

STATISTICAL ANALYSIS OF MALARIA PREVALENCE AMONG
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ABSTRACT

RESEARCH ARTICLE

Malaria being a serious infectious disease has been a public health challenge in Nigeria, despite decades of effort to eliminate or control it, malaria has continue to thrive in the country accounting for mortality. This has in decades subjected pregnant women to the risk of anemia, low birth weight, premature delivery and perinatal mortality hence the need for this research 'Statistical Analysis of Malaria Prevalence among Pregnant Women in Akwa Ibom' to statistically analyze prevalence of malaria among pregnant women in Akwa Ibom State and assess the causes with preventive practice (use of ITN). The study adopted Experimental Research Design to obtain blood specimen of 300 pregnant women in the clinical Laboratory for test. The collected data were analyzed descriptively. Furthermore chi square test was performed to check relationship between social demographic factor such as Educational Level and the prevalence/cases of Malaria also to check the relationship between the use of ITN and the cases of Malaria. The Experimental Results on severity of Malaria revealed Malaria one plus (+) at mire stage is of 30% cases with the mean of 1.2 which is slightly lower to the mean of Malaria two plus (+ +) at more severe stage with mean of 1.3 and 32% of cases. It also revealed the mean of the most severe stage of Malaria (+ + +) to be 0.3 with 7% of cases, this implies out of every 30 pregnant women tested of Malaria at least two (2) cases will be very severe with Malaria three plus (+ + +). While the non significant cases are 31% with 1.2 mean. The analysis also revealed that the prevalence/cases of Malaria among pregnant women is dominant with mean of 1.4 and percentage of 69%, making more than 6 pregnant women out of every 10 pregnant women are found to be living with malaria where 92 pregnant women accounting for 31% are without malaria. Also, the analysis revealed a decrease in the cases of Malaria with higher educational level attained. It also revealed that approximately more than 98% of pregnant women are aware of Malaria among the analyzed samples less than 1.4% indicated not aware. Hence it can be concluded that up to 99 pregnant women out of 100 pregnant women in Akwa Ibom State are aware of Malaria. It also revealed that Mosquito causes more than half of the Malaria cases among Pregnant women in Akwa Ibom State. Malaria cases increased from regular uses of ITN of 38% to 92% non-users of ITN, the difference is 54% increment. Also, the line graph of the non cases of Malaria with usage of ITN showed decrement with non usage of ITN. Hence it can be concluded that the use of ITN is a good measure to reduce the prevalence/cases of Malaria and to increase the non prevalence/cases each by 54% among pregnant women in Akwa Ibom. The hypothesis, $p = 0.0012 < 0.05$ with χ^2 -value of 10.56 revealed statistically significant association between social Demographic factor and cases of Malaria among pregnant women, therefore we reject H_0 . Also since $p = 0.0027 < 0.05$ with χ^2 -value of 9.03 revealed statistically significant association between the use of ITN and malaria infection/cases among pregnant women in Akwa Ibom State, hence we reject H_0 . Women who used ITNs were significantly less likely to contract malaria.

KEYWORDS: Malaria, Pregnant women, Insecticide-Treated Nets (ITNs), Mosquitos, Prevalence

1.1 Background of the Study

Malaria is a disease spread by mosquito, in which a protozoan, plasmodium multiplies in blood every few days if not treated, this disease has become a global challenge and a leading cause of sickness and fatality in Africa especially among pregnant women and children under five years of age. Globally over 247 million malaria cases and approximately 619,000 deaths were recorded from Malaria cases. Nigeria recorded about 27% of the global Malaria records WHO (2023)

Pregnancy significantly increases the risk of being infected with malaria due to immunological and hormonal changes that reduce the woman's resistance to malaria parasites, especially Plasmodium falciparum (Desai et al., 2007). Malaria infection during pregnancy is associated with several adverse outcomes including maternal anemia, low birth weight, miscarriage, preterm delivery, stillbirth, and even maternal death (WHO, 2023). The National Malaria Elimination Programme (NMEP, 2022) has emphasized the need to monitor and reduce malaria among pregnant women, who are categorized as a high-risk group.

In Nigeria, malaria transmission has been stable and perennial, with its seasonal peaks always during the rainy season. Akwa Ibom State, located in the coastal southern region, experiences year-round malaria transmission due to its tropical climate, heavy rainfall, swampy environment, and poor drainage systems. The local government areas in the state—particularly rural and semi-urban communities report persistent malaria cases among pregnant women despite efforts by government and development partners to scale up preventive interventions such as Insecticide-Treated Nets (ITNs) and intermittent preventive treatment in pregnancy (IPTP) (Okon & Etim, 2021).

Malaria being a serious infectious disease has been a public health challenge in Nigeria, despite decades of effort to eliminate or control it, malaria has continue to thrive in the country accounting for mortality (WHO, 2023). In the midst of Malaria thriving in Nigeria pregnancy makes women more susceptible to Malaria because of immunological change and attractiveness to mosquito bites. This has in decades subjected pregnant women to the risk of anemia, low birth weight, premature delivery and perinatal mortality hence the need for this research 'Statistical Analysis of Malaria Prevalence among Pregnant Women in Akwa Ibom' to statistically analyze prevalence of malaria among pregnant women in Akwa Ibom State and assess the causes with preventive practice (use of ITN)

Akwa Ibom, one of the Southern State in Nigeria, due to its climate and geographical characteristics of high rain fall, swampy terrain and warm temperature the region has been an ideal breeding condition for the female Mosquitos (Anopheles). Despite the distribution of insecticide treated net ITN as preventive measure to curb the situation within the state, the disease remains a burden among pregnant women in the state, hence this research focuses on pregnant women within the Akwa Ibom state also to analyze the use of ITN as preventive measure and how it relates with the prevalence of Malaria among pregnant women within the State.

Area of the Study

The study was conducted in Akwa Ibom State, located in the South-South region of Nigeria. The state is highly endemic for malaria due to its tropical climate and swampy terrain. Major public hospitals and antenatal clinics in seven different LGAs Uyo, Ikot Ekpene, Oron, Eket, and Abak. EssienUdim and Ikono were randomly selected for data collection to represent both urban and rural populations.

Literature Review

Theoretical Framework

This study is anchored on two major theories relevant to public health behavior and disease prevention:

1. Health Belief Model (HBM)

The Health Belief Model, developed in the 1950s by social psychologists Hochbaum, Rosenstock, and Kegels, is one of the most widely used frameworks for explaining health behaviors. The model posits that a person's likelihood of taking a health-related action (such as using insecticide-treated nets or attending antenatal care) depends on their perception of the following:

Perceived Susceptibility: Pregnant women's beliefs about their risk of contracting malaria.

Perceived Severity: Their understanding of the dangers malaria poses to themselves and their unborn babies.

Perceived Benefits: The expected benefits of taking preventive action (e.g., using ITNs or taking IPTP).

Perceived Barriers: The obstacles to taking these actions (e.g., cost, side effects, cultural beliefs).

Cues to Action: Factors that prompt action (e.g., advice from health workers, media campaigns).

Self-Efficacy: Confidence in their ability to take the recommended health action.

Relevance to this study: HBM helps explain why some pregnant women adopt malaria prevention behaviors while others do not. It suggests that increasing knowledge and reducing perceived barriers can enhance adoption of malaria control strategies.

2. Social Determinants of Health (SDH) Theory

The Social Determinants of Health (SDH) theory, as emphasized by the World Health Organization (WHO), posits that health outcomes are largely shaped by the conditions in which people are born, grow, live, work, and age. These include:

Socioeconomic status (income, education)

Access to healthcare services

Living conditions and environmental factors

Social support and community infrastructure

Relevance to this study: SDH theory explains how social and economic disparities in Akwa Ibom influence malaria vulnerability. For instance, women with low education or income may lack access to mosquito nets or antenatal services, increasing their risk of infection.

Integrative Application in the Study

Together, these theories guide the identification of both individual-level behavioral factors (through HBM) and contextual or structural barriers (through SDH). By combining insights from both theories, this study is better positioned to examine the complex interactions influencing malaria prevalence.

Conceptual Review

1. Malaria: Concept and Epidemiology

Malaria is an infectious parasitic disease caused by Plasmodium parasites transmitted through the bites of infected female Anopheles mosquitoes. Conceptually, malaria is understood not just as a biomedical illness but also as a public health challenge with social, economic, and environmental determinants. According to the World Health Organization (WHO, 2023), Nigeria contributes nearly 30% of the global malaria burden. Malaria prevalence is usually measured using indicators such as parasite prevalence, incidence, and test positivity rates.

In the context of this study, malaria is conceptualized as the dependent variable, represented by whether pregnant women report an infection (Yes/No), based on diagnosis or self-reported episodes.

2. Malaria in Pregnancy (MiP): Concept and Implications

Pregnancy reduces a woman's immunity, making her more susceptible to malaria infections and complications. The concept of malaria in pregnancy (MiP) is more than just infection — it includes maternal health outcomes (such as anemia, severe malaria) and fetal complications (low birth weight, preterm delivery, stillbirth). According to Desai et al. (2007), MiP accounts for significant maternal morbidity and infant mortality in sub-Saharan Africa.

For this study, MiP is operationalized as malaria infection among pregnant women only, acknowledging that the consequences extend beyond maternal health to child survival.

3. Insecticide-Treated Nets (ITNs): Concept and Preventive Use

ITNs are bed nets treated with insecticide, designed to kill or repel mosquitoes. The conceptualization of ITNs involves three levels:

Ownership: Whether households have nets.

Access: Whether nets are sufficient for all members.

Usage: Whether individuals consistently sleep under the net.

Studies differentiate between “net ownership” and “effective usage,” since the protective effect depends on regular use. Diala et al. (2018) found that women who consistently used ITNs had significantly lower malaria prevalence compared to non-users.

In this study, ITN usage is treated as an independent variable, categorized into users vs. non-users, to examine its relationship with malaria prevalence.

4. Antenatal Care (ANC): Concept and Utilization

ANC is a structured health service provided to pregnant women to monitor maternal and fetal health, provide preventive care, and reduce complications. Conceptually, ANC is both a health-seeking behavior and a service delivery platform. ANC serves as the primary channel for distributing ITNs, administering IPTp, and educating mothers on malaria prevention.

The number of ANC visits is often used as a proxy for maternal health service utilization (NMEP, 2022). In this study, ANC attendance is considered an intervening variable that strengthens the relationship between preventive interventions (ITN, IPTp) and malaria prevalence.

5. Socio-Demographic Determinants

Malaria prevalence is shaped by socio-demographic variables such as age, education, parity (number of children), income, and residence (rural/urban). These are conceptualized as background variables that influence preventive behavior and vulnerability to infection.

Age: Younger women may lack knowledge or resources for prevention.

Education: Women with higher education are more likely to adopt preventive measures.

Income: Low-income households may face barriers to healthcare access.

Residence: Rural women often have higher exposure due to environmental risk factors.

For this study, socio-demographic factors serve as control variables, helping to explain variations in malaria prevalence.

Method of Data Analysis

The collected data were analyzed descriptively using statistical tools such as mean, frequencies, percentages and then presented with tables, pie chart and bar chart. Furthermore chi square test was performed to check relationship between social demographic factor such as Educational Level and the prevalence/cases of Malaria also to check the relationship between the use of ITN and the cases of Malaria. The chi square was tested at 5% level of significance

Results: Data Presentation

4.1.1 Demographic Characteristics of Respondents: the table below presents the demographic analysis.

Table 4.1: Demographic Profile of Respondents (n = 300)

Variable	Category	Frequency	Percentage (%)
Gender	Pregnant	300	100%
	Women		
Education Level	B.Sc/HND	82	27%
	ND	47	16%
	SSCE	40	13%
	FLSC and Non Educated	131	44%
		300	100%

Number of Children	1 st time Preg.	52	17%
	1	68	23%
	2	45	15%
	3 and above	135	45%
		300	100%
LGA	Abak	45	15%
	Ikot Ekpene	45	15%
	Eket	45	15%
	Uyo	45	15%
	Essien Udim	40	13.3%
	Oron	40	13.3%
	Ikono	40	13.4%
		300	100%

Source: Field Survey (2025)

The table revealed that 300 samples of pregnant women from 7 (seven) different LGAs were used for the analysis were 82 pregnant women (27%) are B.Sc/HND. Holder, 47 of them (16%) are ND holder, 40 (13%) are SSCE holder while the rest are First Living School Certificate (FLSC) holder and non-educated

Table 4.2: Experimental report on the severity of Malaria among Pregnant Women in Akwa Ibom State (n = 300)

LGA	HOSPITAL CATEGORIES	WARD	(+)	(+ +)	(+ + +)	NOT SIGNIFICANT	TOTAL
Abak	1 st GHSPL	Maternity	7	12	2	9	30
	1 st ANTC	Maternity	6	3	1	5	15
Ikot Ekpene	2 nd GHSPL	Maternity	8	10	3	9	30
	2 nd ANTC	Maternity	4	7	0	4	15
Eket	3 rd HSPL	Maternity	13	6	2	9	30
Uyo	3 rd ANTC	Maternity	5	4	1	5	15
	4 th GHSPL	Maternity	6	10	2	12	30
Essien Udim	4 th ANTC	Maternity	5	6	0	4	15
	5 th GHSPL	Maternity	11	15	3	11	40
Oron	6 th GHSPL	Maternity	13	11	2	14	40
Ikono	7 th GHSPL	Maternity	12	13	5	10	40
Freq.			90	97	21	92	300
Mean			1.2	1.3	0.3	1.2	4.00
(%)			30%	32%	7%	31%	100%
NOTE	*GHSPL: Government Hospital						
	*ANTC: Antenatal Clinic						

Source: Experimental Reports (2025)

Experimental Reports of Malaria among Pregnant women in Akwa Ibom State from 11 different Hospitals in 7 Different local Government Area revealed the severity of Malaria among the pregnant women. It revealed Malaria one plus (+) at mire stage is of 30% cases with the mean of 1.2 which is slightly lower to the mean of Malaria two plus (+ +) at more severe stage with mean of 1.3 and 32% of cases. It also revealed the mean of the most severe stage of Malaria (+ + +) to be 0.3 with 7% of cases, this implies out of every 30 pregnant women tested of Malaria at least two (2) cases will be very severe with Malaria three plus (+ + +). While the non-significant cases are 31% with mean of 1,2

Tab 4.3: Cases/Prevalence of Malaria among Pregnant Women. (n = 300)

Malaria	Frequency	Percentage	Mean
Positive (+, ++, +++)	208	69%	1.40
Not Significant	92	31%	0.60
Total	300	100%	2.00

Source: Experimental Results (2025)

The result revealed that the prevalence/cases of Malaria among pregnant women is dominant with mean of 1.4 and percentage of 69%, making more than 6 pregnant women out of every 10 pregnant women are found to be living with malaria where 92 pregnant women accounting for 31% are without malaria

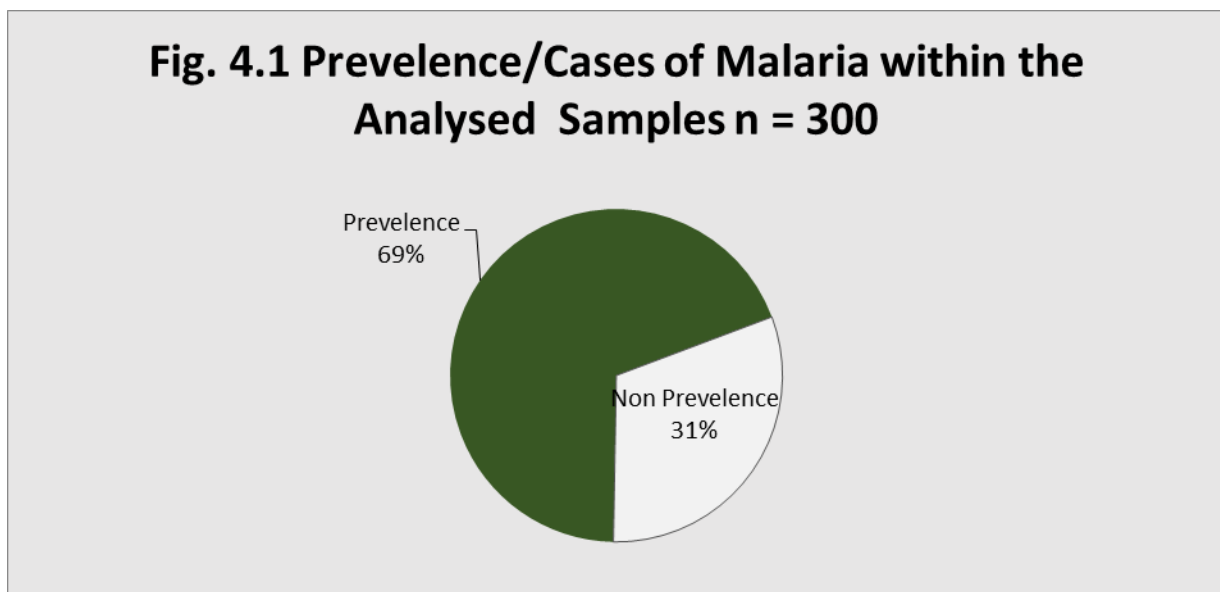


Fig 4.1 depicts the prevalence of malaria pictorially, showing the larger portion of 69% for cases of Malaria and the smaller portion of 31% for Non-Prevalence/cases of Malaria among Pregnant women in Akwa Ibom State.

4.1.4 Socio-Demographic factor and malaria infection among pregnant women.

Prevalence of Malaria among Pregnant Women with Level of Education

Tab 4.4: Cases/Prevalence of Malaria among Pregnant Women. (n = 300)

Variables	(+)	(+ +)	(+ + +)	Not Significant	Freq.	(%)	Mean
B.Sc/HND (82)	17	13	2	50	32	39%	0.62
ND (47)	8	14	7	18	29	62%	0.56
SSCE (40)	9	16	6	9	31	77.5%	0.59
FLSC & Not Educated (131)	56	54	6	15	116	88.5%	2.23
Total	90	97	21	92	208		4.00

Source: Experimental Results (2025)

Also, the analysis revealed a decrease in the cases of Malaria with higher educational level attained. The cases was highest in FLSC and not Educated pregnant women with more than 88% followed by SSCE holders with more than 77%, followed by ND holders with 62% and lowest at B.Sc./HND holder on 39%. Therefore, the Prevalence of malaria with socio demographic factor such as educational level plays a role in preventive practices.

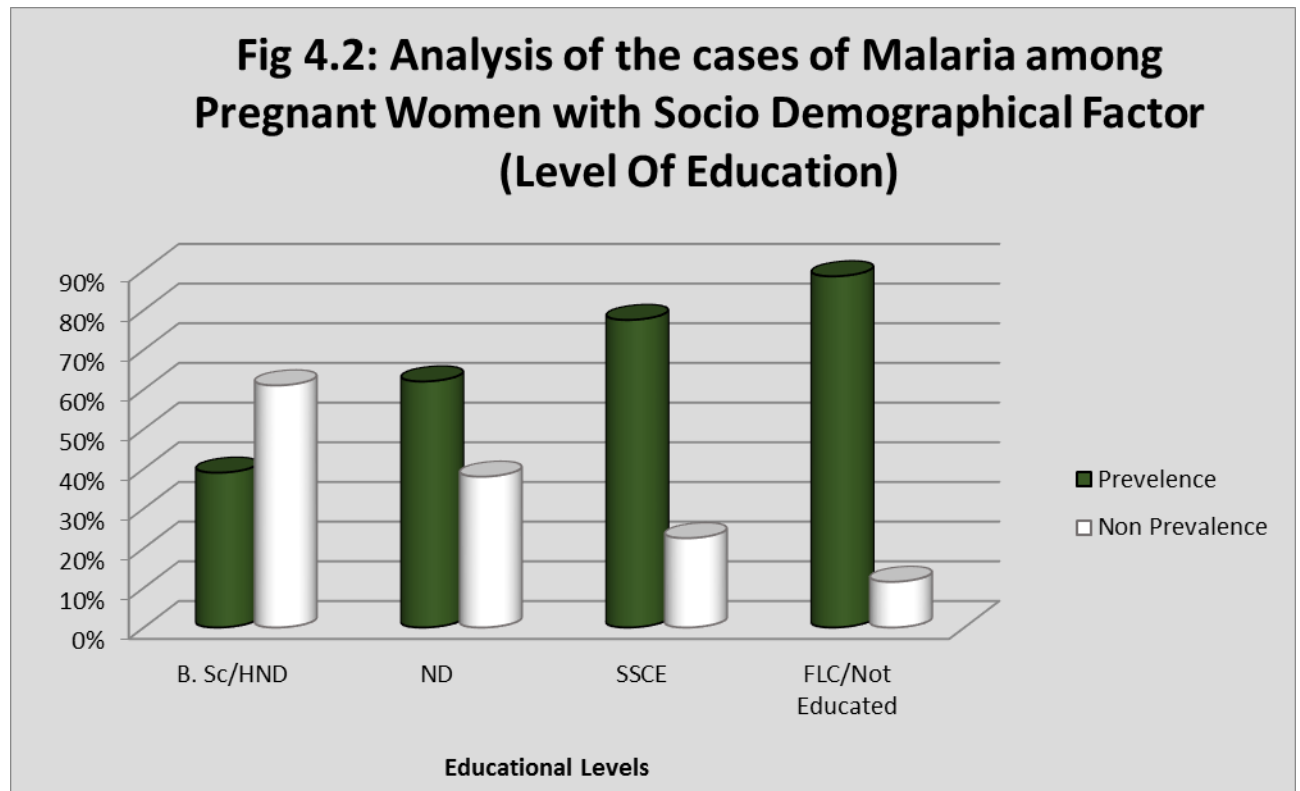


Fig 4.2 Revealed decrement in the cases of Malaria with higher educational level. The prevalence of Malaria was highest among First Living School Certificate holders and the Non Educated with 88.5% cases of Malaria followed by SSCE holders with 77.5% cases of Malaria, followed by ND holders with 62% cases of Malaria and is observed to be least among B.Sc. holders with 39%.

The Non cases of Malaria was observed to increase with level of Education, non-prevalence of Malaria among pregnant women in Akwa Ibom is seen to be highest among the B.Sc./HND holders with 61% Non-prevalence followed by ND holders with 38% non-prevalence then followed by SSCE with 13% non-cases of Malaria,, the non cases was observed to be least among the FLSC holders/Non educated group with 11%.

4.1.5: Level of Awareness of Malaria

Tab 4.5: Level of Awareness of Malaria among Pregnant women in Akwa Ibom. n = 300

Variables	Frequency	Percentage
Yes	296	98.7%
No	4	1.3%
Total	300	100%

Source: field survey (2025)

The analysis revealed that approximately more than 98% of pregnant women are aware of Malaria among the analyzed samples less than 1.4% indicated not aware. Hence it can be concluded that up to 99 pregnant women out of 100 pregnant women in Akwa Ibom State are aware of Malaria

4.1.4: Causes of Malaria

Tab 4.4: Analysis on the Causes of Malaria n = 300

Variables	Frequency	Percentage	Mean
Mosquitos	141	67.7%	2.7
Dirty Environment	34	16.3%	0.7
Stress	26	12.3%	0.5
Unidentified	7	3.7%	0.1
Total	208	100%	4.0

Source: field survey (2025)

Table 4.3 Revealed Mosquito as a major cause of Malaria with 68% causes of the self-reported causes of malaria among pregnant women in Akwa Ibom State followed by dirty environment with 16%, followed by stress with 26%, causes of 4% were unidentified. The analysis showed 2.7 mean for Mosquitos as causes of malaria, the 2.7 significantly shows that Mosquito causes more than half of the Malaria cases among Pregnant women in Akwa Ibom State.

4.1.6: Usage of Malaria Preventive Measure

Tab 4.6: Use of Insecticide Treated Net (ITN) n = 300

Variables	Frequency	Percentage	Mean
Regular	66	22%	0.88
Often	81	27%	1.08
Rarely	75	25%	1.00
Not at all	78	26%	1.04
Total	300	100%	4.00
Cases of Malaria among Pregnant Women and the use of ITN			
Regular (66)	25	38%	1.51
Often (81)	47	58%	2.32
Rarely (75)	64	85%	3.41
Not at all (78)	72	92%	3.69
Total	208		

Source: field survey (2025)

Tab 4.5 Revealed that 66 pregnant women (22%) use ITN regularly with the mean of 0.88 where 81 pregnant women (27%) use ITN often with the mean of 1.08. These mean revealed a moderately use of ITN as preventive measures of Malaria among pregnant women. While 75 pregnant women (25%) with the mean of 1.00 rarely use ITN, 78 pregnant women (26%) with the mean of 1.4 do not use ITN at all. Therefore it can be concluded that ITN is moderately use among pregnant women in Akwa Ibom State.

The study also revealed from the analysis of the cases of Malaria and the use of ITN that Malaria cases was highest among Pregnant women who don't use ITN at all with 92% of self-reported cases, followed by Pregnant women who rarely use ITN with 85% self-reported cases, then followed by pregnant women who often use ITN with 58% of self-reported cases, malaria cases was seen to be least among those who regularly use ITN with 38%

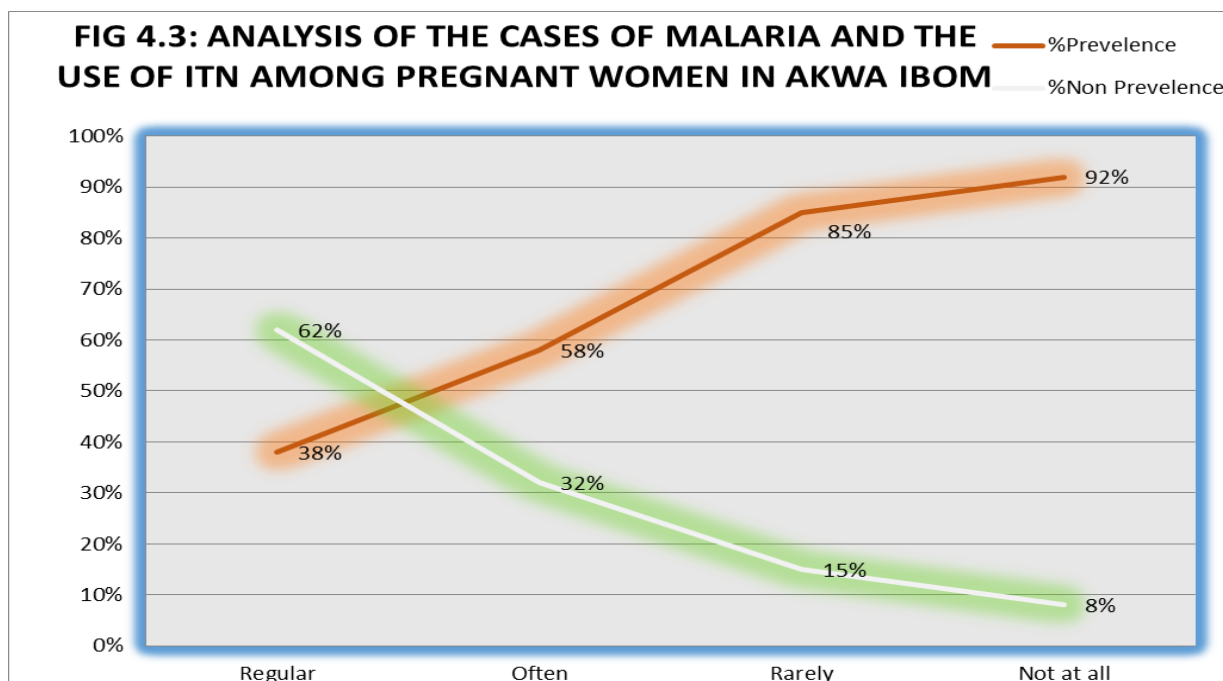


Fig 4.3 the line graph of the cases of Malaria among pregnant women in Akwa Ibom with the use if ITN clearly shows an increment in the cases of Malaria with non usage of ITN; Malaria cases increased from regular uses of ITN of 38% to 92% non-users of ITN, the difference is 54% increment. Also, the line graph of the non cases of Malaria with usage of ITN showed decrement with non usage of ITN; the non cases of Malaria decreases from regular users of ITN of 62% to non users of ITN of 8% the decrement in the non cases is also 54%. Hence it can be concluded that the use of ITN is a good measure to reduce the prevalence/cases of Malaria and to increase the non prevalence/cases each by 54% among pregnant women in Akwa Ibom

4.2 Data Analysis

Hypotheses	Variable	X-value	p-value	Decision
H₀₁: Socio-demographic factor do not significantly influence case of Malaria among pregnant women in Akwa Ibom State	Educational level and malaria infectious Cases	10.56	0.0012	Reject H₀
H₀₂: Use of ITN do not significantly impact the cases of Malaria	Use of ITN and Malaria	9.03	0.0027	Reject H₀

The table above revealed the following:

From the table above the hypothesis, $p = 0.0012 < 0.05$ with χ^2 -value of 10.56 revealed statistically significant association between social Demographic factor and cases of Malaria among pregnant women, therefore we reject H₀

Also since $p = 0.0027 < 0.05$ with χ^2 -value of 9.03 revealed statistically significant association between the use of ITN and malaria infection/cases among pregnant women in Akwa Ibom State, hence we reject H_0 . Women who used ITNs were significantly less likely to contract malaria.

4.3 Summary of Result

- i. **Experimental Reports of Severity of Malaria among Pregnant women in Akwa Ibom State:** The Experimental reports revealed Malaria one plus (+) at mire stage is of 30% cases with the mean of 1.2 which is slightly lower to the mean of Malaria two plus (+ +) at more severe stage with mean of 1.3 and 32% of cases. It also revealed the mean of the most severe stage of Malaria (+ + +) to be 0.3 with 7% of cases, this implies out of every 30 pregnant women tested of Malaria at least two (2) cases will be very severe with Malaria three plus (+ + +). While the non significant cases are 31% with mean of 1.2
- ii. **Prevalence/cases of Malaria among Pregnant Women:** the prevalence/cases of Malaria among pregnant women was seen to be dominant with mean of 1.4 and percentage of 69%, c
- iii. **Relationship between Socio-Demographic factor (Educational level) and cases of malaria among pregnant women in Akwa Ibom:** The analysis revealed a relationship between Educational factor and cases of Malaria among pregnant women the analysis revealed a decrease in the cases of Malaria with higher educational level attained. The cases of Malaria was highest among First Living School Certificate holders and the Non Educated with 88.5% cases of Malaria followed by SSCE holders with 77.5% cases of Malaria, followed by ND holders with 62% cases of Malaria and is observed to be least among B.Sc. holders with 39%. In the test of hypothesis, $p = 0.0012 < 0.05$ with χ^2 -value of 10.56 revealed statistically significant association between social Demographic factor and cases of Malaria among pregnant women, Hence H_0 was rejected.
- iv. The Non cases of Malaria increased with level of Education, non-prevalence of Malaria among pregnant women in Akwa Ibom was highest among the B.Sc./HND holders with 61%, followed by ND holders with 38% , followed by SSCE with 13% , it was least among the FLSC holders and Non educated group with 11%.
- v. **Awareness of Malaria:** Approximately more than 98% of pregnant women are aware of Malaria among the analyzed samples less than 1.4% indicated not aware. Therefore it was concluded that up to 99 pregnant women out of 100 pregnant women in Akwa Ibom State are aware of Malaria.
- vi. **Causes of Malaria among Pregnant women in Akwa Ibom:** Mosquito was seen to be a major cause of Malaria with 68% causes of the self reported cases of malaria among pregnant women in Akwa Ibom State followed by dirty environment with 16% causes, followed by stress with 12%, causes of 4% were unidentified. The analysis showed 2.7 mean for Mosquitos as causes of malaria; this signifies that Mosquito causes more than half of the Malaria cases among Pregnant women in Akwa Ibom State.
- vii. **Malaria Preventive Measure (the Use of ITN):** it was seen that 66 pregnant women (22%) use ITN regularly with the mean of 0.88, also 81 pregnant women (27%) use ITN with the mean of 1.08. These mean reveled a moderately use of ITN as preventive measures of Malaria among pregnant women. While 75 pregnant women (25%) with the mean of 1.00 rarely use ITN, 78 pregnant women (26%) with the mean of 1.4 do not use ITN at all. Therefore it was concluded that ITN is moderately use among pregnant women in Akwa Ibom State. The test of hypothesis $p = 0.0027 <$

0.05 with χ^2 -value of 9.03 clearly revealed significant association between the use of ITN and malaria infection/cases among pregnant women in Akwa Ibom State, H_0 was rejected

- viii. **Prevalence of Malaria and the Use of ITN:** Cases of Malaria among pregnant women in Akwa Ibom increases with non usage of ITN; Malaria cases increased from regular users of ITN of 38% to 92% non-users of ITN, the difference is 54% increment. Also, the non cases of Malaria with usage of ITN showed decrement with usage of ITN; the non cases of Malaria decreases from regular users of ITN of 62% to non users of ITN of 8% the decrement in the non cases is also 54%. Hence it can be concluded that the use of ITN is a good measure to reduce the prevalence/cases of Malaria and to increase the non prevalence/cases each by 54% among pregnant women in Akwa Ibom

Discussion of Results

- i. **Experimental Reports of Malaria among Pregnant women in Akwa Ibom State:** The Experimental reports the severity of Malaria cases among the pregnant women, it revealed Malaria two plus (+ +) to be the highest with frequency of 97 which is 32% with the mean of 1.3 then followed by Malaria one plus (+) at mire stage with frequency of 90 which is 30% cases and mean of 1.2 which is slightly lower to the mean of Malaria two plus (+ +). It also revealed the mean of the most severe stage of Malaria (+ + +) to be 0.3 with 7% of cases, this implies out of every 30 pregnant women tested of Malaria at least two (2) cases will be very severe with Malaria three plus (+ + +). While the non significant cases are 31% with mean of 1.2. The high account of Malaria (+ +) could be due to pregnant women being reluctant to visit the hospital for proper medical check up and also self medication, therefore pregnant women should be encouraged to visit the hospital on time when experiencing any Malaria symptom.
- ii. **Cases of Malaria among Pregnant Women in Akwa Ibom State:** it was also seen that the cases of Malaria is moderately high, although pregnant women are aware of the Malaria disease but its prevalence among pregnant women was seen to be moderately high moderately high this could be as a result of the location of Akwa Ibom. the location makes Akwa Ibom highly endemic for malaria due to the State's tropical climate and swampy terrain. Hence the government should adopt more strategies in the curbing of Malaria among pregnant women to reduce the prevalence to its minimum. Although pregnant women are aware of the Malaria disease hence the high account of Malaria mostly 2+ (+ +) could also be due to self medication and being reluctant to visit the hospital for proper medical check up; therefore women should be educated on the need to visit the hospital early as soon as they experience any symptom of Malaria to moderate its severity.
- iii. **Socio-Demographic factor (Educational level) and cases of malaria among pregnant women in Akwa Ibom:** The test of hypothesis for the relationship between Pregnant women who are educated and those who are not Educated using educational level revealed a high relationship between educational level and the cases of Malaria in Akwa Ibom State; the p- value = 0.0012 < 0.05 with χ^2 -value of 10.56 revealed the association also from the analysis of the cases of Malaria was highest among First Living School Certificate holders and the Non Educated with 88.5% cases of Malaria followed by SSCE holders with 77.5% cases of Malaria, followed by ND holders with 62% cases of Malaria and is observed to be least among B.Sc. holders with 39%. Where the Non prevalence with the level of Education revealed to be highest among the B.Sc./HND holders with 61% Non-prevalence followed by ND holders with 38%

non-prevalence then followed by SSCE with 13% non-cases of Malaria,, the non cases was observed to be least among the FLSC holders/Non educated group with 11%, all of These further confirmed the relationship as the hypothesis has revealed, the higher the Educational level attained the less chances of contracting Malaria disease while the lower the educational level attained the higher the risk to contracting Malaria disease.

- iv. **Awareness of Malaria Among Pregnant Women in Akwa Ibom:** The analysis revealed very high percentage of pregnant women in Akwa Ibom are aware of Malaria as a disease, the analysis showed over 98% of pregnant women in Akwa Ibom state are aware of the disease this could be as a result of educational level attained by the pregnant women and their being taught by their maternity Doctors and Nurses because almost all the pregnant women analyzed have their pregnancy registered with one hospital or the other within the selected LGAs. It is obvious that 56% of the pregnant women analysed have at least SSCE level of Education while in the remaining 44% some have acquired the FLSC.
- v. **Causes of Malaria among Pregnant women in Akwa Ibom:** The analysis revealed that Mosquito causes more than half of the Malaria cases analyzed, it causes up to 68% of Malaria cases this could be due to Akwa Ibom State's climate and geographical characteristics of high rain fall, swampy terrain and warm temperature the region has been an ideal breeding condition for the female Mosquitos (Anopheles). Mosquito is followed by dirty environment with 16% causes of Malaria, followed by stress with 12% causes of Malaria and 4% were unidentified.
- vi. **Malaria Preventive Measure (the Use of ITN):** The analysis revealed a moderate use of ITN among pregnant women in Akwa Ibom State, it was seen that 66 pregnant women (22%) use ITN regularly with the mean of 0.88, also 81 pregnant women (27%) use ITN with the mean of 1.08, where 75 pregnant women (25%) with the mean of 1.00 rarely use ITN, 78 pregnant women (26%) with the mean of 1.4 do not use ITN at all. Despite the distribution of ITN in the hospitals among all pregnant women in the State to curb Malaria, the use of ITN is still moderate hence additional to the free distribution of ITN, education of the use of ITN among the pregnant women should also be taken serious mostly among the uneducated.
- vii. **Prevalence of Malaria and the Use of ITN:** The analysis revealed that the use of ITN reduces the cases of Malaria, hence the use of ITN reduces the cases of Malaria in Akwa Ibom, the hypothesis $p = 0.0027 < 0.05$ with χ^2 -value of 9.03 revealed significant association between the use of ITN and malaria infection/cases among pregnant women in Akwa Ibom State, the cases of Malaria. The cases of Malaria was 38% among regular users of ITN while it increases to 58% among those who rarely use ITN, the cases increased to 92% among those who do not use ITN at all. Hence the cases of Malaria decreases with the use of ITN among pregnant women in Akwa Ibom State. Therefore the use of ITN in curbing Malaria should be in continuous practice and also priority should be given to educating the public on the importance of using ITN.

Conclusion

The following can be concluded from the analysis

- i. It can be concluded that out of every 30 pregnant women tested of Malaria at least two (2) cases will be very severe with Malaria three plus (+ + +). Also the account of Malaria for 2+ (+ +) was the highest among pregnant women, the high account of Malaria (+ +) could be due to Pregnant women being reluctant to visit the hospital for

- proper medical check up and also self medication, therefore pregnant women should be encouraged to visit the hospital on time when experiencing any Malaria symptom.
- ii. The cases of Malaria among pregnant women are moderately high. More than 6 pregnant women out of every 10 pregnant women in Akwa Ibom State are found to be living with malaria where 31% pregnant women in Akwa Ibom State are without malaria.
 - iii. There is a high relationship between educational level and the cases of Malaria in Akwa Ibom State; the test of hypothesis between the cases of pregnant women and their level of education results, $p\text{-value} = 0.0012 < 0.05$ with χ^2 -value of 10.56; the higher the Educational level attained the less chances of contracting Malaria disease while the lower the educational level attained the higher the risk to contracting Malaria disease.
 - iv. More than 98% of pregnant women in Akwa Ibom state are aware of the disease. Hence it can be concluded that up to 99 pregnant women out of 100 pregnant women in Akwa Ibom State are aware of Malaria
 - v. Mosquito causes more than half of the Malaria cases, it causes up to 68% of Malaria cases Akwa Ibom State.
 - vi. ITN is moderately used among pregnant women in Akwa Ibom State
 - vii. There is significant relationship between the use of ITN and the cases of Malaria in Akwa Ibom. The hypothesis test for the relationship between the use of ITN and malaria infection/cases among pregnant women revealed $p = 0.0027 < 0.05$ with χ^2 -value of 9.03; the use of ITN reduces malaria infection/cases among pregnant women in Akwa Ibom State

Recommendation

- i. Pregnant women should be educated on the need to visit the hospital early as soon as they experience any symptom of Malaria to moderate its severity.
- ii. Generally the girl child education should be encouraged in the society, this will help to curb the infection cases to its minimum.
- iii. The use of ITN in curbing Malaria should be in continuously practiced and also priority should be given to educating the public on the importance of using ITN.

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