



## Knowledge, Attitude and Practice of Insecticide Treated Nets Among Antenatal Attendees in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Amaku, Awka

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### Abstract

The aim is to evaluate their experiences with use of insecticide treated nets and assess factors that may contribute to increased or decreased utilization of insecticide treated nets.

A descriptive cross-sectional study was done in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, COOUTH, Awka, Anambra State. This research utilized a semi-structured interviewer administered questionnaire. The data was summarized using tables, bar charts, pie charts and chi square test.

The mean age of respondents was  $27.42 \pm 8.74$ . All respondents were females. Among them, 20 (12.3%) were single and 140 (85.9%) were married. Most of the respondents, 153 (96.2%) were Igbo by ethnicity. By occupation, 56 (34.4%) were civil servants, 48 (29.4%) were business owners/traders, 17 (10.4%) were housewives and 39 (23.9%) were self-employed professionals.

The respondents had adequate knowledge about insecticide treated nets as majority, 161 (97%) have heard about insecticide treated nets. 154 (92.8%) attendees agreed that use of insecticide treated nets is necessary during pregnancy and the same number of attendees believe that it provides more benefit than harm. In addition, 140 (90.9%) attendees agreed that insecticide treated nets are a potent method of preventing malaria during pregnancy and improves quality of life 112 (75.7%). It was evident from the study that fewer attendees sleep under insecticide treated net every day compared to number that agreed they sleep under insecticide treated net. The study revealed that there is adequate knowledge of malaria in pregnancy and preventive measures among antenatal attendees in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, COOUTH, Awka, Anambra State. There was effective utilization of various preventive measures especially use of insecticide treated nets, antenatal drugs (IPT) and insecticide spray. Excessive heat accounted for the most common reason which discouraged the attendees from using insecticide treated nets. Also, according to them, the major difficulty encountered when using insecticide treated net is that it causes more heat in hot weather.

We concluded by recommending some measures which will boost compliance and utilization of malaria preventive measures in pregnancy which include public health education and enlightenment of pregnant women on the benefits of use of insecticide treated nets and integration of malaria prevention strategies by the government and policy makers across all tiers of the health system.

**Keywords** Antenatal Attendees; Insecticide Treated Nets; Knowledge Attitude and Practice

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## 1. Background to the Study

Malaria is a mosquito borne infectious disease caused by parasitic protozoan belonging to the genus plasmodium. The first record of malaria like symptom occurred in as early as 2700BC in China and the vector of this disease was not identified until 1880 when Charles Louis Alphonse Laveran identified mosquitoes as a vector for malaria.

Malaria remains a rising cause of morbidity and mortality, posing as a major threat to Nigeria and Africa economy as a whole. It is an important cause of illness and death in many parts of the world especially the sub-Saharan Africa. It has become a good indicator for the assessment of maternal and child health. It is the second most common cause of infected disease related deaths in the world after tuberculosis and it is estimated to affect between 35p to 500 million people annually. Twenty-five million pregnant women are currently at the risk of malaria<sup>1</sup>.

In 2015 alone there was an estimated rate of 212 million new cases of malaria and 429,000 deaths.

The world health organisation (WHO) Africa region continues to shoulder the heaviest malaria burden accounting for an estimated 90% of malaria cases and 92% of malaria deaths in 2015 while the WHO of South east Asia Region accounted for 7% of global malaria cases and 6% of malaria deaths. Three quarter of these cases and deaths are estimated to ha e occurred in fewer than 15 countries with Nigeria and DR Congo accounting for more than a third<sup>2</sup>.

The incidence rate of malaria is estimated to have died by 21% globally between 2010 and 2015 especially in developed countries. Decrease in incidence rate has been greatest in the WHO European region (100%) and the WHO South East Asia region (54%). However, progress has been slow in the sub-Saharan Africa which is the region that carries the heaviest malaria burden<sup>4</sup>.

Nigeria is known for its high prevalence of malaria and it is a leading cause of morbidity and mortality in the country. Available records shows that at least 50% of the population of Nigeria suffers from at least one episode of malaria each year and it is noted that malaria prevalence in 2000 was about 2.4 million. As the world marked the world malaria day in 2011 it was said that an estimated 100 million cases and about 300,000 deaths are recorded each year in Nigeria. The disease is responsible for 60% of outpatient visit to health facilities, 30% of childhood deaths, 25% of deaths under one year, 11% of maternal deaths. The disease is estimated to cause the country about 132 billion naira every year taking into account the cost of treating and prevention and loss of working hours.

Malaria in pregnancy remains an important public health problem that has proved difficult to tackle and pregnant women are at high risk of dying from the complication of severe malaria. While the consequences of malaria in pregnancy on maternal health are dominated by anaemia, for the foetus its low birth weight which in turn is a significant risk factor for both impaired development and infant mortality<sup>3</sup>. A study conducted in Benin south-south Nigeria reported a higher risk of low birth weight associated with malaria infection after six months of pregnancy. It is estimated that more than two third of malaria deaths occur in children less than % years and in 2014<sup>5</sup> about 303,000 African children died before their 5<sup>th</sup> birthday. According to worlds malaria report 2016, one child dies from malaria every 2 minutes. The recognition of the unaccepted morbidity and mortality arising from malaria in Africa and the availability of evidence-based cost-effective interventions led to the launch of the Roll back malaria (RBM) initiative in 1988. The RBM movement aimed to half deaths attributable to malaria by 2010 and half it again by 2015 through the use of 3 tools which are insecticide treated bed nets (ITN), artemisinin based anti-malaria combination-based therapy and the use of insecticides. Other preventive and control measures such as advocacy communications and social mobilization, effective programme, monitoring and evaluation and partnership and collaboration were also used and there has been a renewed emphasis on preventive measures at community and individual levels, but no sources have reported the key roles played by insecticides treated nets in malaria control especially in the sub-Saharan Africa. Their roles in reducing human vector contact and lowering malaria morbidity and mortality is well documented in areas of both high and low endemicity. Newer longer lasting insecticide nets have started replacing ITNS in many countries ITNS are mosquito nets treated with insecticides and are said to be two times more effective than untreated nets and offer greater than 70% protection compared with no net. ITNS protect people sleeping under them and simultaneously kill any mosquito on the net. Some protections are also provided to people through this method including people sleeping in the same room but not under the net. ITN distribution is said to be an effective method of preventing malaria and a part of WHO millennium developmental goal. Between 2010 and 2015 there was an 80% increase in the use of ITNS for all populations at risk of malaria in the sub-Saharan Africa.

Preventing malaria in pregnancy can be a key intervention to improving maternal and foetal health globally and because mosquito bite is associated with malaria transmission, there is need to prevent mosquito bite through the use of ITNS, thus reducing transmission<sup>12</sup>.

At the present time, there are 3 basic types of mosquito nets: Untreated Nets, Insecticides Treated Nets (ITNs) and Long-Lasting Insecticide Treated Nets (LLINs).

Insecticide-treated nets are mosquito nets treated with insecticides. They were developed in the 1980s for mosquito prevention. ITNs are estimated to be twice as effective as untreated nets, and offer greater than 70% protection compared with no nets. These nets are dip-treated using a synthetic pyrethroid insecticide such as deltamethrin which will double the protection over non-treated nets by killing and repelling mosquitoes. For maximum effectiveness, ITNs should be re-impregnated with insecticide every six (6) months. Newer, long lasting insecticidal nets (LLINs) have now replaced ITNs in most countries.

The distribution of ITNs impregnated with insecticides such as permethrin or deltamethrin has been shown to be an extremely effective method of mosquito prevention.

Malaria is a mosquito borne infectious disease of humans and other animals caused by protozoans belonging to the genus plasmodium (phylum Apicomplexa). The disease is most commonly transmitted by an infected female Anopheles mosquito. Only female mosquitoes feed on blood; male mosquitoes feed on plant nectar, and do not transmit the disease. The female of the Anopheles genus of mosquito prefer to feed at night.

Five species of plasmodium can infect and be spread by humans; *P.falciparum*, *P.vivax*, *P.ovale*, *P.malariae*, and the simian parasite *P.knowlesi*.

The female anopheles mosquito becomes infected when it feeds on human blood containing gametocytes, the sexual forms of malaria parasite. Development in the mosquito takes from 7 to 20 days, and results in sporozoites accumulating in the salivary glands and being inoculated into the human blood stream. Sporozoites disappear from human blood within half an hour and enters the liver. After some days, merozoites leave the liver and invade red blood cells, where further asexual cycles of multiplication take place, producing schizonts. Rupture of the schizonts releases more merozoites into the blood and causes fever, the periodicity which depends on the species of parasites.

*P.vivax* and *P.ovale* may persist in the liver cells as dominant forms, hypozoites, capable of developing into merozoites months or years later. Thus, the first attack of clinical malaria may occur long after the patient has left the endemic area, and the disease may relapse after treatment, if drugs that kill only the erythrocytic stage are given. *P.falciparum* and *P.malariae* have no persistent exoerythrocytic phase but recrudescence of fever may result from multiplication of parasites in red blood cell which hasn't been eliminated by treatment.

*P.falciparum* is the most dangerous of the malarias and patients are either "cured or killed". The onset is often insidious, with malaise, headache and vomiting. Cough and mild diarrhea are also common. The fever has no particular pattern.

Jaundice is common due to hemolysis and hepatic dysfunction. There is tender hepatomegaly and splenomegaly. Anaemia develops rapidly, as does thrombocytopenia. A patient with falciparum malaria, apparently not seriously ill, may rapidly develop dangerous complications. Cerebral malaria is manifested by confusion, seizures or coma, usually without localizing signs<sup>5</sup>.

Apart from the most common method of malaria transmission-the bite of so many species of Anopheles mosquito, other forms of transmission have occurred, namely:

(i) by blood transfusion; (ii) congenital from mother to foetus (transplacental); (iii) sharing needles and syringes among drug addicts; (iv) accidental, among health workers through needle and instrumental puncture; (v) plasmapheresis and organ transplantation. Vectors surviving journeys from endemic to non-endemic areas have been responsible for transmitting malaria to airport workers or individual living around airports ('airport malaria'), or in baggage originating from endemic areas ('baggage malaria')<sup>6</sup>.

Although malaria is known to affect all ages and sexes, its morbidity and mortality is believed to be significant in pregnant women and children less than five years of age,

Pregnant women are more susceptible than the general population to malaria: they are more likely to become infected, have recurrence, develop severe complications and to die from the disease. Malaria contributes very significantly to maternal and fetal mortality. Malaria in pregnancy is different to the disease in the non-pregnant state.

The severity of malaria in pregnancy is thought to be due to general impaired immunity plus a diminution of acquired immunity to malaria in endemic areas.

Placental malaria occurs where *P.falciparum* infected erythrocytes accumulate in the intervillous space of the placenta but may be rare or absent in the peripheral circulation. Treatment can be more difficult due to restrictions on anti-malaria agents. Many are unlicensed in pregnancy, due to lack of clinical trials involving this important population, for fear of damaging the fetus. With regards to chemoprophylaxis, recent WHO recommendations and a large meta-analysis support the use of intermittent prophylactic treatment during the second and third trimester.

Dihydroartemisinin + piperquin are being evaluated as an option to replace sulfadoxine + pyrimethamine for intermittent preventive treatment. Atypical presentation of malaria is present in pregnancy, particularly in the second and third trimester, so a high index of suspicion should be maintained in susceptible pregnant mothers. A travel history should be taken in any pregnant woman with unexplained fever or anaemia. Fever may be absent, low grade or high grade and may not behave in the classical quartan/tertian fashion. Other symptoms may include fever, cough, malaise, headache, myalgia and diarrhea. Anaemia is a common feature and may be the only clue to the illness in mature primigravidae living in endemic areas. Splenomegaly may occur, but tends to regress in the second half of pregnancy. Complications along with features of cerebral malaria (impaired consciousness, seizures) and jaundice can be presenting features of an acute, severe illness<sup>8</sup>.

The outcome of pregnancy is affected by malaria. Pyrexia from acute attack of malaria may lead to spontaneous abortions or premature labour by producing uterine contractions. Abortions may also result from asymptomatic but intense death of the fetus. Malaria produces haemolysis when parasitized red cells rupture, also parasitized cells are constantly removed from the circulation by the spleen. This may result in anaemia in pregnancy. Increased parasitaemia is accompanied by marked cellular reaction in the placenta. This in turn interferes with the circulation of maternal blood through the intervillous spaces leading to impairment of oxygenation to the fetus and subsequent interuterine growth restriction.

Thus, the weight of babies born to mothers with marked placental parasitisation is less than those without placental parasitisation. This effect on birth weight is more marked in primigravida and may partly explain the difference in birth weight between first and subsequent pregnancies<sup>9</sup>.

Preventing and treating malaria in pregnancy can be a key intervention to improving maternal, fetal and child health globally and are linked to three of the Millennium Development Goals (MDG-3 Maternal Health, MDG-4 Child Health, MDG-5 Combating Infectious Disease)<sup>8</sup>.

Obviously if mosquito bite is not associated with malaria transmission, the need to prevent mosquito bite through the use of Insecticide Treated Nets (ITNs) cannot be duly appreciated.

### **Problem Statement**

Insecticide treated nets (ITN) have been known to reduce numbers of infective mosquito bites by 70% to 90% in various geographical settings. In Nigeria, it remains a thing of concern that despite the proven efficacy of this preventive intervention and its supposed availability, malaria still constitutes a serious threat to maternal and neonatal health<sup>10</sup>. The 2013 Nigeria Demographic and Health Survey (NDHS) reported that pregnant women who slept under ITNs were only 71% of which 39% came from south-East, Nigeria<sup>11</sup>. This survey provided baseline information for the current study. However, the current study reveals the utilization pattern of ITNs throughout the entire gestational period.

## Justification

Despite the concerted efforts made by the various health authorities to promote the use of ITNs by pregnant women, studies have shown that the level of awareness, ownership and actual use of ITNs by pregnant women has varied from one locality to or zone. Although the awareness level has improved overtime, studies have shown that a lot of factors still militate against actual ownership and correct use of ITNs. Treated Nets (ITNs) provide effective barrier or shield between the user and mosquito or other biting insects thereby protecting against mosquito bites and malaria transmission. The increased prevalence of malaria in pregnancy as reported by some studies suggest that all is not well with the awareness or use of ITNs in Anambra State. Besides, no study has being done in Awka to ascertain the knowledge, attitude and actual practice regarding ITNs among pregnant women. This study was therefore designed to assess the level of awareness, ownership and use of ITNs by pregnant women attending antenatal clinic in a state teaching hospital in Awka Anambra state, south East of Nigeria<sup>12</sup>.

## Objectives

### General Objective

To assess the knowledge, attitude and use of ITNs among pregnant women attending antenatal clinic in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) Awka.

### Specific Objective

1. To determine the level of knowledge of the pregnant women attending antenatal clinic at COOUTH regarding ITNs.
2. To determine the attitude of the ANC attendees towards ITNs.
3. To ascertain the proportion the ANC attendees who are currently in possession of ITNs.
4. To find out challenges (if any) towards the effective use of ITNs.
5. To know the level of practice of the use of ITNs among these antenatal attendees.

## Hypotheses

Ho<sub>1</sub> There is no knowledge of pregnant women attending antenatal care clinics at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) regarding ITNs.

Ho<sub>2</sub> There is no attitude of antenatal care clinic attendance towards ITNs.

Ho<sub>3</sub> There is no proportion of antenatal clinic attendees who are currently in position of ITNs.

Ho<sub>4</sub> There is no challenges towards the effective use of ITNs.

Ho<sub>5</sub> There is no level of practice towards the use if ITNs among these antenatal care attendees.

## 2. Methodology

### Study Area

Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH), formerly called Anambra state University Teaching Hospital (ANSUTH), is a tertiary health care institution located in Awka, Awka-south LGA of Anambra state. Awka south local government is an urban LGA which is part of Anambra state capital territory. It has a population of 189,049 and a land mass of 175km<sup>2</sup> based on the 2006 national census report<sup>12</sup>. Historically, the people of Awka are known for blacksmithing. Chukwuemeka Odumegwu Ojukwu University Teaching Hospital COOUTH is the only state government owned teaching hospital in Anambra state. Anambra state is located in the south east geopolitical zone of Nigeria. It has a population of 4,177,828 inhabitants according to the 2006 national census report<sup>13</sup>. The state has a landmass of 4,816.21km<sup>2</sup> and a population density of 867.5km<sup>2</sup><sup>14</sup>. The major language of the people is Igbo. The major occupation of the people are farming, trading and public service. The state has 21 local government areas, 14 of which are rural and 7 are urban. There are 31 state government owned general hospital, a federal teaching hospital, a state teaching hospital, 14 mission hospital, 189 maternity homes and about 600 private hospital and clinics<sup>15</sup>.

The Chukwuemeka Odumegwu Ojukwu University Teaching Hospital is owned by Anambra state government. It is a teaching hospital for training of medical personnel and is affiliated to the Chukwuemeka Odumegwu Ojukwu University. It offers the full range of medical services and diagnostics expected of a typical teaching hospital of which provision of good antenatal care service are inclusive.

This study was conducted at the Antenatal clinic at COOUTH Awka, Anambra state of Nigeria. The hospital runs her antenatal clinic on Mondays and Fridays, while booking for new clients holds on Wednesdays. The clinic is located beside the Obstetrics and Gynecology ward inside the teaching hospital.

### Study Design

A descriptive cross-sectional study

### Study Population

This consisted entirely of pregnant women who came for Antenatal booking visits, which holds every Wednesdays at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital.

### Sample Size Determination

Using the formula for calculating minimum sample size for cross sectional studies.

$$n = z^2pq / d^2$$

Where n= minimum sample size

z= standard normal deviation usually 1.96

p= proportion of respondents who had knowledge of ITNs= 0.41

d= degree of precision taken as 5%=0.05

$$q = 1 - P = (1 - 0.41)$$

$$\therefore n = 1.96^2 \times 0.41 \times (1 - 0.41) / 0.05^2 = 372$$

The sample size was approximated to 370

Since the population size is less than 10,000, final sample estimate will be

$$Nf = n / 1 + (n) / (N)$$

Where nf= the desired sample size when population is less than 10,000

n = the desired sample size when population is greater than 10,000

N= the estimate of the population size =600, as evidenced by the number of pregnant women who registered for ANC over the past three months

$$\therefore nf = 370 / 1 + 370 \div 300$$

$$= 370 / 1 + 1.23$$

$$= 370 / 2.23$$

$$= 165.9 \text{ approximated to } 166.$$

### Sampling Technique

A systemic random sampling technique was used. The antenatal clinic was visited and the booking register was inspected. It showed that an average of about 50 pregnant women comes for antenatal care, every Wednesdays.

The 166 respondents were chosen at a ratio of 1 respondent to every 2 pregnant women that register. Thus 21 respondents will be sampled each Wednesday and the sampling of 166 respondents (population size) was done over 8 Antenatal booking clinic days.

### **Ethnical Consideration**

Ethnical approval was sought and obtained from Chukwuemeka Odumegwu Ojukwu University ethnical review committee, through the department of community Medicine.

Informed verbal consent was obtained from research participant before administration of questionnaires. Participation was made voluntary. All data collected were strictly kept confidential.

### **Inclusion Criteria**

Participants included:

- I. Clients who attend antenatal clinic at COOUTH
- II. Clients who are stable enough to answer the questions.
- III. Clients who gave their consent.

### **Exclusion Criteria**

Participants excluded

- I. Pregnant women on admission
- II. Women who came on outpatient visits on antenatal clinic days.

### **Instruments for Data Collection**

Data was collected using a semi-structured interviewer administered questionnaire which was designed with the help of our supervisor. The questionnaire consists of five sections:

- I. Section A: Socio- demographic characteristics/Bio-data
- II. Section B: knowledge of malaria in pregnancy
- III. Section C: knowledge of insecticide treated nets
- IV. Section D: Attitude towards the knowledge of ITN
- V. Section E: Use of ITN

### **Method of Data Analyses**

Questionnaires was checked for errors and omissions at the end of each day. Data was entered into the computer and analyzed using SPSS version 20.0. Data error was checked and corrected too. Data was represented in tables, bar charts, pie charts.

## **3. Results**

### **3.1 Socio-Demographic Characteristics of the Respondents**

A total of 166 antenatal attendees at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka, Anambra State out of 200 who were approached for the study responded to the questionnaire giving a response rate of 83%.

Three (1.9%) attendees fell within the age group  $\leq 19$  years, 96 (61.1%) fell within the age group 20-29 years and 58 (36.9%) fell within the age group 30-39 years. The mean age of respondents was  $27.42 \pm 8.74$ .

Regarding marital status of the attendees, 20 (12.3%) are single while 140 (85.9%) are married. 153 (96.2%) respondents are Igbo by ethnicity and 6 (3.8%) belong to other ethnic minority groups.



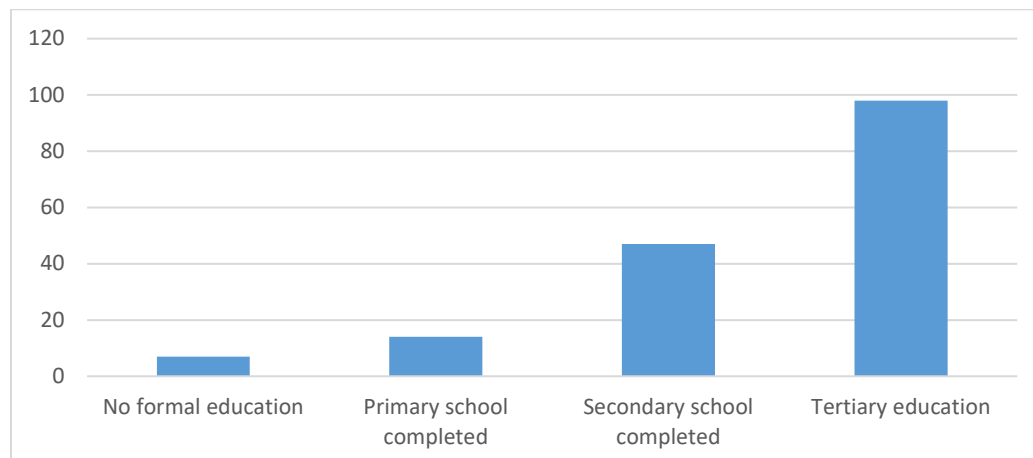
By occupation, 56 (34.4%) are civil servants, 48 (29.4%) are business owners/traders, 17 (10.4%) are housewives and 39 (23.9%) are self-employed.

Seven (4.2%) respondents have no formal education, 47 (28.3%) have up to secondary school education and 98 (59%) have tertiary education. 8.5% (12) of the respondents have no children at the time of this study, 43 (30.3%) have only one child while 19 (13.4%) have more than three children.

**Table 1: Socio-Demographic Characteristics of the Respondents**

Characteristics (N = 166)	Frequency (n)	Percentage (%)
<b>Age group</b>		
≤ 19	3	1.9
20-29	96	61.1
30-39	58	36.9
<b>Marital status</b>		
Single	20	12.3
Married	140	85.9
Widowed	3	1.8
<b>Ethnicity</b>		
Igbo	153	96.2
Hausa	0	0
Yoruba	0	0
<b>Number of children</b>		
None	12	8.5
One	43	30.3
Two	37	26.1
Three	31	21.8
Other	19	13.4
<b>Occupation</b>		
Civil servant	56	34.4
Business owner/trader	48	29.4
House wife	17	10.4
Self-employed	39	23.9

**Diagram 1: Highest Educational Qualification**





### 3.2 Knowledge of Malaria in Pregnancy

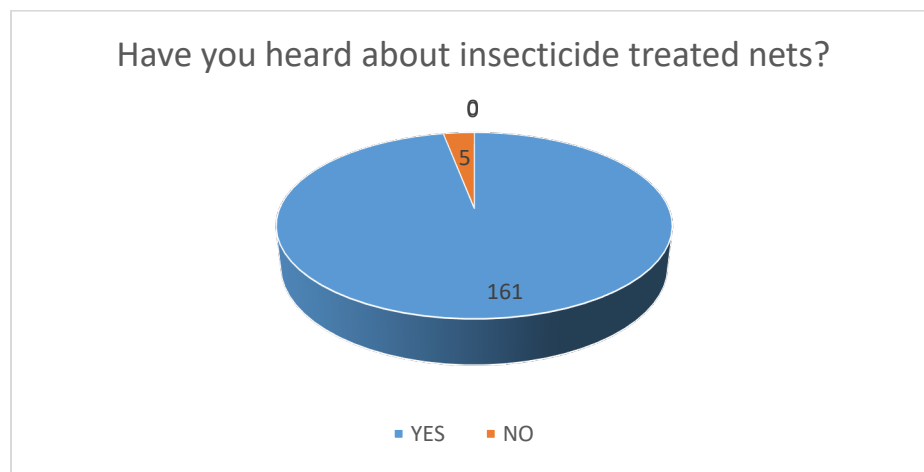
161 (97%) attendees know about malaria in pregnancy. 158 (98.1%) of them also acknowledged mosquito bites as a cause of malaria in pregnancy. A greater number of the antenatal attendees, 145 (90.1%) heard about malaria in pregnancy from hospitals. Also, majority of the attendees 130 (87.2%) know about the negative effects of malaria in pregnancy with poor fetal growth (30.6%) and ill health to the mother (28.8%) representing the most common negative effects of malaria in pregnancy they know.

**Table 2: Knowledge of Malaria in Pregnancy**

Have you heard about malaria in pregnancy?	Frequency (n)	Percentage (%)
Yes	161	97
No	5	3
<b>Source of information about malaria in pregnancy</b>		
Hospitals	145	90.1
Relatives/Friends	10	6.2
Media (radio/television)	6	3.7
<b>What do you think causes malaria in pregnancy?</b>		
Mosquito bites	158	98.1
Others	3	1.9
<b>Do you know any negative effects of malaria in pregnancy?</b>		
Yes	130	87.2
No	19	12.8
<b>If yes, what are the effects?</b>		
Premature labor	29	18.1
Miscarriage	18	11.3
Poor fetal health	49	30.6
Ill health to the mother	46	28.8

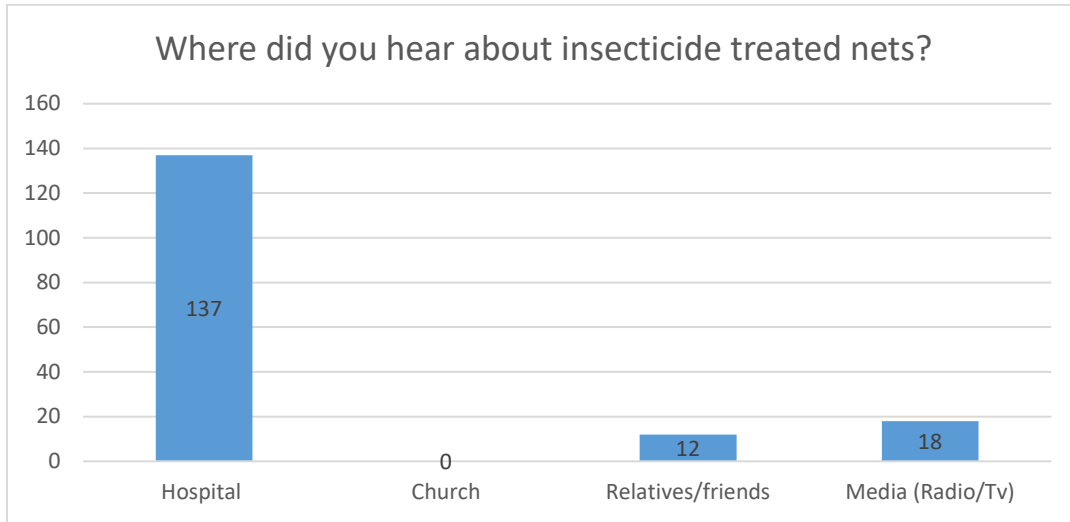
### 3.3 Knowledge of Insecticide Treated Nets

**Diagram 2: Knowledge of insecticide treated nets**



Majority of the respondents, 161 (97%) have heard about insecticide treated nets.

**Diagram 3: Source of information about insecticide treated nets**



From the above table, hospitals represent the most common source of information regarding insecticide treated nets.

About 105 (63.3%) attendees acknowledged that they are aware that insecticide treated nets are provided free of charge for pregnant women in Anambra state. 155 (95.1%) know the benefits of use of insecticide treated nets with protection from mosquito bite assuming the most frequent benefit the attendees know about.

**Table 3: Knowledge of importance of insecticide treated nets**

Do you know the importance of insecticide treated nets?	Frequency (n)	Percentage (%)
Yes	155	95.1
No	8	4.9
<b>What are the benefits</b>		
Protection from mosquito bite	152	91.6
Comfort during sleep	3	1.8
Beautification of room	6	3.6

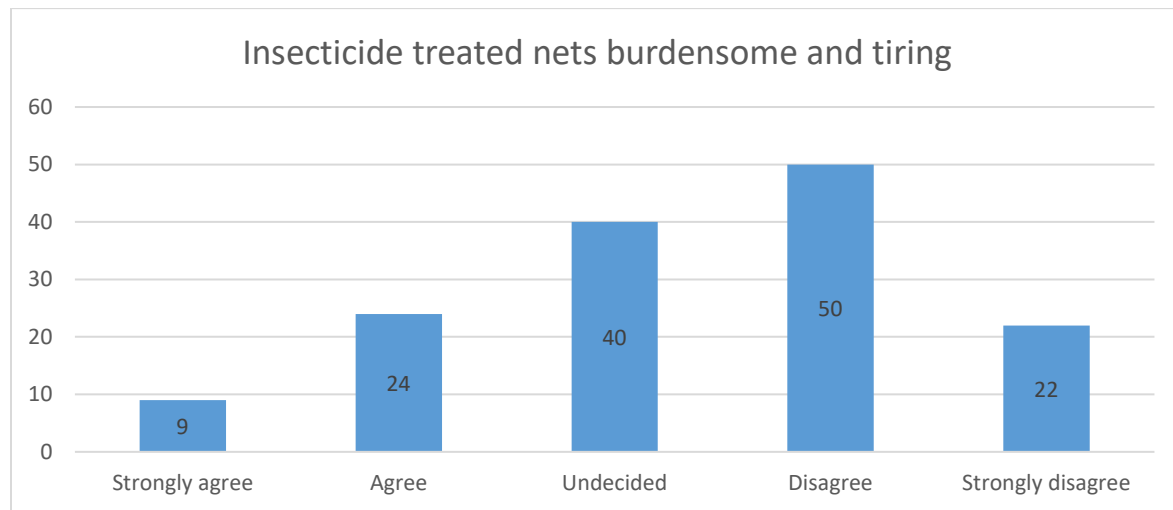
### 3.4 Attitude Towards Use of Insecticide Treated Nets In Pregnancy

One hundred and fifty-four (92.8%) attendees agreed that use of insecticide treated nets is necessary during pregnancy and the same number of attendees believe that it provides more benefit than harm. In addition, 140 (90.9%) attendees agreed that insecticide treated nets are a potent method of preventing malaria during pregnancy and improves quality of life 112 (75.7%).

**Table 4: Attitude towards use of insecticide treated nets**

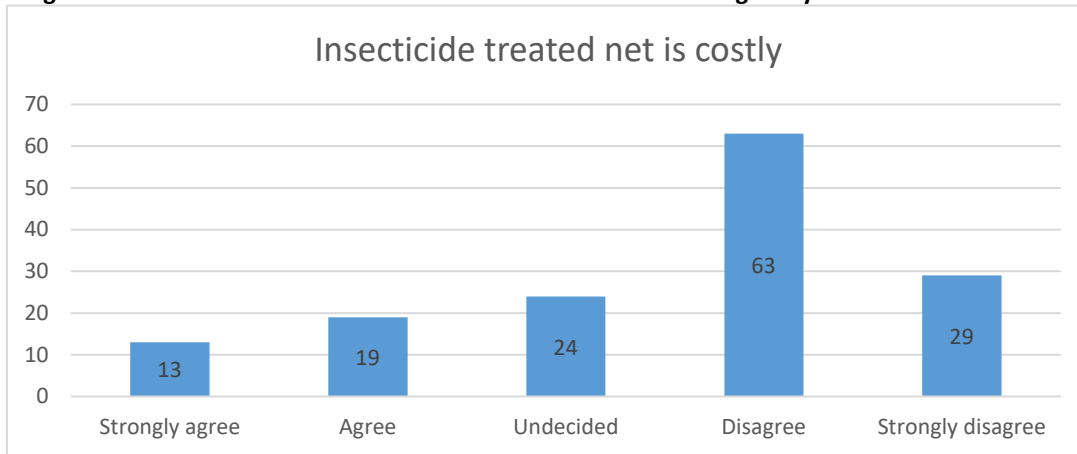
Use of insecticide treated nets is necessary during pregnancy	Frequency (n)	Percentage (%)
Strongly agree	112	72.7
Agree	42	27.3
Undecided	0	0
Disagree	0	0
Strongly disagree	0	0
<b>Use of insecticide treated nets gives more benefit than harm</b>		
Strongly agree	90	58.4
Agree	64	41.6
Undecided	0	0
Disagree	0	0
Strongly disagree	0	0
<b>Use of insecticide treated nets is a potent way of preventing malaria during pregnancy</b>		
Strongly agree	95	61.7
Agree	45	29.2
Undecided	11	7.1
Disagree	0	0
Strongly disagree	3	1.9
<b>Use of insecticide treated nets improves quality of life</b>		
Strongly agree	38	25.7
Agree	74	50
Undecided	28	18.9
Disagree	4	2.7
Strongly disagree	4	2.7

**Diagram 4: Attitude towards use of Insecticide Treated Nets in Pregnancy**



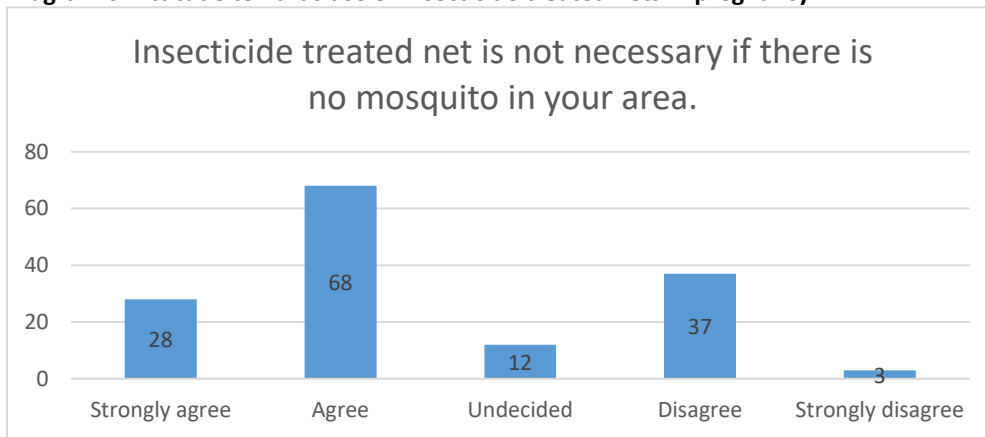
From the above table, most of the antenatal attendees do not agree that use of insecticide treated nets is burdensome and tiring.

**Diagram 5: Attitude towards use of Insecticide Treated nets in Pregnancy**



The above table shows that a larger proportion of the attendees do not agree that insecticide treated nets are costly.

**Diagram 6: Attitude towards use of insecticide treated nets in pregnancy**



From the table above, most of the respondents agree that insecticide treated nets are not necessary in areas where there is no mosquito.

### 3.5 Practice of Insecticide Treated Nets in Pregnancy

One hundred and ten (69.2%) attendees sleep under insecticide treated net and a larger number 62 (54.9%) agreed they use it every day. Among those who do not use insecticide treated net, 62 (41.1%) claimed that excessive heat account for the most common reason which discourage them from using it. Also, according to the attendees, the most common difficulty encountered when using insecticide treated net is that it causes more heat in hot weather.

**Table 5: Practice of insecticide treated nets in pregnancy**

Do you sleep under an insecticide treated net?	Frequency (n)	Percentage (%)
Yes	110	69.2
No	49	30.8
<b>If Yes, how often do you use insecticide treated nets?</b>		
Everyday	62	54.9
Once a week	3	2.7
2-4 times a week	30	26.5
5-6 times a week	18	15.9

**If No, what discourages you from using it?**

Excessive heat	62	41.1
Fear of suffocation and death	6	4
Large bed size, compared to the size of the nets	6	4
Use of sleeping mats	4	2.6
Fear of enclosures	3	2

**What difficulties do you encounter when using insecticide treated nets**

Absence of hanging stands for the nets	61	39.6
Trapping/accumulation of dust by the net	12	7.8
Causes more heat in hot weather	63	40.9

This study also revealed that more attendees had malaria for more than 3 times in the last one year. Also, more attendees 133 (86.9%) use other methods of malaria prevention and the most commonly used method of prevention is insecticide spray as indicated by 70 (42.9%) attendees.

**Table 6: Practice of Insecticide treated nets in Pregnancy**

In the past one year, how many times did you have malaria?	Frequency (n)	Percentage (%)
0	3	2
1	42	27.5
2	33	21.6
3	58	37.9
4	12	7.8
5 or more	5	3.3
<b>Do you use any method of malaria prevention?</b>		
Yes	133	86.9
No	20	13.1
<b>If yes, what type?</b>		
Insecticide spray	70	42.9
Mosquito coils	46	28.2
Antenatal drugs	15	9.2
Mosquito repellent cream	23	14.1

**3.6 Comparison of Socio-Demographic Factors of the Attendees and Practice of Insecticide Treated Nets**

**Table 7: Age and Practice of insecticide Treated Nets**

DO YOU SLEEP UNDER AN INSECTICIDE TREATED NET (ITN)?	AGE GROUPS		
		Less than or equal to 19 years	20-29 years
Yes	0	72	35
		67.3%	32.7%

From the table above, the highest number of attendees 72 (67.3%) who sleep under an insecticide treated net fell within the age group 20-29 years.

**Table 8: Marital Status and Practice of Insecticide Treated Nets**

DO YOU SLEEP UNDER AN INSECTICIDE TREATED NET (ITN)?	MARITAL STATUS		
	Single	Married	Widowed
Yes	12 11.2%	95 88.8%	0 0.0%

From the table above, majority of the attendees who sleep under an insecticide treated net are married, 95 (88.8%).

**Table 9: Occupation and Practice of Insecticide Treated Nets**

DO YOU SLEEP UNDER AN INSECTICIDE TREATED NET (ITN)?	OCCUPATION				
	Civil Servant	Business owner/trader	House wife	Self-employed	Banker
Yes	35 31.8%	32 29.1%	10 9.1%	33 30.0%	0 0.0%

The table above shows that a greater number of attendees who sleep under an insecticide treated net are civil servants, 35 (31.8%).

### 3.7 Relationship between Educational Status and Practice of Insecticide Treated Nets (ITNs)

**Table 10: Educational status and Practice of insecticide Treated Nets (ITNs)**

DO YOU SLEEP UNDER AN INSECTICIDE TREATED NET (ITN)?	HIGHEST EDUCATIONAL QUALIFICATION		
	Primary school completed	Secondary school completed	Tertiary education
Yes	7	36	67
No	7	11	31

The table above shows that antenatal attendees who had tertiary education account for the greatest proportion of respondents who sleep under insecticide treated net.

**Table 11: Chi-Square Test**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	3.658 <sup>a</sup>	2	.161
Number of Valid Cases	159		

There is evidence that there is no relationship between educational status of the attendees and use of insecticide treated nets. The differences may have been due to chance; hence null hypothesis is accepted. (Chi-square = 3.658, df = 2, p > 0.005).

## Discussion

This study was a descriptive cross-sectional study that utilized a semi-structured, interviewer administered questionnaire to assess the knowledge, attitude and practice regarding insecticide treated nets (ITNs) among antenatal attendees in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, COOUTH, Awka, Anambra State.

The mean age of the respondents is  $27.42 \pm 8.74$ . The respondents had adequate knowledge about insecticide treated nets as a majority, 161 (97%) attendees have heard about insecticide treated nets. This can be compared to a hospital-based study conducted in Uyo, Nigeria where 191 respondents have heard about insecticide treated nets while 59 have not.

From the study, 137 (85.1%) heard about insecticide treated nets from hospitals, 12 (7.5%) heard about it from friends and 18 (11.2%) heard about it from the media (Radio/Television). This is similar to a study done in Uyo, Nigeria where the major source of information regarding insecticide treated nets was antenatal clinic 77 (40.3%). According to the same study, other sources of information regarding insecticide treated net include: electronic media (radio/television) 64 (33.5%), friends/relatives 25 (13.1%), seminars 10 (5.2%), church 7 (3.7%) and print media 4 (2.1).

A good number of the respondents 110 (69.2%) sleep under insecticide treated nets and among those who do not sleep under insecticide treated nets, excessive heat represents the most frequent reason which discourage them from using it. This can be compared to a cross sectional study on utilization of insecticide treated nets (ITNs) during pregnancy among 335 postpartum women in Ibadan, Nigeria where a low utilization and compliance rate was observed. 127 (37.9%) women had high knowledge of malaria in pregnancy but only 70 (20.9%) demonstrated positive attitude towards use of insecticide treated nets. The finding is in contrast to a cross sectional study of 250 consecutive pregnant women attending Usman Danfodio University Teaching Hospital, Sokoto. According to the study, the main reason for non-utilization of insecticide treated nets were non-availability of the net in 58.8% of cases and inconvenience caused to women in 29.4% of cases.

Among the antenatal attendees who sleep under insecticide treated nets, a considerable number use it every day 62 (54.9%). The most frequent difficulties encountered by the attendees when using insecticide treated nets is absence of hanging stands for the nets 61 (39.6%) and generation of heat in hot weather 63 (40.9%). The attendees also avail themselves of other methods of malaria prevention and use of insecticide spray 70 (42.9%) account for the most frequently used method. This is in contrast to a study conducted in Kwara state Nigeria to determine the awareness, accessibility and use of insecticide treated nets among pregnant women in the state. Of the 455 women who participated in the study, 252 (55%) practiced environmental sanitation and 201 (44%) used prophylactic drugs as a method of malaria prevention.

## 4. Conclusion

The respondents had adequate knowledge about insecticide treated nets as a majority of them have heard about insecticide treated nets. The major source of information regarding insecticide treated nets are from hospitals, although other significant sources include: media (Radio/Television) and relatives/friends. Many attendees acknowledged that they are aware that insecticide treated nets are provided free of charge for pregnant women in Anambra state. They also know the benefits of use of insecticide treated nets with the most common benefit being protection from mosquito bites.

A significant number of attendees agreed that use of insecticide treated nets is necessary during pregnancy and believe that it provides more benefit than harm. Also, they agreed that insecticide treated nets are a potent method of preventing malaria during pregnancy and it improves quality of life. However, they do not agree that use of insecticide treated net is burdensome and tiring, costly and are not necessary in areas where there is no mosquito.

There is a positive attitude towards use of insecticide treated nets evidenced by the considerable number attendees who sleep under insecticide treated nets. More attendees agreed they use it every day. Among those who do not use insecticide treated net, excessive heat account for the most common reason which discourage them from using



it. Also, according to them, the major difficulty encountered when using insecticide treated net is that it causes more heat in hot weather.

More attendees had malaria for more than 3 times in the last one year. The most commonly used method of prevention other than use of insecticide treated net is insecticide spray.

## **5. Recommendation**

Based on the findings from this study, the following recommendations have been made

1. Public health education and enlightenment of pregnant women on the benefits of use of insecticide treated nets as a cheap and readily available means of malaria prevention.
2. Integration of malaria prevention strategies by the government and policy makers across all tiers of the health system in other ensure adequate utilization of malaria preventive measures.
3. Proper follow up of pregnant women by healthcare workers to ensure maximum satisfaction with use of insecticide treated nets.
4. Further research by community health specialists to ascertain factors that limit accessibility and utilization of use of insecticide treated nets.
5. Training and re-training of health workers by the government to ensure quality healthcare delivery during pregnancy and wide healthcare coverage.

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