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Abstract
Background: Malaria remains a significant public health problem, particularly in southern countries such as the DRC, although the disease is preventable and curable. Pregnant women are among those most at risk of contracting the disease. However, the importance of these extra-medical factors particularly attitude and their potential impact on pregnant women at risk of contracting malaria in the Democratic Republic of Congo are largely poorly documented.
Objective: The aim of the study, therefore, was to analyze the extra-medical factors related to attitude and malaria prevention among pregnant women.
Method: The study was carried out in the Kirotshe health zone. A sample size of 318 pregnant women were selected for the study. Also, healthcare professionals working in public health facilities in the region were also included in the study. We targeted pregnant women in the area who contracted malaria (cases) and those who did not contract malaria (controls) during pregnancy. We used both retrospective matched case-control study design and correlational design. Data was collected using a survey questionnaire and an interview guide and was analyzed using descriptive and inferential statistical methods.
Results: We found out that the shame of pregnancy (β = -0.225; $p \leq 0.05$) and attitudes towards allopathic medicine (β = 0.373; $p \leq 0.05$) were the most significant attitude factors influencing malaria prevention practices and the likelihood of contracting malaria. Most pregnant women in the area (control 41.8%; case 82.9%; $p \leq 0.05$) reported that pregnancy shame prevented them from seeking and adhering to malaria preventive treatment. Also, the women in the area had negative opinions towards modern medicine (control 49.4%; case 61.3%; $p \leq 0.05$).
Conclusion: The study, therefore, concludes that extra-medical attitudinal factors were significantly related to the risk of contracting malaria among pregnant women in Kirotshe health zone, North Kivu province, DRC.
Recommendation: We recommend that women of reproductive age, especially adolescents should be sensitized by community health workers and other leaders on the need to accept their pregnancy when it occurs. Efforts should also be made to educate pregnant women about malaria prevention and help dispel myths associated with conventional medicine for malaria prevention.

Keywords: Malaria, extra-medical, pregnancy, prevention, attitude

1. Introduction
Malaria remains a significant public health problem, particularly in southern countries such as the DRC, although the disease is preventable and curable. This makes it one of the target areas of the Sustainable Development Goals (SDGs) 3; Target 3.3, which among other things seeks targets to reduce the disease burden and eliminate malaria by 2030 (World Health Organization [WHO], 2024). Pregnant women are among those most at risk of contracting the disease, which can have adverse consequences for mother and child, including cerebral malaria, death, stillbirth, premature birth or delayed birth, intrauterine growth and neonatal mortality (Bauserman *et al.*, 2019; Djabanor, Quansah & Asante, 2017) [6, 12]. Maternal mortality from malaria contributes to neonatal mortality since survival rates of young children after maternal death are lower than those of other children. It is therefore extremely important to reduce, reduce, or eliminate the risk of malaria during pregnancy.
The aggressive global anti-malaria campaigns have considerably paid off. The World Health Organization (WHO) has recommended three types of interventions to prevent malaria and its complications during pregnancy: intermittent preventive treatment (IPT) with

sulfadoxine-pyrimethamine (SP) administered during antenatal visits (ANC), the use of mosquitoes treated nets (ITN) and the early and correct management of cases in pregnant women (Likwela *et al*., 2010) [19]. The subscription to these interventions have led to a significant decline in deaths from malaria worldwide. According to WHO (2022), globally, approximately 2.1 billion cases and 11.7 million deaths were averted between 2000 and 2022. The estimated number of malaria deaths was 608,000 in 2022, down slightly from 610,000 in 2021.

In poor and developing countries like the Democratic Republic of Congo (DRC), however, the malaria disease burden still remains unacceptably high. Globally, 96% of malaria cases and deaths came from 29 of 85 malaria endemic countries (WHO, 2022). WHO (2022) further reported that half of the malaria mortality cases were from Nigeria (31.9%). This was followed by the DRC which accounted for 13.2% of malaria cases, and Tanzania with 4.1% and Mozambique with 3.8% of the malaria and mortality cases respectively. (Piccaluga & Ignatius, 2023) [30]. In the DRC, malaria is the main cause of morbidity and mortality. According to 2019 estimates, 11% of global malaria deaths occurred in the Democratic Republic of Congo (DRC), where the disease accounts for 60% of hospital visits (Lechthaler *et al*., 2019) [18]. Pregnant women and children under five suffer the most from the effects of malaria.

Malaria is mainly localized in tropical regions. The high prevalence of malaria in tropical countries is mainly due to the long lifespan and aggressive human-biting behavior of Anopheles mosquitoes carrying the parasite (Mwema, 2021; Sougoufara, Ottih & Tripet, 2020) [27, 32]. Human factors such as extra-medical factors also influence the high prevalence rates. Malaria, like most other diseases, can therefore be viewed from both a medical and extra-medical perspective, and both are important for developing strategic interventions. Patient care decisions are often governed not only by biomedical factors related to the physiology and psychology of illness, but also by considerations of extra-medical factors associated with behavioral and social dimensions of illness (Mushlin & Appel, 1976) [26]. For example, research indicates that social determinants may have a greater influence on health than access to health care or lifestyle choices. Several studies suggest that other non-medical factors contribute to between 30% and 55% of health outcomes (Brown, Lyson, & Jenkins, 2011; WHO, 2023) [7]. However, the importance of these extra-medical factors particularly attitude and their potential impact on pregnant women at risk of contracting malaria in the Democratic Republic of Congo (DRC) are largely poorly documented.

Household Survey data in the DRC in 2017-2018 shows that just over 51% of children under five and 52% of pregnant women in the DRC reportedly slept under an insecticide-treated mosquito net (ITN) the previous night (UNICEF, 2019). The data also showed progress in the uptake of IPTp among pregnant women where more than 50% received IPTp1 (first dose) and about 30% received IPTp2 (second dose). However, the percentage of women receiving three or more doses of IPTp remained below 15% (PMI, 2022; UNICEF, 2019). However, despite the improvement in the uptake of ITNs and IPTp, pregnant women in the country continue to suffer from malaria, with the incidence increasing day by day. This shows that there is still a problem with pregnant women adhering to malaria prevention services in the DRC.

Attitude refers to the tendency to react in a certain way to certain situations; see and interpret events according to certain predispositions; or to organize opinions into coherent and interdependent structures. Individual attitudes and behavior related to health and disease are major components of clinical encounters. These factors shape lifestyle, presentation of symptoms, access to patient care, interactions between patients and physicians, adherence to medical advice, and response to treatment. Studies show that attitudes of pregnant mothers are significant to prevention practices and treatment (Hall, Griffiths & McKenna, 2011; Launiala & Kulmala, 2006; Mbonye, Bygbjerg & Magnussen, 2008) [13, 17, 23]. However, the attitudes differed with some presenting as barriers and others as enablers. For instance, Wilmet (2020) [19] found that pregnant women perceived themselves and their babies to be particularly susceptible to malaria and, therefore, felt they should be diagnosed and treated by health care providers. In Uganda, Mbonye *et al*. (2006) [22] found that adolescents did not seek medical care due to the stigma associated with pregnancy and attempted to terminate their pregnancies in different ways.

Therefore, the objective of the paper is to examine extra-medical attitudinal infleunce in malaria prevention among pregnant women in the Kirotshe health zone in North Kivu.

2. Materials and Methods

2.1 Study Context and Design

The study was carried out in Kirotshe health zone is located in the Masisi territory, 34 km from the city of Goma, the capital of the North Kivu province in the east of the Democratic Republic of Congo. The study adopted the mixed methods approach involving a retrospective case-control design and correlational design. Mixed methods research is instrumental in gaining a more complete picture than a standalone quantitative or qualitative study, as it integrates the benefits of both methods. Case-control studies, due to their typically retrospective nature, can be used to establish a correlation between exposures and outcomes, that is, they attempt to find correlations between past events and the current state (Dey, Mukherjee & Chakraborty, 2020) [11]. The study only included adult women (≥18 years) in their second or third trimester of their pregnancy from the study area who had already contracted malaria during their pregnancy. These formed the case group while the control group consisted of pregnant women who had not contracted malaria during their pregnancy. The exposed group consisted of women who did not use malaria prevention measures, while the unexposed group consisted of those who used malaria prevention measures such as mosquito nets, medications, etc. available in the region. Pregnant women with other comorbidities (excluding HIV) were excluded from the study as well as those suffering from mental illness. A map of the Kirotshe health zone is shown in Figure 1.

2.2 Determination of sample size

To determine the sample size for the two groups (cases and controls) of the retrospective case-control study, the study used the formula proposed by Charan and Biswas (2013) [8] as follows:

$$n = \frac{r+1}{r}\frac{(P^*)(1-P^*)\left(Z_\beta + Z_{\alpha/2}\right)^2}{(P_1 - P_2)^2}$$

Or;
r = Control/case ratio, 1 for equal number of cases and controls
P* = Average proportion exposed = proportion of cases exposed + proportion of controls exposed/2
Z β = standard normal variable for power = for a power of 80%, it is 0.84 and for a value of 95%, it is 1.96.
Z $_{a/2}$ = standard normal variable for significance level as mentioned in the previous section.
P $_1$ – P $_2$ = Effect size or different proportion expected based on previous studies. P $_1$ is the proportion of cases (taken at 17% based on previous studies) and P $_2$ is the proportion of controls (taken at 30.3% based on previous studies (Deutsch -Feldman *et al.*, 2020).

$$n = \frac{2}{1}\frac{(0.1789)(7.84)}{(0.017689)}$$

$$n = 158.58 = 159$$

Therefore, for the case-control study, the study used a sample size of 159 pregnant women for each group, i.e., case and control groups, bringing the total size of the sample of 318 participants. The study used the matched case approach where age of participants was used as a matching criterion along with exposure to the most prevalent malaria pathogen found in the region in order to reduce bias in comparisons between groups.

2.3 Data collection methods and tools
The study data was collected using a structured survey questionnaire that was administered to pregnant women. Data collection was carried out throughout the Kirotshe health zone across the 31 health areas in our study area. Questionnaires were translated into local languages and French before being administered. The frequency of data collection was done according to the prenatal consultation program as planned in the different health zones of our study area.

2.4 Data analysis method
The study used descriptive and inferential statistical methods for analysis of the data for the study using SPSS 25.0. Descriptive statistics involved the use of frequencies, percentages, means and standard deviations to provide the general trend of the data and also to provide the basis on which inferential statistics were constructed. For inferential statistics, the study used ordinary least square regression to evaluate the relationship between each independent variable construct and the dependent variable and also to determine the joint effect of the attitude constructs on the dependent variable, that is, malaria prevention.

3. Results
3.1 Respondents' Sociodemographic Information
The study first examined respondents' sociodemographic information regarding their length of stay in the health zone, household size, age, pregnancy duration in months, marital status and educational level. The results are summarized in Table 1.

Table 1: Respondents' Sociodemographic Information

Question	Answer	Case	Control	Chi-Sq	p-value
Stay all year round in a health zone	Less than a year	4.4%	3.1%	24.845a	0.000
	A year	3.1%	1.3%		
	Two years	8.8%	30.6%		
	More than two years	83.8%	65%		
Household size	Maximum	10	10	11.249a	0.188
	Minimum	2	2		
	Mean	5.8	5.41		
How old are you?	Maximum	45	45	21.369a	0.769
	Minimum	18	18		
	Mean	30.06	29.35		
How long have you been carrying your	Maximum	9	9	9.984a	0.352
pregnancy? (month)	Minimum	1	2		
	Mean	5.77	5.56		
What is your marital status?	Married	34.4%	39.4%	2.411a	0.661
	Civil union	60%	53.1%		
	Bachelor	1.9%	3.1%		
	Divorce	1.9%	3.1%		
	Widower	1.9%	1.3%		
What is your education level?	No level of studies	50%	33.1%	13.239a	0.004
	Primary	25.6%	43.1%		
	Secondary	22.5%	20.6%		
	Higher or University	1.9%	3.1%		

The results in Table 1 show that the majority of respondents had stayed in the Kirotshe health zone for more than two years, with more case group respondents (83.8%) having resided in the area than control group respondents (65%). On average, households had between 5 and 6 members, and a minimum of two members and a maximum of 10 members. Additionally, most women had been carrying their pregnancies for more than five (5) months. Regarding marital status, most women were in civil unions, with most women in the case group being in a civil union (60%) compared to their counterparts in the control group (average = 53.1%). Furthermore, majority of pregnant women in the

region had no formal education, with case group respondents (50%) having more illiterate women than the control group (33.1%), and the differences in the education attainment between the two groups was significant (p = 0.004 ≤ 0.000).

3.2 Attitudinal factors influencing prevention of malaria among pregnant women in Kirotshe health zone in North Kivu province

The objective of the study was to examine extra-medical attitudinal factors affecting malaria prevention attitudes among pregnant women in Kirotshe health zone in North Kivu province, DRC. The goal was measured in terms of feelings of shame during pregnancy, opinions regarding modern medicine, perception of mosquitoes as causative agents of malaria, and alternative use of bed nets. The results are presented in Table 2.

Table 2: Attitudinal factors and prevention of malaria among pregnant women in Kirotshe

Question	Answer	Case (%)	Control (%)	Chi-Sq	p-value
Do you often feel ashamed when	Yes	65.6	34.4	31.250a	0.000
you are pregnant?	No	34.4	65.6		
If so, does this shame prevent you from adhering to preventive treatment against malaria?	Yes	82.9	41.8	28.294a	0.000
in your health zone?	No	17.1	58.2		
What is your opinion regarding	Not important	61.3	9.4	100.238a	0.000
the use of modern medicine?	Less important	26.9	49.4		
	Important	7.5	15.6		
	Very important	4.4	25.6		
Do you believe that mosquitoes	Yes	11.9	42.5	39.380a	0.000
cause malaria ?	Not sure	11.9	11.3		
	No	76.3	46.3		
Beyond preventing malaria, what is the use of the mosquito net?	Protect plants/ gardens from harmful insects	48.1	26.3	51.331a	0.000
do you have in the community?	Serve as a curtain	6.9	7.5		
	Use as a net to catch fish in a river	29.4	13.8		

The results in Table 2 show that most women in the case group women (65.6%) compared to women in the control group (34.4%) often felt ashamed when they are pregnant (p = 0.000). Pregnancy shame prevented most women in the region from adhering to malaria preventive treatment (control 41.8%; case 82.9%; $p \leq 0.05$). Most women in the region had negative opinions towards modern medicine (control 49.4%; case 61.3%; $p \leq 0.05$). Furthermore, the majority of women in the region believed that mosquitoes were not the causative agents of malaria (control, 46.3%; case 76.3%; $p \leq 0.05$). The results also show that most women in the area alternately used mosquito nets to protect plants/gardens from harmful insects, most women (control 26.3%; case 48.1%; $p \leq 0.05$). Some of the women also used the ITNs for fishing in local rivers (control 13.8%; case 29.4%; $p \leq 0.05$).

3.3 Incidence of malaria among pregnant women in the Kirotshe health zone in North Kivu

The study also examined the incidence of malaria among pregnant women in Kirotshe health zone, North Kivu province, DRC. This was the dependent variable and was measured in terms of the number of times pregnant women contracted malaria during pregnancy, whether they received treatment, whether they found the treatment more effective than their alternatives, whether other members of their household had contracted malaria during their pregnancy and whether there are many cases of malaria in their health zone. The results are presented in Table 3.

Table 3: Malaria incidence among pregnant women in Kirotshe Health Zone

Question	Answer	Case (%)	Control (%)	Chi-Sq	p-value
How many times have you contracted	Once	42.5	75	40.399a	0.000
Malaria while you were pregnant?	Twice	27.5	7.5		
	Thrice	19.4	14.4		
	More than three times	10.6	3.1		
If you contracted malaria, where did you	Health center	40	24.4	35.429a	0.000
Receive treatment?	Pharmacy	28.1	51.3		
	Traditional practitioner	14.4	1.9		
	Prayer room	6.9	5		
	Health post	5	8.8		
	Hospital	5.6	8.8		
Did you find the treatment more effective	Very effective	21.3	16.7	5.694a	0.127
What are the alternatives?	Quite effective	6.9	14.1		
	Not so effective	54.4	44.9		
	Ineffective	17.5	24.4		
Have other members of your household	Yes	76.3	61.3	8.378a	0.004
Received malaria while you were pregnant?	No	23.8	38.8		

In your opinion, are there many cases of	Completely agree	70.6	83.8	16.452a	0.001
Malaria in your health zone?	Somewhat agree	16.3	13.8		
	To disagree	8.1	-		
	Extremely disagree	5	2.5		

The results in Table 3 show that the majority of pregnant women in the region contracted malaria at least once during their pregnancy (control, 75%; case 42.5%; $p \leq 0.05$). Most women in the control group (51.3%) indicated that they had sought malaria treatment at local pharmacies, compared to women in the case group (40%) who indicated that they had sought treatment in health centers in the region ($p = 0.000$). There were also indications that women sought interventions from traditional practitioners in the area when they contracted malaria (control, 1.9%; case 14.4%; $p \leq 0.05$). However, women also reported that they did not find the treatment they received more effective than their alternatives (control, 44.9%; case 54.4%; $p > 0.05$). The majority of women (control, 61.3%; case 76.3%; $p \leq 0.05$), reported that other members of their household had contracted malaria when they were pregnant. Also, the majority of women, case group (70.6%) and control group (83.8%), indicated that there were many cases of malaria in their health zone ($p = 0.001$).

3.3 Regression Analysis

The study used ordinary least square regression analysis to evaluate the relationships between constructs of extra-medical factors linked to attitude and malaria incidence among pregnant women in the Kirotshe health zone in North Kivu, DRC. The findings are summarized in Table 4.

Table 4: Attitudes towards prevention and treatment and malaria contraction

	Unstandardized Coefficients		**Standardized Coefficients**	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.429	0.16		8.916	0.000
Shame of pregnancy preventing treatment	-0.216	0.074	-0.225	-2.939	0.004
Attitudes on use of modern medicine	0.189	0.057	0.373	3.323	0.001
Belief mosquitoes cause malaria	-0.116	0.07	-0.204	-1.664	0.098
Attitudes on mosquito nets use	0.02	0.031	0.056	0.653	0.515
R	.386a		F	6.768	
R Square	0.149		Sig.	.000b	
Adjusted R Square	0.127		df	4,155	
a Dependent Variable: Malaria Contraction					

The results in *Table 4* show that the model with attitude as an extra-medical factors could significantly explain up to 14.9% ($R^2 = 0.149$) of the variations in the malaria incidence among pregnant women in the Kirotshe health Zone and that the model was fitting ($F_o = 6.768 > F_c = 2.43$; $\alpha < 0.05$; $df = 4, 155$; $p < 0.05$). Table 4 shows that shame of pregnancy preventing treatment ($\beta = -0.225$; $p \leq 0.05$) and attitudes on use of modern medicine ($\beta = 0.373$; $p \leq 0.05$) were the only significant constructs predicting malaria contraction among pregnant women in the area. However, belief mosquitoes cause malaria ($\beta = -0.204$; $p > 0.05$) and attitudes on mosquito nets use ($\beta = 0.056$; $p > 0.05$) were not significant. Of these variables, the attitudes on use of modern medicine was the most influential in predicting malaria incidence as per the beta values.

Discussions

The results revealed that most women in the case group women (65.6%) compared to women in the control group (34.4%) in the health zone often felt ashamed when they are pregnant ($p = 0.000$). Pregnancy shame prevented most women in the region from adhering to malaria preventive treatment (control 41.8%; case 82.9%; $p \leq 0.05$). The shame of pregnancy was, therefore, a barrier in seeking malaria treatment among mothers in the area. These results were in agreement with Mbonye *et al*., (2006) [22], whose study in central Uganda highlighted the social vulnerability of teenage pregnancies. Adolescents did not seek medical care due to the stigma associated with pregnancy and attempted to terminate their pregnancies in different ways. Atuyambe *et al*., (2008) [4]. Noted that in central Uganda, it is widely believed that unmarried pregnant girls should not stay in the same house as their parents, and teenage pregnancy brings shame to the family.

Women experiencing violent situations are often unable to make sexual and reproductive health choices and this exposes them to many health risks as observed in the same setting (Kaye *et al*., 2006; Mngadi *et al*.,2003) [15, 24]. According to Khuzaiyah *et al*., (2023) [16], for the majority of adolescents, once they disclosed their pregnancy, they reported experiencing stigmatization, isolation, exclusion and shame from society. In a study it was observed that pregnant women in rural Amhara, Ethiopia were hesitant to disclose pregnancy, most women only seek care when they are sick or experience new discomfort or pain. In addition, women do not usually disclose pregnancy until it is the late second trimester, although there are some women who preferentially disclose their pregnancy statuses only to their husbands and close relatives as early as possible. This led to low utilization of antenatal care services.

Regarding women's opinions on the use of modern medicine, the results indicated that most women in the region had negative opinions towards modern medicine and this was significant across the two groups (control 49.4%; case 61.3%; $p \leq 0.05$). Most women indicated that modern medicines were not important. These results corroborate those of Sumankuuro *et al*., (2020) [31] who found that herbal medicine (HM) intake in pre/pregnancy, labour, and post-delivery was a standard practice in many countries. Majority of women reportedly used HM only during pregnancy whiles the rest evaluated HM uses in labour, pre-pregnancy, and the postpartum periods. Further, majority of women received information about HM from friends, family, the “black markets,” and drug outlets. This could be

an indication of lack of trust of allopathic medicine among the women, and interestingly the local drug outlets. The preference of HM among the pregnant women over Western medicine was also informed on the perceived of lack of trust in the competence of physicians as shown in a Norwegian study by Nordeng and Havnen (2005). Mothupi (2014) [28, 25]. Also found that some women were more concerned about the side effects/contraindications of Western medicine than HM. Astin. (1998) [3], however, found that majority of alternative medicine users appear to be doing so not so much as a result of being dissatisfied with conventional medicine but largely because they find these health care alternatives to be more congruent with their own values, beliefs, and philosophical orientations toward health and life.

Globally, herbal medicine (HM) or complementary and alternative medicine (CAM) or traditional medicine (TM) intake among women ranges from 45 to 80% (Onyiapat *et al*., 2017) [29]. The World Medicines Situation report for 2011 estimated between 70 to 95% of people in low and middle-income countries (LMICs) use HM (Lu *et al*., 2011) [20]. In some developing countries, traditional medicine (TM) is much more available than allopathic medicine. In most low- and middle-income countries, HM users and herbal dealers outnumber allopathic or conventional medicine intake (Yeh *et al*., 2009; Hall, Griffiths & McKenna, 2011; Jo *et al*., 2016) [34, 13, 14]. Moreover, allopathic practitioners are located primarily in cities or other urban areas. So, for many rural populations, HM is the only available source of health care.

According to Matheson (2009) [21], Western medicine is intrinsically tied with modern Western culture, and as such is foreign to many African cultures. As such, concepts of evidence-based medicine as well as individual human or patients' rights contain aspects foreign to some African culture. However, Sumankuuro *et al*., (2020) [31] showed that herbal medicine (HM) intake was a standard practice in many countries across the world including Western countries like the US, Norway, Italy, Canada, the UK and Eastern Europe. Herbal medicine was also used by pregnant women in the Middle East and Far-East. Generally, herbal medicine was used among pregnant women across the world for a variety of reasons which were mostly attitudinal and cultural.

Furthermore, the majority of women in the region believed that mosquitoes were not the causative agents of malaria (control 46.3%; case 76.3%; $p \leq 0.05$). This probably informed the alternative use of the ITNs such as for protecting plants/gardens from harmful insects, most women (control 26.3%; case 48.1%; $p \leq 0.05$), and also for fishing in local rivers (control 13.8%; case 29.4%; $p \leq 0.05$). The inappropriate use of the ITNs stems from the attitudes the women had towards their effectiveness in preventing mosquitoes and, hence, malaria. Adébayo, Akinyemi, and Cadmus (2015) [1] found that the majority of pregnant women had poor attitudes towards ITN use. Most were of the opinion that there was no difference between individuals using or not using ITNs, arguing that "those who get malaria will get it". Studies conducted in Nigeria, Senegal, Uganda and Zambia found that perceptions surrounding ITN "chemicals," seen by some respondents as harmful to pregnant women and unborn children; concerns related to the withdrawal of ITNs and the effects of insecticides on pregnant women and the unborn child (Mbonye *et al*., 2008; Aung, Win & Show, 2022) [23, 5]. The same concerns were observed in Kenya by Chuma *et al*., (2010) who found that concerns have been expressed over the possible implications of ITN use on the fertility of Kenyans. Anto *et al*., (2019) [2]. Also attributed the lag in the ownership and use of ITNs among pregnant women in rural northern Ghana to hot weather, preference for fans, insecticide sprays or coils, saving the netting for later use, or reusing the netting for other uses, such as fencing gardens.

5. Conclusions

The study concludes that extra-medical attitudinal factors such as pregnancy shame, attitudes on allopathic medicine, and attitudes on ITNs were significantly related to the risk of contracting malaria among pregnant women in Kirotshe health zone, North Kivu province, DRC. The shame of pregnancy and attitudes towards allopathic medicine were the most significant attitude factors influencing malaria prevention practices and also the likelihood of contracting malaria. Most women in the region especially the younger ones were often ashamed when they are pregnant, and the shame of pregnancy prevented most women in the region from seeking and adhering to malaria preventive treatment. Furthermore, most women in the region had negative views towards modern medicine, with most women in the case group indicating that modern medicines were not important, while most women in the case group control indicated that modern medicines were less important and that the difference in perception of modern medicine was significant between the two. Furthermore, the majority of women in the region believed that mosquitoes were not the causative agents of malaria, with more women in the case group than women in the control group. The results further show that most women in the area alternately used mosquito nets for non-malaria control reasons. However, belief in the malaria vector and on the alternative use of mosquito nets was not significantly associated with malaria incidence.

6. Recommendations

The study, therefore, recommends that women of reproductive age, especially younger women such as adolescent girls, should be sensitized by community health workers and other leaders on the need to accept their pregnancy when it occurs so that they can benefit from an appropriate pregnancy health care management that will reduce the risk of malaria infection and the consequences for the unborn child. Efforts should also be made to educate pregnant women about malaria prevention and help dispel myths associated with conventional medicine for malaria prevention. Management should also consider identifying and using health champions or role models in the region to encourage pregnant women to adopt recommended malaria prevention practices. Policy initiatives for reproductive health should target younger pregnant mothers and teenage girls to help them approach matters of pregnancy and malaria prevention from an informed perspective.

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Not available

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