OPEN ACCESS
Global Journal of Research in Medical Sciences
ISSN: 2583-3960 (Online)
Volume 05 | Issue 01 | Jan.-Feb. | 2025
Journal homepage: https://gjrpublication.com/gjrms/
Research Article

Study On Maternal Risk Factors Among Pregnant Mothers Attending Holy Family Hospital Ikenegbu

*ANYANWU, JOSEMARIA CHINONYEREM[1] AND OZIMS, STANLEY JAMES[2]

[1,2] Department of Public Health of Imo State University, Owerri

DOI: 10.5281/zenodo.14732944 **Submission Date:** 19 Dec. 2024 | **Published Date:** 24 Jan. 2025

Corresponding author:** ***ANYANWU, JOSEMARIA CHINONYEREM
Department of Public Health of Imo State University, Owerri

Abstract

Maternal risk is a common challenge of health concerns that poses danger to pregnant women ranging from pregnancy complications to childbirth outcomes. The present study was aimed at studying the maternal risk factors among pregnant mothers attending Holy Family Hospital Owerri. The study was designed as a health facility-based cross-sectional study that sampled a total of 364 pregnant women in the health facility. Information concerning the obstetric characteristics and other health status of the women were obtained from the health facility. Sociodemographic characteristic of the women was obtained through a study-validated questionnaire. Data analysis was performed using descriptive and inferential methods. Descriptive methods include the construction of frequency distribution tables for the data, which were all expressed as the percentage of the distribution. An inferential test was performed using the Chi-square test for independent variables, at a 5% level of significance. The result of the test indicates that common maternal risk outcomes found among the women include Anaemia (31.3%), preeclampsia (13.5%), spontaneous Abortion (miscarriage) (9.1%), gestational diabetes (8.5%), and. obstructed labour (3.6%). Others include haemorrhage (2.2%), ectopic pregnancy (1.9%), eclampsia and sepsis at 0.8% each. A total of 117 (32.1%) pregnant women had maternal complications. Significantly associating factors for complications include hypertension (P=0.001), diabetes (P=0.041), Mental health (depression and anxiety) (P=0.005), obesity (P=0.043), presence of infections (P=0.001), (P=0.043), Also, socio-demographic factors such as age (P =0.013), an education level (P=0.000) and income level (p=0.001) were significantly associated with maternal risk complications outcome, as well as income status (p=0.000), occupational status (p= 0.003). alcohol use (p=0.038) and Intimate Partner violence (p=0.000). Therefore, the study concluded that maternal risk is still an unresolved challenge in pregnancy and its associated risk factors need to be properly addressed to reduce the menace of maternal complications among pregnant women.

INTRODUCTION

Maternal health remains an obvious concern worldwide. World Health The organization reported that approximately 295,000 women died during pregnancy and childbirth in 2017 and the majority of these deaths were due to low-resource settings. Particularly, Nigeria is known to have one of the highest mortality rates globally contributing predominantly to the global burden of maternal deaths [1]

Despite several interventions to improve maternal health, the reduction of maternal mortality and morbidity remains slow. Holy Family Hospital was selected because it serves different populations of pregnant women from socio-economic backgrounds, making it an ideal setting for studying a wide range of maternal risk factors [2].

Holy Family Hospital Ikenegbu serves a different population of pregnant women, many of whom are challenged with socio-economic and health issues. Understanding the particular prevalent risk factors in this facility is important for the development of effective interventions that can improve maternal and neonatal outcomes.

Previous studies have established many key factors, including advanced maternal age, high parity, low socioeconomic status, inadequate prenatal care, and pre-existing medical conditions such as hypertension and diabetes [3]

In the context of Holy Family Hospital Ikenegbu, socioeconomic factors play an obvious role in maternal health outcomes, limited access to quality healthcare services, low educational background, and poverty are widespread issues that intensely aggravate the risks associated with pregnancy. In addition, cultural practices can influence the behaviors of these women and their ability to adhere to medical advice which further makes it difficult to manage maternal health.

Knowing the significance of identifying and managing maternal risk factors early, this study aims to investigate these factors among pregnant women attending Holy Family Hospital. By identifying the prevalent risks and understanding their impact on maternal and neonatal outcomes, this research provides valuable insights that can guide healthcare providers and those who make policies. The highest goal is to build up effective strategies to reduce maternal and neonatal morbidity and mortality in this area [4].

This study is particularly at the right time and important as it aligns with the worldwide attempt to achieve the Sustainable Development Goal (SDG) 3, which aims to ensure healthy lives and promote well-being for all at all ages.

Precisely, SDG 3.1 aims to reduce the worldwide maternal mortality ratio to less than 70 per 100,000 by live births in 2030. Understanding and addressing the maternal risk factors in local settings like Ikenegbu will be a critical step toward achieving this worldwide target [3]

Maternal risk factors significantly influence maternal and neonatal outcomes and have different aspects that surround a wide range of conditions that can impact maternal and neonatal health.

According to the World Health Organization, Maternal risk factors are those factors that are biological, behavioral, and socio-economical that can affect maternal and fetal health negatively. Thus, it states ‘Maternal risk factors encompass pre-existing medical conditions, age-related risks, socio-economic challenges and lifestyle choices that increase the likelihood of complications during pregnancy, labor and the postpartum period [5]

One of the most critical maternal risk factors is advanced maternal age which is related to pregnancy in women at the age of 35 and above. Studies have shown that women at the age of 35 and above with pregnancy are likely to have increased risks of complications like gestational diabetes, preeclampsia, and chromosomal abnormalities in the fetus [6]

However, women who have five or more viable children or who have high parity are also associated with maternal complications such as uterine rupture, hemorrhage, and preterm birth [1]

Socioeconomic status (SES) plays an important role in maternal health. Pregnant women from lower socioeconomic backgrounds are faced with low income, education, and access to healthcare which links to poorer maternal and neonatal outcomes. These categories of women are prone to inadequate prenatal care, which is associated with higher rates of complications during pregnancy and childbirth [7]

Inadequate prenatal care also is a significant risk factor. It is linked with higher rates of complications during pregnancy, preterm births, and low birth weight infants [2]. Regular prenatal visits are important for monitoring the mother and the developing fetus but inadequate prenatal care undermines the significance of making sure that all pregnant women have access to quality prenatal care services.

Medical conditions that are pre-existing such as hypertension and diabetes also pose significant risks during pregnancy and can lead to complications and increase the risk of negative outcomes for both the mother and baby. Gestational diabetes is diabetes that the mother develops during pregnancy and can cause complications like preeclampsia, cesarean delivery, and increased risk of type 2 diabetes for the mother and child in the future [3]

According to the American College of Obstetricians and Gynaecologists. Chronic diseases like hypertension, diabetes, and heart disease can cause complications in pregnancy and increase the risk of negative outcomes for both the mother and the baby.

Preeclampsia is an important maternal risk factor that is due to high blood pressure and signs of damage to the kidney. If not properly managed can lead to serious complications or death of the mother and child [8]

Lifestyle choices such as smoking, alcohol consumption, and poor nutrition pose significant risks during pregnancy and can affect maternal and fetal health. These lifestyle choices are risk factors that can be changed through appropriate health interventions and education. Substance abuse during pregnancy has been associated with negative outcomes including fetal alcohol spectrum disorders (FASDs), low birth weight, preterm birth, developmental issues, placenta abruption, and preterm labor [9]

Obesity in pregnancy which is having a body mass index of 30 and above also gives rise to the risk of gestational diabetes, preeclampsia, cesarean delivery, and macrosomia. This can be associated with long-term health issues for both the mother and child.

Short inter-pregnancy interval which is characterized by the time between the end of one pregnancy and the conception of the next less than eighteen (18) months is also linked to increased risks of preterm birth and low birth weight for gestational age infants. This can cause maternal depletion of essential nutrients and maternal health complications [10]

Multiple pregnancies involving more than one fetus give rise to demands on the mother's body and can cause complications for the mother and babies. Multiple pregnancies are linked to a higher risk of preterm birth, low birth weight, preeclampsia, and gestational diabetes [11]

Infections such as urinary tract infections (UTIs), sexually transmitted infections (STIs), and other bacterial or viral infections are other risk factors that can cause complications such as preterm labor, low birth weight, congenital infections, and increased risk of maternal morbidity. Adverse outcomes can be prevented if It is detected and treated early [12]. It was found out that infections such as malaria, HIV, and urinary tract Infections during pregnancy are significant risk factors for maternal and fetal. Morbidity. For instance, malaria in pregnancy is linked with low birth weight, maternal anemia, and stillbirth [6]. Researching the burden of Infectious diseases in the local population can help identify specific risks. Need addressing. Mental health disorders such as depression, anxiety, etc affect the mother's capacity to care for herself and her baby giving rise to poor Prenatal care, preterm birth, and low birth weight. If mental health issues are not Treated, it can affect postpartum health and parenting [13]

Domestic violence during pregnancy is a serious higher risk factor for miscarriage, preterm birth, low birth weight, and maternal mental health issues.

It can cause obvious long-term risks to both the mother and the child Environmental exposures to hazards like lead, mercury, pesticides, or other toxic substances during pregnancy can lead to congenital abnormalities, developmental delays, and complications like preterm birth and low birth weight. Reduction of these exposures is important for the protection of maternal and fetal health [14]. The hospital has a well-structured antenatal program enabling the engagement of a significant number of pregnant women who come to regular antenatal visits which is important in collecting reliable data for the study. The choice of this facility is in line with the objectives of the study, which is to explore maternal risk factors and their effects on pregnancy outcomes. The hospital's interest in neonatal and maternal services makes it an ideal setting for this research as it will give access to comprehensive medical records.

Maternal health is a very important aspect of public health despite the huge efforts being made to improve maternal health services, maternal morbidity and mortality in Nigeria keep on increasing. Holy Family Hospital in Ikenegbu is not left out, serving a diverse population of women who are pregnant and are also at risk of negative maternal and neonatal outcomes.

There are so many maternal risk factors including high parity, inadequate prenatal care, pre-existing medical conditions, socioeconomic status, and advanced maternal age which contribute to these negative outcomes. The perseverance of these problems is linked to multiplex interaction of maternal risk factors including socio-demographic factors, obstetric history, access to healthcare, cultural practices, and psychological stress [15]. However, there is no detailed data on the particular maternal risk factors prevalent among pregnant women attending Holy Family Hospital. This knowledge gap prevents the development of effective procedures that may be targeted to improve maternal health in this vicinity.

Socioeconomic factors such as poor access to quality health care, low educational level, and poverty contribute high risk associated with pregnancy. In addition, cultural practices and beliefs and the ability to adhere to medical advice have greatly influenced women who are seeking for healthcare leading to complications in the management of maternal health [16]

Without a good and clear understanding of these maternal risk factors prevalent to the population served by Holy Family Hospital, there will be a challenge or problem in designing and implementing effective methods to alleviate these risks. This study fills this gap by identifying and analyzing the maternal risk factors among pregnant women attending Holy Family Hospital in Ikenegbu.

By addressing this problem, the study aims to generate effective ideas that will inform healthcare providers and those who make policies and contribute to the development of effective procedures that will alleviate maternal and neonatal morbidity and mortality in the area. The findings are also in line with the worldwide efforts to achieve the Sustainable Development Goal of reducing maternal mortality and promoting well-being for all.

MATERIALS AND METHODS.

RESEARCH DESIGN

For this study on maternal risk factors and pregnancy outcomes among pregnant others attending Holy Family Hospital Ikenegbu, Cross-Sectional Descriptive design was employed. This design is suitable because it permits the examination of the association between maternal risk factors and pregnancy outcomes at a particular point in time. The descriptive part enabled the study to have a comprehensive make-up of the participants and exposed the pattern linked to the risk factors and outcomes.

AREA OF STUDY

The study was conducted at Holy Family Hospital Ikenegbu, a healthcare facility situated at the heart of the town, Aladimma Housing Estate in Owerri Municipal Council, capital of Imo State of South-eastern Nigeria. The facility is also accessible to different populations of pregnant women in both urban and semi-urban communities, ensuring a representative sample of the population. Geographically coordinated to an area that lies within Lat. 5degree 28 North and Lat.7degree 2 East situated in the South-Eastern region of Nigeria. Ikenegbu enjoys a tropical climate with distinct wet and dry seasons that can influence healthcare access and maternal health conditions. Ikenegbu being part of the Owerri Municipal council has a mixture of residents from various ethnic, educational and socioeconomic background. The population includes government workers, traders, students and professionals many of whom seek maternal health care at Holy Family Hospital due to its reputation for quality maternity services. The socioeconomic status of the population in Ikenegbu varies ranging from low to high income. However, the significant portion of the patients at Holy Family Hospital comes from middle to lower socioeconomic background. This socioeconomic diversity impact healthcare seeking behaviour, access to prenatal service, and the prevalent of maternal risk factors such as poor nutrition and delayed prenatal care. Access to healthcare can be influenced by factors such as household income, educational attainment, and employment status which are crucial for understanding the maternal risk factors in the area.

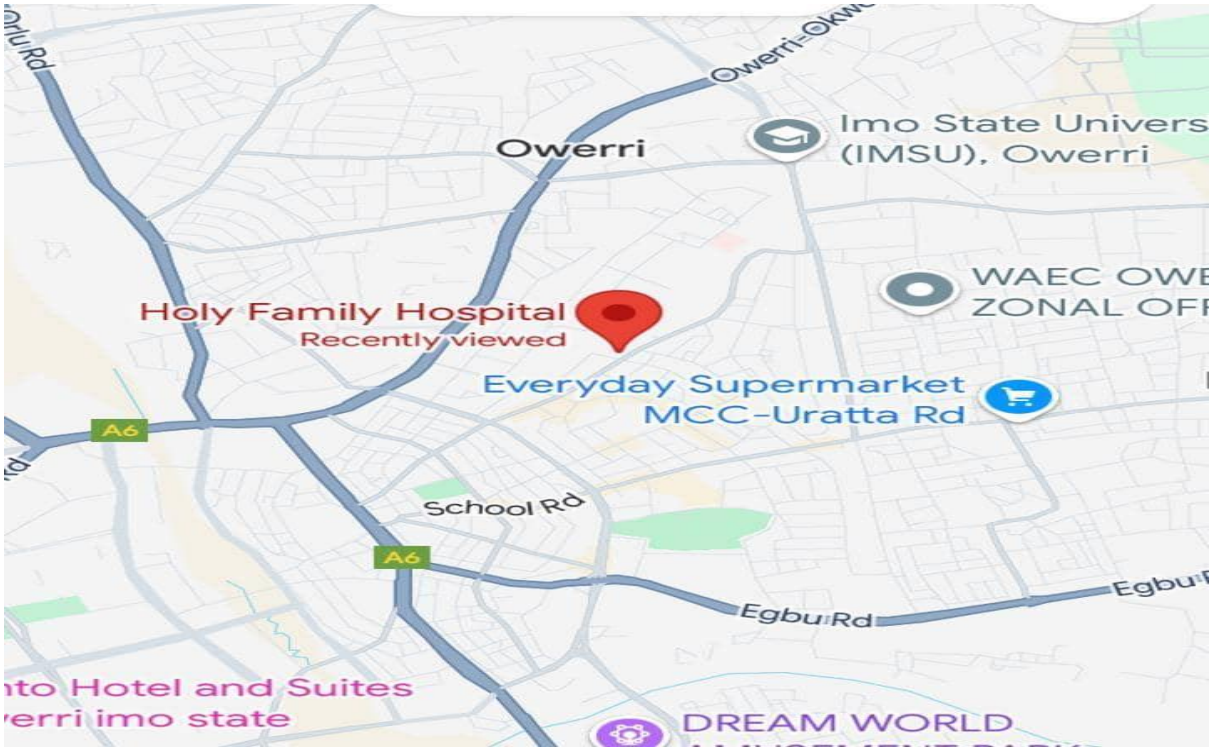

Figure 3.1 Map of Owerri citing Holy Family Hospital

STUDY POPULATION

The population for this study comprises all pregnant women attending antenatal care (ANC) services at Holy Family Hospital, Ikenegbu, during the study period. Holy Family Hospital serves various pregnant women from the Ikenegbu area and its environs. This population is relevant to the study as it provides a representative group of women who may be exposed to various maternal risk factors and whose health outcomes can be studied.

Target Population: The primary target population for this study is pregnant women who attend antenatal care visits at Holy Family Hospital. These women come from different socio-demographic backgrounds, including various age groups,

educational levels, income brackets, and obstetric histories (e.g., first-time mothers, and women with high parity). In addition to pregnant women, healthcare providers such as midwives, obstetricians, and nurses may also be included to provide insights into the maternal risk factors they observe and manage at the hospital. The population size used was 3,988.

SAMPLE SIZE

The sample size was determined based on the total population of pregnant women attending Holy Family Hospital and the desired confidence level, margin of error, and statistical power.

Taro Yamane's formula for sample size determination was used to calculate the appropriate sample size. The sample size was determined from a population of 3,988.

n =N/1+N(e)2

Where n = sample size

N = the population size

e = the acceptable size to be 0.05

n = 3988/1+3988(0.05)2

n = 3988/1+3988(0.0025)

n = 3988/1+9.97

n = 3988/10.97

n = 363.53 approx. 364

n = 364

SAMPLING TECHNIQUE

Stratified random sampling is the most appropriate technique for this study because it ensures that all significant subgroups of the population are represented, enabling a more accurate analysis of how maternal risk factors impact pregnancy outcomes among pregnant women attending Holy Family Hospital, Ikenegbu. This technique provides a robust and comprehensive approach to sampling, essential for drawing meaningful conclusions from the study.

Stratified Random Sampling:

The sampling technique adopted for this study is stratified random sampling. This method is selected to ensure that key subgroups (strata) within the population are adequately represented in the sample. Stratified sampling is useful when the population is heterogeneous, and the study aims to ensure representation across different characteristics, such as age, socioeconomic status, or obstetric history.

This was used based on the advantages of stratified sample technique;
Advantages of Stratified Random Sampling,
Increased Precision: Stratified sampling ensures that different subgroups are adequately represented, reducing sampling bias and increasing the precision of estimates.

Better Comparability: By stratifying the sample based on risk factors such as age or socioeconomic status, the study can make meaningful comparisons between subgroups (e.g., older vs. younger mothers).

Minimization of Variability: Stratification helps reduce variability within each subgroup, leading to more reliable and generalizable results.

INSTRUMENT FOR DATA COLLECTION

Data were collected using a structured questionnaire and medical record reviews (secondary data).
The questionnaire includes sections on sociodemographic factors, obstetric history, access to healthcare, cultural practices, psychological stress, and other important maternal risk factors.

For secondary (medical record) reviews, data on pregnancy outcomes such as gestational age at delivery, birth weight, and the presence of complications were extracted from the medical records of the participants to be sure of accuracy and completeness.

VALIDITY

The questionnaire was structured based on an extensive review of the literature on maternal risk factors and pregnancy outcomes, to make sure that all important aspects are included. Experts in maternal health like obstetricians and public health professionals were consulted to review the questionnaire to determine whether the questions adequately point out all the required content areas associated with the objectives of the study.

A pilot test was conducted with a small sample of pregnant women and feedback from the pilot test was used to clarify the questions, making sure they were clear, detailed, and applicable.

The feedbacks from the questionnaire were corelated with objective data from medical records such as pregnancy outcomes to validate the information from the questionnaire.

RELIABILITY OF INSTRUMENTS

The reliability of the instrument was tested by the use of the test re-test technique. The questionnaire was distributed to a subset of the participants to complete the questionnaire twice within a time interval of one to two weeks. The results from the two instances were correlated using correlation coefficients (Pearson rule) to examine the consistency of the instrument over time.

METHOD OF DATA COLLECTION

The questionnaire was designed according to the objectives of the study, literature review and theoretical framework. It will cover sections on socio-demographic factors such as age, income, education and marital status, obstetric history like previous pregnancy outcomes, cultural practices, access to healthcare, psychological stress and pregnancy outcomes. The questions were comprised of open and close ended questions to capture qualitative and quantitative data.

Secondly, important data were extracted from the medical records which includes information on previous obstetric history, pregnancy outcomes like birth weight, gestational age at delivery and maternal complications.

Pilot testing was conducted before the main data and feedback from the pilot testing was used to modify the questionnaire.

Participants were gathered during the antenatal visits and with their consent, the questionnaire was given to them to be completed on-site or to be returned during their next antenatal visit.

With the participants' consent, their medical records were accessed to extract important data which will support the self-reported information increasing the accuracy of the findings of this study.

METHOD OF DATA ANALYSIS

The data analysis includes descriptive and inferential statistical techniques to explore the association between maternal risk factors and pregnancy outcomes among pregnant women attending antenatal care at Holy Family Hospital Ikenegbu.

Data were cleaned for accuracy by eliminating outliers, inconsistency and checking missing values. Duplicate and erroneous inputs were removed.

The responses from the open-ended questions were coded into categorical variables to speed up the analysis. Numerical coding was used like 1 for the 'Yes 'answers and 0 for the 'No' answers to be easier for statistical analysis.

DESCRIPTIVE ANALYSIS: The frequency distributions for all variables (socio-demographic factors, obstetric history, cultural practices) were generated. This will help to understand the general characteristics of the population of the study. The mean and median (measures of central tendency), standard deviation and range (dispersion) of continuous variables (age, income) were calculated to summarize the data. In order to explore the relationships between different variables like the association between socio-demographic factors and pregnancy outcomes, cross-tabulations was used.

INFERENTIAL ANALYSIS: To examine the association between variables such as relationship between socio-demographic factors (education, marital status) and pregnancy outcomes (low birth weight, preterm birth), Chi-square was employed. Continuous variables like birth weight, were calculated with independent t-test (for two groups) to compare the means between groups defined by different risk factors such as income levels.

To determine the relationship between maternal age and pregnancy outcomes (strength and direction of the relationship between continuous variables), Pearson or Spearman Correlation coefficients was used.

To determine the odds of negative pregnancy outcomes (preterm birth, low birth) associated with various maternal risk factors (age, parity, access to healthcare), logistic regression analysis was employed to control confounding variables and identify independent potential pregnancy outcomes.

INTERPRETATION OF RESULTS: The results were interpreted based on p-values and confidence intervals to determine the statistical significance of the findings. The significance level was set at $p<0.05$.

The descriptive statistics was presented in form of tables, graphs and charts and narrative summary highlighting the key results and their implications for maternal and neonatal health in the population of the study was provided.

ETHICAL CONSIDERATIONS

Informed consent was obtained from participants before the collection of data. They were informed about the purpose of the study, their right to withdraw at any time and inform the measures taken to maintain confidentiality.

To ensure confidentiality, data were secured and access limited to the researcher to protect their privacy.

Efforts were made to reduce bias in the data analysis while carefully considering confounding variables and the use of statistical techniques. Aggregate data only will be presented to make sure that no participant can be identified.

RESULTS

Socio-Demographic Characteristics of Pregnant Women Studied

In all, 364 pregnant women were assessed in the study, their sociodemographic characteristics are presented in Table 4.1.

Table 4.1: Socio-Demographic Characteristics of Pregnant Women Studied

Socio-Demographic Characteristics	Frequency (n=364)	Per cent
Age		
Less than 18	11	3.0
18 – 24	45	12.1
25 -30	200	54.9
30 – 34	86	23.6
35+	22	6.0
Education Level		
Non-Formal	11	3.0
Primary	47	12.9
Secondary	218	59.9
Tertiary	88	24.2
Marital Status		
Single	24	6.6
Married	308	84.6
Separated/divorced	32	8.8
Income level		
Less than- N30,000	97	26.6
N31,000-N59,000	78	21.4
N60,000-N99,000	44	12.1
N100,000-N159,000	81	22.3
N160,000-N199,000	47	12.9
N200,000 and above	17	4.7
Maternal Occupation		
Hand work	110	30.2
Trading	126	34.6
White colar	82	22.5
Other	46	12.6

Table 4,1 shows that 22 (6%) of the women were at least 35 years of age and 11 (3.0%) were less than 18 years of age. More than half of them (200: 54.9%) were within 25 – 34 years old. In terms of highest level of education attained, almost 60% (218 women) had secondary education level, while 24.2% (88 women) had tertiary education.

There were 11 (3%) that had no formal education while a total of 47 (12.9%) had primary education. Clear majority of the women were married (308: 84.6%). The singles among the were 24 (6.6%) while 32 (8.8%) were separated or divorced.

The income level of the study group indicated that large number of them earn less than thirty thousand naira ((97: 26.6%) which was the minimum wage in Nigeria as at the period of data collection. Less than half earn as from #100,000 of which just 17 (4.7%) earn as from #200,000 and above.

The data on maternal occupation was such that many of them were either engaged in trading (126: 34.6%) or hand work activities such as hair dressing and sewing (110: 30.2%). Those involved in office white collar jobs were 82 (22.5%0 while 46 (12.6%) were involved in other sorts of occupation such as farming.

Prevalence and Common Maternal risk outcomes (complications) in the Health Facility of Study

In table 4.2, the common maternal risk outcomes found among the pregnant women in the study health facility were Anaemia (31.3%), preeclampsia (13.5%), spontaneous Abortion (miscarriage) (9.1%), gestational diabetes (8.5%), and. obstructed labour (3.6%). Others include haemorrhage (2.2%), ectopic pregnancy (1.9%), eclampsia and sepsis at 0.8% each.

Table 4.2: Prevalence and Common Maternal risk outcomes (complications) in the Health Facility of Study

Maternal Risk Found	Frequency	Prevalence (%)
Haemorrhage	8	2.2
Pre eclampsia	49	13.5
Obstructed labour	13	3.6
Sepsis	3	0.8
Anaemia	114	31.3
Eclampsia	3	0.8
Ectopic pregnancy	7	1.9
Gestational Diabetes	31	8.5
Spontaneous Abortion (miscarriage)	33	9.1
Others	13	3.6

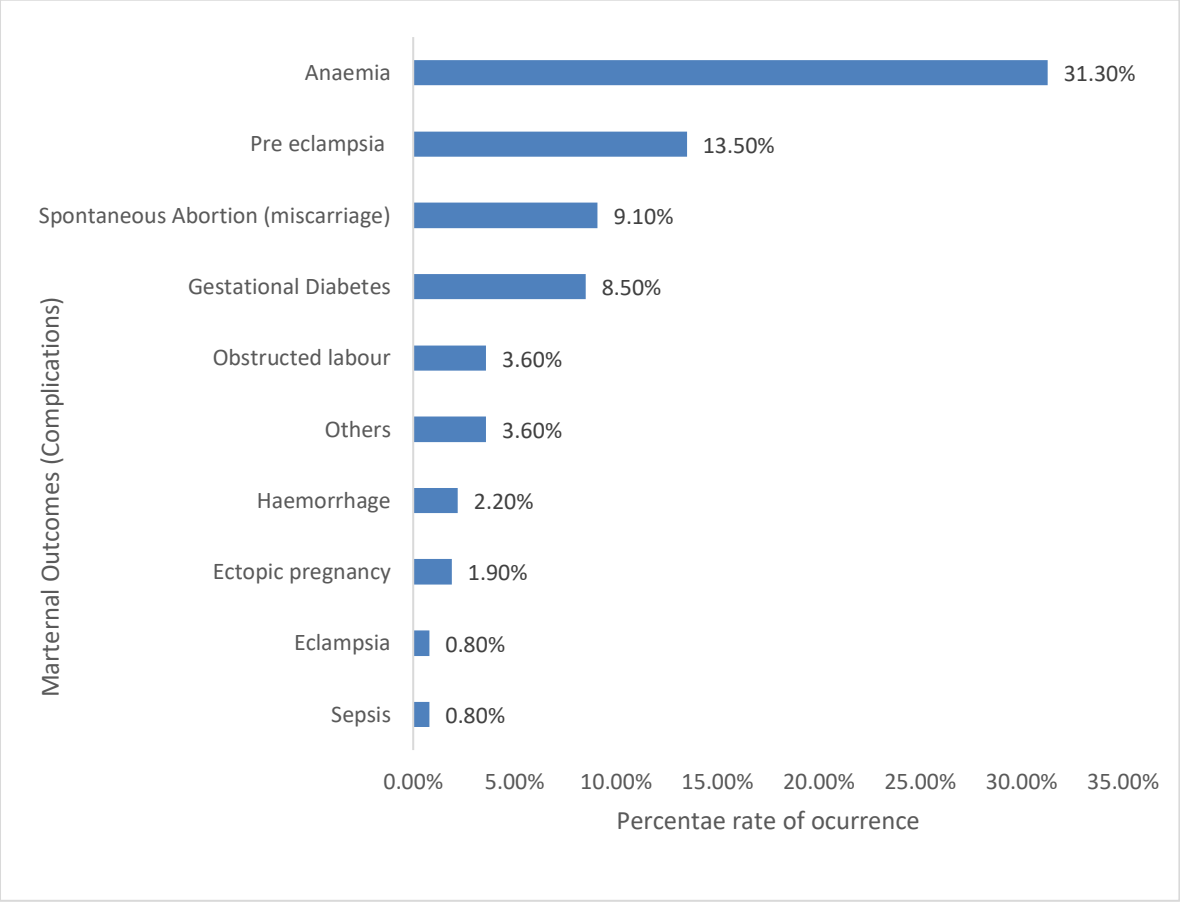

Figure 4.1: Common Maternal risk outcomes (complications) Among Pregnant Women of Study

Prevalence of Maternal Risk Complications Among Pregnant Women of Study

Figure 4.2 represents the prevalence of maternal complications (maternal issues) among the study pregnant women. The figure shows that a total of 117 (32.1%) pregnant women had maternal issues while non was present on the remaining 247 (67.9%), indicating a prevalence rate of 32,1%.

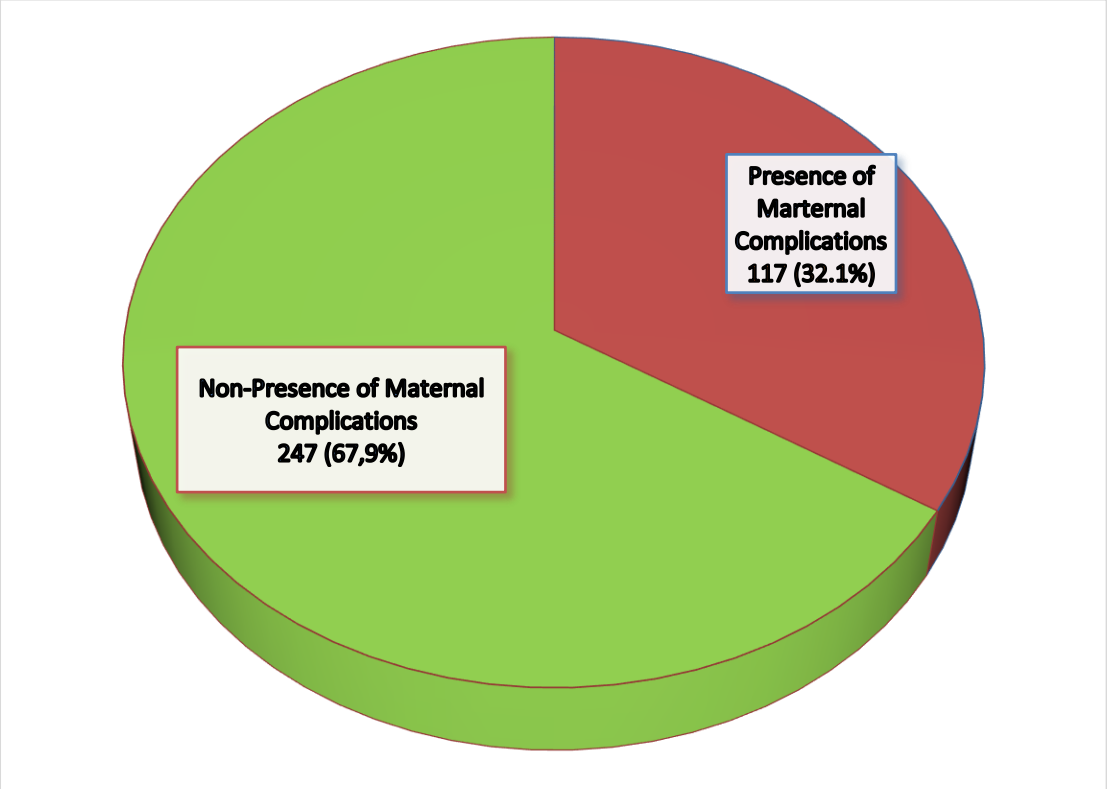

Figure 4.2: Prevalence of Maternal complications Among Pregnant Women of Study

Maternal Risk Factors of Complications among Women studied

The result presented in table 4.3 represents the risk factors of maternal complications among pregnant women studied.

Table 4.3: Maternal Risk Factors of Complications among Women studied

		Maternal Complications: Present		Maternal Complications: Absent			
	Total	Number	%	Number	%	Chi-sq	P value
Hypertension							
Yes	123	53	43.1	70	56.9		
No	241	64	26.6	177	73.4		
Total	364	117	32.1	247	67.9	10.206	0.001
Depression and Anxiety							
Yes	131	54	41.2	77	58.8		
No	233	63	27.0	170	73.0		
Total	364	117	32.1	247	67.9	7.733	0.005
Diabetes							

Yes	21	11	52.4	10	47.6		
No	343	106	30.9	237	69.1		
Total	364	117	32.1	247	67.9	4.185	0.041
Obesity							
Yes	26	13	50.0	13	50.0		
No	338	104	30.8	234	69.2		
Total	364	117	32.1	247	67.9	4.094	0.043
Presence of Infections							
Yes	78	37	47.4	41	52.6		
No	288	80	27.8	208	72.2		
Total	364	117	32.1	247	67.9	10.906	0.001

The table show that the risk factors established in this study include hypertension (P=0.001), diabetes (P=0.041), Mental health (depression and anxiety) (P=0.005), obesity (P=0.043), presence of infections (P=0.001), (P=0.043), maternal complications were present on 43.1% among hypertensive women compared to 26.6% among the no-hypertensive subjects. Similar patterns of result was obtained among those with depression and anxiety (Yes = 41.2%, No = 27%), presence of diabetes (Yes = 52.4%, No = 30.9%), obesity (Yes = 50.0%, No = 30.8%), and presence of infection (Yes = 47.4%, No = 27.8%).

Socio demographic factors and Maternal Complications outcome

Table 4.4 shows that significant socio demographic factors associating with maternal risk complications outcome include age (P =0.013), education level (P=0.000) and income level (p=0.001). In terms of age, it can be observed that complications outcome were higher among those who were at least 35 years old (52.2%), followed by the under 18s (45.5%) while it was lowest among the 18 -24 years (17.8%) and the 25 – 30 years at 29%.

Table 4.4: Socio demographic factors and Maternal Complications outcome

Socio Demographic Characteristics		Maternal Complications: Present		Maternal Complications: Absent			
	Total	Number	%	Number	%	Chi-sq	P value
Age							
Less than 18	11	5	45.5	6	54.5		
18 – 24	45	8	17.8	37	82.2		
25 -30	200	58	29.0	142	71.0		
30 – 34	85	34	40.0	51	60.0		
35+	23	12	52.2	11	47.8		
Total	364	117	32.1	247	67.9	12.694	0.013
Education Level							
None	11	6	54.5	5	45.5		
Primary	47	14	29.8	33	70.2		
Secondary	218	84	38.5	134	61.5		
Tertiary	88	13	14.8	75	85.2		
Total	364	117	32.1	247	67.9	18.904	0.000
Marital Status							
Single	24	10	41.7	14	58.3		

Married	308	94	30.5	214	69.5		
Separated/divorced	32	13	40.6	19	59.4		
Total	364	117	32.1	247	67.9	2.426	0.297
Income level							
N0- N30,000	97	47	48.5	50	51.5		
N31,000-N59,000	78	22	28.2	56	71.8		
N60,000-N99,000	44	14	31.8	30	68.2		
N100,000-N159,000	81	25	30.9	56	69.1		
N160,000-N199,000	47	7	14.9	40	85.1		
N200,000 and above	17	2	11.8	15	88.2		
Total	364	117	32.1	247	67.9	22.097	0.001
Maternal Occupation							
Hand work	110	37	33.6	73	66.4		
Trading	126	49	38.9	77	61.1		
White colar	82	22	26.8	60	73.2		
Other	46	9	19.6	37	80.4		
Total	364	117	32.1	247	67.9	7.139	0.060

Table 4.4 also shows that complications were highest among the non- formal education participants (54.5%), and lowest among the tertiary education level subjects (14.8%). Similarly, the lowest income earners recorded the largest rate of complications (48.5%), while it was lowest among the highest income earners (11.8%).

Marital status was not significant, though the married recorded the lowest rate of complications. Also, occupation was not found significant in this study but complications were highest among those involved in trading activities.

Socio economic status factors and Maternal Complications outcome

Factors of socio economic status such as income status and occupational status were both significantly associated with maternal risk complications outcome (Income: p=0.000, occupational status: p= 0.003). the low income earners recorded largest rate of maternal complications (40.6%) while it was lowest among the high income earners (10.9%). Similarly, maternal complications was higher among the unemployed (40%) and the partly employed (48%), compared to the fully employed (39.4%).

Table 4.5: Socio economic status factors and Maternal Complications outcome

Socio economic status	Total	Maternal Complications: Present		Maternal Complications: Absent		Chi-sq	P value
		Number	%	Number	%		
Income Status							
Low-income Earners	219	89	40.6	130	59.4		
Middle Income Earners	81	21	25.9	60	74.1		
High Income Earners	64	7	10.9	57	89.1		
Total	364	117.0	32.1	247	67.9	21.876	0.000
Occupational status							
Unemployed	20	8	40.0	12	60.0		
Self employed	179	41	22.9	138	77.1		

Partly employed	50	24	48.0	26	52.0		
Fully employed	104	41	39.4	63	60.6		
other (student)	11	3	27.3	8	72.7		
Total	364	117	32.1	247	67.9	15.981	0.003

Assessment for Risk of Substance use and Intimate Partner violence on risk of maternal Complications outcome among Women studied

In table 4.6, none of the pregnant women responded that they use substances., while 68 responded that they do take alcohol. Alcohol was found as a significant risk factor of maternal complications (P =0.039). Among the women that consume alcohol, the rate of maternal complications was found higher (42.6%) compared to the rate among women that do not consume alcohol (30%). Also, intimate partner violence was found as a risk factor in this study. Up to 51.5%of the women that experienced intimate partner violence had maternal complications against 27.7% found among those without intimate partner violence.

Assessment for Risk of Substance use and Intimate Partner violence on risk of maternal Complications among Women studied

		Maternal Complications: Present		Maternal Complications: Absent			
	Total	**Number**	**%**	**Number**	**%**	**Chi-sq**	**P value**
Substance use							
Yes	0	0	0.0	0	0.0		
No	364	117	32.1	247	67.9		
Total	364	117	32.1	247	67.9	-	-
Alcohol Use							
Yes	61	26	42.6	35	57.4		
No	303	91	30.0	212	70.0		
Total	384	117	30.5	267	69.5	4.279	0.039
Intimate Partner Violence							
Yes	68	35	51.5	33	48.5		
No	296	82	27.7	214	72.3		
Total	364	117	32.1	247	67.9	14.322	0.000

DISCUSSION

The index study was aimed at investigating maternal risk factors among pregnant women attending Holy Family Hospital in Ikenegbu, targeting the improvement of maternal and neonatal outcomes with the environs of the study.

The study found the prevalence of common maternal risk outcomes (complications) as 31.3% for Anaemia, 13.5% for preeclampsia, 9.1 for spontaneous abortion (miscarriage), 8.5% for gestational diabetes (8.5%), and. 3.6% for obstructed labour (3.6%). Others include haemorrhage (2.2%), ectopic pregnancy (1.9%), eclampsia and sepsis at 0.8% each. However, significant risk factors for maternal complications established in this study include hypertension diabetes, Mental health (depression and anxiety), obesity, and presence of infections. This finding indicates that there exist plenty of risk to maternal mortality in the study area.

Most of the common factors find in the present study were also identified in some other studies. For instance, the identified major risk factors include obstetric hemorrhage, hypertension, non-obstetric complications and pregnancy-related infections [17]. In an Egypt study, common maternal risk factors identified were anemia, diabetes mellitus, cesarean section, and placenta previa. obstetric hemorrhage, hypertensive disorder of pregnancy and sepsis were the major risk factors [18]

Chronic hypertension and diabetes have also been reported as major risk factors in another studies [19]

In terms of socio demographic factor, significant associating factors of socio-demographics with maternal complications in this study were s and Maternal Complications outcome higher age (above 35 years), poor education level and low income. Advanced maternal age was also an established risk factor in a U. S study [20]. Unlike the findings of this study, younger maternal age was a major risk factor. However, younger maternal age was also found as a risk factor in the present study but was not the major risk factor based on age. In line with this study finding, low education was found as a risk factor in a systemstic review study in Nigeria [21].

This study also found association between alcohol consumption and intimate partner violence with risk of maternal complications outcome among women studied. This is an important finding considering that alcohol excessive consumption and violence are associated and have established harmful effects at pregnancy [22]

CONCLUSION

Maternal risk is common among pregnant women in the study area, leading to complications in pregnancy outcomes. Factors such as sociodemographic, socioeconomic status, and maternal-related factors pose significant maternal risk among pregnant women and require careful examinations.

REFERENCES

1. Adabenege, F. E., Rosemary, I. E., Omoyine, Adesuwa Osarugue, & Natalie, T.-I. E. (2022). Prevalence of Maternal Mortality And Its Associated Risk Factors in Nigeria: A Systematic Review. *Figshare*.
2. Moyo, N. T., Chinoda, T., & Nyadindu, W. (2018). Maternal health outcomes in rural settings: An analysis of antenatal care utilization and its impact on birth outcomes in Zimbabwe. *Journal of Public Health in Africa*, 9(2), 96-102.
3. Sitaula, S., Basnet, T., Agrawal, A., Manandhar, T., Das, D., & Shrestha, P. (2021). Prevalence and risk factors for maternal mortality at a tertiary care centre in Eastern Nepal- retrospective cross sectional study. *BMC Pregnancy and Childbirth*, *21*(1).
4. Nhemachena, M., Mavundla, T., & Tladinyane, M. (2021). Barriers to maternal health services in developing countries: A systematic review. *Global Health Action*, 14(1), 1877077.
5. Gad, M, S.; Abosalem, M. E.; Shaheen, A.E.; Elshafey, O. S.M.; and Anter, M. E. (2023). Prevalence and risk factors of maternal mortality in Menoufia Governorate: a 5-year period prevalence study. *Menoufia Medical Journal*, 36 (2);15.
6. Meh, C., Thind, A., Ryan, B., & Terry, A. (2019). Levels and determinants of maternal mortality in northern and southern Nigeria. *BMC Pregnancy and Childbirth*, *19*(1).
7. Wang, X., Zhang, X., & Zhou, M. (2020). Barriers to antenatal care in rural areas of China: A cross-sectional study. *BMC Pregnancy and Childbirth*, 20(1), 245.
8. WHO. (2019). Maternal mortality: Key facts. Retrieved from [WHO] (https://www.who.int/news-room/fact-sheets/detail/maternal-mortality
9. Amoo, T. B., & Ajayi, O. S. (2019). Maternal mortality and factors affecting it, among pregnant women in Abeokuta South, Nigeria. *Clinical Journal of Obstetrics and Gynecology*, *2*(2), 071–078.
10. Fekadu, G. A., Kassa, G. M., Berhe, A. K., Muche, A. A., & Kassa, Z. Y. (2019). Prevalence and determinants of adolescent pregnancy in Africa: A systematic review and Meta-analysis. Reproductive Health, 16(1), 195.
11. Mundell, B. F., Gilliam, M. L., Maniere, E., & Schoenbachler, C. M. (2018). "Preventing preterm birth: A practical approach for improving prenatal care." American Journal of Obstetrics and Gynecology, 218(4), 407-416.
12. Bayrampour, H., Vinturache, A., Hetherington, E., Lorenzetti, D. L., & Tough, S. (2020). Risk factors for antenatal depression and poor birth outcomes in adolescents: A systematic review and meta-analysis. *Journal of Pediatric and Adolescent Gynecology*, 33(4), 423-432.
13. Nik Hazlina, N. H., Norhayati, M. N., Shaiful Bahari, I., & Mohamed Kamil, H. R. (2022). The Prevalence and Risk Factors for Severe Maternal Morbidities: A Systematic Review and Meta-Analysis. *Frontiers in Medicine*, *9*.
14. Bornstein, E., Eliner, Y., Chervenak, F. A., & Grünebaum, A. (2020). Concerning trends in maternal risk factors in the United States: 1989–2018. *EClinicalMedicine*, *0*(0).
15. Musarandega, R., Nyakura, M., Machekano, R., Pattinson, R., & Munjanja, S. P. (2021). Causes of maternal mortality in Sub-Saharan Africa: A systematic review of studies published from 2015 to 2020. *Journal of global health*, *11*, 04048.
16. Ntoimo, L. F., Okonofua, F. E., Ogu, R. N., Galadanci, H. S., Gana, M., Okike, O. N., Agholor, K. N., Abdus-Salam, R. A., Durodola, A., Abe, E., & Randawa, A. J. (2018). Prevalence and risk factors for maternal mortality in referral hospitals in Nigeria: a multicenter study. *International journal of women's health*, *10*, 69–76.
17. Cunnington, A. J., de Souza, J. B., Walther, R. M., & Riley, E. M. (2019). "Malaria and bacterial infections in children: an emerging link?" Trends in Parasitology, 25(6), 289-297.

18. World Health Organization. (2008). "Closing the gap in a generation: Health equity through action on the social determinants of health." Final Report of the Commission on Social Determinants of Health.
19. Nyarko, S. H., & Potter, L. (2019). Cultural beliefs and health behaviors among pregnant women in Ghana. *Women & Health*, 59(8), 800-811.
20. Chinwah, V., Nyame-Asiamah, F., & Ekanem, I. (2020). Risk factors affecting maternal health outcomes in Rivers State of Nigeria: Towards the PRISMA model. Social Science & Medicine, 265, 113520.
21. World Health Organization (2018). *Harmful use of alcohol*. [online] World Health Organisation. Available at: https://www.who.int/health-topics/alcohol#tab=tab_1
22. Yasmin, S., Osrin, D., Paul, E., & Costello, A. (2014). Neonatal mortality of low-birth-weight infants in Bangladesh. *Bulletin of the World Health Organization*, 79(7), 608-614.

CITATION
ANYANWU, J. C., & OZIMS, S. J. (2025). Study On Maternal Risk Factors Among Pregnant Mothers Attending Holy Family Hospital Ikenegbu. In Global Journal of Research in Medical Sciences (Vol. 5, Number 1, pp. 23–36). https://doi.org/10.5281/zenodo.14732944