ASSOCIOATION BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS AND PATTERNS OF PREVENTION OF MALARIA IN PREGNANT WOMENN, ILISHAN-REMO, OGUN STATE, NIGERIA

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Abstract: Despite being a preventable and treatable infectious disease, malaria during pregnancy continues to be the leading cause of morbidity and mortality in mothers, unborn children, and infants. Due to their increased vulnerability, pregnant women employ various management and prevention strategies to safeguard against potential risks and consequences. However, this study was conducted to determine the socio-demographic and patterns of prevention of malaria in pregnant women in Ilishan-Remo Nigeria, Ogun State.

A cross-sectional survey design was used to determine the objectives of the study, this study also employed a purposive technique to select proportionate 271 consented pregnant women sample of average

440 monthly attendees at ante-natal care (ANC) facilities in four health care levels, Ilishan-Remo. A self-administered questionnaire was used to collect data on socio-demographic, patterns of prevention and management, and factors associated with prevention and management of malaria in pregnancy. And sections on prevention and management patterns were further categorized into conventions. Prior main study, it was pre-tested among 27 pregnant women at ANC facility, PHC Ward-five Iperu-Remo. Administered instrument ensured valid and reliable after data analysis for reliability and Cronbach's alpha coefficient score of 0.78, 0.74, 0.69 as well face and content validity fulfilled. Data collected at ANC facilities based on clinic days from pregnant women. The retrieved data statistically analyzed with SPSS 23 for descriptive and hypothesis tested using chi-square at P-value ≤ 0.005.

Pregnant women age ranged 25 to 40 years, one-third (35.4%) were between ages 31-35years and one-third (38.4%) were trader, 24.4% civil servant and few (6.3%) apprentice. Predominantly Christian (80.8%) and had different educational levels, almost half (49.1%) tertiary education, and 5.5% no formal education. Two-third (64.6%) were Yoruba, and 6.6% minority tribes (Egun, Irobo). Monthly income in levels; 29.2% earned 51000 and above, 25.1% earned least income 11,000-20,000naira. Patterns of prevention and management measures at frequency; always, often and seldom. Slightly more than half (57.9%) seldom slept in the net. Majority (83.8%) seldom used herbs and 16.2% often used herbs as prevention. Above half (52.4%) seldom cleaned drainages. IPT-SP Fansidar used respectively by 37.6% and 19.2% pregnant women often and always, Majority (78.8%) seldom used it under DOT. On categorized pattern of prevention, 54.2% used convention, 39.1% both convention and non-convention and none of the associated factors was statistically significance to prevention. There were significant relationship between ANC facilities (χ^2 =20.291), Beliefs (χ^2 = 16.540) and pattern of prevention at p< 0.005. Nearly one-fifth (19.9%) and 16.6% pregnant women often and always used artemisinim combined therapy (ACT) for management of malaria in pregnancy. Majority (76.8%) seldom used faith homes measures including holy water, soap and oil while predominantly all seldom used herbal mixtures and herbal care of Moringa 99.6% and aleo-vera 95.2% were seldom used for management. On categorized management, 20.7% convention, 15.9% both convention and non-convention measures. Facilities and resources were statistically significant to Pattern of management used (p < 0.005). Conventional patterns of prevention and management used by the majority and influenced by health facilities. There is still a need to encourage pregnant women to the follow standard FMOH/WHO pattern of prevention and management.

Keywords: Patterns of Prevention, Management, Malaria in Pregnancy, Pregnant Women
Word Count: 500

BACKGROUND OF THE STUDY

Despite being a preventable and treatable infectious illness, maternal, fetal, and newborn death and morbidity are still mostly caused by malaria during pregnancy. It appears to be a chronic, age-old sickness of the human race and a widespread condition that affects everyone's health in both industrialized and developing countries.. Globally, an estimated 3.4 billion people are at risk of malaria and 1.2 billion at high risk specifically, pregnant women. Predominantly, malaria constitutes a great burden in the Sub-Saharan Africa region where about 88% malaria cases and 90% deaths occurred, in which Nigeria and the Democratic Republic of Congo accounted for more than 35% (National Multiple Indicator Cluster Survey (NMICS) & Federal Ministry of Health (FMoH), 2015; WHO, 2018 and 2019). Annually, about 50 million pregnancies are at risk of malaria infection, and majority of the pregnant women are in sub-Saharan Africa, particularly Nigeria. In Nigeria, an approximately 70% of pregnant women suffer from malaria disease and 11% died (National Population Commission (NPC), 2008, NMICS, 2015 & Noland et al, 2018).

Malaria is a common notifiable and endemic infectious disease caused by plasmodia (*falciparum, vivax, malariae, ovale and knowles*) species affecting all age groups. Particularly, pregnant women, in-

utero and under-five children are most vulnerable to malaria infection and death due to low level of immunity, affinity to pregnant women hormones and unique taste to maternal blood (WHO, 2016; Rogerson, Duffy, Leke & Taylor, 2015). However, in high malaria transmission area, pregnant women especially the first timer are more susceptible to malaria infection as they are yet to acquire and develop immunity against malaria (Eijk, Hill, Noor, Snow & Kulie, 2015; Galactionova, Smith, Savigny & Penny, 2017). Although malaria in pregnancy may not manifest as febrile illness or/and with other signs and symptoms, thus makes it more common and dangerous in pregnant women. Malaria may interfere with maternal-foetal exchange in the placenta thereby causing low birth weight, still births, abortions, preterm, failure to thrive in infants (WHO, 2016). Whilst in the mother, it causes anemia, miscarriage and subsequently other pregnany-related complications (shock and death) (Bekele, 2016). Despite the several concerted efforts attempted in the past and present towards prevention and management of malaria in pregnancy like the use of insecticide treated net (ITN), indoor residual spray (IRS), chloroquine, intermittent preventive therapy- sulphodoxine pyrethamine (IPT-SP), mono-arthemisinin and arthemisinin combination therapy (ACT) both in the developing and developed world. However, malaria still remain a burden, and concomitantly slowing down the achievement of sustainable development goals and target (Roll back Malaria and SDGs, 2018).

Nevertheless, some interventional strategies, plans and approaches made for high transmission areas including Nigeria are incorporated into the National health strategic plans, policies and programmes. Thus, included; Integrated Malaria Management (Effective Case Management (ECM), Integrated Vector Control (IVC) and personal protection (PP), and Roll Back Malaria (RBM) initiative programme of MDGs four and five through Ante-natal clinic (ANC) and infant welfare services (Roll Back Malaria and WHO, 2015). Recently, the World Health Organization recommended modifiable approach of a three-prong pattern of malaria prevention and management (Malaria control) for pregnant women as uptake of Intermittent Preventive Treatment prophylaxis Sulphadoxine-Pyrimethamine (IPTp-Sp), use of Insecticide Treated Nets (ITNs), prompt diagnosis and case management of malaria illness for endemic regions (WHO, FMOH & RBM, 2015). Specifically, targeting the pregnant women through maternal and child health services and recently extended to entire populace in other to forestall malaria menace and its magnitude (Roll back Malaria, 2018 and WHO, 2018). Simultaneously, pregnant women in endemic areas also use other patterns of prevention and management measures such as mosquito repellants coil, herbs, self-medication, sanitation, indoor residual spraying for prevention of malaria in pregnancy (WHO, 2015). A community based study in Ogun State also revealed that pregnant women used various items to prevent and manage malaria included; insecticide and chemicals spray (70.9%), clean surroundings (24.2%), use of window/door screens (16.2%), ITNs (15.2%), taking home drugs (2.9%), using untreated nets (2.4%), herbs (1.0%), avoiding stress (0.4%) and very few (1.6%) not taking any preventive step against malaria (Adeneye, Jegede & Adeniyi, 2016).

Generally, pregnant women sought, adopt and use various preventive and management patterns of prevention and control against malaria. Nevertheless, some patterns of measures could be beneficial like WHO recommended approach (ITN, IPTp-SP, RDT and ACT), while others could pose risk to pregnancy and its outcomes such as (Herbs/herbal concortion, self-medication (Alessandro et al., 2018). Invariably, pregnant women are persistently influenced by a number of factors such as; socio-economic, traditional and religious beliefs, behavioural, knowledge, family members, attitude and perception on patterns of prevention and management use for malaria. Moreover, a certain factors; socio-economic, ante-natal facility, pregnant women vital records, knowledge, family/social support, environment and attitude have also been documented to be associated with the patterns of prevention and management against malaria in pregnancy (Exavery et al., 2015; Pell et al., 2016). Malaria in pregnancy is a persistent endemic disease that is a major cause of maternal, in-utero, infant morbidity and mortality in Nigeria. Hence, there is need to determine the socio-demographic and patterns of prevention of malaria in pregnant women in Ilishan-Remo Nigeria, Ogun State.

Statement of the problem

The study's findings may aid in explaining the current situation regarding the patterns of usage of malaria prevention and therapy in pregnancy, which will make it extremely important. The availability and acceptability of the WHO/FMOH recommended malaria preventive and control strategy/program for pregnant women in Ilishan-Remo may also aid in identifying factors linked to patterns of prevention and management of malaria in pregnancy. Though is so enormous and worrisome in developing countries as it's rated the persistent leading prevailing illness among all diseases affecting human race especially pregnant women, in utero and under-five (National Bureau of Statistics (NBS) & FMoH, 2016). Recently, the World Malaria Report (2019) showed that in 2018 about 19 countries in sub-Saharan Africa and India accounted for more than 80% of the global malaria burden. More so, about six countries in Africa accounting for more than half of all malaria and death cases globally; Nigeria (25%), Democratic Republic of the Congo (12%), Uganda (5%), Niger, Cote d'Ivoire (5%) and Mozambique (4%) respectively. Of these, Nigeria, Madagascar and Democratic Republic of Congo had the highest estimated increase, greater than half a million cases (WHO, 2018). Thus, placing Nigeria first as country with the highest malaria burden globally.

However, the prevalence varies in the geographical zones and areas of Nigeria ranging from 37% in South East to North West Zone and, even three times higher in the rural to urban communities as 36% to 12% respectively (NMIS, 2015).

Currently, the malaria situation has steadily accounted for more than 65% of all diseases in Nigeria health facilities. Even evidence in Ogun State health indices 2019 data report, that malaria particularly uncomplicated confirmed cases which is peculiar to pregnancy accounted for 80% of all illnesses. Similarly, a study in Oyo State revealed about 42% pregnant women are often diagnosed of malaria and consequently affecting in-utero, infants and under-five (Ogun State Ministry of Health, 2019 & Akanbi, 2009). Malaria kills more than 400,000 people annually in the tropics than any other infectious diseases (Erhun et al, 2015). The incidence rate of malaria declined globally between 2010 and 2017, from 72 to 59 cases per 1000 population at risk due to heavy investment, free mass distribution campaign of patterns of measures of malaria prevention and management (ITN and IPT-SP). Although, it did not still meet the MDGs Roll back Malaria target but was appluadable (WHO, 2018). Recently, malaria incidence rose again as a result of multiple factors; reduced WHO/FMOH recommended measures supply, suspected resistant to some drugs, changes in ITN chemicals, behavioural factors among others (Alessandro et al., 2018). These prevention and management failure might have made pregnant women to use alternative patterns such as local herbs, self-medication, and spiritual means and thus contribute to constant increase of malaria and its outcomes on both the mothers and in-utero. In addition, the unfavorable economy, environmental factor (heat), continuous population increase, migration of health personnel, failing healthcare system and many others could inadvertently affect the malaria prevention and management (Exavery et al., 2015 & Pell et al., 2016).

However, quite a number of studies have also documented good outcome of WHO/FMOH recommended patterns of prevention and management of malaria used by pregnant women in areas where it was strictly adhered too especially urban areas but there is still a gap in patterns of prevention and management of malaria used by pregnant women and WHO recommended patterns which could have contributed to increase in malaria cases during pregnancy. Hence, there is still need to determine the socio-demographic and patterns of prevention of malaria in pregnant women in Ilishan-remo community which will become clear and give direction to which the antenatal education of malaria in pregnancy will take.

Objective of the Study

The general objective of this study is to determine the socio-demographic and patterns of prevention of malaria in pregnant women in Ilishan-Remo Nigeria, Ogun State.

The specific objectives of the study are to:

1.   describe the socio-demographic characteristics of the pregnant women attending selected antenatal care facilities

2.   identify the patterns of malaria prevention among pregnant women attending selected antenatal care facilities

3.   identify the patterns of malaria management among pregnant women attending selected antenatal care facilities.

4.   determine the factors associated with patterns of malaria prevention among pregnant women.

5.   determine the factors associated with patterns of malaria management among pregnant women.

Research Questions

1. What are the socio-demographic characteristics of the pregnant women attending selected antenatal care facilities?

2. What patterns of malaria prevention are used by pregnant women attending selected antenatal care facilities?

3. What patterns of malaria management are used by pregnant women attending selected antenatal care facilities?

4. What are the factors associated with the patterns of malaria prevention use by pregnant women in Ilishan-Remo Community?

5. What are the factors associated with the patterns of malaria management use by pregnant women in Ilishan-Remo Community?

Hypotheses

1. There is no significant relationship between socio-demographic characteristics and patterns of Malaria prevention used by pregnant women.

2. There is no significant relationship between socio-demographic characteristics and patterns of malaria management used by pregnant women.

Significance of the Study

The study's findings may aid in explaining the current situation regarding the patterns of usage of malaria prevention and therapy in pregnancy, which will make it extremely important. The availability and acceptability of the WHO/FMOH recommended malaria preventive and control strategy/program for pregnant women in Ilishan-Remo may also aid in identifying factors linked to patterns of prevention and management of malaria in pregnancy. This may also help to notify various concerns relevant stake-holders on the need to effectively and strategically decide, improve, develop and design an achievable interventional/alternative programme to promote adoption and utilization of appropriate recommended preventive and management patterns for malaria in pregnancy. In other words, to meet the various set targeted goals of Malaria plans/programmes and as well the National Health Policy for pregnant women wellbeing in Nigeria. It may help to serve as a template for adoption and reference for decision makers in other similar settings (endemic and high malaria transmission areas) to appropriately plan a way forward to improve the healthy livelihood of pregnant women, in utero and the family at large safety towards achieving the Sustainable development goal of " Zero malaria free area" (SDGs)   **MATERIALS METHOD**

This study was carried out in Ilishan-Remo community, Ikenne Local Government Area, Ogun State. The community equidistant lies between Lagos and Ondo states of Southwest, Nigeria. The study utilized descriptive survey design to describe the patterns of prevention and management of malaria among pregnant women attending Antenatal clinic in Ilishan- Remo, Ikenne Local Government Area, Ogun State. The target population for the study comprised of the booked pregnant women attending antenatal clinics in the selected facilities in Ilishan-Remo Community, Ogun state. The study was carried out in four selected antenatal care facilities in Ilishan-Remo. Proportionate sampling techniques was used to select the participant.The study utilized a self-developed questionnaire for the patterns of prevention and management of malaria in pregnancy.

Method of Data Analysis

The study data was managed by on-site checking and as well after retrieving the questionnaire from the field, it was sorted, coded, and entered into the spread sheet and analyzed by using SPSS version 23.0 statistical software (SPSS inc USA). Analysis was doen as well presented in a summarized manner for general acceptance likewise to avoid complexities. The variables were analyzed descriptively; percentage and frequency, and bivariate; using chi-square test for hypotheses P-value <0.05 to determine the level of association between independent and dependent variables.

Ethical Consideration

S/N	Socio-demographic	Frequency (n-271)	Percentage (%)
1.	**Age**		
	≤ 25years	43	15.9%
	26- 30 years	78	28.8%
	31- 35 years	96	35.4%
	36 – 40years	37	13.7%
	41years and above	17	6.3%
2.	**Occupation**		
	Civil servant	66	24.4%
	Trader	104	38.4%
	Artisan	59	21.8%
	Apprentice	17	6.3%
	Full house wife	25	9.2%
3.	**Educational level**		
	No formal education	15	5.5%
	Primary	27	10.0%
	Secondary	96	35.4%
	Tertiary	133	49.1%
4.	**Ethnicity**		
	Yoruba	175	64.6%
	Igbo	60	22.1%
	Hausa	18	6.6%
	Others (minority)	18	6.6%
5.	**Religion**		
	Christianity	219	80.8%
	Islam	51	18.8%
	Traditional	1	0.4%
6.	**Income level**		
	≤ 20000	68	25.1%
	21000 – 30000	51	18.8%
	31000 – 40000	39	14.4%
	41000- 50000	34	12.5%
	51000 and above	79	29.2%

Ethical approval was obtained from Babcock University Health Research Ethics Committee (BUHREC).Letter of introduction was given to the Human Resources of Babcock University Teaching Hospital, the Chief Medial Director in-charge of Primary Healthcare Centers in Ikenne Local Government, and the ante-natal care facilities managers. Also, the participants were fully informed about the nature of the study and that their participation will be voluntary. The researcher ensured anonymity, beneficences

and non-maleficence

RESULT

Table 4.1: Socio-demographic characteristics of pregnant women attending ante-natal facilities

The above table 4.1 shows the socio-demographic distribution of pregnant women characters; age, occupation, education etc. One-third (35.4%) of the respondents were between ages 31-35years, 26-30years (28.8%) and pregnant women less than 25years (15.9%). Slightly more than one-third (38.4%) of the pregnant women were trader, 24.4% were civil servant and few (6.3%) were apprentice. Pregnant women had different educational levels, almost half (49.1%) had tertiary education, and others had secondary (35.4%), Primary (10.0%) and no formal education (5.5%) respectively. Pregnant women beliefs varied, majority (80.8%) were Christianity, and very few (0.4%) believed in tradition, equally, two-third (64.6%) of the pregnant women were Yoruba, Igbo (22.1%), Hausa and other minority tribes (Egun, Irobo) were 6.6% respectively. The income of the pregnant women on monthly basis ranged into five levels; slightly above quarter (29.2%) earned 51000 and above naira, 25.1% earned the least income of less than 20,000 naira while less than one-fifth (18.8%) of the pregnant women visiting ante-natal facilities earned 21000-30000, 14.4% earned 31000-40000, and 41000 -50000 (12.5%) respectively.

Table 4.2: Pattern of Malaria Preventive Measures Adopted by Pregnant Women

S/N	Malaria Preventive items	Frequency (n-271)	Percentage (%)	
		Always n (%)	Often n (%)	Seldom n (%)
	Sleeping in ITN	78 (28.8%)	36 (13.3%)	157 (57.9%)
	Using Mosquitoes coil	11 (4.1%)	42 (15.5%)	218 (80.4%)
	Herbs (Pawpaw, dogoyaro and mango bark)	0 (0.0%)	44 (16.2%)	227 (83.8%)
	Using Moringa	0 (0.0%)	1 (0.4%)	270 (99.6%)
	Using Aloe vera plant	0 (0.0%)	13 (4.8%)	258 (95.2%)
	Insecticide Residual Spray	54 (19.9%)	47 (17.3%)	170 (62.7%)
	Draining and cleaning water channels	76 (28.0%)	53 (19.6%)	142 (52.4%)
	Wearing protective clothes	30 (11.1%)	45 (16.6%)	196 (72.3%)
	Burning substances	2 (0.7%)	7 (2.6%)	262 (96.7%)
	Using Faith home measures	28 (10.3%)	45 (16.6%)	198 (73.1%)
	Tidy-up surroundings	83 (30.6%)	90 (33.2%)	98 (36.2%)
	Clearing bushes around	21 (7.7%)	104 (38.4%)	146 (53.9%)
	Closing windows and doors	71 (26.2%)	119 (43.9%)	81 (29.9%)
	Sprinkle kerosene and water	3 (1.1%)	11 (4.1%)	257 (94.8%)
	Windows and doors netting/screening	142 (52.4%)	42 (15.5%)	87 (32.1%)
	Using fan and lighting room	17 (6.3%)	50 (18.5%)	204 (75.3%)
	Buying and using drugs from patent store	23 (8.5%)	82 (30.3%)	166 (61.3%)
	Using IPT- SP Fansidar from ANC	52 (19.2%)	102 (37.6%)	117 (43.2%)
	Using mosquitoes repellant cream/lotion	19 (7.0)	23 (8.5%)	229 (84.5%)
	Avoid stress	33 (12.2%)	53 (19.6%)	185 (68.3%)
	Bathing/shower with ordinary water only	19 (7.0%)	104 (38.4%)	148 (54.6%)
	Taking pregnancy care supplement	4 (1.5%)	114 (42.1%)	153 (56.5%)

Table 4.2 shows the distribution of rate of the various preventive measures adopted by pregnant women attending the ante-natal care facilities for malaria as; always, often and seldom. Slightly more than half (57.9%) seldom slept in the net, about one-third (28.8%) of the pregnant women always slept in the insecticide net, and few (13.3%) often slept in net. Majority (80.4%) seldom prevent malaria with coil and very few (4.1%) pregnant women always used mosquitoes coil. Most (83.8%) of the pregnant women seldom used herbs and 16.2% often used herbs. Slightly above half (62.7%) seldom sprayed indoor residuals (IRS), nearly a quarter (19.9%) of the pregnant women always and (17.3%) and half (52.4%) seldom cleaned drainages, one-third (28.0%) always and 19.6% often drained and clean drainage channels to avoid stagnant water to breeding mosquitoes. Majority (72.3%) of the pregnant women seldom worn protective clothing, and 11.1% always worn protective clothing to protect against malaria. Virtually all (96.7%) of the pregnant women seldom burnt any substance against mosquitoes. Highest percentage (73.1%) of the pregnant women seldom prevent malaria using faith home measures and above one-tenth (16.6%) and 10.3% always used faith measures. About one-third (36.2%), (33.2%) and (30.6%) of the pregnant women seldom, often and always cleaned surroundings respectively and half (53.9%) of the pregnant women seldom cut bushes around. Average (52.4%) number of the pregnant women always net windows and doors, two-fifth (43.9%) often and 26.2% always close windows and doors. Predominantly (94.8%) and (84.5%) of the pregnant women rarely sprinkled kerosene and used repellant as preventive measures. A few (12.2%) pregnant women always and 19.6% often avoid stress and a very few (6.3%) always used fan and lighting room as prevention respectively. Pregnant women used drugs from patent medicine in varied proportion; 61.3% seldom, 30.3% often and always (8.5%). Nearly two-fifth (43.2%) of the pregnant women seldom used IPT-SP Fansidar in this pregnancy, 37.6% often and 19.2% always used for malaria prevention.

Table 4.3: Pattern of Management Adopted among Pregnant Women

Malaria Management Items	Frequency (n-271) Percentage (100%)		
	Always n (%)	Often n (%)	Seldom n (%)
Diagnosed with clinical features(signs and symptoms)	7 (2.6%)	57 (21.0%)	207 (76.4%)
Diagnosed with laboratory microscopic test	13 (4.8%)	38 (14.0%)	220 (81.2%)
Diagnosed by Rapid diagnostic testing (RDT) kit	8 (3.0%)	30 (11.1%)	233 (86.0%)
Rest	27 (10.0%)	122 (45.0%)	122 (45.0%)
Paracetamol with ferrous	18 (6.6%)	122 (45.0%)	131 (48.3%)
Panadol extra only	0 (0.0%)	23 (8.5%)	248 (91.5%)
Sulphadoxine/Pyrimethamine (Fansidar)	3 (1.1%)	6 (2.2%)	262 (96.7%)
Salicyclate (Alabukun) powder	0 (0.0%)	0 (0.0%)	217 (100.0%)
Quinine	10 (3.7%)	45 (16.6%)	216 (79.7%)
Chloroquine	0 (0.0%)	6 (2.2%)	265 (97.8%)
Fansidar (SP)	3 (1.1%)		262 (96.7%)
Arthemisinin Combined Therapy (ACT) e.g Amala	45 (16.6%)	54 (19.9%)	172 (63.5%)
Mixture of herbs with drink(Gin, Alcohol, 7up, fermented cold pap water, hot pap)	0 (0.0%)	0 (0.0%)	271 (100.0%)
Drinking juice from aloe vera	0 (0.0%)	13 (4.8%)	258 (91.5%)
Moringa powder	0 (0.0%)	1 (0.4%)	270 (99.6%)
Taking, Bathing, and rubbing faith-based measures (oil, soap and water)	20 (7.4%)	43 (15.9%)	208 (76.8%)

Bathing or shower with water	19 (7.0%)	104 (38.4%)	148 (54.6%)

The table 4.3 shows the distribution of pattern of management used by pregnant women for malaria in pregnancy. Majority (81.2%) of the pregnant women seldom diagnosed of malaria in pregnancy with clinical features symptoms or signs, few 2.6% always diagnosed by clinical features of malaria. Predominantly, 81.2% and 86.0% of the pregnant women seldom diagnosed of malaria by laboratory microscopic and rapid diagnostic testing kit screening respectively. Many (79.7%) rarely used quinine for malaria and few (16.6%) often and 3.7% always used quinine for malaria treatment in pregnancy. Virtually all (97.8%) rarely took chloroquine for malaria treatment, while nearly half (48.3%) seldom and (45.0%) often took paracetamol with ferrous to managed malaria in pregnancy respectively. Most (91.5%) and (96.7%) rarely used Panadol extra and Fansidar for malaria management in pregnancy while 100.0% seldom used Alabukun powder for management. Nearly one-fifth (19.9%) and (16.6%) of the pregnant women often and always used artemisinim combined therapy (ACT) for management of malaria in pregnancy. Majority (76.8%) of the pregnant women seldom used faith homes measures including holy water, soap and water for malaria management in pregnancy, 15.9% often and 7.4% always used faith measures for malaria management in pregnancy. Predominant number of pregnant women seldom used traditional herbal care; almost all 99.6% and 95.2% seldom used moringa and aleo vera for management.

Table 4.4: Factors Associated with Malaria Prevention among Pregnant Women at ANC

Factors	Frequency (n -271)	Percentage (%)
Information from ANC attendant		
True	239	88.2%
False	32	11.8%
Knowledge of Malaria prevention		
True	191	70.5%
False	80	29.5%
Previous experiences with malaria		
True	157	57.9%
False	114	42.1%
Family recommendation		
True	171	63.1%
False	100	36.9%
Cost of ANC care		
True	259	95.6%
False	12	4.4%
Quality of ANC care services		
True	262	96.7%
False	9	3.3%
Positive attitude of ANC attendant		
True	233	86.0%
False	38	14.0%
Beliefs in Traditional care		
True	134	49.4%
False	137	50.6%

Table 4.4 displays the distribution of factors associated with malaria preventive measures adopted

by pregnant women. Majority (88.2%) of the pregnant women said true that they were influenced by the information heard from the midwives on pattern of prevention adopted for malaria in pregnancy, few (11.8%) claimed they did not based pattern used on midwife's information and two-third (70.5%) said true claiming that they had knowledge of malaria prevention while Slightly above half (57.9%) of the pregnant women said the pattern of malaria prevention used was due to their previous experience with malaria in pregnancy and 42.1% claimed false that none of the experiences of malaria in pregnancy influence act. Many (63.1%) of the pregnant women also claimed true that patterns used were recommended by the family and almost half said false that family did not decide or influence on pattern of prevention used. Predominant number (97.4%) of the pregnant women said true that their preventive measures used depends on their income status, and a similar range (95.6%) also said true that the cost of care determined the pattern of prevention. As well, virtually all (96.7%) said true that quality of care at Ante-natal Clinic facilities determined the patterns to use for prevention. Majority (86.0%) claimed true to positive attitude of ANC attendee predict pattern of prevention and almost half (49.4%) said true that their traditional beliefs influenced the patterns of malaria prevention to adopt and about half (50.6%) counter-reacted that it did not predicted pattern of prevention adopted for malaria

Figure 4. 3: Proportion of pattern of prevention adopted by pregnant women at visited healthcare facilities

The above clustered bar chart displays the proportion of categorized pattern of prevention adopted by pregnant women at across various health facilities attended for ante-natal services.

Table 4.5: Factor associated with the pattern of management adopted at malaria in pregnancy by pregnant women

Associated factors	Frequency (n-271)	Percentage (%)
Previous malaria experience in pregnancy		
True	180	66.4%
False	91	33.6%
Previous pregnancy outcome		
True	186	68.6%
False	85	31.4%
Level of education		
True	173	63.8%
False	98	36.2%
Cost of treatment		
True	217	100.0%
False	0	0.0%
Resources at facility		
True	261	96.3%
False	10	3.7%
Accessibility of services		
True	271	100.0%
False	0	0.0%
Negative attitude of attendance		
True	0	0.0%
False	271	100.0%
Awareness that malaria is dangerous		
True	231	85.2%
False	40	14.8%
Allergy to specific medication		

True	125	46.1%
False	146	53.9%
Severity of malaria cases		
True	200	73.8%
False	71	26.2%

Table 4.4 shows the factors associated with the patterns of management adopted by pregnant women for malaria treatment in pregnancy. Majority (66.4%) of the pregnant women said true that previous experience(s) of malaria in pregnancy would influenced the management measure to seek while one-third of them said it never influenced the pattern of management used and 68.6% of the pregnant women said true that the previous outcome of pregnancy predicted the pattern of malaria management to use in pregnancy. All (100.0%) the pregnant women claimed true that the cost of treatment and negative attitude of care givers determined the pattern of management use for malaria respectively. Almost all (96.3%) of the pregnant women claimed true that the resources at the facility would influenced the pattern of management for malaria. Many (85.2%) of the pregnant women said true that being aware that malaria is dangerous in pregnancy would quicken and influenced the pattern to use for malaria and few said false. Slightly above half (53.9%) pregnant women claimed false that being allergic to medication had no influence whatsoever on the pattern of management to use for malaria and almost half (46.1%) said it did determine the management used for malaria in pregnancy. Majority (73.8%) of the pregnant women said true that the severity of malaria case would predict the pattern of management to use for malaria in pregnancy.

Table 4.6: Factors associated with the patterns of malaria prevention in pregnancy among pregnant women

	Conventional	Non-Conventional	Combination of conventional and non-conventional	P-value	χ^2
Information from the facility attendance				0.643	0.883
True	130 (54.4%)	17(3.1%)	92 (38.5%)		
False	17(53.1%)	1 (3.1%)	14 (43.8%)		
Knowledge of prevention				0.437	1.655
True	101 (52.9%)	15 (7.9%)	75 (39.3%)		
False	46 (57.5%)	3 (3.8%)	31 (38.8%)		
Previous experiences				0.608	0.738
True	84 (53.5%)	6 (5.3%)	61 (38.9%)		
False	63 (55.3%)	12 (7.6%)	45 (39.5%)		
Family recommendation				0.887	0.239
True	91(56.0%)	12(7.0%)	68(39.8%)		
False	56 (53.2%)	6 (6.0%)	38 (38.0%)		
Family income				0.536	1.246
True	144 (54.5%)	18(6.8%)	102 (38.6%)		
False	3 (42.9%)	0(0.0%)	4 (57.1%)		
Cost of ANC care service				0.943	0.117
True	141 (54.4%)	17 (6.6%)	101 (39.0%)		
False	6 (50.0%)	1 (8.3%)	5 (41.7%)		
Quality of care render				0.709	0.689

True	142 (54.2%)	18 (6.9%)	102 (38.9%)		
False	5 (55.6%)	0 (0.0%)	4 (44.4%)		
Positive Attitude of Attendants				1.180	0.554
True	126 (54.1%)	17 (7.3%)	90 (38.6%)		
False	21 (55.3%)	1 (2.6%)	16 (42.1%)		
Traditional beliefs				0.916	0.175
True	71 (53.0%)	9 (6.7%)	54 (40.3%)		
False	76 (55.5%)	9 (6.6%)	52 (38.0%)		

Table 4.7: Factors associated with the patterns of management of malaria in pregnancy adopted by pregnant women

Associated factors	Nil Management	Conventional	Non-conventional	Combination of conventional and non-conventional	P-Value	χ^2
	n (%)	n (%)	n (%)	n (%)		
Previous malaria experience					0.012	10.913
True	100 (55.6%)	45 (25.0%)	2 (1.1%)	33 (18.3%)		
False	69 (75.8%)	11 (12.1%)	1 (1.1%)	10 (11.0%)		
Previous pregnancy outcome experience					0.593	1.904
True	111 (59.7%)	41 (22.0%)	2 (1.1%)	32 (17.2%)		
False	58 (68.2%)	15 (17.6%)	1 (1.2%)	11 (12.9%)		
Educational status					0.326	3.461
True	103 (59.5%)	40 (23.1%)	1 (0.6%)	29 (16.8%)		
False	66 (67.3%)	16 (16.3%)	2 (2.0%)	14 (14.3%)		
Resources at facility					0.040	8.312
True	162 (62.1%)	55 (21.1%)	2 (0.8%)	42 (16.1%)		
False	7 (70.0%)	1 (10.0%)	1 (10.0%)	1 (10.0%)		
Allergy to medication					0.072	7.001
True	68 (54.4%)	33 (26.4%)	2 (1.6%)	22 (17.6%)		
False	101 (69.2%)	23 (15.8%)	1 (0.7%)	21 (14.4%)		
Aware of malaria danger in pregnancy					0.312	3.570
True	30 (75.0%)	5 (12.5%)	3 (1.3%)	5 (12.5%)		
False	139 (60.2%)	51 (22.1%)	0 (0.0%)	38 (16.5%)		

Severity of malaria condition					0.082	6.692
True	116 (74.6%)	10 (14.1%)	0 (0.0%)	8 (11.3%)		
False	53 (58.0%)	46 (23.0%)	3 (1.5%)	35 (17.5%)		

Table 4.8: The relationship between the socio-demographic and patterns of Prevention of Malaria in Pregnancy

S/N	Socio-demographic variables	Conventional n (%)	Non-conventional n (%)	Combination of conventional and non-conventional n (%)	P-Value	χ^2
	ANC facilities				0.002	20.291
	BUTH	60 (48.4%)	11 (8.9%)	53 (42.7%)		
	Community Hospital	25 (41.0%)	1 (1.6%)	35 (57.4%)		
	PHC 1	29 (59.2%)	3 (6.1%)	17 (34.7%)		
	PHC 2	29 (78.4%)	1 (2.7%)	7 (18.9%)		
	Age					
	≤ 25years	27 (62.8%)	3 (7.0%)	13 (30.2%)	0.592	6.491
	26- 30 years	40 (51.3%)	5 (6.4%)	33 (42.3%)		
	31- 35 years	47 (49.0%)	4 (4.1%)	45 (46.9%)		
	36 – 40years	19 (51.4%)	4 (10.8%)	14 (37.8%)		
	≥41years	10 (58.8%)	0 (0.0%)	7 (41.2%)		
	Occupation				0.117	12.846
	Civil servant	27 (40.9%)	4 (6.1%)	35 (53.0%)		
	Trader	59 (56.7%)	5 (4.8%)	40 (38.5%)		
	Artisan	30 (50.8%)	7 (11.9%)	22 (37.3%)		
	Apprentice	12 (70.6%)	0 (0.0%)	5 (23.5%)		
	Full house wife	15 (60.0%)	0 (0.0%)	10 (40.0%)		
	Educational level				0.659	4.132
	No formal education	11 (73.3%)	0 (0.0%)	4 (26.7%)		
	Primary	14 (51.9%)	2 (7.4%)	11 (40.7%)		
	Secondary	53 (55.2%)	6 (6.2%)	37 (38.5%)		
	Tertiary	65 (48.9%)	8 (6.0%)	60 (45.1%)		
	Ethnicity				0.344	6.755
	Yoruba	94 (52.5%)	12 (6.7%)	73 (40.8%)		
	Igbo	32 (47.8%)	2 (3.0%)	33 (49.3%)		
	Hausa	14 (70.0%)	2 (10.0%)	4 (20.0%)		
	Others(minority)	3 (60.0%)	0 (0.0%)	2 (40.0%)		
	Religion				0.002	16.540
	Christianity	114 (52.1%)	13 (5.9%)	92 (42.0%)		
	Islam	29 (56.9%)	2 (3.9%)	20 (39.2%)		
	Traditional	0 (0.0)	1 (100.0%)	0 (0.0%)		
	Income level				0.921	3.201

≤ 20000	38 (55.9%)	5 (7.4%)	25 (36.8%)
21000-30000	28 (54.9%)	1 (2.0%)	22 (43.1%)
31000-40000	20 (51.3%)	3 (7.7%)	16 (41.0%)
41000-50000	19 (55.9%)	2 (5.9%)	13 (38.2%)
≥51000	38 (48.1%)	5 (6.3%)	36 (45.6%)

The above table 4 displays the relationship between socio-demographic variable and pattern of malaria prevention adopted by pregnant women. Few of the socio-economic variables are related to pattern of malaria prevention particularly, there was significant relationship between the Ante-natal facilities attended and pattern of malaria prevention adopted. In which majority of the pregnant women attending ante-natal clinic at Babcock University Teaching Hospital (48.4%), Primary health care I (59.2%) and II (78.2%) adopted conventional pattern of prevention methods to non-conventional and combined patterns of conventional and non-convention methods (χ^2=20.291, p =0.002). As well, there was a significant relationship between the pregnant women beliefs and pattern of malaria prevention adopted, in which majority of the pregnant women who were either Christianity or/and Islam beliefs adopted conventional pattern of malaria prevention to other patterns and women who were not either Christian or Islam beliefs adopted non-conventional patterns only over conventional and to combine conventional and non-conventional patterns. However, other socio-demographic variables as pregnant women's age, education, socio-economic status, and occupation were not significantly related to any of the pattern of malaria prevention measures adopted (P> 0.005).

Table 4.9: The relationship between the socio-demographic and patterns of management

S/N	Socio-demographic Variables	Nil management n (%)	Conventional n (%)	Non-conventional n (%)	Combination of conventional and non-conventional n (%)	P-Value	χ^2
	ANC facilities					0.019	19.817
	BUTH	59 (47.9%)	45 (36.3%)	1 (0.8%)	19 (15.3%)		
	Community Hospital	25 (41.0%)	23 (37.7%)	2 (93.3%)	11 (18.0%)		
	PHC 1	14 (28.6%)	20 (40.8%)	0(0.0%)	15 (30.6%)		
	PHC 2	25 (67.6%)	9 (24.3%)	0 (0.0%)	3 (8.1%)		
	Age					0.731	8.672
	≤ 25years	22 (51.2%)	14(32.6%)	0(0.0%)	7 (16.3%)		
	26- 30 years	35(44.9%)	30(38.5%)	1(1.3%)	12 (15.4%)		
	31- 35 years	39 (40.6%)	38 (39.6%)	2(2.1%)	17(17.7%)		
	36 – 40years	19 (51.4%)	12 (32.4%)	0 (0.0%)	6(16.2%)		
	≥41years	8 (47.1%)	3 (17.6%)	0 (0.0%)	6 (35.3%)		
	Occupation					0.325	13.631
	Civil servant	24 (36.4%)	24 (36.4%)	2 (3.0%)	16 (24.2%)		
	Trader	50 (48.1%)	41 (39.4%)	0 (0.0%)	13 (12.5%)		
	Artisan	26 (44.1%)	18 (30.5%)	1(1.7%)	14 (23.7%)		
	Apprentice	11 (64.7%)	5 (29.4%)	0 (0.0%)	1 (5.9%)		
	Full house wife	12 (48.0%)	9 (36.0%)	0 (0.0%)	4 (16.0%)		
	Educational level					0.515	8.193
	No formal education	8 (53.3%)	6 (40.0%)	0 (0.0%)	1 (6.7%)		

Primary	16 (59.3%)	9 (33.3%)	0 (0.0%)	2 (7.4%)		
Secondary	44 (45.8%)	29 (30.2%)	1 (1.0%)	22 (22.9%)		
Tertiary	55 (41.4%)	53 (39.8%)	2 (1.5%)	23 (17.3%)		
Ethnicity					0.991	2.005
Yoruba	82 (45.8%)	65 (36.3%)	2 (1.1%)	30 (16.8%)		
Igbo	29 (43.3%)	25 (37.3%)	1 (1.5%)	12 917.9%)		
Hausa	10 (50.0%)	5 (25.0%)	0 (0.0%)	5 (25.0%)		
Others(minority)	2 (40.0%)	2 (40.0%)	0 (0.0%)	1 (20.0%)		
Religion					0.630	4.343
Christianity	94 (42.9%)	83 (37.9%)	2 (0.9%)	40 (18.3%)		
Islam	28 (54.9%)	14 (27.5%)	1 (2.0%)	8 (15.7%)		
Traditional	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)		
Income level					0.237	15.087
≤ 20000	34 (50.0%)	23 (33.8%)	0 (0.0%)	11 (16.2%)		
21000-30000	24 (47.1%)	20 (39.2%)	1 (2.0%)	6 (11.8%)		
31000-40000	16 (41.0%)	12 (30.8%)	0 (0.0%)	6 (11.8%)		
41000-50000	16 (47.1%)	10 (29.4%)	2 (5.9%)	6 (17.6%)		
≥51000	33 (41.8%)	32 (40.5%)	0 (0.0%)	14 (17.7%)		

The above table shows that there was significant relationship between the health facility visited for malaria treatment and pattern of management used by pregnant women, as majority of the pregnant women visited Babcock University teaching Hospital, Primary health care I and II respectively adopted the conventional pattern to other patterns while women visited community health facility adopted more of non-conventional to conventional. The remaining socio-demographic variables such as age, education, occupation ethnics, religion and socio-economic had no significant relationship to pattern of malaria management adopted at p >0.005. Similarly, highest proportion of the pregnant women did not use any pattern of management at all as either no malaria cases in pregnancy to treat or decided not to use any of the management patterns.   **SUMMARY, CONCLUSION AND RECOMMENDATION**

SUMMARY

The study identified patterns of malaria prevention and management measures distribution among pregnant women. However, the various measures of malaria preventions adopted revealed in this present study is mostly peculiar to various measures commonly used against malaria generally by pregnant women both in the rural and urban areas, thus affirms to many studies including Adeneye, Jegede and Adeniyi, (2016); Adebayo, Akinyemi and Cadmus, (2015); Fakeye, Adisa and Musa, (2009) Khadivzadeh & Ghabel, (2012); Okafor et al., (2019); FMOH, (2015); Sam-wobo et al., (2017), Idowu et al., (2014), Efunshile et al., (2014) conducted within Nigeria context, identified measures like ITN, IPTp-SP, IRS, herbs, spiritual measures adopted by pregnant women as well it also correspond to studies conducted on malaria prevention among pregnant women outside Nigeria as documented in WHO, 2013; Khadivzadeh & Ghabel, 2012; Erhun et al., 2015, Nyeko, Tumewesigye and Halage, (2016). Although, the measures adopted is rooted in different settings peculiarities as the Steketee and Campbel, (2018) affirmed that different culture and areas used malaria prevention practices in their settings. Furthermore, in this study different preventive measures adopted are used in different rates of pattern which is also similar to Pell et al, 2016; Steketee and Campbel, (2018) reports that several patterns of prevention are notable and peculiar differently among women. In this present study findings, the proportion of specific measure for malaria prevention varied; randomly, the insecticide treated net (ITN) proportion was slightly high among those that seldom used it which is similar to the findings of some studies conducted in Ogun State particularly studies of Adeneye et al., 2013 at rural areas of Ijebu-igbo, and Adeniran, et al., (2015) at Imeko-afon and Odeda Local government areas, Ahmed, Akinboboye, Ilesanmi, & Oguntuase, (2017) and in all reflected the NDHS, 2018 and MICS, 2017 reports that less than average number of pregnant women in

the last one year slept under ITN. Thus, this might contribute to the reason while malaria cases still very common among pregnant women and also indicating the highest toll of malaria cases and deaths in pregnancy in Nigeria and probably other Africa countries. Equally, others measures like indoor residual spray (IRS) adoption contradicts the findings of Efunshile et al, (2011), buying drugs from patent medicine store were also a little above average among those that seldom adopted and Invariably contradicts the WHO, 2015 reports and others like Mashin- Bello, 2015 and mosquito coil, and repellant cream/lotion were very very rarely used as converse to the findings of Okafor et al., (2019) in Lagos metropolitan study and Sabin et al., 2018 in India though Efunshile et al, (2011) also corroborates the present study findings by acknowledging the fact that is used by women could be likely due to awareness of its consequence effects. Whilst, a little more than average proportion of the pregnant women used intermittent prophylaxis treatment (IPT) both always and often to seldom, which measured up and equivalent with the findings of Mbu et al., (2015) and Pell et al, (2016) but contrary to the findings of Akaba et al., (2015) and reports in the national data (NMICS, 2017 & NDHS, 2018). Thus, this could be linked to the presence of the functioning public and private health facilities particularly their numbers and levels as well sophisticated ones in the area. Although, the IPT-SP used in this area did not conform to the WHO standard guideline pattern of using like DOTs and others, particularly DOTs as about two-third pregnant women rarely used it as recommended which is similar to findings of Akaba et al., (2015) and Efunshile, et al., (2016) in Nigeria, and as well outside Nigeria Mbu et al., (2015) and Pell et al., (2016) in Africa. Other behavioural practices as measures of prevention against malaria in this study like netting or screening of windows and doors also closing of these objects, cleaning of surroundings were very high among always and often rating which is in line with the findings of Adebayo, Akinyemi, & Cadmus, (2015); Idowu et al, (2014); Sam-wobo et al., (2017) and Yaya et al., (2017) though contrary to Adeneye et al., (2015) in Ogun State, however the attributes of this acts might be the impact of health facilities, educational status, and as well development in the area. The practices like burning substances, sprinkle kerosene, wearing protective thick clothing, lighting house and fan were rarely done in more than two-third pregnant women as perhaps this may be due its adverse and consequential effects. Nevertheless, sum of always and often proportions of pregnant women equate to two-fifth resorts to spiritual measures and herbs in the area though is inconsequential but corroborates studies finding of Erhun et al. (2015); Efunshile et al, (2011) and (Deresea & Ali, 2016). And it might be linked to their beliefs particularly, churches and probably influences of their tradition as also stated in Negard et al., (2015) and Erhun et al. (2015) works. This present study finds a significant statistical relationship between few socio-demographic factors as beliefs (religion), ANC and patterns of prevention, thus contrary to Ezebunwa & Nwakocha, (2014) in Ondo State.

The present study identified various measures for management of malaria to treat and promote wellbeing of the pregnant women which is in line with Khadivzadeh & Ghabel, (2012) and Steketee & Campbel, (2018). However, the patterns of measures adopted for malaria in pregnancy different among pregnant women, in general, majority of them seldom managed malaria in this pregnancy. This may be as result of not having malaria or no obvious and threaten clinically symptoms or signs, not screened and/or diagnosed of malaria which is contrary to the findings of (Chukwuocha et al., 2010 & Adindu, 2010). Nevertheless, few pregnant women less than five-percent probably had malaria were always or often diagnosed either clinically, or laboratory or RDT for malaria in this pregnancy which corroborates findings in Chukwuocha et al., (2010); WHO, (2010); Pell et al., (2016) and Ashley & White, (2016) studies Tagbor,Cairns & Bogang, (2015). The malaria measures of quinine was identified amongst same proportion of pregnant women as always taking for management and simultaneous 10% claimed they often used it which is in line with . Chloroquine was identified to have taken often by very minute pregnant women despite is a banned drug, and corroborates WHO, (2015) and Pell et al., (2016) reports. Which means some practitioners still manage with this. And the sum of proportion of often and always amounting to like half of the sample size claimed that multivitamins (ferrous) plus analgesic (paracetamol) as well

rest, and followed by shower/bathing ordinary water were adopted most converses to the findings of Ejidokun, (2016) in the Nigeria study. The measure of Arthemisinim Combined Therapy (ACT) was taken always or often by more than 10% pregnant women for malaria in pregnancy which commensurate the standard protocol of WHO recommendation (FMOH, 2005 & 2014 and WHO, 2012 & 2015). However, to some extent some of the measures identified and adopted in this study correspond to the WHO measures for management of malaria in pregnancy as well the standard pattern of malaria management in the pregnancy, though this study did not specify the stages of the pattern guidelines of WHO. This could be as a result of less probing and study scope limitation. Though aligning to the protocol guideline could be attributed to the presence of health facilities, health personnel in the area and pregnant women exposure. The measures of panadol extra, Sulphadoxine pyrimethamine (SP) and getting medication from patent medicine store were rarely adopted by the majority but very few often adopted them for management and is synonymous to Ahorlu, Koram & Weiss (2017) result findings. Nonetheless, other measures for malaria management; traditional herbs juice, powder and mixture of herbs, as well spiritual measures such as oil, water and soap etc. were solidified in their beliefs and often adopted by the very few and the rest measures were neither always or often used but totally rarely used which assume and confirms to the findings of Deresea & Ali, (2016) Pell, Mbachu, and Sabin, (2016). However, in the categorization of the measures to pattern adopted based on what was set as standard and generally taught at health facilities as conventional and non-conventional, then the result of this study is in line to Sabin et al., (2018) study in eastern rural areas of India . Invariably, this adoption of care could be own to facilities of care, and development in the area.

In general, studies had determined some factors to be associated with the patterns of malaria prevention for malaria in pregnancy among pregnant women such as information form attendance, knowledge of malaria prevention, previous experiences, recommendation, cost and quality of care, and belief, which were found true in this present study by majority of the pregnant women except for belief in traditional care which average. However, some recent studies by Maegan et al., (2010) and Ezebunwa & Nwakocha, (2014) conducted both in rural and urban ends conform to the present study findings results, though none of the factors is significantly associated with the patterns of prevention thus contrary to the studies of Okafor, Oluwole, Onigbogi, & Ezekude, (2019). Similarly, some factors too were also found to be associated with the patterns of management of malaria in pregnancy adopted as experience, resources, severity, allergy, pregnancy outcome which majority of them also agreed to and is quite similar to findings. Notwithstanding, some of these factors were also notably included ANC facility to be statistically significantly associated with the patterns adopted for management in this present study and thus, converse to the findings of Goshu and Ayitayew, (2019) and Rumisha, et al., (2014) that reported educational status and knowledge of malaria preventive measures respectively.

Conclusion

Pregnant women typically adopted various patterns of malaria prevention and management by using a variety of measures at varying rates, including herbs, mosquito coils, mosquito repellants, spiritual homes water, oil, soap as well as attending prayers, Fansidar, purchasing medicine from patent stores, insecticides spray, and some also engage in behavioral action of sanitation, sleeping in the net, though a higher proportion of them rarely adopted most of the methods except for cleaning, closing of window screen and doors as well IPT were slightly above average in the current study meaning that pregnant women are much expose and knowledgeable about appropriate and even conventional preventives approach to keep off , healthy and lead a productive living in this area though the ANC facilities and beliefs significantly influence the pattern of measure practices for prevention of malaria in pregnancy and as well health facility and resources at facilities thus also determine the pattern of management adopted by pregnant women if diagnosed of malaria in pregnancy.

Recommendation

Based on the findings from this study, the researcher recommended that

1.   For adequate care, such as the prevention and treatment of malaria in pregnancy, midwives must urge pregnant women to register and visit antenatal care facilities at all planned intervals.

2.   To protect themselves and their unborn children from malaria, pregnant women should learn about efficient malaria prevention and management techniques..

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