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Incidence of Malaria Among Pregnant Mothers in Nsukka Local Government Area of Enugu State, 2008-2012

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Abstract

The study determined incidence rate and trend of malaria among pregnant mothers in Nsukka LGA of Enugu State for 2008-2012. Three specific objectives, three research questions and one hypothesis guided the study. The study adopted expost facto design using retrospective survey. The population of the study consisted of all pregnant mothers that attended health facilities in Nsukka LGA within 2008-2012. A total number of 1, 277 new malaria case files between 2008– 2012 was sampled for the study. Inventory profoma was used for data collection. Data generated were analysed using percentages. The null hypothesis was tested using chi–square at .05 level of significance. The results showed that incidence rate of malaria among pregnant mothers recorded highest (24.7 per 1000) in 2011 and lowest (13.5 per 1000) in 2008. There was increase and decrease incidence trend of malaria for the five years. The null hypothesis of no significant difference in the incidence of malaria among pregnant mothers based on age was accepted. Based on the findings, the researchers recommended among others that, pregnant mothers should be encouraged by health providers to utilize roll – back malaria programmes.

Keywords: Incidences, Malaria, Trend, Pregnant, Mothers.

Introduction

Malaria is one of the most common and serious tropical diseases. It is caused by protozal parasites of the plasmodium family. There are four species of plasmodium. They are; *Plasmodium falciparium, Plasmodium malariae, Plasmodium ovale and Plasmodium vivax.* Among these four species, *Plasmodium falciparium* causes a more serious disease and is common in tropical Africa (Lucas and Gills, 2007). The disease is transmitted by the female anopheles mosquitoes which become infected when they feed on human carriers. Ojo and Bridges (2004) stated that the development and multiplication of the parasite in the mosquito takes about 7–20 days, after which the mosquito becomes infected and capable of transmitting the infection into the human blood during a bite. It stays for a short period (between 10 and 14 days) in the new host before causing signs and symptoms. This is called the incubation period. Symptoms of malaria according to Obionu (2006) include malaise, lack of appetite, headache, joint and body aches, followed by irregular fever which is often interrupted by episodes of rigor (shivering) and then sweating – febrile paroxysms. These

symptoms are most often severe during pregnancy and affect the pregnant woman's normal daily activities.

It is endemic throughout south and South–East Asia, Africa, the Middle East and Central America. In many developing countries, malaria is one of the major causes of ill health and death especially in children and pregnant mothers. Olise (2007) posited that over one million people die worldwide annually from malaria. In Africa, malaria is the second leading cause of death from infectious diseases. Almost 1 out of 5 deaths of children under 5 years in Africa is due to malaria (United States Embassy in Nigeria, 2011). It further reported that there are an estimated 100 million malaria cases with over 300, 000 deaths per year in Nigeria, and contributes to an estimated 11 per cent of maternal mortality. Malaria is an infectious disease, therefore could be transmitted from one person to another.

Malaria in pregnancy is life threatening and it can affect the brain resulting to cerebral malaria leading to convulsions. According to Centers for Disease Control and Prevention –CDC (2013), malaria in pregnant women is associated with high risk of both maternal and perinatal morbidity and mortality. Other complications of malaria in pregnancy include: anemia, abortion, premature birth, low birth weight, still birth, death of the mother, and intra-uterine growth retardation (Abino, 2012). It is therefore, very important that both preventive and curative measures are adequately employed to reduce the incidence of malaria in pregnancy in all the malaria in Nigeria. Saugare, Weiss, Brentlinger, Richardson and Staedke (2012) stated that effective prevention strategies and case management of malaria illness are the foundation of malaria control during pregnancy. Preventive measures like environmental cleanliness, use of insecticide treated mosquito nets (ITNs) and pesticides are effective in preventing mosquito bites. Also, the use of intermittent preventive therapy (IPT) such as sulphadoxine pyrimethamine (SP) drugs is effective in prevention of malaria during pregnancy. Chedraui, Daily & Wylie (2014) opined that pregnant women are more prone to complications of malaria infection than non-pregnant women and treatment involves antimalarial drugs and supportive measures. The authors also opined that prevention involves chemoprophylaxis and mosquito avoidance

Incidence refers to number of times something new happens especially a disease. Park (2009) defined incidence of a disease as the number of new cases of a particular disease conditions occurring in a defined population during a specific period of time. The author further stated that incidence measures the rate at which new cases of a disease are occurring in a population. This is referred to as incidence rate. In this study, incidence of malaria in pregnancy therefore, refers to the repeated occurrence of malaria during pregnancy in a particular population over a specific period (2008 - 2012). Incidence rate is calculated as the number of new cases of malaria in pregnancy during a given period over the population of pregnant women in the study area. Trend refers to the direction in which a situation is changing or developing. Osie (2012) stated that trend studies changes within some general population over time.

Nsukka LGA is located in Enugu-North senatorial zone of Enugu State. It is made up of urban and rural settings with pregnant women scattered almost in every

community that make up Nsukka LGA with poor socio-cultural and poor socio-economic characteristics. These characteristics may likely predispose women in this area to malaria in pregnancy. Incidentally, no study or basic surveys to the best knowledge of the investigators exist that focused on the incidence of malaria among pregnant mothers in Nsukka LGA of Enugu State. Thus, this research is poised to fill part of the gap.

Purpose of the Study

The main purpose of this research was to study the incidence of malaria in pregnancy among pregnant mothers in Nsukka LGA. Specifically the study determined:

1. the incidence rate of malaria in pregnancy among pregnant women in Nsukka LGA between 2008 and 2012
2. the trend of malaria in pregnancy between 2008 and 2012.

Research Question

The following research questions were formulated to guide the study.

1. What is the incidence rate of malaria in pregnancy among pregnant women in Nsukka LGA between 2008 and 2012?
2. What is the trend of malaria in pregnancy between 2008 and 2012?

Hypothesis (H0)

The incidence of malaria among pregnant mothers in Nsukka LGA between 2008 and 2012 is not significantly different based on age.

Methodology

***Design of the Study*:** The study adopted descriptive survey of expost–facto design using the retrospective survey. This method was chosen because it is mostly used in epidemiological studies and is widely used to retrieve data from records on the occurrence of diseases in the past.

***Area of the Study*:** the area of the study was Nsukka Local Government Area (LGA) in Enugu-North senatorial zone of Enugu State. It is made up of 24 communities with fifty health facilities (thirty-two public health facilities and eight private health facilities). Pregnant women in this study area utilize these health facilities for their ante-natal services. Nsukka is surrounded with hills, grasses, ponds especially during rainy season. The area is also characterized by improper waste disposal. All these foster the breeding of mosquitoes which transmit malaria.

***Population for the Study*:** The population for the study consisted of all pregnant women (their case files) that attend the health facilities in Nsukka LGA between 2008 and 2012. A total of 12, 371 pregnant mothers' case files were retrieved and used for the study.

***Sample for the Study*:** The study used the new cases of malaria among pregnant mothers. All first diagnosis of malaria during the gestational period was selected. A total number of 1,277 case files were selected and used for the study.

***Instrument for Data Collection*:** The instrument for data collection was inventory proforma called incidence of malaria inventory proforma (IMIP). This was used to collect data from the pregnant mothers' case files in the health facilities on the incidence of malaria among pregnant mothers. The instrument was validated by three experts, one from the medical record office and two from the Department of Health and Physical Education, University of Nigeria, Nsukka.

***Method of Data Collection*:** The researchers approached the officers-in-charge (oic) of the health facilities with their staff ID to obtain permission to access the case files. Data were collected for the period of five years (2008-2012), through the help of three research assistants (medical record officers). They were requested to transfer data from the client's folders to the proforma.

***Method of Data Analysis*:** Frequency and percentages were used to compute the incidence rate of malaria in pregnancy. Index number was used to establish the trend of malaria in pregnancy between 2008 and 2012. Chi-Square statistic was used to test the null hypothesis.

Results

The results are hereby presented in tables and graphs as they relate to the research questions and hypothesis.

Table 1: Incidence Rate of Malaria among Pregnant Women (2008-2012) (N = 1, 277)

Years	f	%	(IR)
2008	135	10.57	13.5
2009	164	12.84	15.1
2010	293	22.94	21.6
2011	384	30.07	24.7
2012	301	23.57	19.5

IR = Incidence Rate

Table 1 shows the incidence rate of malaria among pregnant women from 2008 – 2012. The incidence rate recorded was highest in 2011 (24.7) and lowest in 2008 (13.5). The incidence rate of malaria in pregnancy in 2009, 2010 and 2012 recorded 15.1, 21.6 and 19.5 respectively. The incidence rate of malaria among pregnant women in Nsukka LGA is further presented in Figure 1.

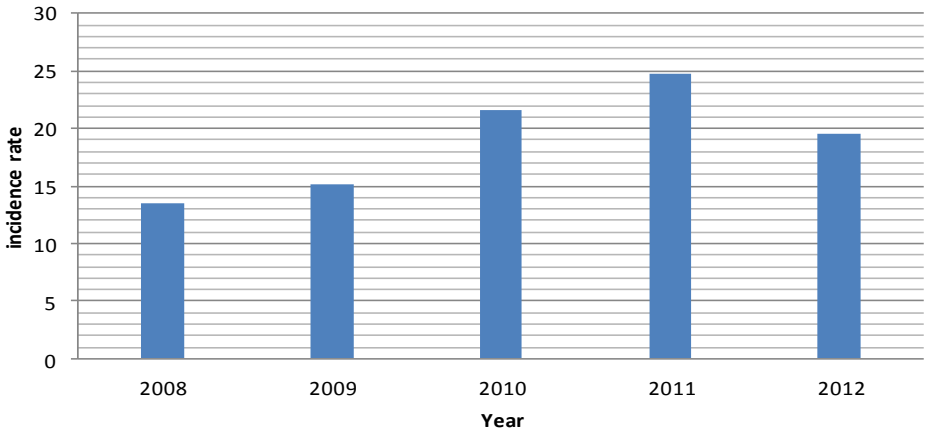

Figure 1: Bar Graph Showing the Incidence Rate Malaria among Pregnant Women (2008 – 2012) (N = 1, 277)

Figure 1 shows the pictorial presentation of the incidence rate of malaria among pregnant mothers in Nsukka between 2008 and 2012. The figure shows that the incidence rate of malaria was highest in 2011 and lowest in 2008.

Table 2: Incidence Trend of Malaria among Pregnant Mothers (2008 - 2012)

Years	f	Index no
2008	135	100
2009	165	121
2010	293	217
2011	384	284
2012	301	223

Table 2 shows that there is a fluctuating incidence trend of malaria among pregnant mothers using 2008 as the base line index number. In 2009 the trend increases by 121 and increases further in 2010 to 217. In 2011, the trend increases to 284 and decreases in 2012 to 223. Thus, the incidence trend of malaria was increasing until 2012 when it had a sharp decline.

Figure 2: Graph showing the Incidence Trend of Malaria among Pregnant Women (2008 – 2012) (n = 1,277)

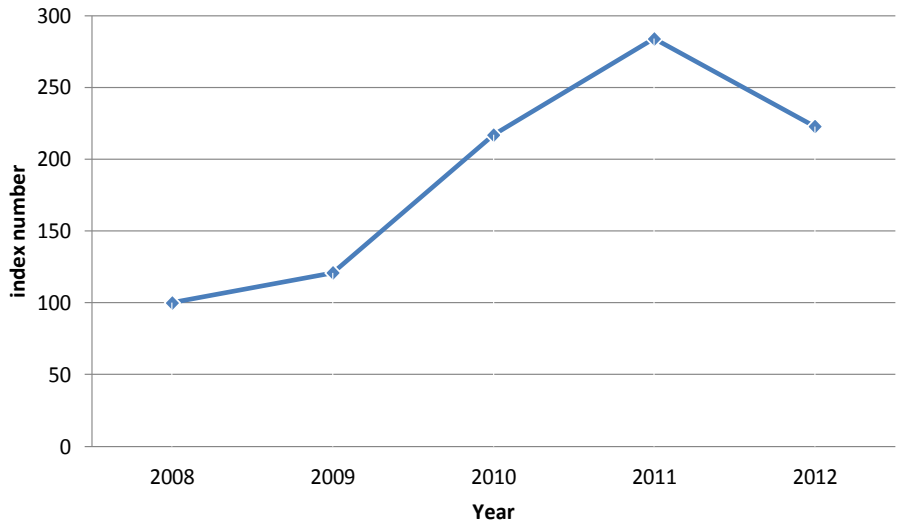

Figure 2 is a graphic explanation of Table 2. The figure shows the incidence trend of malaria among pregnant mothers in a pictorial form. It shows that between 2008 and 2011, there is increase in the incidence of malaria among pregnant mothers, after which there was a sharp decline.

Table 3: Summary of Chi-Square Analysis of Incidence of Maria Based on Age.

Variable	N	CalX^2	TabX^2	df	P	Decision
Age	1277	11.5	15.5	8	.05	Accepted

Table 3 shows that the calculated chi-square value of 11.5 is less than the table chi-square value of 15.5 at .05 level of significance and df of 8. The null hypothesis of no significant difference in the incidence of malaria among pregnant mother in Nsukka LGA based on age was therefore accepted.

Discussion

The findings of the study in table 1 and figure 1 showed that there was 1, 277 new cases of malaria among pregnant mothers in Nsukka LGA of Enugu State between 2008 and 2012. The highest incidence rate of 24.7 per 1000 was recorded in 2011 while the lowest incidence rate of 13.5 per 1000 was recorded in 2008. This finding was surprising due to the fact that there have been various intervention programmes against malaria in Enugu State generally. These intervention programmes include distribution of insecticide treated mosquito nets (ITNs) to pregnant and nursing mothers and the use of free intermittent preventive treatment (IPT) in the prevention of malaria among pregnant mothers. These findings were in line with the findings of a study on the prevalence and prevention of malaria in pregnancy in Edo State conducted by Wagbatsoma and Omoike (2008). The study found out that the use of ITN and IPT were observed to be highly effective in reducing the episodes of malaria among pregnant women. The findings were also in line with Alemu et al (2012) who asserted that regardless of sustained control efforts, malaria still remains as the major cause of morbidity and mortality especially among pregnant mothers and children under five years.

Table 2 and figure 2 showed fluctuating trend in the incidence years (2008 - 2012) in Nsukka LGA. The incidence trend recorded a maximum index number of 284 in 2011 and minimum index number of 100 in 2008. This increase and decrease fluctuations were expected. This is because the intervention programmes of malaria control might influence the trend. Alemu et al (2012) opined that factors affecting malaria incidence and prevalence trend include increase attention to malaria control and preventive measures by different agencies. These programmes appeared to be prerequisite to improved health care services especially the provision of maternal and child health care services, both in the urban and rural areas of the country.

The chi-square analysis of no significant difference in the incidence of malaria among pregnant mothers based on age was accepted. The implication of this finding is that age is not a factor in the incidence of malaria among pregnant mothers for the five years (2008-2012) in Nsukka LGA of Enugu State. This finding is in line with Oladeinde, Omoregie, Odia & Oladeinde (2012) who asserted that prevalence of malaria among pregnant women did not differ with age range. This finding however, contradicts Snow (1998) who asserted that there was astronomical increase of malaria infection for pregnant mothers who were 40 years and above. This may be due to low utilization of ITNs observed in older pregnant mothers,

resulting from discomfort experienced by some of them when they sleep under ITN. Aluko and Abimbola (2012) also found that there was low utilization of ITN among postpartum women in Ibadan due to discomfort especially excessive heat when slept under ITN.

Conclusion

The highest incidence rate of 24.7 per 1000 of malaria among pregnant mothers was recorded in 2011 while the lowest incidence rate of 13.5 per 1000 was recorded in 2008. Moreover, there was increase and decrease in the trend of malaria for the five years. The incidence of malaria among pregnant mothers did not significantly differ.

Recommendations

- Pregnant mothers should be encouraged by health care providers to utilize roll-back malaria programmes such as the use of insecticide treated mosquito nets (ITNs) and intermittent preventive therapy (IPT).
- Mothers should be advised to improve on environmental sanitation to curb breeding of mosquitoes.
- Government should improve and be consistent with malaria preventive measures and control.

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