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PREVALENCE OF MATERNAL MORTALITY AMONG MOTHERS OF CHILDBEARING AGE IN CHUKWUEMEKA ODUMEGWU OJUKWU UNIVERSITY TEACHING HOSPITAL AWKA, ANAMBRA STATE

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ABSTRACT

The purpose of this study was to investigate the prevalence of maternal mortality among mothers of childbearing age who visited COOUTH from 2018-2022. The method adopted for the study was ex-post facto research design. It's an experimental study carried out at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka Anambra State. The population of the study was made up of 3718 registered pregnant mothers attending clinics at the teaching Hospital, from 2018-2022. The sample size comprised records of dead registered mothers of childbearing age from 2018-2022. The research instrument for this study was hospital record containing all the variables in this study. The instrument was not validated because the researcher used hospital record to collect data of dead mothers of childbearing in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka. There was no reliability for the instrument because hospital record was used for the study for data collection. Data collected was analyzed using frequencies, percentages and chi-square statistics. Frequencies and percentages were used to answer research question while the inferential statistics of chi-square was used to test the hypothesis at 0.05 alpha level of significance. Findings indicated that mothers of childbearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka had a 9.4% of prevalence of maternal mortality. Accordingly, it was among others recommended that interventions using a health education approach aimed at combating the high prevalence rate of maternal mortality in COOUTH should be both cause-specific as well as target-specific.

Keywords: Prevalence; Maternal Mortality; Mothers; Childbearing Age.

Introduction

Maternal mortality is the death of pregnant mothers or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. The complications of pregnancy may be experienced during pregnancy or delivery itself or may occur up to 42 days following childbirth. Hence, the prevalence of maternal mortality refers to the extent to which maternal deaths occur within a specific population or region during a given time period. It is often measured using the maternal mortality ratio (MMR), which calculates the number of maternal deaths per 100,000 live births (Birth Right and Birth Companion, 2019). This ratio provides a snapshot of the risk of maternal deaths

associated with pregnancy and childbirth within that population. In many developing countries mother's death is much more than an emotional crisis. The death of a mothers often leads to long-term economic and social breakdown, both for her immediate family, surviving children, households, community, and the nation at large (World Health Organization, 2022).

The prevalence of maternal mortality rate is often higher in developing countries and rural areas due to limited resources and infrastructure. Improving antenatal care and identifying high risk factors at the grassroot level and timely referral to the higher center would decrease the load of materanal mortality (WHO 2017). It is a human tragedy, a violation of mothers right to life that requires a concerted and effective intervention for its reduction. It results from a complication during pregnancy and childbearing which in most case can be prevented. The prevalence of maternal mortality rates in Nigeria are an issue of concern as they are indicators of the poor state of health services.

Maternal death has been defined as the death of a woman while pregnant, within 42 days of delivery, miscarriage or termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes (Birth right and Birth Companion 2019). Maternal death is the death of a woman during pregnancy or within 42 days of termination of pregnancy. Without regard to site or duration of pregnancy, from any cause related to or aggravated by pregnancy or its management (Lucas & Gilles, 2019). WHO (2017) sees maternal death as mothers death during pregnancy or 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by pregnancy or its management but not from accidental or incidental causes. Thus, maternal death can also be referred to as deaths from pregnancy-related complications occurring throughout pregnancy, labour, and the postpartum period (up to the 42nd day after birth). In this study, maternal mortality refers to the death of a woman while pregnant, in labour or during the first six weeks after delivery or termination of pregnancy resulting from causes directly due to pregnancy.

According to Lucas and Gills (2019) maternal deaths are subdivided into direct and indirect obstetric deaths. Direct obstetric deaths result from obstetric complications of pregnancy, labour or postpartum period, from interventions, omissions, incorrect treatment, or chain of events resulting from any of the above. They are usually due to one of the five major causes of haemorrhage, sepsis, eclampsia, obstructed labour, and complications of unsafe abortion. Indirect obstetric deaths are deaths usually from previously existing diseases or from diseases arising during pregnancy (but without direct obstetric causes), which were aggravated by the physiological effects of pregnancy. Examples of such diseases include malaria, anaemia, HIV/AIDS and cardiovascular disease. These maternal deaths can be measured using the maternal mortality ratio and maternal mortality rate. Lucas and Gilles (2019) identified maternal mortality as maternal mortality ratio and maternal

mortality rate. Maternal mortality ratios are expressed as maternal deaths during a given period per 100 000 live births during the same period. This is not an actual death rate because it does not measure deaths per woman exposure to pregnancy and childbirth within a specified period. This does not include deaths from stillbirths, which include spontaneous abortions and ectopic pregnancies.

Research Question

What is the prevalence of maternal mortality among mothers of child bearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka from 2018-2022?

Research Hypothesis

There is no significant difference in the prevalence of maternal mortality among mothers of child bearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka based on age of mothers from 2018-2022.

Literature Review

Prevalence of Maternal Mortality

The prevalence of maternal mortality rate is often higher in developing countries and rural areas due to limited resources and infrastructure. Improving antenatal care and identifying high risk factors at the grassroot level and timely referral to the higher center would decrease the load of materanal mortality (WHO 2017). It is a human tragedy, a violation of mothers right to life that requires a concerted and effective intervention for its reduction. It results from a complication during pregnancy and childbearing which in most case can be prevented. The prevalence of maternal mortality rates in Nigeria are an issue of concern as they are indicators of the poor state of health services.

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The maternal mortality rate is the number of maternal deaths in a period, usually a calendar year per 100,000 mothers of reproductive age during the same period. It reflects both obstetric risks and the frequency with which mothers are exposed to this risk. Maternal mortality rate = Annual number of maternal deaths due to pregnancy, childbirth and puerperal condition X 100,000 Total number of births in a year 1.

An actual death rate measures deaths from stillbirths, abortions and ectopic pregnancies. Maternal mortality ratio and rate are used interchangeably by medical practitioners. The term maternal mortality rate was used in this study. These maternal deaths accruing pregnancy-related conditions are attributed to some causes.

Causes of Maternal Mortality

Gray (2015) stated that causes of maternal mortality could be broadly classified into obstetric factors, socio-cultural/economic factors and health services factors. Birth right and Birth Companion (2019) identified six leading causes of direct maternal deaths in developed countries as thrombosis and thromboembolism, early pregnancy death (ectopic pregnancy, miscarriage, termination), pregnancy-induced hypertension, sepsis, amniotic fluid embolism and haemorrhage. Nigeria Partnership for safe Mothershood-NPSM (2018) stated that medical causes of maternal deaths are similar throughout the world. Globally, around 80 per cent of all maternal deaths are the direct result of complications arising during pregnancy, delivery or the puerperium (Parks, 2017). The most common direct causes of obstetric death in Nigeria include haemorrhage, sepsis, pre-eclampsia and anaemia. Others include cephalometric disproportion, abortion and malaria.

Obstetric Hemorrhage is vaginal bleeding in a pregnant woman from 24 weeks of pregnancy, child delivery and in the first 24

days of the post-delivery (the puerperium). The two types of obstetric haemorrhage: Antepartum haemorrhage-APH and postpartum haemorrhage- PPH. APH is vaginal bleeding occurring from 24 weeks of pregnancy and up to the onset of labour. Carmel (2023) defined APH as bleeding from the genital tract in late pregnancy, after the 24th weeks of gestation and before the onset of labour. APH is often due to two conditions, namely placenta previa or placenta abruption. In placenta previa, the placenta is partially or wholly implanted in the lower uterine segment on either the anterior or posterior wall. The lower uterine segment grows and stretches progressively after the 12th week of pregnancy. Later this may cause the placenta to separate, and severe bleeding can occur. Placenta previa places the mothers and foetus at high risk, and it constitutes an obstetric emergency.

Abruption Placenta is a condition in which there is premature separation of the placenta from its usual site in the uterus. The premature separations of a typically situated placenta usually occur after 22 weeks of pregnancy. Abruption can follow a sudden reduction in uterine size, for instance, when the members rupture or after the birth of a first twin or through a road traffic accident, seat belt injury or deliberate violence (Gaham, 2018). All these may partially dislodge the placenta, and blood loss may reveal concealed or mixed haemorrhage. Abruption placenta can be mild or severe. Severe abruption can lead to several complications, including the impairment of clotting ability, which leads to further haemorrhage (Eckford, 2015). Both placenta previa and abruption placentae affect the woman and her unborn baby, but abruption affects the baby more. Both conditions tend to occur more in mothers having too many births, those with previous caesarean sections, and older mothers (NPSM, 2018). The clinical features of antepartum haemorrhage may include vaginal bleeding before the onset of labour, board-like rigidity in severe abruption placenta. This might result in the accumulation of large blood and clots in the uterus, and the fetal heart may be present in mild cases and may be absent when both conditions are severe.

Postpartum haemorrhage (PPH) is referred to as excessive bleeding from the genital tract anytime following the baby's birth up to 6 weeks after delivery (Myles, 2020). PPH can be primary or secondary. Primary PPH is bleeding more than 500ml occurring during the third stage of labour or within 24 hours of delivery. Secondary PPH is the same amount of bleeding occurring after 24 hours following birth until the 6th-week postpartum (NPSM, 2018). PPH can be mild or severe. Severe PPH, which leads to maternal mortality, occurs in 5.3% of pregnancies worldwide (NPSM, 2018). However, its contributions to mortality are higher in developing countries because of the lack of proper infrastructure to manage complications in these countries. Causes of PPH include failure of the uterus to contract after delivery (uterine atony), retained placenta, trauma (lacerations in the cervix, vagina and perineum at the time of delivery and failure of the blood to clot at the time of delivery (blood coagulation disorder). The clinical features of PPH include severe bleeding immediately after delivery of the baby, shock and death if immediate measures

are not taken to stop bleeding and replace lost blood. Another cause of maternal death is puerperal sepsis.

Carmel (2023) defined puerperal sepsis as an infection of the genital tract following childbirth. This is still a significant cause of maternal death where it is undetected and untreated. Infection following an uncomplicated spontaneous standard delivery occurs in 4.1% of pregnancies across the populations (NPSM, 2018). Although the incidence of puerperal sepsis has fallen in many countries, it remains one of the third most common causes of maternal mortality in Nigeria (WHO, 2016). Puerperal sepsis can result from unsterile procedures during delivery, such as unclean hands by traditional birth attendants (TBAs) or dirty instruments. It can also result from prolonged labour when fetal membranes rupture and the woman has not delivered within 24 hours. The clinical features of puerperal sepsis include – high-grade fever, offensive vaginal discharge, wound infection, if there had been infected caesarean section, and signs of severe illness, and toxaemia.

Unsafe abortion, according to Warriner and Shah (2016), is defined as the termination of unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal standard, or both. About 13 per cent of pregnancy-related deaths have been attributed to complications of unsafe abortion, and probably number about 67000 deaths annually (WHO, 2017). Abortion is defined as the death or expulsion of the fetus spontaneously or by induction before the 24 weeks of pregnancy (Carmel 2023). Abortion can be induced or spontaneous. Spontaneous abortion is the involuntary loss of the products of conception before 24 weeks of gestation. Most of these abortions occur in the first trimester that is within the first 12 weeks of pregnancy.

Induced abortion is the termination of pregnancy before 24 weeks of pregnancy. Abortion, whether induced or spontaneous, anytime that is performed by an unskilled (quacks) person in an environment lacking minimal standards is said to be unsafe. Most of the induced abortions in Nigeria are illegal and are done by unsafe hands. In Nigeria, abortions are legally permitted only to save the lives of the woman. However, when abortion occurs, and there are complications, assistance must be offered to save the mothers's life. Complications of abortion include bleeding, infection, injury to female reproductive organs, infertility and or increased pregnancy wastage and injury to abdominal organs (Costescu & Guilbert, 2018). Unsafe abortion requires immediate and proper treatment to reduce maternal morbidity and mortality. This is post-abortion care which consists of emergency health care services, family planning, counselling and referral services offered to a woman due to complications arising from an induced or spontaneous abortion (Costescu & Guilbert, 2018). This care aims to treat complications arising from abortion and encourage family planning methods to prevent the future occurrence of unwanted pregnancies. Obstructed labour occurs when there is no advance of the presenting part despite solid uterine contractions (Carmel, 2023). The causes of obstructed labour include cephalopelvic disproportion (CPD),

malpresentation, pelvic mass and fetal abnormalities such as hydrocephalus. CPD is the most common cause of obstructed labour. In this condition, the pelvis is too small for the baby, or there is a mechanical difficulty in achieving vaginal delivery. CPD may lead to obstructed labour, where labour can no longer proceed vaginally due to mechanical barriers. The size of the woman also determines the size of her pelvis. Where environmental hygiene is poor, and malnutrition and childhood diseases are common, growth may be stunted, and pelvis contracted. Childbirth at a very young age before the pelvis is fully developed also increases the risk of obstructed labour. Complications of obstructed labour are ruptured uterus, vesicovaginal fistulae (VVF), puerperal sepsis, recto-vaginal fistulae, fetal death and maternal death.

Hypertensive disease is a significant cause of maternal mortality. Samuel (2021) identified hypertensive pregnancy as the second most common cause of maternal death. Hypertension is the most typical medical condition encountered in pregnancy, complicating approximately 10 per cent of all pregnancies (Haine, 2019). This group of diseases includes pre-eclampsia and eclampsia. Pre-eclampsia is characterized by high blood pressure, protein in urine and swelling (oedema) of the tissues (feet, hands, face) during the second half of pregnancy.

In some cases, the condition remains mild throughout pregnancy. In others, it may become severe, with a further rise in the blood pressure and an increase in the amount of protein in the urine. Headaches, vomiting, impairment of vision, pain in the upper abdomen and anuria are other signs. Eclampsia is the last and most severe stage of the disease characterized by convulsions, sometimes ending in coma. If eclampsia is left untreated, the mothers rapidly develop heart failure, kidney failure or brain haemorrhage.

Anaemia is a reduction in the oxygen-carrying capacity of the blood. This may be caused by a decrease in the red blood cells production, or reduction in the haemoglobin (Hb) content of the blood, or both. It is often defined by the decrease in Hb levels in the blood below the normal range of11-15gldl in mothers. Myles (2020) identified signs and symptoms of anaemia as pallor of the mucous membrane, fatigue, dizziness and fainting, headache, shortness of breath, increased heart rate and palpitations. It is estimated that 18 per cent of mothers in developed countries are anaemic; in the developing world, this figure rises to 56 per cent and is a contributory factor to mothers developing health problems and dying during pregnancy and childbirth (WHO, 2019). Nutritional deficit predisposes mothers to anaemia in pregnancy which can be disastrous in any bleeding during delivery or post-delivery. Anaemia may cause death on its own or predispose a woman to severe postpartum haemorrhage leading to death (Harrison, 2017).

Malaria is highly endemic in many developing countries and is one of the major causes of poor health and death, especially in children and pregnant mothers. In Nigeria, malaria ranks highest among notifiable diseases (Solwayo, 2016). Over one million people die worldwide from malaria annually

(WCA inclusive) (Olise, 2017). Malaria is caused mainly by plasmodium falciparum which accounts for about 98 per cent of the cases in Nigeria and is associated with significant morbidity and mortality (PATHS, 2015). As identified by PATHS, clinical symptoms of malaria infection include fever, headache, rigour, chills, general weakness, vomiting, loss of appetite, and profuse sweating. These features vary from asymptomatic to mild and then to severe ones.

In pregnancy, malaria infection is associated with 11 per cent of all maternal deaths. It causes up to 15 per cent of anaemia in pregnancy and accounts for 5 – 14 per cent of low-birth-weight babies (PATHS, 2015). Effects of malaria in pregnancy as identified by PATHS include placental insufficiency, foetal distress, intrauterine growth retardation, spontaneous abortion, premature birth, stillbirth, low birth weight, high infant mortality and maternal death. Due to malaria's impact and adverse effect in pregnancy, roll back malaria initiatives advocated the three strategies for treating malaria in pregnancy as – intermittent preventive treatment (IPT), insecticide-treated nets, and effective case management (Jones, 2023).

In Anambra State, the leading causes of maternal deaths among mothers of childbearing age were obstetric haemorrhage (19.1%), sepsis (18.0%), obstructed labour/ruptured uterus and pre-eclampsia/eclampsia (16.9%) (Onah, Okaro, Umeh & Chigbu, 2015). Other causes of maternal deaths in Anambra Stateare diabetes mellitus, hepatitis, heart disease, contributing an insignificant percentage of the death.

Chiwuzie, Braimoh, Unigbe and Oluneko (2015) explained that high maternal mortality in developing countries stems from a complex array of factors and the inadequacy of health services. Such factors include 'social, cultural, economic and logistic problems coupled with high fertility. Solwayo (2016) revealed a pattern classified under the following; health service, reproductive, socioeconomic, transport and cultural factors. Moreover, maternal mortality among mothers of childbearing age is alarming and has some consequences.

Maternal death is an enormous loss and has a devastating impact on families, communities, and nations. Such death is a terrible loss for the family and community and the nations that benefit from mothers' contributions to economic and social development. Royston and Armstrong (2015) emphasized that maternal deaths and injuries in developing countries constitute a tragedy of vast proportions. It affects infants, children, teenagers as well as adults and aged members of society. Umoh (2019) noted that maternal deaths result in deficient infant care, infant malnutrition, and an increased infant mortality rate. PATHS (2015) posited that mothers who die due to obstetric complications or after delivery leave behind orphans whose growth and development are affected and have a 66 per cent risk of dying.

Similarly, Ibrahim (2016) lamented that those mothers who die due to obstetric complications or after delivery leaves behind orphaned children whose chances of survival

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are reduced. This often has grave consequences on the growth and development of the child in a healthy and happy environment. To the husband, she leaves a widower faced with problems of taking care of the children and other family responsibilities. Without mothers, there is an increase in the rates of crime, truancy, and reduced productivity. The loss of a woman in childbirth is both socially unacceptable and economically unaffordable. The damage is especially significant in developing countries like Nigeria, where social and economic development is founded on family and community structures.

Research Method

The method adopted for the study was ex-post facto research design. It‟s an experimental study carried out at Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka Anambra State. The population of the study was made up of 3718 registered pregnant mothers attending clinics at the teaching Hospital, from 2018-2022. The sample size comprised records of dead registered mothers of childbearing age from 2018-2022. The research instrument for this study was hospital record containing all the variables in this study. The instrument was not validated because the researcher used hospital record to collect data of dead mothers of childbearing in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka. There was no reliability for the instrument because hospital record was used for the study for data collection. Data collected was analyzed using frequencies, percentages and chi-square statistics. Frequencies and percentages were used to answer the research question on the prevalence of maternal maternity. The inferential statistics of chi-square was used to test the hypotheses at 0.05 alpha level of significance.

Research Question 1: What is the prevalence of maternal mortality among mothers of child bearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka from 2018-2022?

Table 1: Frequency and Percentage of Maternal Mortality among Child Bearing Mothers in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital, Awka from 2018-2022

Year	Mothers of Child Bearing Age		Total Number Registered
	Number of Deaths N (%)	Number Alive N (%)	
2018	32(3.7)	839(96.3)	871
2019	51(6.7)	707(93.3)	758
2020	56(9.4)	537(90.6)	593
2021	44(6.5)	633(93.5)	677
2022	30(3.7)	789(96.3)	819
Total	**213(5.7)**	**3505(94.3)**	**3718**

Table 1 presents the frequency and percentage of maternal mortality among mothers of child-bearing age in Chukwuemeka Odumegwu Ojukwu University, Awka from 2018 to 2022. The percentage of deaths from 2018 to 2022

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ranged between 3.7% and 9.4%, with 2018 and 2022 having the lowest prevalence of maternal mortality while 2020 had the highest (9.4%) maternal mortality. Overall, of the total number of registered mothers of child-bearing age in the hospital across the five years (3718) with 213 (5.7%) deaths were recorded within the period under review. The maternal mortality ratio (MMR) of 6,077 indicates a high prevalence of maternal mortality when compared to 70 MMR envisioned for 2030 by the UN in the Sustainable Goal 4.1. The MMR was obtained by dividing the number of deaths (213) by number live births (3505) and multiplied by 100,000.

Research Hypothesis 1: There is no significant difference in the prevalence of maternal mortality among mothers of child bearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka based on age of mothers from 2018-2022.

Table 2: Chi-square Test on Maternal Mortality among Mothers of Child-bearing Age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital from 2018 -2022 based on age

Year	Age Range		df	X^2	*p*	Remark
	15-34 years N(%)	35 years & above N(%)				
2018	28(87.5)	4(12.5)				
2019	44(86.3)	7(13.7)				
2020	50(89.3)	6(10.6)	4	1.55	0.817	NS*
2021	36(81.8)	8(18.2)				
2022	27(90)	3(10)				
	185(86.9)	**28(13.1)**				

*Not significant

The chi-square (X^2) result displayed in Table 2 shows that there was no significant difference in the prevalence of maternal mortality among child-bearing mothers of different age groups registered in Chukwuemeka Odumegwu University Teaching Hospital between 2018 and 2022, X^2 (df, 4) = 1.55, p= 0.817. Therefore, the null hypothesis was not rejected.

Discussion of the Finding

Results showed that mothers of childbearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka had a high prevalence rate of maternal mortality (%) from 2018-2022. This finding was expected because the rate at which mothers die during birth are high due to negligence of health education given to the mothers during their antenatal care on how to leave healthy during the period of pregnancy to avoid maternal mortality. The result of this finding is in line with Anandalakshmy and Talwar, (2017) whose result reported a high rate of prevalence of maternal mortality in a retrospective study conducted in India to determine the maternal mortality rate and associated risk factors from 1983-1985. The result of this finding disagreed with. Ibeh, (2018) whose study showed a low rate of prevalence of maternal mortality in a study

conducted to assess the use of maternal services in Anambra state.

Conclusion

This study concluded that mothers of childbearing age in Chukwuemeka Odumegwu Ojukwu University Teaching Hospital Awka had a 9.4% of prevalence of maternal mortality.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Interventions using a health education approach aimed at combating the high prevalence rate of maternal mortality in COOUTH should be both cause-specific as well as target-specific.
2. Basic professional antenatal care, skilled attendance at birth, community mobilization and health education messages for a healthy pregnancy and safe birth will help to reduce the unacceptably high maternal ratio in COOUTH

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