

Prevalence and Predictors of Postpartum Depression among Mothers in a Tertiary Health Facility in a North-Central State of Nigeria

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Abstract

Background

Postpartum depression (PPD) is a significant, yet poorly identified maternal health burden in Nigeria especially in an environment where mental health screening is not an established part of postnatal care. There is scanty evidence in North-Central Nigeria. This paper evaluated prevalence and predictors of PPD in mothers who visited tertiary health facilities in a part of North-Central region, Nigeria.

Methods

A cross-sectional study was done on 307 postpartum mothers through consecutive sampling. A structured questionnaire and the Edinburgh Postnatal Depression Scale (EPDS ≥ 13) were used to collect the data. Prevalence was summarised using descriptive statistics and chi-square and binary logistic regression were used to identify significant predictors at $p < 0.05$.

Results

PPD was 28.3% prevalent. Significant predictors included prior history of depression or anxiety (AOR = 12.85, 95% CI: 3.82–43.23) and unemployment (AOR = 20.47, 95% CI: 3.02–138.77). Partner support was protective (AOR = 0.25, 95% CI: 0.07–0.90). PPD was also independently related to psychosocial factors such as emotional distress, feeling overwhelmed and infant health problems.

Conclusion

In this environment, postpartum depression is a significant problem and both clinical and psychosocial risk factors play a significant role in contributing to the risk. Mental health screening with validated instruments like the EPDS must become a part of postnatal nursing care, and systematic psychosocial assessment with emphasis on mental health history, emotional distress, and partner support. The nurses are essential in the early diagnosis, counselling and early referral of the at-risk mothers. In this regard, it is necessary to strengthen the screening and support interventions that involve nurses to enhance maternal mental health outcomes.

Introduction

Postpartum period is a very important phase that may have serious consequences on the overall well-being of a mother including her mental health and quality of life. Postpartum depression (PPD) is one of the most common mental health disorders among new mothers and is a mood disorder, which is manifested by constant feelings of sadness, anxiety, fatigue, and inability to connect with the baby [1]. Postpartum depression is a worldwide problem, but its occurrence and effects differ according to the socio-economic and cultural aspects. PPD is still a significant yet neglected maternal health issue in Nigeria, as research has revealed that a significant number of women silently endure the problem due to social stigma and the absence of mental health awareness [2].

Postpartum depression is a condition that is very common and severe but it is not usually diagnosed because of the stigma attached to it, the lack of proper mental health facilities in Nigeria and cultural misconceptions [3]. Nigerian women do not pursue professional assistance when dealing with mental health problems, and instead, they resort to the services of traditional healers, religious leaders, or self-medication [4]. Moreover, primary and tertiary health institutions do not have the required training and facilities to screen and treat postpartum depression [5]. Research has shown that postpartum depression greatly diminishes the quality of life of a mother, as it impacts on her strength to take care of herself and her baby [6].

Research has indicated that postpartum depression is very common in Nigeria with estimates of between 14.6% and 35.6% depending on the area and the sample population [4]. As an example, the PPD prevalence rate was 35.6% in postnatal women in Lagos [7] and 20% in Nsukka [8]. These results suggest that PPD is a significant burden in Nigeria, and the rates are usually higher than the global average, which implies that the country has context-specific risk factors to be explored. Nevertheless, a majority of the cases are not diagnosed and treated because of the stigma, cultural misunderstandings, and lack of mental health services [3]. Nigerian women with postpartum depression are afraid of being termed as weak or unfit mothers and therefore many of them are not willing to seek professional assistance [2]. Also, most cases of mental health issues remain undetected because of the absence of a routine check of mental health services during a postpartum care, which results in many affected mothers struggling silently.

Though some studies in Nigeria have reported different prevalence rates of postpartum depression, however, little is known about the prevalence of postpartum depression in facility settings among postpartum mothers in North-Central Nigeria, especially in Kwara state. In addition, existing studies have reported wide variations in postpartum depression prevalence rates due to differences in study settings, populations, and approaches used in measuring postpartum depression. The need to understand the prevalence of postpartum depression and its predictors among

postpartum mothers in a tertiary health care setting is important in order to inform strategies aimed at reducing postpartum depression among postpartum mothers. This study was therefore designed to determine the prevalence of postpartum depression among postpartum mothers attending Kwara State University Teaching Hospital, Ilorin, Nigeria.

Purpose of the Study

This study assessed postpartum depression and its predictors among mothers attending Kwara State University Teaching Hospital Ilorin Nigeria.

Specific Objectives

1. determine the prevalence of postpartum depression among mothers at Kwara State University Teaching Hospital, Ilorin.
2. identify the predictors associated with postpartum depression in mothers at Kwara State University Teaching Hospital

Method

Research Design

This study employed an analytic cross-sectional design to determine the prevalence and predictors of postpartum depression among postpartum mothers attending KWASUTH. This also allowed a robust data collection; standardized assessment tool e.g. EPDS and questionnaire (researcher structured) was used to determine the prevalence of postpartum depression and the factors associated with postpartum depression among new mothers.

Research Setting

This study was conducted at Kwara State University Teaching Hospital (KWASUTH), Ilorin, Nigeria, a tertiary healthcare facility that provides comprehensive maternal and child health services to residents of Ilorin and surrounding communities in North-Central Nigeria. The hospital offers antenatal, delivery, postnatal, and infant welfare services and serves as a major referral center in the state. Participants for this study were recruited from the infant welfare clinic of the hospital, where postpartum mothers routinely attend for immunization and postnatal care services.

Study Population

The population for this study were postpartum mothers that brought their babies to infant welfare clinic within 0-6months at the Kwara State University Teaching Hospital, Ilorin. A total of 1000 made up the population. Mothers who delivered within the last six months; who are willing to participate in the study; and those who are present during the period of data collection were included in the study. Pregnant women that attend ante-natal clinic; mothers experiencing severe postpartum complications; and those not willing to participate in the study were excluded from the study.

Sample Size

The sample size for this study was determined using Taro Yamane formula for finite populations, this formula is widely used to calculate an appropriate sample size when the population size is known and when a specific margin of error is desired [9]. The formula is expressed as: $n = \frac{N}{1 + N(e)^2}$, where n represents the required sample size, N denotes the estimated population size, and e represents the acceptable margin of error. For this study, the estimated population of postpartum mothers attending the infant welfare clinic was 1000, a margin of error of 5% (0.05) was adopted; substituting these values into the formula produced a calculated sample size of 286 respondents to ensure adequacy of representation. To account for possible non-response or incomplete questionnaires, an attrition rate was added, this led to the inclusion of 29 other respondents, making the final sample size 315 respondents that were included in the study, however, only 307 returned the questionnaire administered.

Sampling Technique

The data collection was carried out through a consecutive sampling method of recruiting eligible postpartum mothers who visited the infant welfare clinic at the Kwara State University Teaching Hospital within the data collection period [10]. All the mothers that met the inclusion criteria were approached sequentially as they reported to the clinic and were requested to participate in the study until the necessary sample size was reached. The eligibility was done in accordance with pre-established inclusion criteria, such as mothers, who were in the six months period after delivery and those who came to the clinic during the study period and agreed to participate. Mothers who were critically ill or had severe postpartum complications or refused to participate were excluded. The sampling method was deemed suitable since consecutive sampling provided an opportunity to recruit participants in a systematic way, as a result of a continuous stream of postpartum mothers receiving routine postnatal care, which enhanced feasibility and reduced selection bias in the clinical setting.

Instrument for data collection

The data collection process used a structured questionnaire that had three sections, Section A of the questionnaire sought the socio-demographic and obstetric information of the respondents. Section B used the standardized Edinburgh Postnatal Depression Scale to measure postpartum depression [11]; the tool is composed of 10 questions, each question is scored on a scale of 0 to 3, with a cut-off score of ≥ 13 indicating probable postpartum depression. Section C of the questionnaire examined the psychosocial and situational factors that might influence postpartum depression, a researcher-designed scale with content validity involving experts from the field of mental health and psychiatric nursing helping to revise the scale to eliminate any ambiguity. A pilot test of the scale among postpartum mothers outside the target area showed that the scale had good internal reliability, with a coefficient of 0.87 from the Guttman Split-Half coefficient.

Method of Data Collection

The data collection methods used included a structured questionnaire that included socio-demographic questions and the standardized Edinburgh Postnatal Depression Scale [11]. The data collection exercise was carried out over a period of four weeks at the infant welfare clinic in the Kwara State University Teaching Hospital in Ilorin. The study participants were postpartum mothers who were consecutively selected during routine visits to the clinic. The study participants were informed about the study's purpose and procedures before giving consent for the study. The questionnaires were administered by the researcher in person, assisted by two trained research assistants. The participants responded to the questionnaire on their own; however, participants that needed help in responding to the questionnaire because of language or literacy difficulties, were assisted in a neutral and standardized way; and The completed questionnaires were checked for completeness before being retrieved.

Method of Data Analysis

The data were processed using SPSS 27, the socio-demographic characteristics were analyzed with descriptive statistics, as well as the prevalence of postpartum depression. The frequencies, percentages, means, and standard deviations were employed as descriptive statistics. The total scores of each of the participants were obtained with the help of the Edinburgh Postnatal Depression Scale. Inferential statistics such as the chi-square test were used to analyze the association between postpartum depression and independent variables i.e. socio-demographic variables and the psychosocial and situational factors that might influence postpartum depression. The variables with statistically significant relationship with the postpartum depression in the chi-square analysis were entered into the binary logistic regression model to determine the independent predictors of postpartum depression, statistical significance was set at 0.05.

Ethical Consideration

The Kwara State University Teaching Hospital Institutional Review Committee provided ethical approval of this study (Approval No: KWASUTH/IRC/246/VOL.II/66). The research was carried out in line with the principles of ethics provided in the Declaration of Helsinki on conducting research with human subjects. The involvement was voluntary and all respondents were well informed about the purpose and procedures of the study prior to enrolling. All participants signed an informed consent before the collection of data. The participants were made aware of the fact that they had the right to refuse to participate in the study or drop out of the study at any point without any repercussion. The research was conducted with strict respect to confidentiality and anonymity and all the data were used exclusively in academic purposes.

Results

Socio-demographic characteristics of respondents

Table 1 below shows the socio-demographic characteristics of respondents. The result revealed that majority 221(72%) of the respondents belonged to the age group 21 to 30 years, 235(76.5%) are married, 223(72.6%) representing the highest figure of the respondent had tertiary education, 195(63.5%) of the respondents are self-employed, 139(45.3%) of the respondents has only 1 child, 121(39.4%) has 2 to 3 children, 41(13.4%) has 4 to 5 children, while the least represented, 166(54.1%) are 1 to 10 weeks postpartum, 90(29.3%) are above 20 weeks postpartum, and 253(82.4%) of the respondents had vaginal delivery, while 54(17.6%) had caesarean section.

Table 1: Socio-demographic characteristics of respondents (n = 307)

Variable	Response	Frequency	Percentage
Age group	15 – 20	5	1.6
	21 – 30	221	72
	31 – 40	67	21.8
	41 – 45	14	4.6
Marital status	Single mother	72	23.5
	Married	235	76.5
Educational level	No formal education	10	3.3
	Primary school	17	5.5
	Secondary school	57	18.6
	Tertiary	223	72.6
Employment status	Employed	87	28.3
	Unemployed	25	8.1
	Self-employed	195	63.5
Number of children	1	139	45.3
	2 – 3	121	39.4
	4 – 5	41	13.4
	Above 5	6	2
Weeks postpartum	1 – 10	166	54.1
	11 – 20	51	16.6
	Above 20	90	29.3
Mode of delivery	Vaginal delivery	253	82.4
	Caesarean section	54	17.6

Prevalence of postpartum depression among mothers

Figure 1 below shows the prevalence of postpartum depression among mothers at Kwara State University Teaching Hospital, Ilorin; to assess the prevalence of postpartum depression among the mothers, Edinburg Postnatal Depression Scale (EPDS) was used, and the results revealed that the prevalence of postpartum depression among respondents based on EPDS ≥ 13 was 28.3%, while 71.7% were not depressed.

Association between predictors and postpartum depression

The table 2 shows the association between selected variables and postpartum depression among respondents. There were statistically significant associations between postpartum depression and marital status ($\chi^2 = 7.901$, $p = .005$), educational level ($\chi^2 = 32.298$, $p < .001$), employment status ($\chi^2 = 46.297$, $p < .001$), delivery complications ($\chi^2 = 5.501$, $p = .019$), fatigue after delivery ($\chi^2 = 8.526$, $p = .004$), adequate sleep ($\chi^2 = 8.593$, $p = .003$), hormonal or thyroid-related conditions ($\chi^2 = 29.810$, $p < .001$), prior history of depression or anxiety ($\chi^2 = 89.950$, $p < .001$), feeling overwhelmed ($\chi^2 = 45.764$, $p < .001$), feeling sad or uninterested in activities ($\chi^2 = 42.935$, $p < .001$), traumatic childbirth experience ($\chi^2 = 14.681$, $p < .001$), partner support ($\chi^2 = 12.723$, $p < .001$), recent stressful life events ($\chi^2 = 44.059$, $p < .001$), planned pregnancy ($\chi^2 = 15.239$, $p < .001$), and infant health problems ($\chi^2 = 36.424$, $p < .001$). However, mode of delivery, family or friend support, domestic violence, breastfeeding difficulty, and excessive infant crying were not significantly associated with postpartum depression ($p > .05$).

Table 2: Association between predictors and postpartum depression (N = 307)

Variable	Category	Not depressed (%)	Depressed (%)	χ^2	p-value
Marital status	Single mother	61(84.7)	11(15.3)	7.901	.005
	Married	159(67.7)	76(32.3)		
Educational level	No formal education	0(0.0)	10(100.0)	32.298	<.001
	Primary	17(100.0)	0(0.0)		
	Secondary	40(70.2)	17(29.8)		
	Tertiary	163(73.1)	60(26.9)		
Employment status	Employed	59(67.8)	28(32.2)	46.297	<.001
	Unemployed	4(16.0)	21(84.0)		
	Self-employed	157(80.5)	38(19.5)		
Mode of delivery	Vaginal delivery	187(73.9)	66(26.1)	3.591	.058
	Caesarean section	33(61.1)	21(38.9)		
Delivery complications	Yes	54(62.1)	33(37.9)	5.501	.019
	No	166(75.5)	54(24.5)		
Fatigue after delivery	Yes	54(60.0)	36(40.0)	8.526	.004
	No	166(76.5)	51(23.5)		
Adequate sleep	Yes	146(77.7)	42(22.3)	8.593	.003
	No	74(62.2)	45(37.8)		
Hormonal condition	Yes	17(37.8)	28(62.2)	29.810	<.001
	No	203(77.5)	59(22.5)		
History of depression/anxiety	Yes	28(32.6)	58(67.4)	89.950	<.001
	No	192(86.9)	29(13.1)		
Feeling overwhelmed	Never	58(85.3)	10(14.7)	45.764	<.001
	Rarely	72(93.5)	5(6.5)		
	Sometimes	71(57.3)	53(42.7)		
	Often	19(50.0)	19(50.0)		
Feeling sad/uninterested	Never	110(89.4)	13(10.6)	42.935	<.001
	Rarely	27(77.1)	8(22.9)		
	Sometimes	73(59.3)	50(40.7)		
	Often	10(38.5)	16(61.5)		
Traumatic childbirth	Yes	31(51.7)	29(48.3)	14.681	<.001
	No	189(76.5)	58(23.5)		
Partner support	Yes	169(77.5)	49(22.5)	12.723	<.001
	No	51(57.3)	38(42.7)		
Family/friends support	Yes	198(72.3)	76(27.7)	0.454	.500
	No	22(66.7)	11(33.3)		
Recent stressful events	Yes	30(41.1)	43(58.9)	44.059	<.001
	No	190(81.2)	44(18.8)		
Domestic violence	Yes	21(61.8)	13(38.2)	1.844	.174
	No	199(72.9)	74(27.1)		
Planned pregnancy	Yes	143(65.3)	76(34.7)	15.239	<.001

	No	77(87.5)	11(12.5)		
Baby health problems	Yes	11(29.7)	26(70.3)	36.424	<.001
	No	209(77.4)	61(22.6)		
Breastfeeding difficulty	Yes	19(65.5)	10(34.5)	0.595	.440
	No	201(72.3)	77(27.7)		
Excessive crying baby	Yes	32(62.7)	19(37.3)	2.394	.122
	No	188(73.4)	68(26.6)		

Predictors of postpartum depression

Table 3 shows the binary logistic regression analysis which identified several independent predictors of postpartum depression among respondents. Marital status was significantly associated with postpartum depression, with married women less likely to experience postpartum depression compared with single mothers (AOR = 0.03, 95% CI: 0.002–0.443, $p = .011$). Educational level was also significant, as respondents with tertiary education had higher odds of postpartum depression compared with the reference category (AOR = 15.45, 95% CI: 1.857–128.481, $p = .011$). Employment status showed significant associations, with both unemployed (AOR = 20.47, 95% CI: 3.018–138.765, $p = .002$) and self-employed mothers (AOR = 1060.42, 95% CI: 29.545–38060.566, $p < .001$) having higher odds compared with employed mothers. A prior history of depression or anxiety significantly increased the likelihood of postpartum depression (AOR = 12.85, 95% CI: 3.818–43.233, $p < .001$). Psychosocial factors including feeling overwhelmed, feeling sad or uninterested in activities, lack of partner support, unplanned pregnancy, and infant health problems were also significant predictors of postpartum depression.

Table 3: Predictors of postpartum depression among respondents (N = 307)

Variable	AOR	95% CI	p-value
Marital status (married vs single)	0.03	0.002–0.443	.011
Education (tertiary vs reference)	15.45	1.857–128.481	.011
Employment (unemployed vs employed)	20.47	3.018–138.765	.002
Employment (self-employed vs employed)	1060.42	29.545–38060.566	<.001
History of depression/anxiety (yes vs no)	12.85	3.818–43.233	<.001
Feeling overwhelmed (sometimes vs never)	0.01	0.000–0.531	.022
Feeling sad/uninterested (rarely vs never)	0.02	0.001–0.735	.033
Partner support (yes vs no)	0.25	0.071–0.904	.034
Planned pregnancy (yes vs no)	56.67	4.266–752.719	.002
Baby health problems (yes vs no)	17.31	1.896–158.039	.012

Discussion of Findings

Prevalence of Postpartum Depression

The prevalence of postpartum depression in this present study was 28.3% among the mothers attending Kwara state University Teaching Hospital, Ilorin. This prevalence is within the range for previous studies in Nigeria where the prevalence rate is between 14.6% and 35.6% depending on the study population, setting, and methods of measurement [4,7]. The prevalence seen in this study is lower than the 35.6% by Adeyemo et al. [7] in postnatal women in Lagos but higher than the 20% by Anosike et al. [8] in Nsukka. These differences could be a reflection of differences in access to healthcare, cultural differences in the perception of mental health, differences in the timing of postpartum assessment, and methodological differences between studies.

Globally, postpartum depression is a significant maternal mental health issue with the World Health Organization estimating that around 13% of women in the world suffer from postpartum depression with higher rates reported in low and middle-income countries. The fairly high prevalence in this study supports earlier findings that postpartum depression is underdiagnosed and undertreated in Nigeria due to stigma, poor awareness, and lack of routine screening in the maternal health services [2 - 3]. The finding underscores the need to implement standardised mental health screening tools such as the EPDS in routine postnatal care services in tertiary healthcare facilities.

Predictors of postpartum depression

This study showed several socio-demographic, clinical and psychosocial predictors significantly related to postpartum depression. Marital status became a major factor, as married women were less likely to have postpartum depression than single mothers. This finding is consistent with other studies that have shown that marital stability and emotional support from partners act as protective factors against postpartum psychological distress [1, 2]. The presence of partner support may minimise stress and enhance coping mechanisms during the postpartum period. Employment status and educational level were also found to be highly associated with postpartum depression. The results align with the results of Wake et al. [12], who discovered that socioeconomic status and employment conditions play a major role in the outcome of maternal mental health. Women whose occupational status is unstable or stressful are likely to have financial stress and low social support and are thus susceptible to postpartum depression. The relationship between education and postpartum depression is however not straightforward and can be a reflection of broader socioeconomic issues in the Nigerian setting.

A previous history of depression or anxiety was found to be one of the best predictors of postpartum depression in this study. This finding is in line with systematic reviews and observational studies showing that previous mental health conditions are a significant risk factor for postpartum depression [5, 13]. The finding emphasises the need for directed screening and early psychological support for women with known mental health vulnerabilities.

Psychosocial factors were also highly linked to postpartum depression in this study. Feelings of being overwhelmed and sad or uninterested in usual activities were significant predictors, as was consistent with previous research indicating that emotional stress and psychological vulnerability play important roles in determining whether postpartum women experience depression [14 - 15]. These findings support the usefulness of routine psychosocial assessment in postnatal care.

Furthermore, lack of partner support, unplanned pregnancy and infant health problems were significant predictors of postpartum depression. These findings are consistent with Adeyemo et al. [7] and Desta et al. [16] who found inadequate social support, unintended pregnancy and stress related to childcare as major contributors to postpartum depression. Collectively, these findings suggest that psychosocial stressors and previous mental health vulnerability are more important in postpartum depression than are obstetric factors or medical factors per se.

Conclusion

This study revealed that postpartum depression affects a lower proportion of mothers attending Kwara State University Teaching Hospital, Ilorin with a prevalence of 28.3%. Several socio-demographic, clinical and psychosocial factors have been found to be significant predictors of postpartum depression; these included marital status, educational level, employment status, previous history of depression or anxiety, feeling overwhelmed, emotional distress, lack of partner support, unplanned pregnancy and infant health problems. These results indicate the high burden of postpartum depression in this context and the need to include routine mental health screening as a part of postnatal care services. Strengthening of psychosocial support systems and earlier identification of at-risk mothers may help to minimize the effects of postpartum depression on maternal and infant health outcomes.

Implications for Nurses Practise, Education, and Research

The findings of this study have important implications for nursing practise, education, and research. For clinical nursing practise, routine mental health screening using validated tools such as the Edinburgh Postnatal Depression Scale should be integrated into routine postnatal care by nurses and midwives to help identify and refer mothers at risk of developing postpartum depression early in their pregnancy. Psychosocial assessment including assessment of partner support and stress levels, past mental health history should also be the target of nurses during postnatal visits. In the context of nursing training, training programmes must improve the content of maternal mental health through equipping nursing students with psychosocial assessment competencies, skills in communication and culturally sensitive care of postpartum women. The greater focus on the identification of early warning signs of postpartum depression will result in the enhanced readiness of future nurses. In the case of nursing research, longitudinal and multicenter studies are needed in more cases to examine causal pathways and evaluate interventions in reducing postpartum depression in healthcare facilities in Nigeria.

Declarations

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Author contributions

OAO conceived and coordinated the study, collected and analyzed the data, and drafted the manuscript. **AJO** supervised the study. **ASD** assisted in data analysis, and critically revised the manuscript. **OSO** contributed to the study design, and data collection, manuscript review and offered

additional insights. **ORO, OFO, and FBM** contributed to data collection. All authors read and approved the final manuscript.

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Data availability

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request, subject to appropriate ethical and institutional approvals.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Figures

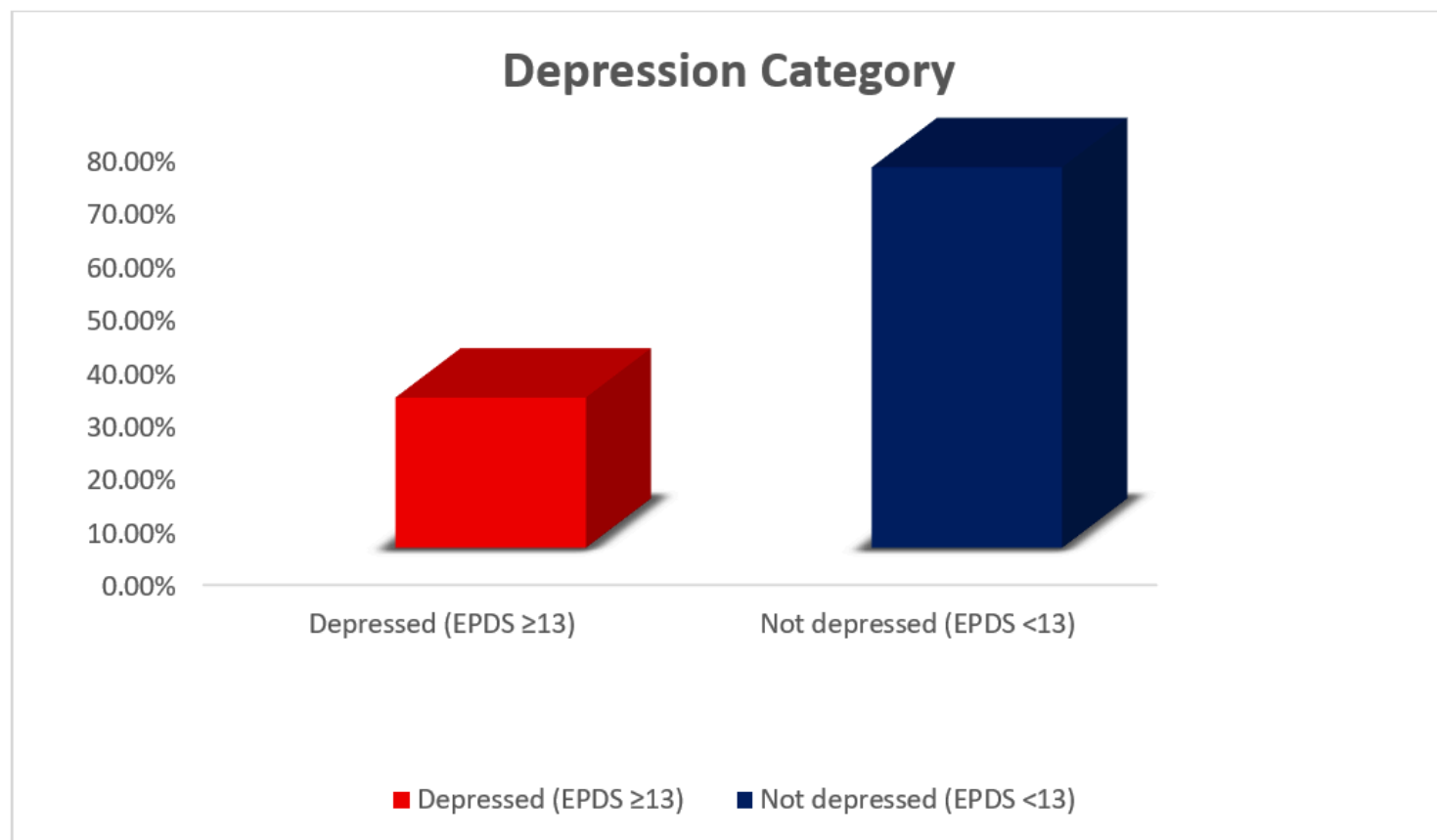


Figure 1

Prevalence of postpartum depression among mothers