uganda, because it was convenient and easier. It is approximately 200 kilometers by road. It is one of the thirteen Regional Referral Hospitals in Uganda and serves as one of the fifteen internship hospitals where graduates of Ugandan medical schools undergo a one- year internship under the supervision of qualified specialists and consultants. As of 2013, the hospital had a bed capacity of 280. Established in 1935, the facility initially functioned as a district hospital in 1994, and it was upgraded to Regional Referral status for the Bunyoro sub- region

Study Population

The study targeted all pregnant women aged 15-49 years attending the ANC unit at HRRH.

Sample Size Determination

The Kish–Leslie formula was used to determine the required sample size.

$$n = \frac{Z^2 p\, q}{d^2}$$

n = sample size required

Z= the statistical certainty 1.96(For 95% confidence interval)

P = estimated prevalence of malaria was 18.5% among pregnant women. (Bernadette, 2023) q=1-p

d=Margin of error set at 5%

n= $(1.96)^2$*0.185*(1-0.185)\$0.05^2$ n=231.6868 n~232/3

n=77 respondents

Sampling Technique and Rationale

A systematic random sampling method was employed to select the study participants at HRRH. This technique was applied because it gave every person in the study population an equal chance to participate, thus avoiding bias.

Sampling Procedure

A systematic random sampling was employed to select pregnant women attending the ANC unit of HRRH .proportionate allocation by trimester was applied to ensure representativeness. A sampling interval (k) was determined daily, 100 mothers from the ANC register were selected, a random starting point was chosen, and every 2nd eligible woman was selected until the required sample was reached. This method was chosen because it's simple, provides a representative sample, and reduces bias.

Inclusion and exclusion criteria

All pregnant women aged 15-49 years attending ANC, only pregnant women who are Ugandan by nationality, English literate, provide informed consent, and pregnant women of sound mind with no psychological conditions.

Exclusion criteria

All pregnant women who were critically ill

Study Variables

Independent Variable

The independent variable is those that can be manipulated by the investigator, this was level of adherence to malaria prevention measures.

Dependent Variables

The dependent variable is a measurable characteristic of the population under study that cannot be manipulated. In this case, malaria prevention strategies among pregnant women aged 15-49 years attending ANC in HRRH

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Data Collection Tool

The data collection process involved the use of semi-structured self-administered questionnaires with closed-ended questions that were specifically designed to meet the objectives of the study. The questionnaires were designed in simple and clear language to ensure they were easily understood by both literate and illiterate participants. Individuals who were unable to read or write were assisted during the process.

Data Collection Method/ procedure and rationale

Data was collected using Semi-structured questionnaires to collect data about malaria prevention strategies among pregnant women attending the antenatal care unit of HRRH. The questionnaire was used because it ensured a high response rate, and it required less time and energy to administer.

Questionnaires were administered to the participants who were available at the selected site during the study and consented to participate. Clear guidelines and instructions were given to participants on how to fill out these questionnaires. After filling out the questionnaires, the responses were collected to monitor**.**

Data Management and Analysis

After data collection, it was checked for completeness, clarity, and accuracy. Grossly incomplete questionnaires and those with unclear responses, jargon, and abbreviations were discarded, while the complete ones were analyzed using Microsoft Excel software. Data was presented in tables and graphs.

Data confidentiality was strictly maintained. Unauthorized personnel were not allowed access to the data, which was restricted to authorized individuals only. Data collection was conducted during the daytime to enhance security and minimize errors.

Quality Assurance: validity and Reliability

To ensure the quality of the study, the following are done,

Piloting the study

A pilot study was conducted among a small sample of pregnant women attending antenatal care at a health facility outside HRRH but within the same region. This was done to pre-test the data collection tools for clarity, validity, and reliability, and to assess the feasibility of the study procedures. Feedback obtained was used to revise and refine the questionnaire and methodology where necessary. Data collected during the pilot were not included in the main study results.

Observation of SOPs

This involved social distancing, hand hygiene, and hand rub so as to avoid cross-infection, and making sure not to break the hospital operating procedures and avoid hindering the normal running of the health center activities because of research.

Ethical Consideration

The proposal was submitted to the Mildmay Research Committee for approval. An approval letter was issued through the Office of the Dean, School of Clinical Officers at Mildmay Institute of Health Sciences, and presented to the District Health Officer to introduce the study and seek permission to commence data collection. Informed written consent was obtained from all participants prior to the study. A full explanation of the research procedures was provided to ensure participants understood the study. Consent forms were used to obtain written consent before conducting interviews, and all information provided was kept confidential. The names of the participants were not included in the report. The participation was voluntary, and one was free to withdraw from the research at any time without any punishment or loss of benefit.

RESULTS

Demographic characteristics

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Table 1: Table showing Demographic Characteristics of Respondents (n=77)

Variable	Category	Frequency(n)	Percentage (%)
Age(15-49years)	15-19	8	10
		29	38
	20-24	20	26
	25-29	8	10
	30-34	12	16
	35-49		
Educational level	No formal	17	22
	education	38	49
	Primary	15	20
	Secondary	7	9
	Higher education		
Marital status	Married	50	65
	Single	23	30
	Divorced	3	4
	Widowed	1	1
Occupation	Unemployed	15	19
	Employed	62	81
Monthly income	Less than 200,000 UGX	40	65
		14	
	200,000 to 400,000 UGX	8	23
	400,001 to 600,000 UGX		12
Pregnancies carried	1	14	18
	2	28	36
	3 or more	35	46
Gestational age	0–12 weeks (First trimester)	20	26
	13–27 weeks (Second trimester)	32	42
	28–40 weeks (Third trimester)	25	32
Residence	Town	60	78
	Village	17	22

The table shows 32(42%) of the respondents had had 3-4 ANC visits, 25(32%) had more than 4 ANC visits, while 20(26%) had 1-2 visits. 21(27%) had received 2 doses of IPTp, 20(26%) had 1, 17(22%) had 3IPTp, and 12(16%) had

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4 or more while 7((9%) had not received. 66(86%) of the respondents had received each dose of IPTp during ANC, while 11(14%) showed that ANC is still the main delivery point of IPTp. 69(90%) had ever received IPTp-SP, while 8(10%) had not. Of the 69, one-quarter (25%) had received two doses, and 20(29%) had received three doses. This showed an adherence to the WHO-recommended number. Of the 77 respondents, 60(78%) reported owning an ITN, while 17(22%) didn't utilization was low; of the 60 who owned one, 28(36%) slept under it every night, 20(26%) most nights, 12(16%) occasionally, while 17(22%) did not. This showed a challenge in adherence to the use.

Factors influencing the uptake and adherence to ITNs and IPTp among pregnant women.

Table 3: A frequency distribution table showing Knowledge on malaria Prevention (=77)

Variable	Category	Frequency	Percentage (%)
rate your knowledge of malaria preventive methods	Poor	14	18
	Average	25	33
	Good	27	35
	Excellent	11	14
How often receive intermittent preventive treatment for malaria	Once during pregnancy	5	7
	Every month	44	57
	Once a week	18	23
	Only when feeling sick	10	13
Source to seek information about malaria prevention	Health facility	35	45.5
	Radio	15	19.5
	Community Health workers	14	18
	Internet	9	12
	Other	4	5
Most trusted source	Healthcare providers	38	49
	Family/friends	12	16
	Media	20	26
	Social media	7	9

The above table shows that the rate of knowledge of the respondents about malaria preventive strategies was average, with 27(35%) of the respondents having good knowledge, 25(33%) having average knowledge, 11(14%)

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having excellent knowledge, and 14(18%) having poor knowledge. Regarding how often pregnant women should receive IPTp for malaria, 44(57%) of the respondents reported that it should be received every month, 18(23%) reported once a week, 10(13%) said only when feeling sick, and 5(7%) said once during pregnancy. Regarding source of information about malaria prevention, of the 77 respondents 35(45.5%) reported to get the information from health facility, 15(19.5%) said radio, 14(18%) community health workers, 9(12%) internet while 4(5%) said other sources.38(49%) of the respondents reported to trust information from health care providers,20(26%) trusted information from media,12(16%) trusted information from family/friends while 7(9%) trusted social media.

Health care services

Figure 1 shows study findings about how far the respondent's residence from the nearest health facility (n=77)

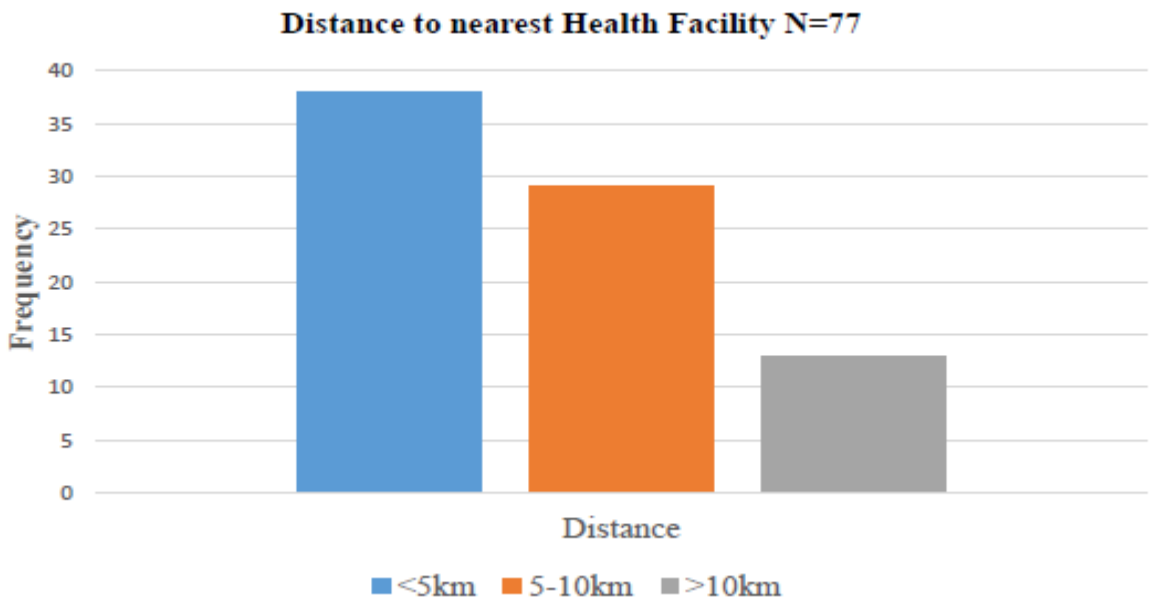

Figure 1 shows the distribution of respondent's response based on the distance from their homes to the nearest facility. Majority of the respondents38(49%) were less than 5km from the nearest facility, while 29(38%) distance from the nearest facility was between 5-10km. Only 10(13%) were more than 10km from the nearest health facility.

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Figure 2 shows study findings about how the respondents were satisfied with the quality of malaria care they received

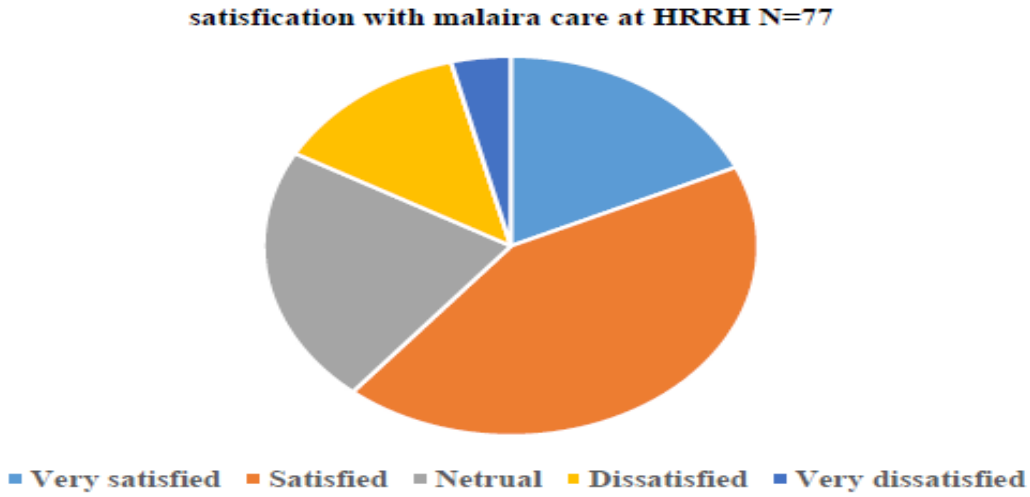

Figure 2 shows that 33 respondents (43%) were satisfied with the malaria care received, while 14(18%) were very satisfied. However, 17(22%) were neutral, and a combined 13(17%) showed dissatisfaction and very strong dissatisfaction with the malaria care.

Figure 3 shows the study findings regarding how the respondents felt about the accessibility of healthcare services at HRRH.

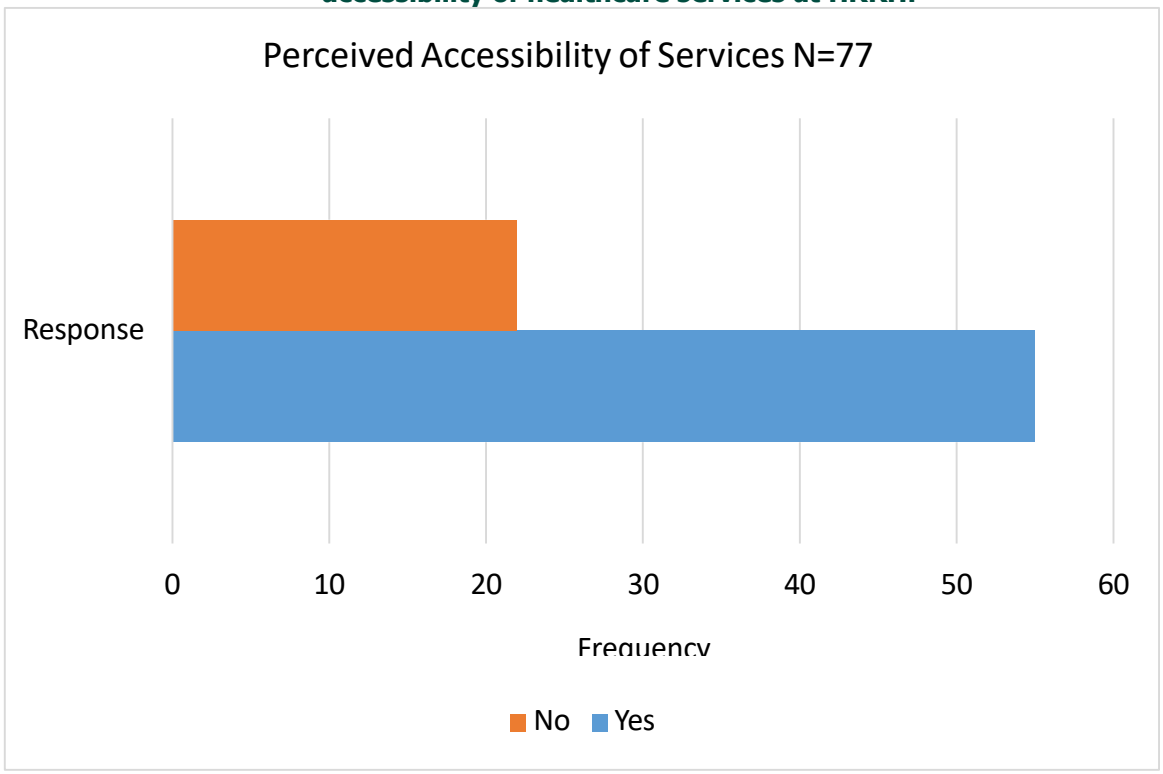

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Figure 3 shows that 55 respondents (71%) felt that health care services at HRRH were easily accessible for pregnant women, while 22(29%) didn't.

DISCUSSION

Demographic characteristics of respondents

The findings of this study revealed that most respondents were between 20 and 24 years (38%) and 25 and 29 years (26%). This aligns with the demographic distribution of pregnant women in similar studies in Uganda, where younger women tend to dominate ANC attendance. (Wafula et al., 2021) The predominance of women in their reproductive peak suggests that interventions targeting malaria prevention should be tailored to this age group, who are often more receptive to health education initiatives, indicating that most were in their reproductive peak. A considerable portion had primary education (49%) or no formal education (22%), highlighting that limited education may influence how women understand and adhere to malaria prevention strategies. Studies conducted in Cameroon and Eastern Uganda similarly highlighted that higher knowledge levels and better education are associated with improved IPTp uptake and ITN use(Wafula et al., 2021; Defo et al., 2025). Therefore, the low education levels observed may partly explain the gaps in adherence to malaria prevention measures.

The majority of the participants were married (65%), which can contribute to comparatively better access to health facilities. This finding is consistent with studies from Cameroon, where marital status was found to influence IPTp uptake. (Defo et al., 2025) (81%)of the respondents were employed, which may offer some financial stability; however, the reported income levels showed that 65% earned less than 200,000 UGX, indicating that, despite employment, financial limitations persist. Low income may affect the ability to access transportation, attend frequent ANC visits, or supplement household malaria-prevention resources—factors also observed in similar studies in Ghana and Uganda(Dun-Dery et al., 2021); (Julius & Justus, 2024), and living in town (78%) Although low monthly household income were evident, 65% earning less than 200,000UGX which could limit ability to acquire preventive measures such as additional mosquito nets and transportation to ANC visits.

Most of the women had carried three or more pregnancies (46%) and were in their second trimester (42%). These characteristics are relevant as multiparous and second-trimester women are key targets for IPTp-SP administration.

Factors influencing the uptake and adherence of malaria preventive strategies among pregnant women aged 15-49 years attending ANC in HRRH.

Level of knowledge of prevention of malaria was average to good, with 33%and 35% respectively. Although 57% reported that IPTp should be received monthly, misconceptions still existed; for example, 23% believed that IPTp should be received weekly. Similar knowledge gaps were reported in Nigeria, where 68.5% of pregnant women did not know who should take IPTp-SP, and 58.5% lacked knowledge on when and how many times IPTp should be administered (Grace & Mergan, 2022). This study, along with the study findings, shows that incomplete knowledge significantly reduces IPTp uptake and ITN use. The majority of the respondents received malaria prevention information from a health facility (45%), and 49% trusted healthcare providers the most. This shows strong reliance on health workers for guidance, emphasizing their important role in influencing adherence. Distance to nearest health facility was favourable as 49% were within5km of a health facility. Accessibility was positively as 71%, and satisfaction with malaria care was 43%, with an additional 18% very satisfied. However, 17% expressed dissatisfaction, suggesting areas for improvement.

CONCLUSION

The study established that adherence is influenced by several factors, including level of knowledge, source of information, and accessibility of services**.** There is a need to address these factors, particularly among women aged 25–49 years.

RECOMMENDATION

Healthcare providers should reinforce counselling during ANC visits on:
The importance of completing all IPTp doses
Proper and consistent use of ITNs
Address misconceptions related to the frequency and timing of IPTp-SP**.**
Improve client satisfaction by:
Reducing waiting time
Enhancing patient–provider communication

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I also acknowledge my parents for their unconditional support and love throughout this process. May God reward you all, abundantly

LIST OF ABBREVIATIONS

ANC – Antenatal Care
HRRH – Hoima Regional Referral Hospital
IPTp – Intermittent Preventive Treatment in Pregnancy
IPTp-SP – Intermittent Preventive Treatment in Pregnancy using Sulfadoxine-Pyrimethamine
ITN – Insecticide-Treated Net
SOPs – Standard Operating Procedures
UGX – Ugandan Shilling
WHO – World Health Organization

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The study received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY

Data is available upon request from the author.

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AUTHOR CONTRIBUTIONS

PN: collected the data.
HN: supervised the study.
FS: supervised the study.
JFN: supervised the study

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