International Journal Dental and Medical Sciences Research
Volume 5, Issue 1, Jan-Feb 2023 pp 472-478 www.ijdmsrjournal.com ISSN: 2582-6018

Occurrence and treatment outcome of malaria among pregnant women who attended health institution in Okada community, Edo State, Nigeria

i. Irodi Chijike Canis, ii. Mrs Oderinde Mary, iii.Mrs Ugeh Veronica, iv.Celestina Nonye Irodi, v.Dr Chukwuka Lucy Omowon, vi.Batista Archibong Nya-Inyang.

Department of Nursing Sciences, Igbinedion University Okada,Edo –State , Nigeria.
Department of Nursing Sciences, Igbinedion University Okada, Edo –State , Nigeria.
Department of Nursing Sciences, Igbinedion University Okada,Edo –State , Nigeria.
Department of Nursing Sciences,Igbinedion University Okada,Edo –State , Nigeria.
Department of Nursing Sciences,Igbinedion University Okada,Edo –State , Nigeria
Department of Nursing Sciences, Igbinedion University Okada,Edo –State , Nigeria

Submitted: 01-02-2023 Accepted: 10-02-2023

ABSTRACT
Malaria is one of the common health problems in Sub-Sahara Africa and a major cause of morbidity and mortality especially in endemic areas. In pregnancy, malaria has a significant impact on the health of the fetus as well as that of the mother. The rationale for this study is to assess the occurrence and treatment outcome of pregnant women with malaria who attended the health institutions in Okada community Edo state from January 2017 - December 2021. In Africa, malaria in pregnancy contributes to non-attainment of the MDG goals 4 and 5 which reduces child mortality and improved maternal health. Malaria in pregnancy results in morbidity and mortality in both the mother and the fetus. The **objectives** of this study are to; (i) Ascertain occurrence of malaria among pregnant women who were treated in health care facilities in okada community between January, 2017-December,2021. (ii) Investigate the treatment outcomes of pregnant women diagnosed with malaria in health care facilities in okada community between January,2017 to December,2021.(iii).To determine the socio-demographic characteristics of pregnant women who were treated in the health institution January 2017- December 2021. **Research questions** were asked; (i).What is the occurrence of malaria among pregnant women that attended health institutions in Okada community? (ii).What is the treatment outcome of malaria in pregnancy among women diagnosed in health institution in Okada community? In Nigeria, studies have shown that malaria contributes to the increased maternal mortality recorded in the nation. This ranges from 14.6% in North-Central Nigeria to 20% in the western region of the country. The **significance** of the study is to help suggest well defined ways of assessing occurrences of malaria, prevention and management of malaria in pregnancy. The **method** used for data collection was checklist instrumentation of all cases of malaria in pregnant women that attended health institutions in Okada community, Edo-state from 2017-2021. A total population of 201 and same number of checklist were used for the study. Data was analyzed using descriptive statistics in form of tables. **Finding** revealed that the prevalence of malaria disease was mainly between the ages of 15-25 years that attended health institution in Okada community Edo State from January 2017 - December 2021.

Key words: occurrence, malaria, pregnancy, treatment, checklist, mortality, morbidity, outcome.

I. BACKGROUND OF STUDY.

Malaria is a mosquito-borne infectious disease affecting humans and other animals caused by parasitic protozoans (a group of single-celled microorganisms) belonging to the Plasmodium type (World Health Organization WHO, March 2014). Malaria infection causes symptoms that typically include fever, fatigue, vomiting, and headaches. In severe cases it can cause yellow skin, seizures, coma, or death (Caraballo .H. 2014). Symptoms usually begin ten to fifteen days after being bitten. The symptoms and complications of malaria in pregnancy vary according to malaria transmission intensity in the given geographical area, and the individual's level of acquired immunity (WHO. 2016). The Plasmodium falciparum, plasmodium vivax, Plasmodium malariae and Plasmodium ovale specie causes malaria in pregnancy and are transmitted by the bite of a sporozoite-bearing female anopheles mosquito. After a period of pre-

erythrocytic development in the liver, the blood stage infection, which causes the disease, begins. Parasitic invasion of the erythrocyte consumes haemoglobin and alters the red cell membrane (Jongwuthves.et al., 2014). This allows P. falciparuminfected erythrocytes to cytoadhere (or stick) inside the small blood vessels of brain, kidneys and other affected organs. Cytoadherence and resetting (adherence of uninfected red blood cells) interfere with microcirculatory flow and metabolism of vital organs. The hallmark of falciparum malaria in pregnancy is parasites sequestered in the placenta. Malaria is an endemic disease in Nigeria, with a seasonal variation in different geographical zones of the countries. Over 90% of the total population is at risk of malaria and at least 50% of the population suffers from at least one episode of malaria each year. According to world health organization and untied nation population fund that conducted a research and found out that maternal mortality, prenatal death, low birth weight and maternal anemia is a major health problem in Nigeria. In pregnant women, Placental parasitemia will lead to impairment of fetal nutrition and this contributes to low birth weight, a leading cause of poor infant development and survival in Africa (WHO, 2012) as a result of the increased risk of malaria during pregnancy; WHO recommended a three pronged approach these include the use of intermittent preventive treatment (IPTP), insecticide treated bed nets (ITN) and effective case management of malaria illness and anemia (W.H.O, 2014). Malaria is usually confirmed by the microscopic examination of blood films or by antigen-based rapid diagnostic tests (RDT) Abba et al, 2014. In some areas, RDTs need to be able to distinguish whether the malaria symptoms are caused by Plasmodium falciparum or by other species of parasites since treatment strategies could differ for non-falciparum infections.

The disease is the major cause of outpatient attendance across all age group with about 66% of clinic attendance due to malaria (FMH, 2005) and thus constituting a great burden on the already depressed economy. The federal ministry of health, Nigeria held its 17th roll back malaria review meeting in 2010 were it was agreed, malaria is among the biggest health challenges faced by the government of Nigeria., and they believed that much have to be done to kick the disease out of the country (punch newspaper,24th march 2014).

Based on the exponentially growing nature of the malaria and the ease by which it can be transmitted, the WHO (2007), took the first leadership role in controlling and eradicating the spread of malaria in affected area. This policy brought about the global roll back malaria initiative (RBM) against malaria to combat the burden pose to developing countries like Nigeria.

II. METHODOLOGY STUDY DESIGN

A retrospective design was used for this study investigating the occurrence and treatment outcome of malaria in pregnancy among women who attended health institution in Okada community from January 2017 to December 2021.

STUDY SETTING

Igbinedion university teaching hospital Okada is a private hospital located in Ovia North East Local Government, Edo state south-south geographical area of Nigeria. Primary health centre Okada is a government owned and it is located in Ovia North East Local Government Area, Edo State.

TARGET POPULATION

The target population at the study time was all women who attended antenatal clinic in health institutions in Okada community from January 2017 to December 2021. SAMPLE AND

SAMPLING TECHNIQUE

The sample comprises of those pregnant women who were diagnosed of malaria and were treated in health institutions in Okada community from January 2017 to December 2021.

INSTRUMENT FOR DATA COLLECTION

A self-developed checklist was used to collect the needed information The checklist contained three sections; Section A - socio-demographic content, Section B - treatment given, Section C-outcome of the treatment

VALIDITY/RELIABLITY OF INSTRUMENT

Face and content validity was observed.

METHOD OF DATA COLLECTION: All ethical procedures for data collection were observed. Permission was sorted out from both the chief medical Director and the head of Primary health in Ovia North East. Finally verbal permission was also obtained from the patients. Before instruments were distributed. The researcher with the help of a staff Nurse distributed the instrument after due explanation.

III. METHOD OF DATA ANAYSIS

Both descriptive and inferential statistics were used to analyze the data collected. Data was presented in the form of frequencies, percentages and tables.

International Journal Dental and Medical Sciences Research
Volume 5, Issue 1, Jan-Feb 2023 pp 472-478 www.ijdmsrjournal.com ISSN: 2582-6018

ETHICAL CONSIDERATION: was duly considered and observed.

IV. ANALYSIS OF DATA

Table 4.1: Demographic characteristic of study population

	FREQUENCY	PERCENTAGE (%)
Age in years		
15-25	136	50.9
25-34	109	40.8
35 and above	22	08.3
Marital status		
Single	39	14.6
Married	200	74.9
Divorced	28	10.5
Parity		
Primigravida	142	100
Multigravida	125	100
Level of education		
No formal education	94	35.7
Primary	67	25.1
Secondary	83	31.1
Tertiary	23	08.6
Religion		
Christianity	211	79.1
Islam	38	14.2
Traditional	18	06.7

The table 4.1 shows that 50.9% of the participants were within the age of 15-24 years, 40.8% are within the range of 25-34 years and 8.3% are within the age of 35 and above. The table shows the marital status of respondents, 39(14.6%) are single, 200(74.9%) are married and 28(10.5%) are divorced. The table reveals the parity status of respondents 142(100%) are primigravida's and 125(100%) are multigravida. For level of education 94(35.7%) have no formal education, 67(25.1%) have primary education, 83(31.1%) have secondary education and 23(8.6%) have tertiary education. It also shows that the religion of the participants 211(79.1%0 are Christians, 38(14.2%) are Muslims and 18(6.7%) are traditional worshippers.

TABLE4.2 .SHOWING THE OCCURRENCE OF MALARIA IN PREGNANCY EACH YEAR

Years	Pregnant Women that Reported for Antenatal	Pregnant Women Treated for Malaria	Percentage (%)
2017	100	35	35.0
2018	110	41	37.2
2019	128	63	49.2
2020	134	59	44.0
2021	138	70	50.7

Table 4.2 above shows the total number of pregnant women that reported for antenatal and those that were treated for malaria from 2017—2021. The occurrence was high in 2019 with 50.7%.

International Journal Dental and Medical Sciences Research
Volume 5, Issue 1, Jan-Feb 2023 pp 472-478 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE 4.3 SHOW'S THE TREATMENT OUTCOME OF PREGNANT WOMEN WITH MALARIA WHO ATTENDED HEALTH INSTITUTION IN OKADA COMMUNITY FROM JANUARY 2017-DECEMBER 2021.

Years	Disease of malaria in pregnancy	Completed treatment	Referred cases of malaria in pregnancy	Complications
2017	35	29	0	6
2018	41	35	5	1
2019	63	48	10	5
2020	59	52	2	5
2021	70	64	0	6

The table 4.3 above shows that in 2017, 35 of the women that attended antenatal had malaria, 29 of the women completed their treatment and none was referred but 6 developed complications. In year 2018, 41 women were diagnosed with malaria, 35 of them completed the treatment, 5 of them were referred and 1 developed complication. In year 2019, 63 of the women were diagnosed of malaria 48 of the women received complete treatment, 10 of the women were referred and 5 developed complication. In 2020, 59 women had malaria, 52 completed the treatment, 2 were referred and 5 developed complication and in the year 2021, 70 were diagnosed with malaria, 64 completed treatment, none was referred and 6 developed complication.

V. DISCUSSION OF RESULT

Objective 1:

To determine the socio-demographic characteristics of pregnant women who were treated in health institutions in Okada community January 2017- December 2021. In this study the highest malaria occurrence was seen in pregnant women age 15-25 years old 50.9%, 40.8% was within the age of 25-34 years and 8.3% was within the age range of 35 and above. This finding is consistent with (Marielle,2013). Reports of malaria in pregnancy where age group of > 24 year was reported to be at a high risk. Her findings also stated that malaria occurrence decreases with increasing age but increases in age group > 34 year. Marielle, 2013 reported a high prevalence of malaria in pregnant women within a similar group 36-38 years in Gabon. As stated by WHO 2014, immunity play a big role in malaria infection on pregnant women. Results showed that primigravidae (142) were more often infected than multigravidae (125). primigravida's are at risk of malaria in pregnancy because they lack the specific immunity to placenta malaria which is acquired from exposure to malaria parasite during pregnancy. This immunity accumulates with successive pregnancy, and her exposure to malaria infection. To stem this trend, awareness on malaria prevention measures during pregnancy should target on young women even before they get married preferably at schools, religious and social gathering. In addition, the intake of adequate and balanced nutrition should be encouraged at the primary health centers and should ensure compliance by home visit of these vulnerable women.

Objective 2

Ascertain occurrence of malaria among pregnant women who were treated in health care facilities in Okada community between January 2017-December 2021. In this study the highest malaria occurrence was seen in pregnant women was seen in 2017 with a percentage of 50.7% then in 2018, 44%, in 2019, 49.2%,. It was observed that malaria occurrence increased with years, which could have been due to poor health education on the causes and preventive measures of malaria especially during pregnancy. Also, inadequate distribution of insecticidal treated mosquitoes net and use of prophylaxis sulfadoxine, pyrimethamine. This finding is in consonance with the findings of Okello, (2014), who stated that the use of other measures to prevent malaria such as cleaning the house and surroundings, closing windows and doors before night fall, use of insecticide spray and mosquito coils, The finding is supported by WHO 2014, which stated that adequate nutrition is a strong tool to boast immunity.

Objective 3:

Investigate the treatment outcomes of pregnant women diagnosed with malaria in health institutions in Okada community. Findings shows that the treatment outcome of pregnant women from January 2017-December 2021 who were diagnosed with malaria was 268, Out of these large, 228 completed their treatment, 17 were

referred for proper care and 23 developed complications such as anemia, intra uterine growth retardation and abortion. It has been observed that inability to complete malaria treatment leads to malaria resistance to treatment. Malaria response to treatment is positive if appropriate drugs for the patient are used. People should be health educated on the need for compliance to treatment as instructed by physicians. It is advisable to avoid malaria complications by early treatment of malaria and being strict to stated malaria prevention measures.

IMPLICATION OF THE STUDY TO NURSING

Health care providers are usually the first point of call by patients and relatives in the occurrence and complications arising from malaria infection. Malaria infection has created much burden on Nurses within the Tropic where malaria is an endemic disease with its adverse health implications associated with it. The Nurse as an important member of the health care team plays a significant role in the care and treatment of patient with malaria. These roles include; Health education on the causes, complications, predisposing factors, treatment, preventive measures of malaria during antenatal care. Use of long lasting insecticidal nets. Prompt diagnosis and effective treatment of malaria, Advise on antenatal visit and sulfadoxine-pyrimethamine (SP) as part of antenatal care services, Proper management of diagnosis to prevent complications, Proper nutrition and rest, ensuring compliance with WHO package interventions for the prevention and treatment of malaria during pregnancy.

RECOMMENDATION

1. Environmental health officers should co-operate to work hand in hand with primary health care department in other to facilitate enhanced sanitary conditions in the community.
2. Community health nurses are needed to emphasize more on prevention of occurrence of diseases, positive health behavior, conduct home visits, community assessment and the development of appropriate malaria intervention,
3. Government should construct and maintain drainages and proper disposal of wastes to eliminate stagnant waters that harbor mosquitoes.
4. More Nurses should be employed to reduce the burden of over work, and also to serve the communities within the location of the primary health Centre where preventive measures are highly needed.
5. Nurses should be given good incentives that will encouraged them to work with comfort.

VI. SUMMARY OF FINDINGS

This study was carried out among woman treated in health institution in Okada community (PHC and IUTH). Information was obtained from existing records of patients to ascertain the prevalence of malaria in pregnancy among women in Okada community from January 2017-December 2021. The Total study population size from January 2017-December 2021 treated in for malaria is 268. Finding shows that the highest malaria prevalence was seen in pregnant women in 2019[50.7%] and most of the women 228 completed their treatment and were positively free of malaria infection, their treatment.

CONCLUSION

This study was carried out to determine the occurrence and treatment outcome of malaria in pregnant women that attended health institution in Okada community, Edo state from January 2017 to December 2021. This study will create awareness on the causes of malaria, vector prevention methods and on ways to establish appropriate health belief methods, among pregnant women in Okada, Ovia North East, Edo State.

REFERENCES

[1]. Abba Katharine, Kirkham, Amanda J,Piero L, Decks, Jonathan J,Garner, P., Takwoingi and Yemisi (18 December 2014). Cochrane Database of Systematic Reviews. 12: CD011431. doi: 10.1002/14651858.cd011431.

[2]. Abeku, T.A (2013). Response to malaria Emerging infectious diseases!4 (5): 681-6.

[3]. Arrow ,KJ, Panosian C, Gelband H, institute of medicine (U.S.). Committee on the Economics of antimalarial drugs (2014). Saving lives, buying time. Economics of malaria drugs in an age resistance/National academies press :14L

[4]. Bartoloni ,A., and Zammarchi, L. (2012). Clinical aspects of uncomplicated and severe malaria.Mediterranean journal of hematology and infectious diseases.

[5]. Barber, B.E, Bird, E.and Wilkes, C.S. Plasmodium knowlesi malaria during pregnancy. J infect Dis 2015; 211:1104

[6]. Beare, N., Taylor, T.E., Harding S.P., Lewalien S, and Molyneux M.E. (2015).Malarial Retinopathy.A Newly

established diagnostic sign in severe malaria". American journal of tropical medicine andhygiene75 (5): 790-800.
[7]. Becker, M.H. (2013). The health belief model and personal health behavior.
[8]. Caraballo, H. (2014). Emergency department management of mosquito-borne illness: Malaria, dengue, and west nile virus. Emergency Medicine Practice.
[9]. Carpenter, U. and Christopher, J. (2012).A meta-analysis of the effectiveness of health belief model variables in predicting behavior". Health communications (8): 661-669. Retrieved 11/2/13
[10]. CDC, (2013) Center for disease control and prevention.
[11]. Clyde, C, (2015).Recent trend in the epidemiology and control of malaria, Epidemiologic review.
[12]. Cullen, K., Mace, K.E., and Argin, P.M.(2016). Malaria Surveillance- United States, 2013. MMWR March 4 2016.
[13]. Desai, M.,Kuile, P.O., Nosten, F., McGready, R., Asamoa, K., and Brabin,, B. Epidemiology and burden of malaria in pregnancy. Lancet Infect Dis 2015;7:93-104.
[14]. Eisen, M.$_5$ (1992). A health belief model social learning theory approach to adolescents' fertility control: findings from a controlled field trial. Health education quarterly.Vol. 19.
[15]. Federal ministry of health (2013). Eradication efforts, public health expenditure Related to malaria.
[16]. Glanz, K., Barbara, k., Rimer, k, and Viswanath (2015).Health behavior and health education Theory, research, and practice.(4th edition). San francisco, ca: jossey-bass: 45-51.
[17]. Greenwood, B.M., Bojang, k., and Whitty, C, (2014). MalariaLancet365 (9469): 1487-98.
[18]. Hay, S.I, Okiro, E.A., Gething PW, Patil A.P, Tatem A.J, Guerra CA, and Snow, R.W. (2012). Estimating the global clinical burden of Plasmodium falciparum malaria.
[19]. Humphreys, M. (2015). Malaria poverty, race, and public health in the united states. Johns hopkins university press: 256.
[20]. Jongwutiwes, S., Putaporntip,.C, Iwasaki, T., Sata, T., and Kanbara H. Naturally acquired Plasmodium knowlesi malaria in a human, Thailand. EmergInfDis 2014; 10:2211-13.
[21]. Janz, Nancy, k., and Marshall, H., Becker (1984). The health belief model: a decade later. Health education behaviorll (1); 1-47. Retrieved 11/2/13.
[22]. Jamieson, A., Toovey, S., Maurel, M. (2014). Malaria a traveller's Guide. Struik.p. 30.ISBN 978-1-77007-353-1.
[23]. Kwiatkowski, D.P (2012). How malaria has affected the human genome and what human genetics can teach us about malaria". American journal of human genetics77 (2): 171-92.
[24]. Layne, S.P.,(2014). Principles of infectious disease epidemiologypi 220.
[25]. Ucla, O. (2013). Department of epidemiology.Archived from the original on 2006-02-20.Retrieved 2007-06-15.
[26]. Lozano, R., (2012). Global and regional mortality from 235 causes of death for 20 agegroups in 1990 and 2010: a systematic analysis for the global burden of disease study 2010.Lancet380 (9859): 2095-128.
[27]. Maitland,K. (2013). ParasitologyFalciparumCochrane Database of Systematic Reviews (2):
[28]. Makange, CM., (2015).Malaria control measures used by community,malaria in Africa scientific Journal Marielle.
[29]. Mens, P.P., Bojtor, E.G., and Schallig (2012).Molecular interactions in the placenta during malaria infection.European journal of obstetrics & gynecology and reproductive bio!ogy!52 (2): 126-32
[30]. Mueller, I.O., Conner, M., and Norman, (201 l)parasite medicine? 1000290. Predicting health behavior. Search and practice with social cognition models.Open university press
[31]. Murray, C.J., Rosenfeld, EC., Fullman, N., Naghavi, M., and lopez, A.D. (2012). Global malaria mortality between (1999 and 2010).Systematic analysis. Lancet379.
[32]. Nadjm, B., and Behrens, R.H. (2012).Malaria update for physicians.Infectious Disease Clinics of North America. 26 (2): 243-59.
[33]. doi: 10.1016/j.idc.2012.03.010. PMID 22632637
[34]. Nahum, E., Ahounou, O., Menten, L, Akogbeto, C., and Alessandro. (2010). Malaria incidence and prevalence among children living in Peri-urban area on the coast of Benin,West Africa: A

longitudinal study. Med Hyg.september;83(3):465-473.
[35]. Olupot-olupot P., and Maitland, K. (2013). Management of severe malaria: results from recent trials. Advances in experimental medicine and biology. Advances in experimental medicine and biology 764: 241-501.
[36]. Owusu-Ofori, A.K., Parry, C., Bates, I. (2010). Transfusion-transmitted malaria in countries where malaria is endemic: A review of the literature from sub-Saharan Africa. Clinical Infectious Diseases.**51** (10):1198. doi: 10.1086/656806. PMID 20929356.
[37]. Okelle,. (2014).Knowlegde, attitude and practice related to malaria and ITNS Malaria in Africa Journal.
[38]. Pates,H,, and Curties. (2014). Mosquito behavior and vector control annual review Of entomology.
[39]. Perkins, M.D. and Bell, D.R. (2008).Working without a blindfold: The critical role of diagnostics in malaria control".Malaria Journal. 1 (Suppl): S5. doi:10.1186/1475-2875-7-Sl-S5. PMC 2604880 PMID 19091039 Provost, C (April 25, 2011). World malaria day: which countries are the hardest hit Get the full data. The guardian.Retrieved 2012-05-03.
[40]. Punch newspaper, (24 march, 2010). Expenditure on malaria.Conference in Lagos.
[41]. Richter, j,, Franken, G., Mehlhorn, H., labisch, A., and Haussinger, D. (2010). What is the evidence for the existence of Plasmodium ovalehypnozoites.Parasitology research 107 (6): 1285-90.
[42]. Rosenstock, irwin (1974).Historical origins of the health belief model Health education behavior! (4): 328-335. DoklO.l 177/109019817400200403. Retrieved 11/2/13.
[43]. Sarkar, P.K., Ahluwalia, G., Vijayan, V.K., and Talwara.(2009). Critical care aspects of malaria. Journal of intensive care medicine25 (2): 93-103.schlagenhauf- lawlor 2008, pp. 70-1.
[44]. Schoofs, M. (July 17, 2014). Clinton foundation sets up malaria-drug price plan". Wall streetjournal.Retrieved 2012-05-14.
[45]. Tanser, F.C, Lengeller ,C., and Sharp,B.L. (2010). Indoor residual spraying for preventing malaria.
[46]. Tilley, L, Dixon, M.W., and Kirk,K. (2014). The plasmodium falciparum-infected red blood cell. International journal of biochemistry and cell biology43 (6): 839-42.
[47]. Tusting, L.S, Thwing, J, Sinclair, D, Fillinger, U, Gimnig, J, Bonner, K.E Bottomley, C, and Lindsay, S.W, (2012). Mosquito larval source management for controlling malaria. The Cochrane database of systematic reviews
[48]. Vaughan, A.M., Aly, A.S., and Kappe, S.H. (2013).Malarial parasite pre-erythrocytic stage infection. Cell Host & Microbe. 4 (3): 209-
[49]. World Malaria Report 2015.World Health Organization. December 2015. ISBN 978-92-4-156515-8.
[50]. World health organization (2014) Roll back malaria who partnership (2012).economic costs of malaria :99-101
[51]. World health organization, (2016).Indoor residual spraying for scaling up global malaria control and elimination.