

Comprehensive Assessment of Factors Affecting Malaria Prevalence among Pregnant Women in Nyabubare Health Centre III, Bushenyi District, Uganda: Implications for Public Health Intervention

Kirungi Richard and Nayebare Julian

Department of computing, Faculty of Science and Technology Kampala International University, Uganda

Email: kirungi@kiu.ac.ug, nayebarejulian1990@gmail.com

ABSTRACT

Malaria remains a significant global health burden, particularly among pregnant women, with adverse outcomes such as maternal mortality and low birth weight. This study comprehensively investigates the multifaceted factors influencing malaria prevalence among pregnant women attending Nyabubare Health Centre III in Bushenyi District, Uganda. Utilizing a mixed-methods approach, data were collected through structured interviews and documentary review from a sample of 86 respondents, including 80 pregnant women and 6 health workers. Descriptive analysis revealed poverty, deficiency in malaria control measures, low education levels, environmental factors such as swamps and floods, age, limited access to health facilities, and climatic changes as major determinants of malaria prevalence among pregnant women. Despite a relatively low malaria prevalence, knowledge gaps regarding malaria prevention were identified. The findings underscore the urgent need for targeted public health interventions, including subsidies for preventive equipment, sustained information campaigns, and improvements in healthcare services to enhance malaria prevention and control among pregnant women in the region. This study provides valuable insights for policymakers and healthcare practitioners to develop effective strategies to mitigate the impact of malaria on maternal and child health in resource-limited settings.

Keywords: Prevalence of malaria, pregnant women, and knowledge

INTRODUCTION

Globally malaria remains the most important infection causing morbidity and mortality in many countries with an estimated 219 million people causing 435,000 deaths in 2017 globally [1]. It is a major cause of mortality and morbidity in Uganda. Despite Uganda's efforts to distribute bed nets, only half of households have achieved the World Health Organization (WHO) [2, 3, 4]. Over the past several months, Efforts have been undertaken by the Government in distributing long-lasting mosquito nets freely to communities across Uganda to all districts to reduce the spread of malaria [2]. According to Severe malaria observatory report (2020), Uganda reduced malaria transmission from 42% in 2009 to 9% in 2018, a significant improvement. Nevertheless, Uganda ranked third globally in terms of malaria cases (5.1%) and seventh in terms of deaths (3.2%) in 2021. In 2021, it also had the greatest percentage of malaria cases (23%), throughout all of East and Southern Africa. In the

Bushenyi district, particularly in the prevention and treatment of malaria, pregnant mothers who visit health centers are given free Insecticide Treated Nets (ITN's) [5], pregnant women are also given information through mass media channels such as television, radios and Newspapers on how to recognize the symptoms of malaria in their body especially during pregnancy.

In a study carried out by Bemanya in 2013 on the status of malaria among 200 randomly selected pregnant women in Bushenyi district; of all blood samples that were obtained from finger pricking and tested for malaria parasites in thin blood films, 70% prevalence of malaria parasites was obtained [6]. More so the study carried out by Byabashaija in March 2023 at Ishaka Adventist Hospital-Uganda Attending Antenatal Clinic, revealed the region has the highest severity of malaria, accounting for 90% of all deaths [7]. According to Bushenyi district health report (2021), it is estimated that malaria

caused as many as 6 maternal deaths at Nyabubare Health Centre III in the financial years 2021, there were 3% to 7% low birth weight babies, and 3% to 8% of all infant deaths [8]. Therefore, this study

investigated the factors affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III in Bushenyi district.

METHODOLOGY

Research Design

Descriptive survey design where both qualitative and quantitative methods of data collection were applied. A descriptive survey design was preferred because of its rapidity, cost effectiveness and ability to obtain data in depth and because it helped to capture information which was easily transformed into numerical form. A descriptive design was chosen for the study in order to describe the factors affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III in Bushenyi district.

Area of study

The study was carried out at Nyabubare Health Centre III in Bushenyi district. Bushenyi district is located approximately 65 kilometers (40 miles), by road, west of Mbarara, the largest town in western Uganda and at about 350 kilometers from Kampala the capital city of Uganda. Its exact location can be geographically determined as longitude $30^{\circ} 19'$ and latitude $0^{\circ} 54'$. The district lies at an average altitude of 1,432 meters above sea level. Nyabubare Health Centre III provides maternal health services and handles cases of pregnant women with malaria and thus this will create a lot of the avenues for the researcher to factors affecting the prevalence of malaria among pregnant women in Nyabubare Health Centre III in Bushenyi district.

Time Frame

The study was carried out between January, 2023 and April 2023. This period helped the researcher to assess the factors affecting the prevalence of malaria among pregnant women in Nyabubare Health Centre III attending Bushenyi district.

Sample size

The sample size was comprised of 80 women and 6 health workers. The women were randomly selected for the study population.

Sample size determination

The rule of the thumb was used in sample size determining to select a sample of 80 respondents [9].

In the last six (6) months, a total of 800 women of reproductive age had received treatment at Nyabubare Health Centre III:

Therefore:

10% of the women of reproductive age in the last six months.

$10/100 \times 800$

80 respondents were selected

6 health workers at Nyabubare Health Centre III were purposively selected for the study.

Sampling procedure

The study used non-probability sampling techniques to select both health workers and women. Purposive sampling was applied to select 6 health workers to give their views and was assumed to have unique information about the prevalence of malaria among pregnant mothers since they are the ones who handle them when they come for medical check-up at Nyabubare Health Centre III. The researcher chose 80 pregnant women who came for ante-natal visit in age bracket of (15 to 49 years) between January- March 2023 and Simple random sampling was applied to pregnant women.

Inclusion criteria

In the study research, sample population of the result was Women in their reproductive age (15 to 49 years) and who were willing to consent were considered. Health workers working at Nyabubare Health Centre III were targeted too because the researcher believes

Exclusion criteria

1. Women not in their reproductive age (15 to 49 years) were not considered.
2. Those who were not willing to consent.
3. Men were not considered

Data Collection Methods

Structured interviews used on women; this was done with the help of an interview schedule. It collected data on demographics as well as structured data on the factors affecting the prevalence of malaria in pregnant mothers. Questions were asked exactly the same way for each respondent in order to be consistent and increase the validity of the responses received. The data collected from this category of respondents was qualitative in nature and the questions were adjusted where there was need in order to get all data that was available about the topic of discussion.

Documentary Review

A detailed history of each woman of reproductive age was taken from the health centre's records to determine the number of women who have had malaria in the past. This helped to determine the prevalence of malaria among women of reproductive age who seek health services at Nyabubare Health Centre III.

Data Analysis

Data from interviews was thematically analyzed to develop themes from objective and literature

reviewed. Qualitative data was later transported to SPSS to determine the prevalence of malaria among the pregnant women. Descriptive summary

statistics and graphical summaries in charts (pie and tables) were used to present the data.

RESULTS

Data presentation and Analysis

The presentation and analyses study findings on the factors affecting the prevalence of malaria among

pregnant women attending were correlated in relation to the study objective.

Table 1: Age distribution of the respondents

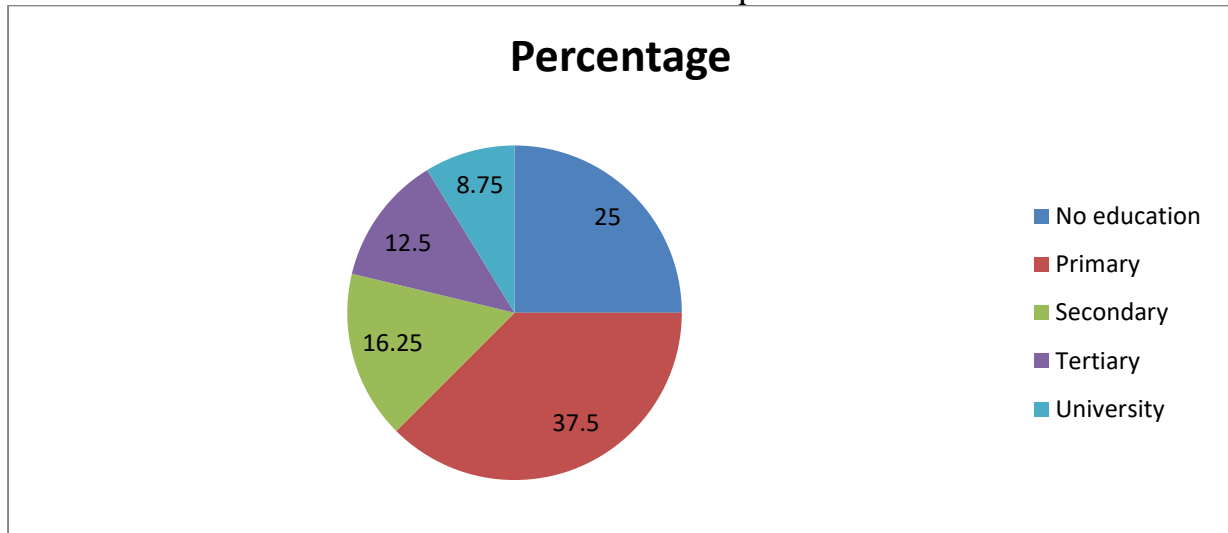
Age bracket	Frequency	Percentage
15-25	10	12.5
26-35	36	45
36-45	28	35
46 above	6	7.5
TOTAL	80	100

Source: Field Data, 2023

From the results the majority 36(45%) of the women were in the age bracket of 26-35 years, this was followed by 28(35%) of respondents who were in the age brackets of 36-45, followed by 10(12.5%)

who were in the age bracket of 15-25 while the minority 6(7.5%) of the women were in the age bracket of 46 and above years.

Education levels of respondents



Of the respondents 25% (n=20) indicated that they had no schooling; 37.5% (n=30) had a primary education; 16.25% (n=13) had a secondary education and 12.5% (n=10) had tertiary education while 8.75 (n= 7) had studied up to university. This shows

there are low education levels among pregnant women seeking medical services at Nyabubare Health Centre III with the majority of the respondents (37.5%; n=30) having completed at most a primary education level

Occupation of respondents
Table 2: Occupation of respondents

Occupation	Frequency	Percentage
Peasants	43	53.75
Business	20	25
Civil servants	10	12.5
Unemployed	7	8.75
Total	80	100

Source: Field Data, 2023

Of the respondents, the majority 53.75% (n=43) were peasants; 20% (n=25) were into business; 12.5% (n=10) were in civil servants; and 8.75% (n=7) were unemployed. Since the majorities were peasants they might lack transport and other fees to come for malaria treatment as found out that poverty of the communities undermines the coping mechanisms that could help these communities reduce their vulnerability to malaria in Africa.

Proportion of pregnant women with malaria parasites

In this section the researcher sought to determine the proportion of pregnant women with malaria parasites attending Nyabubare Health Centre III. Treatment records of a total of 80 pregnant women were sought from health centre records and the results are shown below:

Table 3: Age distribution of pregnant women positive to malaria and those without malaria

Age group	Positive (%)	Negative (%)
20-30	3(58%)	16(50%)
31-40	2 (38%)	12(38%)
Above 40	1(4%)	4(12%)
TOTAL	6(7.5%)	94(92.5%)

Source: Field Data, 2023

Results in table 3 show that out of the 80 pregnant women attending Nyabubare Health Centre III, only 7.5% were positive to and showed symptoms of malaria while 92.5% were negative. This implies that there was low malaria prevalence among the women pregnant women attending Nyabubare Health Centre III. Pregnant women within the age group of

20 to 30 years had the highest number of parasite density while those above 40 years had the least. This could be that there is high prevalence at lower ages and low prevalence at higher ages is due to the existence of natural immunity to infectious disease including malaria.

Table 4: Factors affecting the prevalence of malaria among pregnant

Factors	Frequency	Percentage
Poverty	26	26
Deficiency in malaria control and prevention measures	23	23
Education levels	19	19
Presence of swamps and floods	14	14
Age	10	10
Limited access health centres	6	6
Climatic changes	3	3
TOTAL	100	100

Source: Field Data, 2023

From the results the majority (26%) of the respondents mentioned poverty was the main factor affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III, (23%) mentioned deficiency in malaria control and prevention measures, 15(19%) mentioned education levels, (14%) mentioned presence of swamps and floods, (10%) mentioned age, (6%) mentioned limited access to health centres while the minority (3%) mentioned climatic changes.

Data from key informants on factor affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III

From interview with health workers at Nyabubare Health Centre III, they revealed that the main factor that leads to prevalence of malaria among pregnant women attending Nyabubare Health Centre was poverty. They mentioned that most pregnant women who came for treatment were peasants who were always pre-occupied with digging and doing domestic work and lack time to go for regular

medical check-up to be able to detect malaria parasites early to treat it. The health workers revealed that the pregnant women only came for treatment after getting complications. It was also revealed that due to poverty, most pregnant women Nyabubare Sub County lack funds for transport to come for regular medical check.

A health worker commented,

“Most women in Nyabubare Sub County are low-income earners; they find it difficult to pay transport fees to come to Nyabubare Health Centre III for regular medical check that can help in detecting the malaria parasites to be treated”, (Interview, April, 2023).

This implies that most pregnant women earn little income to enable them afford to meet health-related costs such as transport fees to health centres and buying medicine.

The health also revealed that the low education levels were related to low levels of knowledge about malaria control and prevention; the dangers of

malaria on unborn baby’s health to their health as well. Thus pregnant women are not informed about the importance of regular medical check that leaves them prone to malaria infections.

A nurse commented,

“Without education, most pregnant women in this area do not know the effect of malaria on pregnancy and knew born. This is because good knowledge has an influence on the subsequent return of women to this health centre for ANC which helps us to detect their malaria early and treat it”, (Interview, April, 2023).

The health workers revealed that age was a factor affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III. They revealed that malaria was common among young mothers especially those who were giving birth for the first time and those who had given birth twice. They mentioned that the rate of malaria

infection was among those women who had given birth more than three times was low.

A health worker commented,

“At this health centre Primigravidae are susceptible more to malaria while Multigravidae were less susceptible more to malaria. This is because there is always high prevalence at lower ages and low prevalence at higher ages is due to the existence of natural immunity to infectious disease including malaria”, (Interview, April, 2023).

Knowledge of pregnant women attending Nyabubare Health Centre III about malaria
Knowledge of Causes of Malaria

Ignorance of how malaria is spread interferes with the ability to take appropriate preventive measures. Women were asked several questions to ascertain their knowledge of causes of malaria.

Table 5: Knowledge of women on causes of malaria

Causes	Frequency	Percentage
Mosquitoes	50	55.6
Drinking unboiled water	20	22.2
Cold or changing weather	14	15.6
I don’t know	6	6.7
TOTAL	90	100

Source: Field Data, 2023

From the results (55.6%) of the pregnant women attending Nyabubare health centre III said that malaria is caused by mosquitoes, (22.2%) percent said malaria is caused by drinking unboiled water, (15.6%) said it is caused by cold or changing weather while (6.7%) did not know the causes of malaria. Though the majority (55.6%) were aware of the causes of malaria and correctly mentioned mosquitoes as the cause of malaria, still a big percentage did not know the cause of malaria hence making them vulnerable to malaria infection since they will not take preventive measures against

malaria like sleeping under insecticide treated mosquitoes nets.

Knowledge of Ways to Avoid Malaria

Women were also asked during the survey if they know of ways to avoid getting malaria. The majority 64(80%) knew the ways of avoiding malaria while 16(20%) did not know. Those who knew of ways to avoid getting malaria were further asked to name specific ways to avoid getting malaria. Table 8 shows responses provided by women age 15 to 49 on ways to avoid getting malaria.

Table 6: Ways to avoid malaria

Ways to avoid malaria	Frequency	Percentage
Sleeping under a mosquito net	55	44.7%
Destroying mosquito breeding sites	25	20.3%
sleeping under an insecticide-treated mosquito net	20	16.2%
Preventive medication	15	12.2%
Spraying the house with insecticide	8	6.5%
TOTAL	123	100

Source: Field Data, 2023

When asked to cite specific ways to avoid getting malaria, 44.7 percent of women said sleeping under a mosquito net, 20.3 percent said destroying mosquito breeding sites, and 16.2 percent cited sleeping under an insecticide-treated mosquito net as ways to avoid getting malaria. Only 12.2 percent cited taking preventive medication as a way to avoid malaria, and 6.5 percent mentioned spraying the house with insecticide. This implies that most of the women knew ways of avoiding malaria.

Exposure to Malaria Messages

A crucial element in the fight to eliminate malaria is the ability to reach the population with information

and educational materials. In an effort to assess the coverage of communication programmes, women were asked if they had seen or heard any messages about malaria in the few months before the survey. The majority 52(65%) mentioned that they had seen or heard any messages about malaria in the few months before the survey while 28(35%) had not seen or heard any. Those who said that they had seen or heard any messages about malaria in the few months before the survey were asked to mention the sources where they had seen or heard messages about malaria in the few months before the survey. The results are shown below:

Table 7: Sources where women had seen or heard messages about malaria

Sources	Frequency	Percentage
Neighbor(friend)	22	28.9%
Health centre/community medicine distributor	19	25%
Radio	13	17.1%
Newspapers	10	13.2%
Community leader	7	9.2%
Television	5	6.6%
TOTAL	76	100

Source: Field Data, 2023

From the results majority (28.9%) of the women cited neighbor (friend) as the main source of information where they had seen or heard messages about malaria, (25%) cited health worker/community medicine distributor, (17.1%)

cited radio, (13.1%) cited Newspapers, (9.2%) cited community leader while (6.6%) cited Television as another source of information where they had seen or heard messages about malaria (The Global Fund, 2022).

DISCUSSION

From the results the respondents mentioned poverty was the main factor affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III. It was revealed that most pregnant women who came for treatment were peasants who were always pre-occupied with digging and doing domestic work and lack time to go for regular medical check-up to be able to detect malaria parasites early to treat it. The health workers revealed that the pregnant women only came for treatment after getting complications. It was also revealed that due to poverty, most pregnant women in Nyabubare Sub County lack funds for transport to come for regular medical check-up. It was also found out that the interplay of poverty and other variables do intensify the vulnerability of pregnant women to getting malaria.

For instance, due to poverty women have limited accessibility to education and information that can help to create awareness about malaria prevention. The above findings concur with [10, 11] who noted that poverty undermines the coping mechanisms that could help poor people reduce their vulnerability to malaria. The study also revealed deficiency in malaria control and prevention measures as other factors that affect the prevalence of malaria among pregnant women attending Nyabubare Health Centre III. It was found out that most health facilities are located more than 5 kilometers from where they stay and this made it hard for women to visit the health centre for regular malaria checkup to be able to detect malaria early so that it can be control and prevented. It was revealed that some pregnant women did not know the

medicine they could take to prevent themselves against malaria. It was further revealed that some pregnant women did not know the causes of malaria and could not correctly identify anopheles mosquito as the types of mosquitoes that transmits malaria. This implies that many women are still vulnerable to malaria infection since they do not take preventive measures against malaria like sleeping under insecticide treated mosquitoes nets.

The findings are in line with [12] who noted that deficiency in control measures lead to increased malaria infections among pregnant women in Africa. Deficiency in control measures is where good surveillance are not maintained, malaria not being detected quickly and the implementation of control measure take too late.

According to the results education level was cited as another factor affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III. The findings in this study show that individuals who are educated have adequate information about the available methods of malaria control and prevention and are better able to develop a rational approval to planning their families. However, it was revealed that malaria infection was more associated with women with low education backgrounds compared the more educated women. Low education levels were related to low levels of knowledge about malaria control and prevention; the dangers of malaria on unborn baby's health to their health as well. Thus, most pregnant women in Nyabubare Sub County are not informed about the importance of regular medical check that leaves them prone to malaria infections. It was found out that most women either had never gone to school or dropped out at primary school. Therefore, with low education levels and limited sources of information about ways of malaria control and prevention.

The prevalence of malaria among pregnant women attending Nyabubare Health Centre III is low with pregnant women within the age group of 20 to 30 years being more susceptible to malaria infection than those above 40 years.

The main factors affecting the prevalence of malaria among pregnant women attending Nyabubare Health Centre III include: poverty, deficiency in malaria control and prevention measures, education levels, environmental factors such as the presence of swamps and floods, age, accessibility to health centres and climatic changes.

The overall knowledge level of pregnant women attending Nyabubare Health Centre III about malaria is relatively low. Women lack knowledge on the medicines that a pregnant woman can take

In a related study done by [13], it was noted that without education, pregnant women will not know the effect of malaria on pregnancy and knew born. Good knowledge may have an influence on the subsequent return of women to health centres for ANC. In this study presence of swamps, stagnant water, floods and cold weather were also associated with prevalence of malaria among pregnant women attending Nyabubare Health Centre III. It was found out that the presence of swamps near homesteads was bleeding grounds for mosquitoes. It was reported that papyrus, found in many of the swamps in valley Nyabubare Sub County, excrete oil and provide shade, which inhibit *Anopheles gambiae* reproduction. It was also mentioned that during rainy seasons, flat areas flood with stagnant water which also offers bleeding grounds for mosquitoes.

In a related study by [8], noted that increased flooding could facilitate the breeding of malaria carriers in formerly arid areas.

Differences in age were also revealed to affect the prevalence of malaria among pregnant women attending Nyabubare Health Centre III. It was revealed that malaria was common among young mothers especially those who were giving birth for the first time and those who had given birth twice. They mentioned that the rate of malaria infection was among those women who had given birth more than three times was low. Pregnant women within the age group of 20 to 30 years had the highest number of parasite density while those above 40 years had the least [15-17].

This result supports the existing knowledge by [14, 15], who noted that high prevalence at lower ages and low prevalence at higher ages is due to the existence of natural immunity to infectious disease including malaria. However other studies reported no significant association between malaria infection and maternal age.

CONCLUSION

during pregnancy to avoid getting malaria; they have inadequate knowledge on ways of malaria transmission, control and prevention which makes them unable to take control and preventive measures against the disease.

Recommendations

Based on the study findings, the researcher recommends the following to prevent and reduce on the impact of malaria

- It was found out that most of the pregnant women are peasants and thus may lack the resources to have malaria preventive equipment such as treated mosquito nets and insecticide. Therefore, the government should subsidies on the price of the equipment and drugs to enable even the

poor to afford them in their homes. The government should as well provide free treated mosquito nets to pregnant mothers quarterly within a year.

- Though it was also found out that the prevalence of malaria among pregnant women attending Nyabubare Health Centre III was low, there were still some women who were positive with malaria parasites and therefore, preventive measures of HIV and malaria (chemoprophylaxis and insecticide-treated bednets) may be beneficial in this area for all women irrespective of their age, gestational period or parity. Additionally, Malaria and HIV screening for all pregnant women should be continued to strengthen the diagnosis and treatment at the early stage.
- It was found that though pregnant women attending Nyabubare Health Centre III had limited knowledge about control and prevention of malaria. There is still need for

sustained information, education, and communication (IEC) and behaviour, change, communication (BCC) campaign (radio and mobile phones) to increase use of preventive and curative services for malaria. As mobile phone ownership is rising, innovative approaches to engage telecommunication companies to use mobile technology to mobilise and sensitise the population on malaria prevention could be explored.

- There is need to sensitize local communities on the importance reducing vector reservoir breeding grounds for mosquitoes such as covering drainage, eliminating stagnant water, and bush clearing around homesteads.
- There is need by the government to improve the protection mothers against malaria through intermittent preventive treatment using sulphur dioxide/premethamine.

REFERENCES

1. Talapko, J., Škrlec, I., Alebić, T., Jukić, M., & Včev, A. (2019). Malaria: The past and the present. *Microorganisms*, 7(6). <https://doi.org/10.3390/microorganisms7060179>
2. Takada, S., Krezanoski, P. J., Nyakato, V., Bātwa, V., O'Malley, A. J., Perkins, J. M., Tsai, A. C., Bangsberg, D. R., Christakis, N. A., & Nishi, A. (2022). Social network correlates of free and purchased insecticide-treated bed nets in rural Uganda. *Malaria Journal*, 21(1), 1–10. <https://doi.org/10.1186/s12936-022-04347-8>
3. WHO. (2020a). The 2020 edition of the World malaria report. In *American Journal of Medical Genetics*, 73, 1.
4. WHO. (2020b). World malaria report 2020: 20 years of global progress and challenges. Geneva. In *World Health Organization*, 73, 1. <https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2020>
5. Nseroko, G., Kadobera, D., Okethwangu, D., Nguna, J., Rutazaana, D., Kyabayinze, D. J., Opigo, J., & Ario, A. R. (2020). Malaria Outbreak Facilitated by Appearance of Vector-Breeding Sites after Heavy Rainfall and Inadequate Preventive Measures: Nwoya District, Northern Uganda, February-May 2018. *Journal of Environmental and Public Health*, 5802401. <https://doi.org/10.1155/2020/5802401>
6. MOH (2010) Uganda ministry of health: Annual health sector performance report. M.O. Health, Kampala.
7. Hospital, I. A. (2023). Prevalence of Malaria among Pregnant Women Attending Antenatal Clinic at International Digital Organization for Scientific Research Prevalence of Malaria among Pregnant Women Attending Antenatal Clinic at Ishaka Adventist Hospital , Uganda Byabashaija Joh. March.
8. Nabatanzi, M., Ntono, V., Kamulegeya, J., Kwesiga, B., Bulage, L., Lubwama, B., Ario, A. R., & Harris, J. (2022). Malaria outbreak facilitated by increased mosquito breeding sites near houses and cessation of indoor residual spraying, Kole district, Uganda, January-June 2019. *BMC Public Health*, 22(1), 1–9. <https://doi.org/10.1186/s12889-022-14245-y>
9. Krejcie, R.V. and Morgan, D.W. (1970) Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, 30, 607-610.
10. Alonso, S., Chaccour, C. J., Elobolobo, E., Nacima, A., Candrinho, B., Saifodine, A., Saute, F., Robertson, M., & Zulliger, R. (2019). The economic burden of malaria on households and the health system in a high transmission district of Mozambique. *Malaria Journal*, 18(1), 1–10. <https://doi.org/10.1186/s12936-019-2995-4>
11. Yanda P., Wandiga S., Kangalawe R., Opondo M., Olago D., Githeko A., Downs T., Kabumbuli R., Opere, a., Githui, F., Kathuri, J., Olaka, L., Apindi, E., Marshall, M., Ogallo, L., & Mugambi, P Kirumira E, Nanyunja R, Baguma

- T, S. R. and A. P. (2006). Adaptation to Climate Change/Variability-Induced Highland Malaria and Cholera in the Lake Victoria Region. *AIACC Working Paper No. 43*, 43.
12. Arnott, A., Barry, A.E. & Reeder, J.C. (2012). Understanding the population genetics of *Plasmodium vivax* is essential for malaria control and elimination. *Malar., J.*, **11**, 14. <https://doi.org/10.1186/1475-2875-11-14>
 13. Keats, E. C., Kajjura, R. B., Ataullahjan, A., Islam, M., Cheng, B., Somaskandan, A., Charbonneau, K. D., Confreda, E., Jardine, R., Oh, C., Waiswa, P., & Bhutta, Z. A. (2022). Malaria reduction drives childhood stunting decline in Uganda: a mixed-methods country case study. *The American Journal of Clinical Nutrition*, **115**(6), 1559–1568. <https://doi.org/10.1093/ajcn/nqac038>
 14. The Global Fund. (2022). core_malariagenderhumanrights_technicalbrief_en-Equity, Human Rights, Gender. *Technical Brief, December 2022*.
 15. Raghupathi, V., & Raghupathi, W. (2020). The influence of education on health: An empirical assessment of OECD countries for the period 1995-2015. *Archives of Public Health*, **78**(1), 1–18. <https://doi.org/10.1186/s13690-020-00402-5>
 16. Ugwu, O. P., Nwodo, O. F., Joshua, P. E., Odo, C. E., Bawa, A., Ossai, E. C., & Adonu, C. C. (2013). Anti-malaria and hematological analyses of ethanol leaf extract of *Moringa oleifera* on malaria infected mice. *International Journal of Pharmacy and Biological Science*, **3**(1), 360-371.
 17. Ugwu, O. P. C., Nwodo, O. F. C., Joshua, P. E., Odo, C. E., Ossai, E. C., & Aburbakar, B. (2013). Ameliorative effects of ethanol leaf extract of *Moringa oleifera* on the liver and kidney markers of malaria infected mice. *International Journal of Life Sciences Biotechnology and Pharma Research*, **2**(2), 43-52.

CITE AS: Kirungi Richard and Nayebare Julian (2024). Factors Affecting the Prevalence of Malaria among Pregnant Women in Nyabubare Health Centre III- Bushenyi District. IDOSR JOURNAL OF BIOCHEMISTRY, BIOTECHNOLOGY AND ALLIED FIELDS 9(1):46-54
<https://doi.org/10.59298/IDOSR/JBBAF/24/91.4654>