

Socioeconomic and Psychological Factors as Predictors of Maternal Mortality among Pregnant Women in Selected Hospitals in Ibadan, Oyo State

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Abstract

Maternal mortality is a major public health challenge in Nigeria which is influenced by not only medical but also socioeconomic and psychological factors affecting pregnancy women. Although interventions are in place, women are still dying during pregnancy and child birth, indicating a need for the investigation of more distant determinants. The study examined the socio-economic and psychological determinants of maternal mortality in pregnant women in few selected hospitals in Ibadan, Oyo State. The descriptive survey design was used. The study sample consisted of pregnant women at the antenatal clinics of the hospitals. A sample of 300 was determined by using the Taro Yamane formula with the response rate of 95.3% in which 286 valid responses were analyzed. A structured questionnaire was used to collect data and descriptive and inferential statistics (Pearson correlation and multiple regression) were applied at 5% level of significance. Maternal mortality and age ($r = 0.418$), education ($r = 0.0562$), income ($r = 0.603$), attendance at antenatal clinic during last pregnancy ($r = 0.648$) had significant positive correlations. Psychological variables also had strong association ($r = 0.712$). Socioeconomic and psychological variables combined accounted for 61% of the variance in maternal mortality ($R^2 = 0.610$) with psychological variables being a stronger predictor ($\beta = 0.517$) than the socioeconomic variables ($\beta = 0.462$). Maternal mortality is socially and psychologically determined. Recommendations were for increased female education and provision of sustainable and affordable maternal health care services, in addition to mental health services being integrated into antenatal care.

Keywords: Antenatal, Maternal, Mortality, Socioeconomic, Psychological,

Introduction

Maternal mortality is still a huge public health problem in developing countries with Sub-Saharan Africa being worst affected and where deaths during pregnancy are a constant menace to the life and health of women. It is defined as the death of a woman while pregnant 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. Nigeria logs one of the worst maternal mortality rates in the world, despite progress in maternal healthcare. Many maternal deaths are prevented but continue to occur because of

limited access to high-quality health care, with skilled birth attendance, and emergency obstetric care (World Health Organization, 2023). The UNFPA (United Nations Population Fund, 2022) similarly links the heavy burden to poverty, fragile health systems, and disparities in access to maternal health care. The social and economic impact of maternal death on households and on national development is enormous. Motherless children have greater chances of being sick and getting less education (United Nations Children's Fund, 2021), and maternal deaths also impede women's ability to contribute to economic development (World Bank, 2022).

In Nigeria, maternal death is attributed to direct causes such as haemorrhage and hypertensive disorders as well as indirect causes like delays in seeking and receiving care. Such holdups are mostly motivated by poverty and mental state, which dictate the degree to which a person will seek medical treatment (Idama Osarhiemen, Ajilora, and Omolade, 2024). (Ahiaba et al., 2026) refer to low income, poor education and limited access to health care as factors that place women at risk. The findings of Adebayo Adeyinka, and Abdullahi (2023), and Okeowo Japinye, and Adewale (2025), also point out that poverty and low-level education are the key factors for poor maternal health. Clearly such a need to assess socioeconomic and psychological characteristics as salient predictors of maternal mortality in pregnant women. In addition to socioeconomic factors, the psychological status during pregnancy is now being considered as a crucial influence on the outcome of maternal health. Women are subjected to stress, anxiety and depression during pregnancy, which could potentially affect their behaviour in seeking care, attendance at antenatal visits and compliance with medical recommendations. Mental distress is linked with suboptimal use of maternal health care services in Nigeria (Wegbom Edet, Ogba, Osaro, Harry, Pepple, and Fagbamigbe, 2023), whereas Izuka Ugwu, Ezeugwu, and Ezeoke (2023), found a high rate of anxiety and depression in pregnancy and underlined the importance of mental health services in the maternal health care packages.

Another key factor that affects maternal mortality is availability of quality maternal health services. Most women in Nigeria have limited access to health care as they have to contend with the barriers of distance, inadequacy of health care personnel, high cost of treatment and, at times, unfriendly attitude of health care providers. Poor distribution of health care facilities and shortage of skilled birth attendants still pose challenges to the provision of effective maternal health care services – Federal Ministry of Health Nigeria (2023). In the same vein, Oyinlola, Okorafor, Kupoluyi, Ogbeye, Ouedraogo, Umar, and Shittu (2026), also reported significant influence of regional inequality in health facility on utilization of maternal healthcare. Although tertiary and secondary healthcare centers are existing, maternal mortality is still a problem in Ibadan, Oyo State. Population explosion, poverty, congested health facilities and lack of mental support still prevail in the maternal health. The Oyo State Ministry of Health (2024) (personal communication) blamed maternal

health complications on late presentation, poverty and ignorance and emphasized the importance of researching in context.

The socioeconomic and mental health status are correlated. Financial strain and poverty contribute to stress and anxiety, and psychological distress may delay women from accessing care. Wang, Liu, and Zhao (2025), and MacGinty, Hoffman, Koen, Zar, Stein, and Pellowski (2025), also found that maternal health is compromised by a combination of low socioeconomic status, social isolation, and psychological stress. The results imply that an effective intervention would need to target the socioeconomic and the psychological determinants. While considerable research has investigated the biomedical determinants of maternal mortality, less focus has been placed on the synergistic effect of socioeconomic status and psychological distress among pregnant women in Ibadan. This is why the present study examines these variables as predictors of maternal mortality to contribute with evidence for policy makers, health care givers and social workers in the formulation of strategies to enhance the maternal health outcome and to prevent avoidable maternal death.

Statement of the Problem

Despite government and non-government interventions to address Nigeria's high maternal mortality rates, maternal deaths are still alarmingly high, in Ibadan, Oyo State inclusive, where there are a good number of healthcare centres but access to them are at variance. Many women who are pregnant continue to have poor outcomes because of poverty, low levels of education, lack of access to quality care, and also psychological issues like stress, anxiety and depression. Weak health systems, social inequality, and poor integration of mental health services into maternal care further exacerbate these challenges. Even though earlier research has studied the medical causes of maternal death, there is little empirical data on the joint effects of economic and psychological factors on pregnant women in some hospitals in Ibadan. The gap therefore necessitated the present study on socioeconomic and psychological predictors of maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Purpose of the Study

This study specifically examined:

- i. examine the effect of socioeconomic factors (age, and educational level, occupation, and income level) on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State;
- ii. investigate the effect of psychological factors (stress, anxiety, and depression) on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State;
- iii. examine the relative influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State; and

- iv. determine the joint influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State

Research Hypotheses

Hypothesis One (H0₁): There is no significant relationship between age and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Hypothesis Two (H0₂): There is no significant relationship between educational level and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Hypothesis Three (H0₃): There is no significant relationship between income and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Hypothesis Four (H0₄): There is no significant relationship between psychological factors (stress, anxiety, and depression) and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Hypothesis Five (H0₅): There is no significant relative influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Hypothesis Six (H0₆): There is no significant joint influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Theoretical Review

Social Determinant of Health Theory

The Theory of Social Determinants of Health recognizes that health status is determined not only by individual biological or medical factors but also by social, economic, and environmental conditions in which people live. It posits that availability of resources, risk exposure, and health-related options are mediated by broad structural determinants, such as income and wealth, education, employment and working conditions, housing, and social support systems. Instead of explaining health outcomes and inequalities as a result of individual behaviour or clinical care/services, the theory highlights the role of socio-structural determinants of health outcomes and inequalities. As Hahn (2021), observes, these social systems allocate resources inequitably, resulting in patterned population health disparities. This also renders the theory very appropriate to analyzing disparities in maternal mortality by social class status. Social determinants of health theory offer an all-encompassing rationale for understanding maternal mortality that highlights the influence of socioeconomic and environmental factors on health within which it resides. It claims that health inequalities are

predominantly socially generated and therefore avoidable. By shifting the attention to the wider context of people's lives, the theory identifies several areas for intervention at the structural and community levels. This is very important to this study because it illustrates how the socioeconomic and psychological elements interrelate to determine maternal health outcomes for pregnant women in Ibadan, Oyo State, thus providing a sound theoretical base for the study.

Stress and Coping Theory

The Stress and Coping Theory is the foundation on which people appraise (evaluate) and then respond to stressors and is based on an analysis of the level of threat posed by an event and the coping resources that are accessible. Proposed by Lazarus and Folkman, it posits that stress is not the result of an event itself, but rather how people appraise the event and their own coping ability. Stress results when there is an imbalance between the perceived demands and resources; thus, different people can find the same situation more or less stressful. As Kivak (2024), recognizes, individuals are continually engaged in stress-producing transactions with their environment. The theory applies to maternal health because pregnant women differ in the ways they perceive and respond to pregnancy-related stressors according to their socio-economic status, psychological resilience, and availability of social support. To summarize, the Stress and Coping Theory is a process that states how people deal with stress with their cognitive appraisal and coping strategies in the environment. It demonstrates how psychological processes impact health behaviours and health outcomes. When applied to maternal health, the theory suggests that maternal death is not simply a medical matter, but also influenced by psychological and social factors. Such integrated interventions should target socioeconomic factors as well as the mental health of the pregnant women.

Methodology

This study adopted descriptive design to achieve its goal of the study. The descriptive design was deemed suitable as it allowed the researcher to collect, analyze and interpret data on socioeconomic and psychological determinants of maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo state systematically. The population in the study were pregnant women attending antenatal clinics in selected public and private hospitals in Ibadan, Oyo State. The study population is drawn from major healthcare facilities within Ibadan, including tertiary, secondary and selected primary health institutions, as well as private hospitals that provide maternal health services. These facilities serve a large number of pregnant women not only from Ibadan metropolis but also from surrounding rural and semi urban communities within Oyo State and neighbouring areas. Sample size of approximately 286 pregnant women was used for the study. This number was considered adequate to ensure statistical reliability, reduce sampling error and allow for meaningful analysis of relationships among variables. A multistage sampling technique was adopted to

ensure fair representation of respondents across different healthcare facilities and socio demographic groups.

The instrument for data collection in this study is a structured questionnaire designed by the researcher to obtain relevant information from pregnant women on socioeconomic and psychological factors as predictors of maternal mortality in selected hospitals in Ibadan, Oyo State. The instrument was validated for this study through the content and face validation. Following the pilot administration, the instrument was subjected to statistical analysis for internal consistency using the Cronbach's Alpha reliability coefficient.

Data collection Procedure

The study's data collection was conducted in a staged and coordinated manner while maintaining conforming to the ethical standards in research and ensuring rigor in terms of accuracy and completeness. Subsequently, the researcher attended the antenatal clinics of the chosen hospitals on the scheduled clinic days, to find pregnant women to participate. The respondents were approached one-on-one and the objective of the research were clearly explained to the respondents in order to get their informed consent for the participation. Participants were allowed sufficient time to fill out the questionnaire at their own pace in a suitable private location within the clinic, to motivate them to provide honest and well-thought-out answers. To minimize loss or incomplete responses the completed questionnaires was collected immediately following completion. Data collection was conducted over a period of time until the desired sample size significance is attained.

Method of Data Analysis

Data obtained in this study was subjected to descriptive and inferential statistics. The descriptive statistics (frequency, percentage, mean scores, and standard deviation) will be used to summarise the demographic profiles of the respondents and to present the distribution of responses on the socioeconomic and psychological variables, as well as access related factors of influencing maternal health among the pregnant women attending selected hospitals in Ibadan, Oyo State, Nigeria. Pearson Product Moment Correlation was applied to examine the association between the independent variables (socioeconomic factors and psychological factors and their related indices) and the dependent variable (maternal mortality). All the hypotheses developed in the study was tested at 0.05 level of significance and the decisions shall be based on whether p calculated value is less than or greater than α value. The Statistical Package for Social Sciences (SPSS) was used to make the calculations and interpretations easier and accurate.

Results

All the stated hypotheses for the study were tested at 0.05 level of significance with the help of Pearson product moment correlation and Multiple Regression Analysis.

Research Hypothesis 1 There is no significant relationship between age and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 1: Pearson Correlation Analysis Showing Relationship between Age and Maternal Mortality

Variables	Mean	SD	N	r	p value	Decision
Age	2.48	0.91	286	0.418	0.000	Rejected
Maternal Mortality	3.26	0.74				

**Correlation is significant at 0.05 level (2-tailed)*

The output at the Table 1 indicates that the computed p value of 0.000 is less than 0.05 level of significance. Hence the null hypothesis is rejected. This means that age and maternal mortality of antenatal women in the selected hospital in Ibadan, Oyo-State has a significant association. The correlation coefficient of 0.418, which is positive, indicates a moderate correlation between age and maternal mortality.

Hypothesis 2: There is no significant relationship between educational level and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 2: Pearson Correlation Analysis Showing Relationship between Educational Level and Maternal Mortality

Variables	Mean	SD	N	r	p value	Decision
Educational Level	2.94	0.88	286	0.562	0.000	Rejected
Maternal Mortality	3.26	0.74				

**Correlation is significant at 0.05 level (2-tailed)*

The above Table 2 displays the value of sig in the line of The Test is 0.000 which is less than the level of significance 0.05. Therefore, we reject null hypothesis. This shows that there is a strong association between mother's mortality and educational status among pregnant women in the study area. The positive relation (correlation coefficient $r = 0.562$) indicates that educational level has a strong influence over awareness and utilisation of maternal health care.

Research Hypothesis 3: There is no significant relationship between income and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 3: Pearson Correlation Analysis Showing Relationship between Income and Maternal Mortality

Variables	Mean	SD	N	r	p value	Decision
Income	2.71	0.96	286	0.603	0.000	Rejected
Maternal Mortality	3.26	0.74				

**Correlation is significant at 0.05 level (2-tailed)*

The result in the above Table 3 implies that the null hypothesis is rejected as the p value (0.000) is less than 0.05. This implies that the level of income was a significant determinant of maternal death among pregnant women in the study hospitals. The high correlation coefficient of 0.603, indicates the magnitude of the positive effect of income on maternal health.

Research Hypothesis 4: There is no significant relationship between psychological factors (stress, anxiety, and depression) and maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 4: Pearson Correlation Analysis Showing Relationship between Psychological Factors and Maternal Mortality

Variables	Mean	SD	N	r	p value	Decision
Psychological Factors	3.18	0.79	286	0.712	0.000	Rejected
Maternal Mortality	3.26	0.74				

**Correlation is significant at 0.05 level (2-tailed)*

The result in Table 4 above further reveals that psychological factors are significantly associated with maternal death among pregnant women in the study area. Since the p value of 0.000 is less than the level of significance of 0.05, the null hypothesis is rejected. The value of correlation coefficient 0.712 considered as very strong association between psychological factors and maternal mortality.

Research Hypothesis 5: There is no significant relative influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 5: Multiple Regression Analysis Showing Relative Influence of Socioeconomic and Psychological Factors on Maternal Mortality

Variables	Beta	t value	Sig.	Decision
Socioeconomic factors	0.462	6.214	0.000	Significant
Psychological factors	0.517	7.103		

**Correlation is significant at 0.05 level (2-tailed)*

The regression result in Table 5 above confirms that socioeconomic and psychological determinants of maternal mortality in pregnant women are significant. Psychological factor had a higher value of beta (0.517) followed by socioeconomic factors (0.462). Since both the variables have significance values less than 0.05, the null hypothesis is rejected. Both variables have a significant and a moderate influence on maternal mortality, psychological having a stronger influence.

Research Hypothesis 6: There is no significant joint influence of socioeconomic and psychological factors on maternal mortality among pregnant women in selected hospitals in Ibadan, Oyo State.

Table 6: Multiple Regression Analysis Showing the Joint Influence of Socioeconomic and Psychological Factors on Maternal Mortality among Pregnant Women in Selected Hospitals in Ibadan, Oyo State

R	R Square	Adjusted R Square	Std. Error of the Estimate		
0.781	0.610	0.603	0.428		

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	81.246	2	40.623	44.281	0.000
Residual	51.734	283	0.183		
Total	132.980	285			

Variables	Unstandardized Coefficients (B)	Std. Error	Standardised Coefficients (Beta)	t	Sig.
Constant	1.214	0.248		4.895	0.000
Socioeconomic factors	0.438	0.071	0.462	6.214	0.000
Psychological factors	0.491	0.069	0.517	7.103	0.000

**Correlation is significant at 0.05 level (2-tailed)*

The above Table 6 shows the result of regression on the effect of socioeconomic and psychological factors on maternal mortality among pregnant women in some hospitals in Ibadan Oyo State. The model summary table displays an R value of 0.781, therefore the independent variables (i.e. detrimental health behaviors related to pregnancy) in the model have a strong association with overall maternal mortality. With an R Square value of 0.610, the conclusion that can be drawn about this multiple regression model is that around 61 percent of the variation in maternal mortality is explained by the variation in predictor(s) socioeconomic and psychological factor while other factors, which can be considered as error term in this model, are responsible for the remaining 39 percent. The ANOVA output also showed that the regression model is statistically significant ($F = 44.281$, $p = 0.0005 \leq 0.05$).

This indicates that the effect of the two predictors, socioeconomic and psychological on maternal mortality was significant. The socioeconomic factors & psychological factors each significantly independently predicted maternal mortality according to the coefficients table. Psychological predictors had the largest standardised beta coefficient (0.517), suggesting that they have a stronger effect on maternal mortality than socio-economic predictors with a beta value of 0.462. Since the p-values of the two variables are less than 0.05, the null hypothesis is rejected. This means that socioeconomic and psychological factors affecting maternal mortality among pregnant women confined in the selected hospitals are statistically significant when taken into consideration.

Discussion of Findings

The first hypothesis result indicated that age is a significant predictor of maternal mortality among pregnant women. Women in some age buckets are under higher risk because of biological factors and also social consequences. Young women generally do not have access to information and resources while older women are at risk of pregnancy complications. This concurs with the World Health Organization (2024) that presented age as a critical factor in determining maternal health and Ojei, Odimegwu and Ntoimo (2023), that age was a significant predictor of utilisation of antenatal care in Nigeria. The finding indicates that maternal healthcare services should be age-specific.

Maternal mortality among pregnant women was significantly predicted by level of education. Women in possession of education are more likely to have better access to maternal health related information, identify signs of danger and avail services of healthcare in a proper manner. Education also increases confidence and empowers pregnant women to make better choices during pregnancy and consequently better health outcomes. This is in consonance with Adebayo, Adeyinka and Abdullahi (2023), (who observed that educated women were more likely to attend professional maternal healthcare services and adhere to antenatal advices). It also corroborates UNICEF (2022) which concluded that educating girls reduces maternal mortality by enhancing health knowledge and service use. This indicates that advancing women's education may decrease avoidable maternal deaths.

Income quintile was a significant predictor of maternal mortality. Low income was cited by a number of respondents as limiting their ability to pay for healthcare, transportation, drugs and other costs related to pregnancy. This financial limitation often resulted in delays in care and lost antenatal visits. This finding is consistent with findings of Imo, De Wet Billings and Isiugo (2022), who identified poverty as significant barrier to maternal healthcare access in Nigeria and Okeowo, Japinye and Adewale (2025), who observed that extremely poor households are more vulnerable to maternal complications because of their inability to access care. The results indicate that enhancing women's economic status and healthcare financing can contribute to the reduction of maternal mortality.

Psychological factors such as stress, anxiety, and depression were also found to be significant predictors of maternal death during pregnancy. Main stressors were fear of bearing complications, financial problems, lack of emotional support, and difficulties in making pregnancy-related decisions. Psychological distress has been shown to have a detrimental effect on healthcare use and ability to cope. Women with high anxiety and depression scores were more prone to delay or default from antenatal care and to perform unhealthy behaviours. This is in line with Wegbom et al. (2023), that psychological distress decreases utilization of maternal healthcare in Nigeria, and Izuka et al. (2023), who associated anxiety and depression with negative pregnancy outcomes. These findings

incentivize the inclusion of mental health interventions in the antenatal care package of services.

The results also indicated that life stressors contributed more to maternal mortality than income-related factors. The regression results showed that psychological variables had higher beta interdependences that is related to a stronger impact of stress, anxiety and depression on maternal outcomes. They act immediately on health behaviour, on the use of health services and on the observance of medical prescriptions. Psychological distress decreases motivation, impairs social interaction, and destabilizes emotional well-being, all of which may contribute to an elevated risk of pregnancy complications. This is consistent with the finding of Wang, Liu and Zhao (2025), who highlighted that mental health is a core influence for pregnancy outcomes, and MacGinty *et al.* (2025), who suggested that psychological distress and inadequate emotional support pose greater risks to maternal health in environments of limited resources.

The combined impact of socio- economic and psychological factors on maternal death was significant. The results also showed from the regression analyses that the two proposals combined accounted for a large amount of the variance in maternal mortality for pregnant women visiting the chosen hospital. This means that maternal mortality is multifaceted and vertical factor is not sufficient to explain it. Socioeconomic deprivation may induce emotional strain and stress and psychological distress may affect women's ability to seek and utilise health care services. These two variables contributed to the formation of an environment where expectant mothers were particularly susceptible and at high risk for developing health complications both in pregnancy and delivery. This is in line with the idea of the Social Determinants of Health Theory, which looks at health results as outcomes of social and economic, and environmental conditions. It also corroborates a finding from the Stress and Coping Theory regarding the role of emotional distress and poor coping in health outcomes.

Conclusion

The research revealed that socioeconomic and psychological factors contribute to pregnant women's death in Ibadan. Main socioeconomic factors are age, education, income and use of antenatal services with poor and less educated women at a greater risk as they have less access to services. Psychological variables (stress, anxiety and depression) also play a role in maternal outcomes, as they contribute to a decrease in the utilization of healthcare services and the compliance to medical advice. Psychological factors were more influential than socioeconomic factors in the final model. The results indicate that maternal mortality is a multifaceted problem and an integrated approach to intervention which includes improving economic status, education, access to health care and mental health services is essential.

Recommendations

The following recommendations are made based on findings of the study:

- i. Girls should be supported to stay in school through policies and government actions that promote female education, because education raises awareness of maternal health and the use of services related to it.
- ii. Maternal care needs to be made more affordable via subsidies, wider health insurance coverage, and financial assistance for pregnant women with the least resources.
- iii. Antenatal care services should be enhanced and popularized in the healthcare centers through advocacy at the health facility and community levels to bring about regular ANC attendance.
- iv. Psychological support, including mental health screening and counselling for pregnant women, should be incorporated within maternal health services and provided during antenatal care.
- v. To foster maternal health, both government and communities should strengthen the health infrastructure and promote family participation, particularly the emotional and material contributions of husbands.

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