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Social Economic Determinants of Maternal Mortality in Rural Communities of Umuahia North Local Government Area in Abia State, Nigeria

Godson Chibueze Nwadinobi, PhD
National Open University of Nigeria
Abia state, Nigeria

Felix O. Chima, PhD
Prairie View A&M University
United States of America

Christian Ojobah, PhD
Federal College of Education
Rivers state, Nigeria

Abstract

The study explores the social economic factors that increase maternal mortality in rural communities of Umuahia North Local Government Area (L.G.A) of Abia State, Nigeria. To achieve this, a descriptive survey research design was adopted, and proportionate random sampling technique was used to select 2000 women of childbearing age from the two major clans (Ibeku and Ohuhu) in Umuahia North L.G.A. In order to address the objectives of this study, four hypotheses were tested at 0.05 level of significance. Regression analysis was used to ascertain the effect of the socio-economic factors on the maternal mortality. The study revealed that socio-economic factors such as illiteracy, inaccessibility of healthcare facility, women's level of income and delay in getting obstetric care had statistical significant effect on the maternal mortality with P-values 0.032, 0.002, 0.001 and 0.004 respectively. The study recommends that in order to reduce maternal mortality rate in the studied areas, more emphasis should be laid on addressing the social economic factors like illiteracy, inaccessibility of healthcare facility, women's level of income and delay in getting obstetric care in Abia state and rest of the country.

Key words: Socio-economic, determinants, maternal mortality, rural communities, Nigeria

Introduction

There is this African saying that "a pregnant woman has a foot in the grave and a foot on the earth" which translates that women risk death while giving life. According to World Health Organization (WHO) (2019), Nigeria accounts nearly 20% of all global maternal deaths, a country where a woman has one in 22 lifetime risk of dying during pregnancy, childbirth or post-partum/post-abortion; whereas in the most developed countries, the life time risk is one in 4900.

The high incidence of maternal death has been a source of great concern to government, health and development planners of this country. National Population Commission (2019) opined that "maternal mortality continue to be a serious problem in Nigeria". Women constitute approximately 49.34 percent of Nigeria (WHO, 2020). They play significant role in societal development, by virtue of their physiology they are givers and nurtures of life. This places them in the position of life blood of the entire humanity and mothers of the human race.

Ogunjemilua and Familugba (2015) stated, "Women are the fundamental human reservoir of every society as they control most of the non-monetary economy (subsistence, agriculture, bearing children, domestic labor, etc.)". Every year about nine million Nigerian women become pregnant (Allafrica, 2018). While seven million of the pregnancy results in actual birth (United Nations Children Fund) (UNICEF, 2018), the balance either results in miscarriages or through the death of the mother, when it results in the death of the women it becomes obvious that women risk death while giving life.

National Population Commission (NPC) and ICF (2019) opined that "health care services during pregnancy and childbirth and after delivery are important for the survival and well-being of both the mother and the infants, survival of pregnant women depends on continuous and quality care during the antenatal, intra partum and postpartum periods care is given, complications that may lead to death can be averted when noticed and treated on time (Cremas, 2015). Amina (2017) stated, complications may arise during pregnancy labor and delivery, however complications can be prevented if adequate and timely handled. Many women die because they need blood, which is not available, others die from obstructed labor, infections or hypertension because they are unable to reach a health facility capable of treating them or they arrive too late. Many lose their lives because their relatives cannot pay the medical bills of the hospital. Many more do not even reach health facilities because of geographical, financial or cultural barriers (Becona, 2014). WHO (2019) opined that 94 percent of all maternal deaths occur in low and middle income countries while the risk of maternal mortality is highest for adolescent girls under 15 years old and complications in pregnancy and child birth are higher among adolescent girls age 10-19, and 35nyears and above compared to women aged 20-24.

Poverty is another prominent determinant of maternal death. Statistics from Flick (2013) indicates that 67percent of Nigerians live below the poverty line where poverty makes it difficult for some women to afford medical bills, while antenatal and post-natal care is seen as a luxury. Ezinne (2014) asserted that in almost all African societies, formal education of women especially for rural women has lagged behind. This implies that majority of the women are illiterate and this has affected them such that even where health care facilities exists, they do not attend antenatal and postnatal care because of ignorance, the importance of antenatal care is underestimated (Udele, 2014). Cremas (2015) noted that poor and uneducated women are prone to early marriage and lacks the knowledge of maternal health and immature reproductive organs, which predisposes them to unwanted pregnancy and maternal death. Amnesty International (2017) explains that maternal mortality takes its toll on the poorest and the least educated and those who live in rural areas where social and economic status are poor.

The high maternal mortality rates in Nigeria cannot only be explained by poor antenatal care attendance and provision, but also because of inadequate healthcare facilities, obstetric and healthcare personnel, lack of essential supply and trained personnel to provide safe delivery and handle complications when they arise (Udele, 2014). Poor or broken health systems, distance of health care facilities hinder the progress of maternal mortality reduction and lead to high maternal deaths among mothers due to complications of pregnancy and child birth (Envulade, Agbo, Lassa, Kigbu & Zoakah, 2013). Ibrahim (2016) opined that distance and transportation, issues in rural communities are highly significant factors affecting women's access to health services, especially in emergency care. Pamani (2010) stated that delay in getting obstetrical care is the main cause of maternal mortality. Delays in deciding to seek healthcare, delays in identifying and reaching a health facility and delay in receiving lifesaving interventions while in the health facility.

Nigeria Population Commission (NPC) (Nigeria) & ICF (2019), revealed that more than half of women (52%) in Nigeria reported at least one problem associated with accessing healthcare for themselves; 11% faced with the problem getting permission to go for treatment, 46% was faced with the problem of getting money for treatment, 25% are affected by distance to health facility, 16.1% not wanting to go alone while United Nations Population Fund (UNFPA) (2010), opined that cultural, religious, traditional and socio-economic factors also endanger the lives of pregnant women in Nigeria.

The Study Area and Population

Umuahia North Local Government Area is one of the 17 LGAs in Abia State; a major urban LGA in Abia State. It is comprised of 40 autonomous communities and 20 political wards. There are two main clans that make up Umuahia North. There are Ibeku and Ohuhu. It is in the Abia Central Senatorial Zone and the capital of Abia State. It shares common boundaries with Isuikwuato LGA in the North, Bende and Ikwuano in the East, Obowo LGA in Imo State to the West and Umuahia South LGA in the South. It has a land mass of 250,377sq kilometers.

According to the 2006 National Population and Housing Census, Umuahia North has a population of 223,139 with 112,595 males and 110,539 females and sex ratio of 102 males to 100 females. The population is growing at an annual growth of 3.73.

The Population for the study comprise of all the female of reproductive age in Umuahia north L.G.A There are two main clans that made up Umuahia north L.G.A., that is Ibeku and Ohuhu. According to the 2006 National population and Housing Censes, Umuahia north L.G.A has a female population of 110539, with 69693 female in Ibeku and 40846 female in Ohuhu clan.

Hypothese

The following hypotheses were posed to guide this study

a. Illiteracy of women in Umuahia North (lack of education and awareness) does not significantly influence maternal maternity.
b. Women's level of income in Umuahia North L.G.A does not significantly affect maternal mortality.
c. Inaccessibility of healthcare facilities by women of Umuahia North L.G.A has no significant relationship with maternal mortality.
d. Delay in getting obstetric care by women of Umuahia North L.G.A has no significant relationship with maternal mortality.

Research Design and Methodology

This study adopted descriptive survey research design to investigate socio-economic determinants of maternal mortality in Umuahia North LGA of Abia State. In other to obtain the desired sample for the study proportion sampling technique was adopted to select two thousand (2000) women of child bearing age. The respondents were selected from the two main clans that make up Umuahia North, which are Ibeku and Ohuhu. Simple random sampling technique was adopted in the selection of respondents in the respective clans. The technique was adopted in other to give each of the respondents in the clans an equal chance of being included in the study. A self developed and validated questionnaire was used for data collection. The questionnaire consisted of two sections, A and B as follows:

Section A: This section contains seven (7) items. This section elicited from the respondents certain demographic information such as age, marital status, educational qualification, religion, occupation, birth order and age at first pregnancy.

Section B: This section was developed to elicit information on dependent variable (maternal mortality), independent variables such as educational status, poverty, inaccessibility of health care facility and delay in getting obstetric care. This section was constructed based on a Likert type scale of four (4) response formats of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

The instrument was validated by an expert in social science research department and specifically the expert scrutinized the instrument based on the relevance of the items in relation to the objectives of the study, the language of the instrument in relation to cognitive capacities of the respondents and the comprehensiveness of the itemized sections. The data collected were analyzed using descriptive statistics frequency, tables and regression analysis, with statistical software for social science (SPSS).

Sample and Sampling Technique

The study adopted the proportionate random sampling technique in drawing the sample size for the study. Sample sizes of 2000 respondents were drawn from the total population of 110539 of reproductive age selected from the two clans Ibeku and Ohuhu, with the Taro Yamen's formula. In order to allocate the samples proportional to each clan (strata), the numbers of females' that were analyzed in each clan (stratum size) were determined using the formula Cochran (1967).

$n_h = n\left(\frac{Nh}{N}\right)$ ……. (1)

Where n_h = stratum sample size (number of female that were selected in each clan), which is to be determined from equation (1) above.

N_h = Stratum population size (Total number of female in each clan)

$N =$ Population size, (total number of female in Umuahia). Each of the calculated stratum size for each clan was show in table 1 below.

Table 1- showing stratified Random Sampling of Female Reproductive Age in Ibeku and Ohuhu Clan

Clan	**Total Number of Female in each clan**	**Number of female selected in each clan**
Ibeku	69693	1261
Ohuhu	40846	739
Total	**110539**	**2000**

From the table above, 1261 females were randomly drawn from Ibeku clan while 739 females were randomly drawn from Ohuhu clan. Hence total of 2000 respondents were selected from the two clans. The sample size was divided into two proportions based on the total population considerations.

Result and Findings

The results of the descriptive statistics, frequency distribution and regression analysis are displayed in the tables below:

Table 2: Socio-demographic characteristics of the respondents

Variable	**Frequency**	**Percent (%)**
Age		
15 – 20 years	78	3.9
21 – 26 years	316	15.8
27 – 32 years	621	31.05
33 – 39 years	712	35.6
40 years and above	273	13.65
Total	2000	100
Marital Status		
Married	1702	85.1
Divorced	121	6.05
Widow	119	5.95
Separated	18	0.9
Single	40	2
Total	2000	100
Educational Qualification		
Did not attend school	320	16
Primary School	1206	60.3
Secondary School	445	22.25
Post-Secondary	29	1.45
Total	2000	100
Religion		
Christianity	1991	99.55
Islam	9	0.45
Total	2000	100
Occupation		
Unemployed	451	22.55
Trading	731	36.55
Artisan	381	19.5
Farming	388	19.4
Civil Servant	49	2.45
Total	2000	100
Birth Order		
Nil	68	3.4
1 – 2	608	30.4
3 – 4	781	39.05
5 and above	543	27.15
Total	2000	100

Testing of Hypotheses:

Hypothesis 1

Illiteracy of women in Umuahia North LGA does not significantly influence maternal mortality.

Table 3: Regression Analysis on Illiteracy as determinant of maternal mortality

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.151	1	10.151	28.833	.001
Residual	703.401	1998	.352		
Total	713.552	1999			
a. Dependent Variable: Maternal Mortality					
b. Predictors: (Constant), Illiteracy $R^2 = 0.014$, Adj $R^2 = 0.014$					

Table 3 of the regression analysis shows that R-square value is 0.014, which suggested that 1.4% of the variation in the dependent variable (Maternal Mortality), is explained by the independent variable (illiteracy), while 98.6% of the variation remained unexplained. This remaining percentage could be caused by other factors or variables not included in the model.

The F-statistic of 28.833 that is ($F_{(1, 1998)} = 28.833$) and p-value of 0.001, since the p-value is less than 0.05, it indicates that the test is statistically significant at 5% level. This implies that women's level of education has statistical significant effect on maternal mortality in Umuahia North local government area of Abia state. The null hypothesis is therefore rejected, and concluded that women's level of education has significant effect on the maternal mortality.

The outcome of this study is in conformity with the findings of Olusegun, Thomas & Michael (2012) that female illiteracy adversely affects maternal mortality; women who complete secondary education are more likely to delay pregnancy, receive prenatal and post-natal care and have their birth attended to by qualified medical personnel, contributing Umurung (2010) opined that education is a key determinant of health facility utilization, because education increases women's autonomy, understanding and decision making power within the household. Kateja (2017) is of the opinion that there is a strong relationship that exists between a woman's literacy and her use of reproductive and maternal health services. Literacy is directly related to the status of a woman, her age at marriage and her decision power.

Hypothesis 2

Women's level of income in Umuahia North LGA does not significantly influence maternal mortality.

Table 4: Regression Analysis of women's level of income as determinant of maternal mortality

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4.571	1	4.571	12.882	.001
Residual	708.981	1998	.355		
Total	713.552	1999			
a. Dependent Variable: Maternal Mortality b. Predictors: (Constant), Poverty $R^2 = 0.006$, Adj $R^2 = 0.006$					

Table 4 of the regression analysis shows that R-square value is 0.006, which suggested that 0.6% of the variation in the dependent variable (Maternal Mortality) is explained by the independent variable (women level of income), while 99.4% of the variation remained unexplained. This remaining percentage could be caused by other factors or variables not included in the model.

The F-statistic of 12.882 that is ($F_{(1, 1998)} = 12.882$) and p-value of 0.001, since the p-value is less than 0.05, it indicates that the test is statistically significant at 5% level. This implies that women's level of income is significant determinant of maternal mortality in Umuahia North local government area of Abia state. The null hypothesis is therefore rejected, and concluded that women's level of income has statistical significant effect on the maternal mortality.

The outcome of this study is in line with Bolatito (2008) that poverty is a major cause of maternal mortality, as it prevents many women from getting proper and adequate medical attention due to their inability to afford good antenatal care. The finding also supported American Public Health Association (APHA) (2011) who opined that women living with higher concentrations of poverty have significantly higher risk of maternal mortality while women in middle and high poverty areas face a 60% and 100% greater risk of maternal mortality respectively than women living in low poverty areas.

Hypothesis 3

Inaccessibility of healthcare facilities by women in Umuahia North LGA does not have significant effect on maternal mortality.

Table 5: Regression Analysis on inaccessibility of healthcare facilities as determinant of maternal mortality

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.955	1	12.955	36.946	.001
Residual	700.597	1998	.351		
Total	713.552	1999			
a. Dependent Variable: Maternal Mortality b. Predictors: (Constant), Healthcare facility $R^2 = 0.018$, Adj $R^2 = 0.018$					

Table 5 of the regression analysis shows that R-square value is 0.018, which suggested that 1.8% of the variation in the dependent variable (Maternal Mortality) is explained by the independent variable (inaccessibility of healthcare facilities), while 98.2% of the variation remained unexplained. This remaining percentage could be caused by other factors or variables not included in the model. The F-statistic of 36.946 that is ($F_{(1, 1998)} = 36.946$) and p-value of 0.001, since the p-value is less than 0.05, it indicates that the test is statistically significant at 5% level. This implies that inaccessibility of healthcare facilities is significant determinant of maternal mortality in Umuahia North local government area of Abia state. The null hypothesis is therefore rejected, and concluded that inaccessibility of healthcare facilities has statistical significant effect on the maternal mortality.

This finding agreed with the findings of Henry, Findely & Godwin (2012) in their study of maternal mortality level in rural Northern Nigeria that rural women of Northern Nigeria are challenged with poor health infrastructure and poorly equipped healthcare facilities. Nuamah (2019) opined that poor maternal health delivery in developing countries results in more than half of a million maternal deaths during pregnancy, childbirth or within few weeks of delivery.

Hypothesis 4

Women's delay in getting obstetric care in Umuahia North L.G.A does not have significant effect on maternal mortality.

Table 6: Regression Analysis on women's delay in getting obstetric care as determinants of maternal mortality

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	10.171	1	10.171	28.893	.001
Residual	703.381	1998	.352		
Total	713.552	1999			
a. Dependent Variable: Maternal Mortality b. Predictors: (Constant), Obstetric care $R^2 = 0.014$, Adj $R^2 = 0.014$					

Table 6 of the regression analysis shows that R-square value is 0.014, which suggested that 1.4% of the variation in the dependent variable (Maternal Mortality), is explained by the independent variable (women's delay in getting obstetric care), while 98.6% of the variation remained unexplained. This remaining percentage could be caused by other factors or variables not included in the model. The F-statistic of 28.893 that is ($F_{(1, 1998)} = 28.893$) and p-value of 0.01, since the p-value is less than 0.05, it indicates that the test is statistically significant at 5% level. This implies that women's delay in getting obstetric care has statistical significant effect on maternal mortality in Umuahia North local government area of Abia state. The null hypothesis is therefore rejected, and concluded that women's delay in getting obstetric care has statistical significant effect on the maternal mortality.

This finding is in line with Thaddeus and Mainer (1994) which observed that delay in the decision to seek health care, reaching health facility on time and receiving adequate treatment add to the risk of maternal death. The study also support the findings of Chavane, Bailey & Termmerman (2018) that delays to reach appropriate health facility and receive care faced by women with pregnancy related complications play an important role in the occurrence of death.

Test of Hypotheses

Table 7: Regression Analysis on Social Economic Factors as determinants of maternal mortality

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.336	4	4.584	13.154	0.001
Residual	695.216	1995	.348		
Total	713.552	1999			
a. Dependent Variable: Maternal Mortality b. Predictors: (Constant), Obstetric care, Health facility, Illiteracy, Poverty R= 0.160, R^2= 0.026, Adj R^2 = 0.024					

Table 7 of the regression analysis shows that R-square as 0.026, which suggested that 2.6% of the variation in the dependent variable (Maternal Mortality) is explained by the independent variables, while 97.4% of the variation remained unexplained. This remaining percentage could be caused by other factors or variables not included in the model.

The F-statistic of 13.154that is ($F_{(4, 1995)}$ = 13.154) and p-value of 0.001, since the p-value is less than 0.05, indicates that the test is statistically significant at 5% level. This implies that social economic factors, such as illiteracy of women, women's level of education, inaccessibility of healthcare facilities and delay in getting obstetric care are significant determinants of maternal mortality in Umuahia North local government area in Abia state. The null hypothesis is therefore rejected, and concluded that social economic factors have significant effect on the maternal mortality. The findings of the study revealed that illiteracy, level of income, inaccessibility of healthcare facilities and delay in getting obstetric care are significant determinants of maternal mortality in rural communities of Umuahia North L.G.A of Abia State of Nigeria.

Table 8: Relative contributions of independent variables of educational level, level of income, inaccessibility of health facility and delay in getting obstetric care on maternal mortality

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.883	.038		48.931	.000
Illiteracy	-.211	.032	-.076	-3.342	.032
Health facility	-.177	.058	-.282	-3.038	.002
Poverty	.039	.011	.075	3.389	.001
Obstetric care	.107	.056	.170	4.924	.004
a. Dependent Variable: Maternal Mortality					

The summary of the multiple regression analysis is displayed in table 8. The coefficients of the parameters, t-values and their corresponding p-values are shown in the table. The test is done to ascertain the relative effect of women's level of education, level of income, inaccessibility of healthcare facilities, and delay in getting obstetric care, on maternal mortality. From the table the p-value for women's level of education, inaccessibility of healthcare facilities, level of income and delay in getting obstetric care are given as 0.032, 0.002, 0.001 and 0.004 respectively. Since their p- values is less than 0.05, their null hypotheses is rejected and concluded that women's level of education, level of income, inaccessibility of healthcare facilities, and delay in getting obstetric care, have statistical significant effect on maternal mortality.

The finding of this study revealed that the level of education, level of income, inaccessibility of health care facilities and delay in getting obstetric care are responsible for maternal mortality in rural communities of Umuahia North L.G.A of Abia State.

The finding supported the report of World Health Organization (WHO) (2019) that high number of maternal deaths in some parts of the world reflects inequalities in access to healthcare services and highlights the gap between the rich and poor. Sager (2019) stated that inadequate manpower, delay in seeking help, lack of essential equipment (medication, blood, lack of ambulance, transportation and delay in referrals) contributes to high maternal mortality in Nigeria.

Conclusion and Recommendations

The findings of this study shows that social economic factors (level of education, level of income, inaccessibility of healthcare facilities, and delay in getting obstetric care) are factors that have statistical and significant effects on maternal mortality in the study location. Based on the above findings, this study recommends that women should be empowered through education by the government to help them make right choices and decisions where it comes to their health and wellbeing. Moreover, women in the study location - Umuahia North L.G.A, Abia and all over the country should be empowered with productive resources (financial, material, social capital) and necessary supports from government, international and local development agencies etc., so that they can meet with demands for their health wellbeing throughout pregnancy period. Modern healthcare facilities should be provided in rural communities in order to meet the objectives of primary healthcare provisions in the Nigerian health policy. All institutional and sociocultural barriers that lead to delay in accessing obstetric care by rural women in the study area and Nigeria in general should be addressed and necessary policies should be installed to effect change in the statusquo. Finally, the National Health Insurance Scheme for expectant mothers should be made available and accessible to women in rural communities to reduce maternal death that may result from poverty, lack and economic stressors.

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