

# Knowledge, Attitude and Perception in the Utilization of Insecticide-Treated Bed-Nets and Commonness of Malaria among selected Expectant Mothers Attending Ante-Natal in Ahoada Zonal Hospital, Ahoada, Rivers State, Nigeria

<sup>1</sup>Elele, K, <sup>2</sup>Eze, M. E.

Department of Biology, Faculty of Natural and Applied Sciences, Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Nigeria.

DOI: <https://doi.org/10.5281/zenodo.6548176>

Published Date: 14-May-2022

---

**Abstract:** No documented information exists on the utilization and compliance of expectant mothers to the utilisation of insecticide-treated bed-nets and management of malaria within the studied area. This investigation was designed to ascertain knowledge, attitude and perception and commonness of malaria parasites among expectant mothers attending ante-natal clinic (ANC) in Ahoada Zonal Hospital. In total, 120 expectant mothers were selected randomly during the ANC clinic in Ahoada. Structured questionnaires were administered in the investigation design. Data on occupation, parity, symptoms used to recognize malaria, treatment bases, knowledge factors, control measures, anti-vector measures, health-seeking practices, and malaria parasitaemia were recorded. The result showed that 88.33% of the expectant mothers knew insecticide-treated bed-nets (ITNs), 61.32% possess ITNs while only 18.46% utilized the ITNs while 81.54% do not utilise ITNs, reasons were ineffectiveness, itching, dislike, excessive heat and no reason at all. The result further showed that 75.00% of those that utilise ITNs test negative for malaria parasites. In conclusion, ITNs were effective for controlling malaria parasites while attitude towards utilisation of the ITNs within the investigation area was very poor. Hence, it was suggested that sensitization is needed to educate the populace, especially those living within the investigation area and its environs.

**Keywords:** Ahoada, Ante-natal, Attitude, Knowledge, Malaria, Perception, Expectant mothers'.

---

## I. INTRODUCTION

Malaria is an infectious vector-borne disease caused by five species of protozoan parasites of the genus *Plasmodium*: *P. falciparum*, *P. vivax*, *P. ovale*, *P. malaria* and *P. knowlesi* [kabede et al., 2017; Munis et al., 2019]. A worldwide decrease in investment in malaria research and control in 2016 conversely led to an increase from 2015 of 211 million malaria cases to 216 million in 2016 [WHO, 2017]. Of all global malaria cases, 90% occur in the World Health Organization's Africa Region with 15 sub-Saharan countries accounting for 80% of the global burden of malaria [WHO, 2017]. *Plasmodium falciparum* accounts for about 99% of all malaria cases [WHO, 2017]. Aside from being the significant reason for dismalness and mortality, malaria programs represent over US\$12 billion yearly in African countries [Munis et al., 2019]. Regardless of huge improvement in counteraction and control for as far back as many years, malaria stays a critical general wellbeing worries all around Nigeria with 97% of the populace in danger for malaria disease [WHO,

2018]. It stays among the main public reasons for dreariness and mortality, particularly in youngsters under five years and expectant mothers by which malaria rules short term patients, inpatients and affirmations of under five-year kids at health facilities [WHO, 2018].

Malaria is unarguably the most important disease of mankind and has remained a thorn in the flesh in Sub-Saharan Africa, especially in expectant mothers', immuno-suppressed persons and children [Ukibe et al., 2014; Okwa, 2003; Richard et al., 2017] where the disease has taken its clangs. Different techniques have been planned to control the scourge of malaria amidst which fuses the utilisation of Insecticide-treated bed-nets (ITNs) which were introduced in Nigeria in the year 2000 after a get-together of the African Heads of States in Abuja, the capital city of Nigeria [RBM, 2010]. Despite reports by Gamble et al. 2006 and Adeyemi et al. 2007 on the reduced occurrence of malaria in pregnancy and hence the occurrence of pregnancy-related complications, studies in Nigeria and other third world countries [Isah et al., 2009; Salaudeen & Jimoh, 2009; Musa et al., 2009; Iwuh et al., 2010; Oche et al., 2011; Aluko et al., 2012; Runsewe-Abiodun et al., 2012] have shown that the utilisations of ITNs in pregnancy has remained poor despite the increased health education and awareness campaign mounted by government agencies. Consequently, the commonness of malaria in pregnancy has been stated to be high over the years [Mbanugo and Okorudo, 2005, Aribodor et al., 2007] with its attendant complications.

According to Ukibe et al., [2006 & 2019], who reported a high awareness level (93%) of expectant mothers concerning the utilising of ITNs in pregnancy, relatively high ownership level (60%), nevertheless, poor utilisation of ITNs (46%) in pregnancy, which is evident that having ITNs does not depict genuine utilisation. This investigation was therefore designed to evaluate the knowledge, attitudes, and commonness of expectant mothers which might hamper or promote the utilisations of ITNs in pregnancy in Ahoada city, Ahoada-East Local Government Area, Rivers State, Nigeria.

II. MATERIALS AND METHODS

DESCRIPTION OF THE STUDY AREA

Ahoada is a municipal city in the Orashi region of Rivers State. It is the headquarter of Ahoada-East Local Government Area of Rivers State. The city has situated in the Northwest of Port Harcourt City. It is situated on latitude 5.082817°N and longitude 6.658467°E. The language spoken is Ekpeye, which is an Igboid language. Ahoada and its environs have a projected population of 233, 700 with annual growth of 3.5% as of 2016. The residents of Ahoada are predominantly farmers and traders.

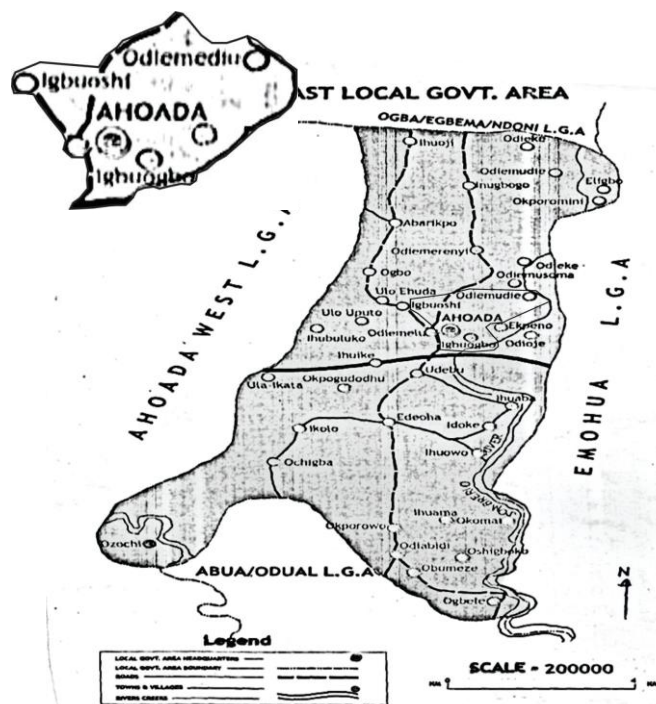


Fig. 1: Map of Ahoada East local government Area showing Ahoada Town

**STUDY POPULATION**

120 volunteer expectant mothers in total, aged 16 – 45 years were drafted for the investigation between January – April 2021. The age series represent the reproductive age of the females. To attain the sample size, the yearly 3% growth rate for the female population in Nigeria was determined as of 2004. The women populace of reproductive age which is 49% of all female populace was calculated. Expectant mothers are 5% of these reproductive women were also established. The figures gotten were replaced in the formula for calculation of sample size. Informed consent was gotten from them and due permission was sought for and gotten from the Zonal Hospital Management Board for the investigation.

**QUESTIONNAIRE’S ADMINISTRATION**

A structured questionnaire was self-administered to the women to obtained information on biodata, awareness, possession, utilization and reasons for non-utilization of ITNs throughout the pregnancy period among other information. The questionnaires were composed of five sections A – E.

**DATA ANALYSIS**

Data generated were analysed with SPSS version 23. Simple percentages were used in transforming the data while chi-square was employed to establish the significant level.

**III. RESULTS**

Results showed that out of 120 respondents enrolled on this study, 88.33% knew ITNs while 11.67% do not. Participants ranging from expectant mothers of the different trimesters, 61.32% of the participants possessed ITNs while 38.68% do not. In terms of utilization, only 18.46% of the respondent uses ITNs while 81.54% do not (Table 1).

Despite the high awareness level of 88.33%, ownership level of 61.32%, only 18.46% utilises ITNs while 81.46% failed to utilise the ITNs for various reasons varying from excessive heat (32.08%), mere dislike (24.53), itching (22.64%), and ineffectiveness (11.32%) while a reasonable number of women (18.87%) had no specific reason while they refuse to utilised ITNs (Table 2).

Further assessment of malaria parasites among the respondents revealed that 25.00% of those that utilised ITNs tested positive for malaria parasites, while 75.00% tested negative. Also, those who do not utilise ITNs revealed that 88.68% tested positive for malaria parasites while 11.32% tested negative for the parasites (Table 3).

Data analysis showed that there was extremely impressive proof of a relationship between usage of ITNs and contamination of malaria parasites ( $X^2 = 22.35; df = 1$  and  $p < 0.05$ )

**TABLE 1: knowledge, attitude and perception towards utilisations of insecticide-treated bed-nets (ITNs).**

**TABLE: I**

Response	Knowledge	Possession	Usage
Yes	106 (88.33)	65 (61.32)	12 (18.46)
	14 (11.67)	41 (38.68)	53 (81.54)
<b>Total</b>	120	106	65

**TABLE 2: Reasons for non-possession and non-utilisation of insecticide-treated bed-nets (ITNs)**

**TABLE: II**

Reasons	Percentage
No reason	16.67
Ineffective	13.33
Itching	20.00
Dislike	21.67
Heat	28.33

**TABLE 3: Commonness of malaria parasites amid expectant mothers attending ante-natal concerning the utilisation of insecticide-treated bed-nets in the area study**

**TABLE: III**

ITNs Utilisation	Total	Positive (%)	Negative (%)
Utilised	12	3 (25.00)	9 (75.00)
Do not utilised	53	47 (88.68)	6 (11.32)
<b>Total</b>	<b>65</b>	<b>50 (76.92)</b>	<b>15 (23.08)</b>

$$X^2 = 22.35 \quad df = 1 \quad p < 0.05$$

#### IV. DISCUSSION

The study assessed the level of knowledge, attitude and perception in the utilisation of insecticide-treated bed-nets and commonness of malaria amid some expectant mothers’ attending ante-natal in Ahoada Zonal Hospital, Ahoada. Despite the high awareness status amidst expectant mothers relating to the utilisation of ITNs and relatively high level of possession which has increased over time in malaria-endemic regions (Gersti et al., 2010; Hanson et al., 2009; Nor et al., 2007), most of the respondents refused to utilised ITNs for various reasons. Reports from Baume et al., (2007), Githinji et al., (2010), Alali et al., (2003), Hlongwana et al., (2009) Ukibe et al., (2014), corroborate with the findings of this work. Excessive heat from poorly ventilated houses is indeed a serious obstacle in the utilisation of ITNs even when the nets are distributed free by governments. In Nigeria, where power is intruded on all of the time whenever or not accessible if there was accessible low voltage, it is a certifiable justification behind the women to decline to use ITNs in inclination to the aggravation and sickness sent by mosquitoes considering the tropical idea of the environment and specialist temperature created particularly during the dry seasons.

Some of the respondents in the study cited itching or skin irritation as the major cause that made them shy away from utilising ITNs which is consistent with Zangpo et al., (2011). Itching from the utilisation of ITNs could result from several reasons such as chemical components of the nets which serve as foreign bodies as well as not following instructions on how to utilise the net.

A reasonable number of the respondents had no specific reason why they refused to use ITNs despite possessing one. This poor attitude could be a result of illiteracy, ignorance or make up stories that may not be true. It could also be accredited to family background, family size, accommodation type, or turn the ITNs into fishing nets. Njoroge et al., (2009) reported a significant association between level of education and satisfactory knowledge on the utilisation of ITNs in expectant mothers.

In this investigation, 38.68% of respondents reported that they do not possess ITNs. None possession of nets observed in these investigations could be attributed to unavailability, high cost of poverty. In sub-Saharan Africa, poverty is so prevalent that most homes hardly afford three square meals. In light of this, it becomes a luxury for one to purchase a mosquito net from the market, even when these nets are provided free of charge by donors or philanthropists, some sell the nets to solve family needs such as food rather than using the nets. Despite the barrier of highlighted above or wrong usage, government and NGOs still donate nets to expectant mothers free of charge to encourage a healthy nation (Pettifor et al., 2009; Guyat and Ochola, 2003)

Generally, the malaria parasite in this study was very high (76.92%), however, very low in women that utilises ITNs (25.00%). This showed that where ITNs are properly used to manage the disease, the transmission of mosquito-borne diseases will drastically reduce. Although, malaria control depends on many factors, of which some have not been studied at the community levels. In curbing the menace of the disease in the community, the mother’s ability to properly manage malaria in the house is very crucial. Evidence showed that there is an increase in self-medication, patronage of patent medicine stores, herbal medicines and non-compliance of individuals to medical prescriptions in some endemic regions, therefore, there’s a need for extra-communal efforts in health education is challenged.

## V. CONCLUSION

This study showcased that majority of the expectant mothers are aware of the causes of malaria, signs and symptoms, preventive strategies including proper utilisation of ITNs for sleeping. But, the high rate of ITNs possession and knowledge does not translate to utilisation and this impacted negatively on the prevention and management of malaria amidst the vulnerable group of the population. Therefore, an extra-communal effort is required to educate the population using languages that they will understand for strict compliance.

## ACKNOWLEDGEMENT

The authors are grateful to the staff and management of Ahoada Zonal Hospital who granted us access to their facilities.

## REFERENCES

- [1] Adeyemi, A. S., Adekanle, D. A., & Akinola, S. E. (2007). Use Prevalence of Insecticide-Treated Mosquito Bed Nets among Pregnant Population in Osogbo. *Nigerian Medical Practitioner*, 52(2), 29-32.
- [2] Aluko, J. O., & Oluwatosin, A. O. (2012). Utilization of insecticide-treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study. *BMC pregnancy and childbirth*, 12(1), 1-7.
- [3] Aribodor, D. N., Nwaorgu, O. C., Eneanya, C. I., & Aribodor, O. B. (2007). Malaria among primigravid women attending antenatal clinics in Awka, Anambra State, south-east Nigeria. *Nigerian Journal of Parasitology*, 28(1), 25-27.
- [4] Bi, P., Tong, S., Donald, K., Parton, K. A., & Ni, J. (2003). Climatic variables and transmission of malaria: 12-year data analysis in Shuchen County, China. *Public health reports*, 118(1), 65.
- [5] Gamble, C. L., Ekwaru, J. P., & Ter Kuile, F. O. (2006). Insecticide-treated nets for preventing malaria in pregnancy. Coch database of systemic reviews.
- [6] Guyat, H. & Ochola, S. (2003). Use of bed-nets given free to pregnant women in Kenya. *Lancet*, 362, 1549 – 1550.
- [7] Ibrahim, S. M., Umar, N. I., Garba, N. A., Isa, B., Usman, H. A., & Bako, B. G. (2014). Utilization of insecticide-treated nets among pregnant women attending antenatal clinic in a suburban referral hospital, North-East Nigeria. *British Journal of Medicine and Medical Research*, 4(12), 2343-2351.
- [8] Isah, A. Y., & Nwobodo, E. I. (2009). Awareness and utilization of insecticides treated mosquito nets among pregnant mothers at tertiary health institution in North-Western Nigeria. *Nigerian Journal of Medicine*, 18(2).
- [9] Kebede, D. L., Hibstu, D. T., Birhanu, B. E., & Bekele, F. B. (2017). Knowledge, Attitude and Practice towards Malaria and Associated Factors in Areka Town, Southern Ethiopia: Community-Based Cross-Sectional Study. *J Trop Dis*, 5(3), 1-11.
- [10] Malaria, R. B., & World Health Organization. (2010). Malaria in pregnancy. *RBM infosheet*, (4).
- [11] Mbanugo, J. I., Ukibe, N. R., & Ikeakor, L. C. (2013). Level of awareness and use of insecticide-treated bed nets among pregnant women attending antenatal clinics in Anambra State, South Eastern Nigeria. *Journal of public health and epidemiology*, 5(9), 391-396.
- [12] Mbanugo, O., & Okoroudo, O. (2005). Prevalence of plasmodium infections in pregnant women in South-Eastern Nigeria. *J. Environ. Health*, 2(2), 64-68.
- [13] Munisi, D. Z., Nyundo, A. A., & Mpondo, B. C. (2019). Knowledge, attitude and practice towards malaria among symptomatic patients attending Tumbi Referral Hospital: A cross-sectional study. *PLoS one*, 14(8), e0220501.
- [14] Musa, O. I., Salaudeen, G. A., & Jimoh, R. O. (2009). Awareness and use of insecticide-treated nets among women attending an ante-natal clinic in a northern state of Nigeria. *marketing*, 59, 354.
- [15] Okwa, O. O. (2004). Preliminary investigations on malaria in sickle cell patients among pregnant women and infants in Lagos, Nigeria. *Nigerian Journal of Parasitology*, 25(1), 81-85.

- [16] Pettifor, A., Taylor, E., Nku, D., Duvall, S., Tabala, M., Mwandagalirwa, K., ... & Behets, F. (2009). Free distribution of insecticide-treated bed nets to pregnant women in Kinshasa: an effective way to achieve 80% use by women and their newborns. *Tropical Medicine & International Health*, 14(1), 20-28.
- [17] Runsewe-Abiodun, T., Iyabo, I. A., & Christy, S. A. (2012). Awareness and knowledge about insecticide-treated nets (ITNs) amongst pregnant mothers in Ogun State, Western-Nigeria: a descriptive cross-sectional study. *Educ Res J*, 2(5 Suppl), 138-45.
- [18] Steketee, R. W., Nahlen, B. L., Parise, M. E., & Menendez, C. (2001). The burden of malaria in pregnancy in malaria-endemic areas. *The Intolerable Burden of Malaria: A New Look at the Numbers: Supplement to Volume 64 (1) of the American Journal of Tropical Medicine and Hygiene*.
- [19] Ukibe, S. N., Ikeako, L. C., Mbanugo, J. I., Obi-Okaro, A. C., & Ukibe, N. R. (2014). Knowledge, Attitude and Practices of Pregnant Women concerning the use of Insecticide Treated Bed Nets (ITNs) in Anambra State, South-east Nigeria. *Journal of Applied Medical Sciences*, 3(1), 15-22.
- [20] World Health Organization. (2017). *Achieving and maintaining universal coverage with long-lasting insecticidal nets for malaria control* (No. WHO/HTM/GMP/2017.20). World Health Organization.
- [21] World Health Organization. (2018). *World health statistics 2018: monitoring health for the SDGs, sustainable development goals*. World Health Organization.