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Original Article

Postpartum Depression and its Associated Factors among Postpartum Mothers Attending a Teaching Hospital in Eastern Nepal

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Abstract

Background
Postnatal depression is an important and burning public health issue in modern civilization with the strongest connection to adverse outcome for children and also maternal morbidity. The objective of the study was to determine the prevalence and factors associated with postpartum depression among postpartum mothers attending Nobel Medical College Teaching Hospital.

Materials and Methods
A descriptive, cross-sectional study was conducted in child vaccine clinic of Nobel Medical College Teaching Hospital. A total of 178 postpartum mothers with a period of six to fourteen weeks after delivery were selected by using non- probability consecutive sampling technique. Data was collected by using Edinburg Postnatal Depression Scale. Association between variables was measured by Chi-square test and binary logistic regression analysis was performed to determine the factors associated with postpartum depression among postpartum mothers

Results
The prevalence of postpartum depression among postpartum mothers was 30.3%.Amongst various variables, age of the women, religion, educational level, occupation, monthly income, type of pregnancy, parity, problem during pregnancy and delivery, infant health problem, marital satisfaction and stressful life events in previous year were significantly associated with postpartum depression.

Conclusion
The number of postpartum mothers experiencing postpartum depression was high. Early screening of depressive symptoms and counseling of postpartum mother should be included in routine antenatal and postnatal care services; so that, maternal morbidity and adverse child outcomes can be prevented.

Keywords: *Mothers, Postpartum depression, Prevalence*

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Introduction

Pregnancy and child birth can induce normal neuroendocrine and psychosocial stress that most women experience in the antenatal, labor and postnatal period through severe emotional distress [1]. The term postpartum depression (PPD) refers to a nonpsychotic psychiatric disorder that occurs after childbirth in the postpartum period [2]. Globally, maternal mental health issues are seen as a major public health concern, though maternal mortality still lies at the heart of maternal health indicators [3].

Maternity care is often neglected during the postpartum period. The lack of postpartum care ignores the fact that during the postpartum period, the majority of maternal deaths and disabilities occur and early neonatal mortality remains high [4]. Studies conducted in High Income countries indicate a prevalence of 10-15% of perinatal mental disorders and in Lower and Middle Income Countries these problems are in the range of 10-41% [2]. It varied from 19% to 22% in India, Pakistan (44%), Vietnam (33%) and 4.9% to 30% in Nepal [5-6]. A study conducted in Kathmandu, and Pokhara, Nepal showed that 17.1% and 12.0% of women were suffered from the depression in the postnatal period. Those studies also reported that abortion history, marital dissatisfaction, stressful life events were associated with postpartum depression [5-6].

Depression within the postpartum period is one among the main psychological disorders among reproductive-age women, which is related to undesirable consequences for mothers and their children too [6]. Hence the present study was aimed to determine the prevalence and associated factors of postpartum depression among postpartum mothers.

Materials and Methods

The descriptive cross-sectional research study design was used to determine the prevalence and associated factors of postpartum depression among postpartum mothers. The study was carried out in Child Vaccine Clinic of Nobel Medical College Teaching Hospital (NoMCTH) from 2020/01/10 – 2020/3/25.

Data was collected after getting ethical clearance from Institutional Review Board of Nobel Medical College Teaching Hospital, Biratnagar. We assured informed written consent from the respondent before their participation. The face to face interview technique was used to collect the data from postpartum mothers. Privacy and confidentiality were maintained during data collection. We requested all participants for voluntary participation and allowed to terminate from the study at any time during the study. The postpartum mothers at a period of six to fourteen weeks after delivery were enrolled in the study and women who had a pre-existing chronic health problem and care takers other than postpartum mothers were excluded.

The population of this study was all the postpartum mothers attending the child vaccine Clinic. The required sample for this study was calculated using Cochran, 1977 formula for the finite population-based on three-months data of a number of postpartum mothers who visited the child vaccine clinic. The sample size was determined using the formula, $n = z2 \, pq/ \, I^2$ .Where, n0=Minimum sample size required for study, Z = Standardized deviate at 95% confidence level i.e 1.96, p = Prevalence for which we are computing the sample size (p) = 0.29 [7], q = Estimated proportion of not having stress $(1-p)=0.71$, at an allowable error of 5% = 0.05. Now putting in the formula, n0 = (1.96)2 x 0.29 x0.71/ 0.05x 0.05 which is equals to 316. Now, using corrected sample size formula for finite population= n0/ (1+n0/N), Where, n0= 316, N=330. The new sample size (n) = 162. To reduce non-response error additional 10% was taken so; the sample size of the study was 178. Postpartum mothers who met the inclusion criteria during data collection were selected for the study by using non-probability consecutive sampling technique.

After reviewing related literature using various online and offline resources (HINARI access) for the collection of data on different independent variables of the participants, the researchers developed a semi-structured interview schedule which consisted questionnaire for sociodemographic characteristic, obstetrics and infant characteristics and psychosocial characteristics.

To screen the depressive symptoms among postpartum mothers, we adopted the validated Nepali version of Edinburgh postnatal depression scale (EPDS), a 10-item self-rating questionnaire which was developed by Cox and colleagues in Edinburg [8]. Each question of EPDS has four alternative answers, scoring from 0 to 3 (where 3 is for "Yes, most of the time", to 0 for "no, not at all"), resulting in a total score of 30. Including Nepal, the questionnaire has been successively validated and used in many languages [9]. From different studies, the sensitivity and specificity of the EPDS has been found to be 75% and 84%, at a cut-off of 13 [8].An EPDS score cut off of ≥13 was obtained to determine the postpartum depression in the present study.

Content validity of the research instrument was established by experts. The original instruments were in English language. They were translated to Nepali language for data collection and again, it

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was translated back to English to ensure that the meaning is retained and maintain the translation validity. The Nepali version of questionnaire was pre tested among 16 postpartum mothers meeting the inclusion criteria in child vaccine clinic of NoMCTH who were later excluded in the data collection. The internal consistency of instrument was established by Cronbach's Alpha test where the test result was, 0.742 which comes within the acceptable range of reliability [5].

The data was analyzed using the Statistical Package for the Social Sciences (SPSS)version 20.0. Data was summarized using descriptive statistics such as frequency, and percentage for categorical and mean and standard deviation for continuous variable. Inferential statistics (Chi-square test) was used to reveal the association between different characteristics and postpartum depressive symptoms of the respondents. The strength of association between postpartum depression and different characteristics were measured by binary logistic regression test at 95% confidence intervals. A P-value of < 0.05 was used as the criterion for statistical significance [10].

Results

In this study, the mean age of the mother was 27.42 (±4.32) Years. Regarding the educational status, all most all (92.1%) were literate and among the literate, 45.1% mothers had completed secondary level education. Approximately, 55.1% mothers were from joint family. Likewise, 56.2% mothers reported paid work. Regarding family income, 57.3% mothers had less than 40,000 rupees per month (Table 1).

Table 1: Demographic Characteristics of Postpartum Mothers n=178

Characteristics Age (in years)	Number	Percent
</20	11	6.2
20-30	131	73.6
>30	36	20.2
Educational Status		
Literate	164	92.1
Illiterate	14	7.9
Educational Level(n=164)		
Can read and write	34	20.8
Elementary	15	9.1
Secondary	74	45.1
Bachelor and above	41	25.0
Type of Family		
Nuclear Family	80	44.9
Joint Family	98	55.1
Occupation		
Paid	100	56.2
Unpaid	78	43.8
Monthly Family Income		
<40000	102	57.3
>40000	76	42.7

Table 2: Obstetric and Infant Characteristics of Postpartum Mothers n=178

Characteristics	Number	Percent
Types of Pregnancy		
Planned Pregnancy	143	80.3
Unplanned Pregnancy	35	19.7
Number of pregnancy		
Primipara	87	48.9
Multipara	91	51.1
Problem(s) during Pregnancy and Delivery		
Yes	44	24.7
No	134	75.3
Mode of Delivery		
Normal Delivery	112	62.9
Cesarean Section	66	37.1
Breastfeeding Status of Mother		
Exclusively Breastfeeding	142	79.8
Non- Exclusively Breastfeeding	36	20.2
Infant Health Problems		
Yes	57	32.0
No	121	68.0

Table 2 shows the obstetric and infant characteristics of postpartum mothers. Among the postpartum mothers, 80.3% had planned pregnancy. Similarly, 51.1% were multipara. Likewise, 24.7% mothers reported problem during pregnancy and delivery. In regard to the mode of delivery, most of the mothers (62.9%) had undergone normal vaginal delivery. Concerning the breastfeeding status of mother, 79.8% mothers did exclusive breast feeding. In regard to infant's health problem, 32.0% infants had some health problems.

Table 3: Psychosocial Characteristics of Postpartum Mothersn=178

Characteristics	Number	Percent
Marital Satisfaction		
Yes	141	79.2
No	37	20.8
Support from family		
Yes	135	75.8
No	43	24.2
History of previous depression		
No	178	100.0
History of husband's depression		
Yes	8	4.5
No	170	95.5
Stressful life events in previous year		
Yes	44	24.7
No	134	75.3

Table 3 depicts the psychosocial characteristics of postpartum mothers. Among psychosocial characteristics of mother, 79.2% mothers were satisfied with their marriage and 75.8% have family support. Concerning the history of depression, no any mothers indicated a previous history of depression whereas 4.5% mothers told that their husband have history of depression.

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Likewise, 24.7% mothers reported stressful life events in previous year.

Table 4: Prevalence of Post-partum Depression

Post-partum Depressi on (EPDS >I13)	Number	Percentage
No	124	69.7
Yes	54	30.3
Total	178	100.0

Table 4 shows the prevalence of postpartum depressive symptoms. Out of 178 postpartum mothers, 54 (30.3 %) showed the postpartum depressive symptoms.

Table 5: Association of Socio-demographic Characteristics with Postpartum Depression n=178

Variables	Depression Number (%) No	Yes	P- value	UOR (95%CI)	AOR (95%CI)
Current Age of Mother (in Yrs)					
</30#	109 (76.8)	33 (23.2)	<0.001*	4.624 (2.144-9.973)	2.823 (1.058-7.532)
>30	15 (41.7)	21(58.3)			
Mean age± S.D= 27.42± 4.32 Years					
Educational Status					
Upto secondary#	81 (65.9)	42 (34.1)	<0.001*	0.099 (0.23-0.430)	0.262 (0.024-2.844)
Above secondary	39 (95.1)	2 (4.9)			
Type of Family					
Nuclear Family#	61 (76.3)	19 (23.7)	0.084	1.784 (0.922-3.452)	0.386 (0.101-1.478)
Joint Family	63 (64.3)	35 (35.7)			
Occupation					
Paid#	79 (79.0)	21 (21.0)	0.002*	2.759 (1.428-5.328)	1.378 (0.343-5.535
Unpaid	45 (57.7)	33 (42.3)			
Monthly Family Income (in Rs)					
<40000#	57 (53.3)	45 (46.7)	<0.001*	0.172 (0.077-0.378)	0.143 (0.022-0.935)
>40000	67 (88.2)	9 (11.8)			

*p-value significant at (p<.05), #: Reference Category AOR: Adjusted Odds Ratio, CI: Confid-ence Interval

Table 5 shows the associated factors of post-partum depressive symptoms. According to bivariate analysis, among various sociodemogr-aphic characteristics, postpartum women with age more than 30 years were four times more likely to have postpartum depressive symptoms (p=<0.001, UOR= 4.624, 95% CI= 2.144-9.973). Likewise, whose educational level was above secondary level were less likely to develop postpartum depressive symptoms (p=<0.001, UOR=0.099, 95% CI= 0.23-0.430) and those who were having unpaid work were two times more likely to develop postpartum depressive symptoms (p=0.002, UOR=2.759, 95% CI= 1.428-5.328). Similarly, the women whose monthly family income was more than 40,000 rupees were 0.172 times less likely to develop postpartum depressive symptoms (p=<0.001, UOR=0.172, 95% CI= 0.077-0.378) which were found statistically significant at 5% significance level. However, there was no significant associa-tion of type of family (p=0.084) with postpartum depression at 5% significance level.

Table 6: Association between Obstetrics and Infant and Psychosocial related Characteristics with Postpartum Depression n=178

Variables	Depression Number (%) No	Yes	P- value	UOR (95%CI)	AOR (95% CI)
Types of Pregnancy					
Planned Pregnancy#	105 (73.4)	38 (26.6)	0.023*	2.327 (1.087-4.983)	3.710 (0.802-17.170)
Unplanned Pregnancy	19 (54.3)	16 (45.7)			
Number of Pregnancy					
Primipara#	76(87.4)	11 (12.6)	<0.001*	6.189 (2.911-13.161)	4.798 (0.925-24.883)
Multipara	48 (52.7)	43 (47.3)			
Problem(s) during Pregnancy and Delivery					
Yes#	15 (34.1)	29 (65.9)	<0.001*	0.119 (0.055-0.254)	0.174 (0.037-0.818)
No	109 (81.3)	25 (18.7)			
Mode of Delivery					
Normal Delivery#	83 (74.1)	29 (25.9)	0.932	1.745 (0.909-3.352)	2.981 (0.764-11.636)
Cesarean Section	41(62.1)	25 (37.9)			
Breastfeeding Status of Mother					
Exclusively Breastfeeding#	98 (69.0)	44 (31.0)	0.078	0.857 (0.381-1.928)	0.551 (0.121-2.502)
Non- Exclusively Breastfeeding	26 (72.2)	10 (27.8)			
Infant Health Problems					
Yes#	20 (35.1)	37 (64.9)	<0.001*	0.088 (0.042-0.187)	0.091 (0.025-0.330
No	104 (86.0)	17 (14)			
Marital Satisfaction					
Yes#	112 (80.0)	29 (20.0)	<0.001*	8.046 (3.614-17.913)	7.611 (1.607-36.042)
No	12 (32.4)	25(67.6)			
Stressful lif e events in previous year					
Yes#	23 (52.3)	21 (47.7)	0.004*	0.358 (0.176-0.728)	1.452 (0.257-8.208)
No	101(75.4)	33(24.6)			

*p-value significant at (p<.05), #: Reference Category AOR: Adjusted Odds Ratio, CI: Confi-dence Interval

Table 6 shows that among various obstetrics and infant and psychosocial related characteristics in bivariate analysis, postpartum women who had unplanned pregnancy were two times more likely to have postpartum depressive symptoms (p= 0.023, UOR= 2.327, 95% CI= 1.087-4.983). Similarly, women with multiparity were six times more likely to develop postpartum depressive symptoms (p=<0.001, UOR=6.189, 95% CI= 2.911-13.161). Likewise, who had not experienc-ed problems during pregnancy and delivery were less likely to develop postpartum depres-sive symptoms (p=<0.001, UOR=0.119, 95% CI= 0.055-0.254). The women whose infant had not any health problems were less likely to develop postpartum depressive symptoms (p=<0.001, UOR=0.088, 95% CI= 0.042-0.187). Similarly, the women without stressful life events in previous year were 0.358 times less likely to develop postpartum depressive symptoms (p=0.004, UOR=0.358, 95% CI= 0.176-0.728). The risk to develop PPD symptoms was increased by eight times in women with marital dissatisfaction compared with those having marital satisfaction (p=<0.001, UOR=8.046, 95% CI= 3.614-17.913). Further, no significant association was observed between mode of

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delivery (p=0.932) and breastfeeding status (p=0.078) with postpartum depression at 5% significance level.

Discussion

The present study showed that about 30.3% of mothers had depressive symptoms during post-partum period. It is consistent with the preva-lence shown by a study conducted among women attending immunization clinic, i.e.30% [9]. Another study also showed 29% prevalence of postpartum depression which was done in Dhulikhel hospital, Nepal [8]. Studies done in other developing countries like India and Pakistan, reported the prevalence of postpartum depres-sion, which range from 11% to 40% [5]. Similarly, study done in Canada showed 8.69% as a prevalence of postpartum depression[11]. The inconsistency with some studies might be becau-se of using different cut off points of EPDS score.

The current study found mothers >30years were four times more likely to report postpartum depre-ssion (p=0.001, OR=4.624, 95% CI= 2.144-9.973). This finding of present study is consistent with another study conducted in Nepal [9], while other earlier studies in Turkey and Canada demonstrated that mothers whose age is less than 25 years were more likely to exhibit depressive symptoms which were inconsistent with present study [11, 12].

Current study demonstrated that mothers whose educational level was above secondary level exhibited less chance to develop PPD than those whose educational level was below secondary level (p=0.001, OR=0.099, 95% CI= 0.23-0.430). This finding is similar with other studies in China [13], and Vietnam [14]. However, some other studies have found no difference in depressive symptoms by educational level [6,9, 15].In pre-sent study mothers who are unemployed and have low monthly income were more likely to develop PPD. Similar findings were reported in the studies conducted in India [16], China [13], California [17] and Brazil [18].

Current study demonstrated that women who had unplanned pregnancy were two times more likely to develop postpartum depressive sympto-ms (*p*= 0.023, OR= 2.327, 95% CI= 1.087-4.983). This finding is consistent with the result of previous studies [8, 12]. In this study women with Multiparity were more likely to develop postpar-tum depressive symptoms (p=0.000, OR=6.189, 95% CI= 2.911-13.161). This finding was support-ed by the study conducted by Bhusal et al. [5], Kruthika et al. [16] and Ho-Yen et al. [19].

Current study revealed that women without pregnancy induced problems were less likely to develop PPD which is similar to various study conducted in Nepal and Denmark [6-7, 9, 20]. Nevertheless, the present result contradicted the study by Bhusal et al. [5]. The present study demonstrated that, women whose infant had no any health problem were less likely to be depre-ssed (p=0.001, OR=0.088, 95% CI=0.042-0.187). This finding was consistent with the study conducted by Kunwar et al. [7]. Similarly, present study showed that the women who had marital dissatisfaction (p=0.000, OR=8.046, 95% CI= 3.614-17.913) and having stressful life events (p=0.004, OR=0.358, 95% CI= 0.176-0.728) were more prone to develop postpartum depres-sive symptoms. These results were also consis-tent with those of other studies [5, 9, 15, 20].

The findings of the current study demonstrated age of the mother, educational level, occupation, type of marriage, family income, types of pregn-ancy, parity, problems during pregnancy and delivery, infant's health problem, marital dissatis-faction, stressful life events in previous years were found to be predictors of PPD. The findings were consistent with other various studies [5,7, 9,12-13, 16, 21]. Further, no significant associa-tion was observed between religion, mode of delivery, birth weight of the baby and breastfeed-ing status with postpartum depressive symptoms which is correspond with other studies [5-6,9, 13, 16].

Limitation

The limitation of the study is that, our study was conducted in one of the advanced centers in the readily accessible areas of the country. The findings of this study may not be generalized among the women of Nepal. So, further resear-ches in large scale need to be conducted before generalizing the results among the Nepalese women. We adopted a descriptive cross-section-al design, so, the results might not be sufficient to establish the causal association of associated factors with postpartum depression among women. Further analytical and interventional stu-dies need to be conducted.

Conclusion

The finding of the study concludes that nearly one-third of postpartum women were suffering from postpartum depression. Among various variable, age of the women, religion, educational level, occupation, monthly income, type of pregn-ancy, parity, problem during pregnancy and delivery, infant health problem, marital satisfact-ion and stressful life events in previous year were

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found to be significant predictors of postpartum depressive symptoms.

Recommendation

Postpartum depression is seen as a public health issue affecting mothers in pregnancy and post-partum period. Thus, Mental health screening and interventions should be integrated into existing maternal and child health programs for early identification and prevention of depressive symptoms to reduce the maternal morbidity and adverse child outcomes.

Conflicts of interests: None

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