Screening for Postpartum Depression among women in selected hospitals in Kaduna, Northern Nigeria: a cross sectional study

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Abstract

Background: Postpartum depression (PPD) is better detected early and treated to prevent maternal and perinatal complications. However, PPD screening is not routine in our environment. The aim of the study was to screen for those at risk of postpartum depression among women attending postnatal clinic.

Methods: A cross sectional study carried out in selected hospitals in Kaduna. A questionnaire was administered to women during their 6 weeks postpartum clinic visit and information elicited on demographics, reproductive characteristics, potential confounders for PPD, and the Edinburgh postpartum Depression Scale, administered. Analysis was done using SPPS (Statistical Package for Social Sciences) with a *p*-value of <0.05 deemed statistically significant.

Results: There were 300 participants. Majority of respondents were aged 20-29years (170, 56.7%), mean age was 27.51 ±5.759 years. Respondents were mostly well educated with 162 respondents (54%) schooled up to tertiary level, Muslim (224, 74.7%), Hausa (160,53.3%) and employed (172, 57.3%). All respondents were married, with most (266, 88.7%) in a monogamous setting and had been married for <10 years (251,83.7%). Only 17 respondents (5.7%) were at risk of PPD (EPDS score ≥13), while 41 respondents (13.7%) had signs of distress (EPDS score 10-12). Ethnicity, parity, baby's birthweight, baby not alive and experience of a recent stressful event were the only confounders significantly associated with the risk of PPD.

Conclusions: Among respondent, 5.7% had a high risk for PPD, which is lower than what was reported in previous studies. Ethnicity, parity, birthweight, death of the baby and experience of a recent stressful were significantly associated with this risk.

Keywords: Screening, Postpartum depression, Edinburgh postpartum Depression Scale (EPDS), Northern Nigeria

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Introduction

Postpartum depression (PPD) is a condition commonly encountered in clinical practice.[1] Sometimes pregnancy, delivery, and the care of a newborn can take an excessively big toll on the mother. Maternal blues (or sadness) affects approximately 50-80% of women in the puerperal period, with about 20% of these women developing postpartum depression.[2] However, incidence varies widely in different countries. In Nigeria reported incidence of PPD varies from 14 -45% [3, 4, 5, 6, 7] but most go undetected.

Several factors may contribute to the development of PPD. One of such factors are hormonal changes in the postpartum period. These include a sharp fall in oestrogen, progesterone and thyroid hormones, increased levels of prolactin and decreased dopamine.[1] Other risk factors for PPD include personal and family history of depression, breastfeeding difficulties, poor socioeconomic status, unintended pregnancy, African race, domestic violence, lack of partner or family support, difficult delivery, or adverse obstetric outcomes. [1, 8]

Clinical features of PPD are like those of "maternal blues" with varying symptoms like insomnia, irritability, crying outbursts, overwhelming feelings, and emotional lability, but tends to persist for longer periods of over 2 weeks.[1,8] In severe PPD, symptoms can still occur anytime during the first year after birth, and mimic severe depression: sadness, loss of interest, difficulty concentrating, psychomotor agitation or slowness, excessive tiredness, appetite disorders, sleep disturbances, decreased libido, suicidal thoughts, ambivalent or negative feelings towards the baby, feelings of guilt about the inability to take care of the child and excessive anxiety. [1, 8]

Screening for PPD is important because it can lead to poor bonding between mother and baby, which may affect childcare and development; babies are slower in acquiring language, age-specific behaviours, and mental development.[1, 8] And in the mother, long-term depression may develop. Also, early detection and treatment leads to faster recovery, less chances of depression recurrence and better child development. [1, 8]

Treatment modalities usually include counselling and supportive therapy, antidepressant medication and cognitive - behavioural therapy.[1,8] Other possible treatments have been poorly studied such as oestrogen therapy, phototherapy, and omega-3 fatty acid

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supplementation. Family support is equally important.[1,8] PPD may be under reported in our environment since routine screening is not widespread and women may not report symptoms due to cultural reasons and stigma attached to mental illnesses. This study aimed to screen and determine the number of women at risk of PPD among women attending postnatal clinic and to understand factors associated with this risk.

Methodology

The study was carried out in three selected hospitals: the Kaduna Polytechnic clinic and Dan Tsoho General Hospital, and the Barau Dikko Teaching hospital Kaduna. All hospitals are located within Kaduna metropolis and were selected for convenience, provide secondary/tertiary level of care, and have a high patient load of obstetric patients.

This was a cross- sectional survey. The study population were women seen at the postpartum clinic 6 weeks after delivery at the selected hospitals in Kaduna.

All women in in their puerperium seen during their second postpartum visit (6 weeks) and gave informed consent for participation were included irrespective of their parity or mode of delivery.

Women seen after 6 weeks postpartum, or too ill to participate were excluded from the study.

The minimum required sample size was determined to be 272 using relevant statistical formula; $n = z^2pq / d^2$ using the prevalence rate of 23% for Maternal depression from a previous study.[10] A 10% no response/poor response rate was calculated as 27 (using 10% of the calculated sample size), hence total study sample size was 299, and rounded up to 300.

Convenient sampling of consecutive consenting women was done.

A questionnaire with two sections was used. The first section, a semi-structured questionnaire designed by the authors, contained basic information on socio-demographic and reproductive characteristics, pregnancy and delivery history including risk factors for PPD. The second section is the Edinburgh postpartum Depression Scale (EPDS) a validated screening tool used for early detection of PPD and found to be acceptable to women in cross-cultural research on depression, including studies done in Nigeria.[11,12] The questionnaire was self-administered but a trained research assistant was available to help if required. The EPDS section was also translated to Hausa, the language predominant in the region, by the process of back translation by a Lecturer in the Hausa department of the Kaduna State University (KASU). The total EPDS score was calculated (maximum of 30) and a score of less than 10 indicated no risk of PPD, score of 10 to 12 indicated maternal distress, while a score of 13 and above indicated depressive symptoms/a high risk of PPD.[13, 14, 15] Women at risk of PPD, or requiring further monitoring were counselled and referred to the mental health department for further diagnosis, monitoring and treatment as required.

Analysis was done using IBM SPPS Statistics 22 (Armonk, NY: IBM Corp). Simple descriptive statistical analysis was done using frequencies, percentages, and cross-tabulation. Chi-square test and likelihood ratio was used to test for association as required. A *p*-value of < 0.05 was deemed to be statistically significant.

Ethical approval was obtained from the Health Research Ethic Committee of the Kaduna State Ministry of Health and Human Services, Kaduna State, Nigeria, participating hospitals, and informed consent from participants. The study was voluntary with privacy ensured, posed no risk to participants, and all information was kept confidential.

Results

There were 300 respondents and table 1 shows their demographic characteristics. Majority of respondents were aged between 20-29years (170, 56.7%), mean age was 27.51 ±5.8 years,. Respondents were mostly well educated with 162 respondents (54%) schooled up to tertiary level, Muslim (224, 74.7%), Hausa (160,53.3%), employed (172, 57.3%). All respondents were married, with most (266,88.7%) in a monogamous setting and had been married for <10 years (251,83.7%).

Several factors such as reproductive characteristics and pregnancy outcomes that may affect PPD are shown in table 2. Among respondents, 260 (86.7%) had planned pregnancies, 264 (88%) had no pregnancy complications, 272 (90.7%) were singleton pregnancies, 232(77.3%) had spontaneous vertex delivery, 250 had term pregnancies (83.3%), 156 (52%) had male babies, 239(79.7%) had babies of normal birth weight, 257 (85.7%) had babies who did not require Neonatal Intensive Care Unit (NICU) admissions, 285 (95.0%) had their babies alive as of the time of interview, 279 (93%), had no recent stressor events, 290 (96.7%) had no previous history of PPD, 289 ((96.3) felt they had adequate social support, 292 (96.3%) reported they did not experience any domestic violence, only one respondent (0.3%) admitted to smoking, 292 (97.3%) did not abuse drugs, and 290(96.7%) had good quality relationships with their partner.

The mean EPDS score for respondents was 6.18 ± 4.16. Only 17 respondents (5.7%) were at risk of PPD (EPDS score ≥ 13), while 41 respondents (13.7%) had signs of distress (EPDS score 10-12) (Table 2, Figure 1). Table 3, 4, 5 and 6 shows association of demographic, reproductive, foetal characteristics and other risk factors with depressive symptoms using PPD cut off scores of 10 and 13. Ethnicity, parity, baby's birthweight, baby not alive and experience of a recent stressful event were the factors significantly associated with the risk of PPD

(Table 3, 4, 5, 6). Only religion was significantly associated with the presence of both distress and depressive symptoms (EPDS score ≥13) (Table 3).

Table 1: Demographic characteristics of respondents

Characteristic (n=300)	Frequency (%)
Age (in years)	
≤ 20	17 (5.7)
20-29	170 (56.7)
30-39	99 (33.0)
≥40	5 (1.7)
Missing	9 (3.0)
Education	
Primary	10(3.3)
Secondary	123(41.0)
Tertiary	162(54.0)
Missing	5(1.7)
Religion	
Christianity	73(24.3)
Islam	224(74.7)
Missing	3(1.0)
Ethnicity	
Hausa	160(53.3)
Igbo	13(4.3)
Yoruba	23(7.7)
Others	95(31.7)
Missing	9(3.0)
Employment status	
Employed	172(57.3)
Unemployed	108(36.0)
Missing	20(6.7)
Type of marriage	
Monogamy	266(88.7)
Polygamy	15(5.0)
Missing	19(6.3)
Duration of marriage	
<10years	251(83.7)
≥10years	33(11.0)
Missing	16(5.3)

Discussion

This study looked at the screening of women for PPD which is an important component of maternal care but is yet to be routine in this environment, despite its benefits to the mother, her baby, and the health system.

For this study, we used an EPDS cut off point of 13 to indicate those at risk of PPD and found the prevalence of PPD to be 5.7%. If we used the lower cut off point of 9, the prevalence of PPD increases to 19.3%. Positive screening scores may increase but does not directly equate to a diagnosis of PPD, as further diagnostic criteria need to be applied by relevant experts. The lower cut-off points increase the sensitivity of the EPDS screening tool to 100%, and specificity to 88%, while the higher/stricter cut-off points indicate a better and greater probability of depression, though does not measure the severity of the symptoms.[16]

Table 2: Reproductive, pregnancy and other characteristics that are potential risk factors for PPD.

Characteristic (n=300)	Frequency (%)
Parity	
1 (Primipara)	86(28.7)
2-4 (Multipara)	177(59.0)
≥5 (Grandmultipara)	25(8.3)
Missing	12(4.0)
Previous miscarriage	
None	219(73.0)
1	59(18.6)
2	11(3.7)
≥3	11(3.7)
Current pregnancy is planned?	
No	21(7.0)
Yes	260(86.7)
Missing	19(6.3)
Pregnancy complications	
No	264(88.0)
Yes	36(12.0)
Type of pregnancy	
Singleton	272(90.7)
Multifoetal	12(4.0)
Missing	16(5.3)
Mode of delivery	
Caesarean	68(22.7)
Vaginal	232(77.3)
Gestational age at delivery	
Preterm	22(7.3)
Term	250(83.3)
Missing	28(9.3)
Baby's sex	
Female	142(47.3)
Male	156(52.0)
Both (multifetal)	2(0.7)
Birthweight	
Low birth weight (<2.5kg)	30(10.0)
Normal birth weight (>2.5 - <4kg)	239(79.7)
Macrosomia (>4kg)	14(4.7)
Missing	17(5.7)
NICU admission	
No	257(85.7)
Yes	12(4.0)
Missing	31(10.3)
Baby alive	
No	15(5.0)
Yes	285(95.0)

Table 2: Reproductive, pregnancy and other characteristics that are potential risk factors for PPD. Contd.

Characteristic (n=300)	Frequency (%)
Recent stressful event	
No	279(93.0)
Yes	17(5.7)
Missing	4(1.3)
History of depression	
No	290(96.7)
Yes	6(2.0)
Missing	4(1.3)
Lack of social support	
No	289(96.3)
Yes	6(2.0)
Missing	5(1.7)
History of domestic violence	
No	292(97.3)
Yes	1(0.3)
Missing	7(2.3)
Smoking status	
No	293(97.7)
Yes	1(0.3)
Missing	6(2.0)
Poor quality relationship of partner	
No	290(96.7)
Yes	10(3.3)
History of drug abuse	
No	292(97.3)
Yes	8(2.7)
PPD Scores	
<10 (No risk)	242(80.7)
10-12 (Maternal distress)	41(13.7)
≥13 (Depressive symptoms)	17(5.6)

Our PPD prevalence of 5.7% was much lower that what was found in other Nigerian studies. Obindo et al[3] reported a prevalence of 44.5% in north central Nigeria, while Ukaegbe et al[6] reported a prevalence of 30.6% in southern eastern Nigeria. Uwakwe et al[11] however reported a lower PPD prevalence rate 10.7% in South-Eastern Nigeria. Other Nigerian studies reported variable rates of 14 -28%. [4, 5, 7, 11, 12, 17, 18, 19] Globally there are also varied prevalent rates reported for PPD; 7% in Uganda and16-35% in Zimbabwe,[20] 17.9% in Egypt, [21] 18% in India,[22] 41% in Thailand, [23] 28% - 57% in Pakistan, [24] 35% - 47% in Latin America.[25] The disparity in PPD rates reported by these studies may be partly explained by the fact that they used varying EPDS PPD cut off points (of 9, 10,11, 12 or 13) to screen, use of different methodologies and PPD screening tools, administration of screening tools at deferent times (antenatally, immediately after birth, to days and 6-8 weeks after birth), different study settings with varying sociocultural contexts that make exact comparisons difficult.

Table 3: Association Between Demographic Characteristics and Depressive Symptoms

Characteristic (n=300)	Depressive symptoms (PPD score ≥13)		Combined distress and depressive symptoms (PPD score ≥10)	
	Frequency (Row %)		Frequency (Row %)	
	No	Yes	No	Yes
Age (in years)				
≤ 20	13(76.5)	4(23.5)	12(70.6)	5(29.4)
20-29	161(94.7)	9(5.3)	138(81.2)	32(18.8)
30-39	96(97.0)	3(3.0)	80(80.8)	19(19.2)
≥40	5(100.0)	0(0)	4(80.0)	1(20.0)
Missing	8(88.9)	1(11.1)	8(88.9)	1(11.1)
	Likelihood ratio - 8.492		Likelihood ratio - 1.469	
	df - 4, p value - 0.075		df - 4, p value - 0.832	
Education				
Primary	9(90.0)	1(10.0)	9(90.0)	1(10.0)
Secondary	119(96.7)	4(3.3)	102(82.9)	21(17.1)
Tertiary	151(93.2)	11(6.8)	127(78.4)	35 (21.6)
Missing	4(80.0)	1(20.0)	4(80.0)	1(20.0)
	Likelihood ratio - 3.427		Likelihood ratio - 1.590	
	df - 3, p value - 0.330		df - 3, p value - 0.662	
Religion				
Christianity	67(91.8)	6(8.2)	52(71.2)	21(28.8)
Islam	213(95.1)	11(4.9)	187(83.5)	37(16.5)
Missing	3(100.0)	0(0)	3(100.0)	0(0)
	Likelihood ratio - 1.387		Likelihood ratio - 6.230	
	df - 2, p value - 0.500		df - 2, p value - 0.044	
Ethnicity				
Hausa	153(95.6)	7(4.4)	130(81.3)	30(18.7)
Igbo	9(69.2)	4(30.8)	6(46.2)	7(53.8)
Yoruba	21(91.3)	2(8.7)	18(78.3)	5(21.7)
Others	92(96.8)	3(3.2)	81(85.3)	14(14.7)
Missing	8(88.9)	1(11.1)	7(77.8)	2 (22.2)
	Likelihood ratio - 10.565		Likelihood ratio - 9.181	
	df - 4, p value - 0.032		df - 4, p value - 0.057	
Employment status				
Employed	163(94.8)	9(5.2)	139(80.8)	33(19.2)
Unemployed	103(95.4)	5(4.6)	86(79.6)	22(20.4)
Missing	17(85.0)	3(15.0)	17(85.0)	3(15.0)
	Chi square - 3.537		Chi square - 3.537	
	df - 2, p value - 0.171		df - 2, p value - 0.853	
Type of marriage				
Monogamy	251((94.4)	15(5.6)	215((80.8)	51(19.2)
Polygamy	15(100)	0(0)	15(100)	0(0)
Missing	17(89.5)	2(10.5)	16(84.2)	3(15.8)
	Likelihood ratio - 2.429		Likelihood ratio - 0.641	
	df - 2, p value - 0.297		df - 2, p value - 0.726	
Duration of marriage				
<10years	236(94.0)	15(6.0)	201(80.1)	50(19.9)
≥10years	33(100.0)	0(0)	28(84.8)	5(15.2)
Missing	14(87.5)	2(12.5)	13(81.3)	3(18.7)
	Likelihood ratio - 4.953		Chi square - 0.429	
	df - 2, p value - 0.084		df - 2, p value - 0.798	

Table 4: Association Between Reproductive Characteristics and Depressive Symptoms

Characteristic (n=300)	Depressive symptoms (PPD score ≥13)		Combined distress and depressive symptoms (PPD score ≥10)	
	Frequency (Row %)		Frequency (Row %)	
	No	Yes	No	Yes
Parity				
0	81(94.2)	5(5.8)	70(81.4)	16(18.6)
1-4	169(95.5)	8(4.5)	143(80.8)	34(19.2)
>4	25(100.0)	0(0)	21(84.0)	4(16.0)
Missing	8(66.7)	4(33.3)	8(66.7)	4(33.3)
	Likelihood ratio - 12.008		Likelihood ratio - 1.526	
	df - 3, p value - 0.007		df - 3, p value - 0.676	
Previous miscarriage				
None	207(94.5)	12(5.5)	180(82.2)	39(17.8)
1-2	65(92.9)	5(7.1)	53(75.7)	17(24.3)
≥3	11(100.0)	0(0)	9 (81.8)	2(18.2)
	Likelihood ratio - 1.563		Chi square - 1.437	
	df - 2, p value - 0.458		df - 2, p value - 0.501	
Current pregnancy is planned?				
No	20(95.2)	1(4.8)	14(66.7)	7(33.3)
Yes	245(94.2)	15(5.8)	213(81.9)	47(18.1)
Missing	18(94.7)	1(5.3)	15(78.9)	4(21.1)
	Likelihood ratio - 0.043		Likelihood ratio - 2.592	
	df - 4, p value - 0.978		df - 2, p value - 0.274	
Pregnancy complications				
No	251(95.1)	13(4.9)	213(80.7)	51(19.3)
Yes	32(88.9)	4(11.1)	29(80.6)	7(19.4)
	Likelihood ratio - 1.866		Likelihood ratio - 0.001	
	df - 1, p value - 0.172		df - 1, p value - 0.986	
Type of pregnancy				
Singleton	258(94.9)	14(5.1)	220(80.9)	52(19.1)
Multifoetal	10(83.3)	2(16.7)	10(83.3)	2(16.7)
Missing	15(93.8)	1(6.3)	12(75.0)	4(25.0)
	Likelihood ratio - 1.987		Likelihood ratio - 0.373	
	df - 2, p value - 0.370		df - 2, p value - 0.830	
Mode of delivery				
Caesarean	64(94.1)	4(5.9)	55(80.9)	13(19.1)
Vaginal	219(94.4)	13(5.6)	187(80.6)	45(19.4)
	Likelihood ratio - 0.008		Chi square - 0.003	
	df - 1, p value - 0.931		df - 1, p value - 0.959	
Gestational age at delivery				
Preterm	22(100.0)	0(0)	17(77.3)	5(22.7)
Term	237(94.8)	13(5.2)	203(81.2)	47(18.8)
Missing	24(85.7)	4(14.3)	22(78.6)	6(21.4)
	Likelihood ratio - 5.470		Chi square - 0.287	
	df - 2, p value - 0.065		df - 2, p value 0.870	

For example, the higher figures reported by Obindo et al in North-central Nigeria[3] and in Pakistan[24] may also be attributed to the possible prevailing crises or war around the period of the study.

Ethnicity was significantly associated with the risk of PPD in this study. The reason for this is unclear. Caution should be taken interpreting this finding. The Hausa ethnic group is predominant in the study setting, and more than half (53.3%) of the study population were Hausa. The numbers of other major ethnic groups were quite small, and there were numerous minority ethnic groups, so further and larger studies are required to explain this finding.

Table 5: Association Between Foetal Characteristics and Depressive Symptoms

Characteristic (n=300)	Depressive symptoms (PPD score ≥13)		Combined distress and depressive symptoms (PPD score ≥10)	
	Frequency (Row %)		Frequency (Row %)	
	No	Yes	No	Yes
Baby's sex				
Female	137(95.8)	6(4.2)	121(84.6)	22(15.4)
Male	145(92.9)	11(7.1)	120(76.9)	36(23.1)
Both (multifetal)	1(100)	0(0)	1(100)	0(0)
	Likelihood ratio - 1.271		Likelihood ratio - 3.282	
	df - 2, p value - 0.530		df - 2, p value - 0.194	
Birthweight				
Low (<2.5kg)	27(90.0)	3(10.0)	25(83.3)	5(16.7)
Normal (2.5 - 4kg)	230(96.2)	9(3.8)	196(82.0)	43(18.0)
High (>4kg)	13(92.9)	1(7.1)	9(64.3)	5(37.7)
Missing	13(76.5)	4(23.5)	12(70.6)	5(29.4)
	Likelihood ratio - 8.674		Likelihood ratio - 3.467	
	df - 3, p value - 0.034		df - 3, p value - 0.325	
NICU admission				
No	243(94.6)	14(5.4)	209(81.3)	48(18.7)
Yes	11(91.7)	1(8.3)	9(75.0)	3(25.0)
Missing	29(93.5)	2(6.5)	24(77.4)	7(22.6)
	Likelihood ratio - 0.198		Chi square - 0.528	
	df - 2, p value - 0.906		df - 2, p value - 0.768	
Baby alive				
No	11(73.3)	4(26.7)	10(66.7)	5(33.3)
Yes	272(95.4)	13(4.6)	232(81.4)	53(18.6)
	Likelihood ratio - 7.546		Likelihood ratio - 1.735	
	df - 1, p value - 0.006		df - 1, p value - 0.188	

Parity was a significant factor associated with the risk of PPD in our study, slightly higher among primipara. Two other Nigerian studies[12,19] also found primiparity to be significantly associated with PPD, which they attributed to inadequate knowledge and preparedness for parenting. There might also be a heightened anticipatory fear about labour and caring for the baby. Some other studies rather found multiparity [26,27] to be associated with PPD which they attributed to the stress of caring for more children. Yet other studies found no association of parity with PPD. [10,28]

Baby's birthweight was significantly associated with the risk of PPD in this study; those with macrosomia or low birth weight were more at risk than those with normal birth weight. Perhaps this may be related to

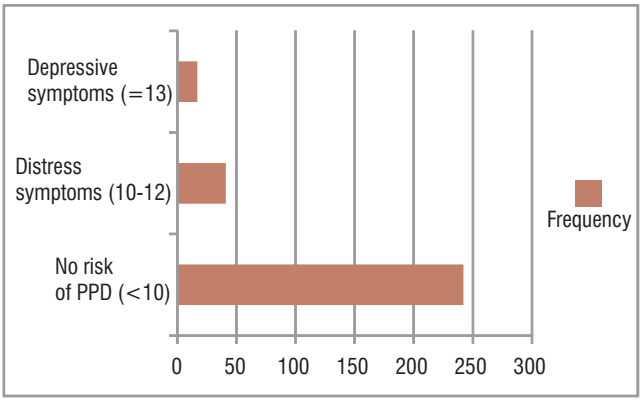
circumstances/co-morbid conditions leading to abnormal birth weight in the first instance, as well as associated increased perinatal morbidity and mortality. Some studies have reported the association of low birth weight with PPD.[29, 30] However, Obindo et al[3] found no significant association between birth weight of the baby and PPD.

Table 6: Association Between Other General Risk Factors and Depressive Symptoms

Characteristic (n=300)	Depressive symptoms (PPD score ≥13) Frequency (Row %) No	Yes	Combined distress and depressive symptoms (PPD score ≥10) Frequency (Row %) No	Yes
Recent stressful event				
No	270(95.4)	13(4.6)	231(81.6)	52(18.4)
Yes	13(76.5)	4(23.5)	11(64.7)	6(35.3)
	Likelihood ratio - 6.581		Likelihood ratio - 2.541	
	df - 1, p value - 0.010		df - 1, p value - 0.111	
History of depression				
No	274(94.5)	16(5.5)	235(81.0)	55(19.0)
Yes	5(83.3)	1(16.7)	4(66.7)	2(33.3)
Missing	4(100.0)	0(0)	3(74.0)	1(25.0)
	Likelihood ratio - 1.397		Likelihood ratio - 0.756	
	df - 2, p value - 0.497		df - 2, p value - 0.685	
Lack of social support				
No	273(94.5)	16(5.5)	235(81.3)	54(18.7)
Yes	5(83.3)	1(16.7)	3(50.0)	3(50.0)
Missing	5(100.0)	0(0)	4(80.0)	1(20.0)
	Likelihood ratio - 1.510		Likelihood ratio - 2.911	
	df - 2, p value - 0.470		df - 2, p value - 0.233	
History of domestic violence				
No	275(94.2)	17(5.8)	237(81.2)	55(18.8)
Yes	1(100.0)	0(0)	1(100.0)	0(0)
Missing	7(100.0)	0(0)	4(57.1)	3(42.9)
	Likelihood ratio - 0.946		Likelihood ratio - 2.494	
	df - 2, p value - 0.623		df - 2, p value - 0.287	
Smoking status				
No	276(94.2)	17(5.8)	238(81.2)	55(18.8)
Yes	1(100.0)	0(0)	0(0)	1(100.0)
Missing	6(100.0)	0(0)	4(66.7)	2(33.3)
	Likelihood ratio - 0.627		Likelihood ratio - 4.000	
	df - 2, p value - 0.661		df - 2, p value - 0.135	
Poor quality relationship with partner				
No	273(94.1)	17(5.9)	234(80.7)	56(19.3)
Yes	10(100.0)	0(0)	8(80.0)	2(20.0)
	Likelihood ratio - 1.187		Likelihood ratio - 0.003	
	df - 1, p value - 0.276		df - 1, p value - 0.957	
History of drug abuse				
No	275(94.2)	17(5.8)	237(81.2)	55(18.2)
Yes	1(100.0)	0(0)	0(0)	1(100.0)
Missing	7(100.0)	0(0)	5(71.4)	2(28.6)
	Likelihood ratio - 0.946		Likelihood ratio - 3.679	
	df - 2, p value - 0.623		df - 2, p value - 0.159	

Perinatal mortality and recent stressful events (such as loss of a family member/relative) were found to be significantly associated with the risk of PPD in this study. This is not surprising, and it was reported in one other study that women were three times more likely to have postpartum depressive symptoms if they experienced a perinatal death than compared to those who had not. [31] This is similar to other reports,[32, 33] and may be explained by the fact that such significant losses lead to recurrent feelings of pervasive sadness and sorrow.[34]

Figure 1: Risk of PPD among Respondents (PPD Scores)



In our study, religion was significant only when the cut-off point was lowered to <10, indicating distress symptoms which may persist and progress to PDD, hence requiring further monitoring. Obindo *et al* [3] reported religious affiliation as being significant to the risk of PPD as probably some people may find it comforting to relieve stress, but Tungchama et al[17] found no such association.

In our study age was not significantly associated with the risk of PPD. This finding is similar to some other studies.[6, 10, 12] Tungchama et al[17] however found age to be significant. Perhaps older women are more experienced and better able to cope with stress associated with pregnancy and delivery depression. [17]

Unlike our study, some other studies found several other factors to be significantly associated with PPD such employment status, [4, 5, 35] educational level, marital status and type of marriage,[17] previous history of mental health problems,[26] unplanned pregnancy,[26] sex of the baby,[5] among others.

Mode of Delivery was not significantly associated with PPD in our study and is similar to other studies.[10] Unlike our study however, Owoeye et al.[4] found mode of delivery to be associated with PPD, it was higher among women who delivered through caesarean section than those who did via the vaginal route.

The use of a validated screening tool is a strength; however, all tools (including screening instruments) have

their own inherent limitations. The EPDS does not adequately evaluate context or exhaust all possible symptoms of PPD.[36, 37] This was a hospital-based study with convenience sampling, and this may have introduced some selection bias. The high level of stigma associated with mental illnesses in our environment [46] may also contribute to some information bias. Missing data may also affect the quality of data.

Conclusions

It is still important to routinely screen for PPD in our environment. Our study found relatively low level risk for PPD. Ethnicity, parity, birthweight, death of the baby and experience of a recent stressful event were significantly associated with this risk.

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