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Prevalence and risk factors associated with postpartum depression among mothers in selected municipalities of Bardiya, Nepal

Sandesh Paudel[1]✉, Nabin Lamichhane[1]✉, Binita Kumari Paudel[1]✉, Jamuna Gautam[1]✉, Babu Ram Magar[1]✉, Suresh Kandel[1]✉, Samarpan Adhikari[2]✉

[1]Department of Public Health, Purbanchal University School of Health Sciences, Morang, Nepal
[2]Central Department of Public Health, Institute of Medicine, Tribhuvan University, Kathmandu, Nepal

Abstract

Background: Depression is a prevalent mental health condition characterized by enduring sadness and reduced interest in activities. Postpartum depression is a significant issue, impacting 10-15% of women post-childbirth, affecting both mothers and families. This study aimed to assess the prevalence and risk factors associated with postpartum depression among mothers in Bardiya, Nepal.

Method: A community-based cross-sectional study was conducted among 164 mothers in the postnatal period in Bardiya, Nepal. The Edinburgh Postpartum Depression Scale, with a cut-off value of ≥12, was utilized to assess depressive syndrome. Chi-square and logistic regression analyses were used to determine associations with postpartum depression and related factors.

Result: The prevalence of depressive symptoms among postpartum mothers was 29.4%. In bivariate analysis, family income, drinking and smoking habits of both respondents and husband, child being hospitalized, husband's occupation, conflicts with family members, and obstetric history were significantly associated with postpartum depression ($p<0.05$). In multivariate logistic regression, family monthly income <30,000 (AOR=4.90, 95% CI: 1.13-21.15), multiparity (AOR=10.42, 95% CI: 1.68-64.51) and complications after delivery (AOR=10.21, 95% CI: 2.30-45.36) were factors significantly associated with postpartum depressive symptoms.

Conclusion: Almost one-third of the respondents experienced postpartum depressive symptoms. Family monthly income, parity, and complication after delivery were found to be associated with postpartum depression. The findings emphasize the importance of regular screening at health posts and primary healthcare centers, facilitating timely referrals for counseling and treatment.

Keywords: Postpartum depression, EDPS, Associated factors, Nepal

How to cite

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Correspondence

Sandesh Paudel, Department of Public Health, Purbanchal University School of Health Sciences, Gothgaun, Morang, Nepal. Email: sandeshpaudel18@gmail.com, Telephone: +977 9844841055

Introduction

Postpartum depression (PPD) is feeling sad and down after having a baby. Symptoms are being in a bad mood, not finding joy in things used to like, having less energy and motivation, struggling to do everyday tasks, feeling bad, and even thinking about hurting or having thoughts of suicide.[1–3] The American Psychiatric Association(APA) defines PPD as the occurrence of a Major Depressive Episode(MDE) within 4 weeks after delivery.[4] By 2030, Sustainable Development Goals (SDGs) aim to reduce premature mortality by one-third from non-communicable diseases through prevention, treatment, and promotion of mental health well-being.[5]

The PPD affects approximately 10-15% of women and their families. It affects health and well-being of mothers and children, mother-child bonding, and family relationships.[6] World Health Organization (WHO) estimates that depression will be the second leading cause of disability and disease burden by 2030.[7] This study aimed to assess the prevalence and risk factors associated with PPD among mothers in Bardiya district, Nepal.

Method

A community-based cross sectional study design was used and data was collected from 3rd January to 18th January, 2024 to assess the status of postpartum depression and associated factors among postpartum mothers of Bardiya, Nepal. Ethical approval was obtained from Purbanchal University School of Health Sciences-Institutional Review Committee (Ref No: 041-080/81).

Permission was secured from three selected Municipality of Bardiya. Both verbal and written consent was taken from each postnatal mother prior to interview. Postnatal mothers who were not able to communicate and who had depression for more than 1 year were excluded.

The sample size was calculated using Cochran's formula (Z^2 *p*q/d^2) with a 95% Confidence Interval, considering a prevalence rate of 12%[8] and a 5% margin of error, the estimated sample size was 163.

Probability/simple random sampling was used for data collection. Initially, three out of the six municipalities were selected randomly through lottery methods. Madhuwan Municipality, Barabardiya Municipality and Bansgadi Municipality were selected during the lottery process. According to municipal records, there were 166 postnatal mothers in randomly selected municipalities. All the post-partum mothers were selected.

Semi-structured questionnaire was used to collect the information. The questionnaire was developed by reviewing various other cross-sectional study of Nepal and standard Edinburgh Postnatal Depression Scale (EPDS). The questionnaire was also categorized into five section including socio-demographic variables, substance use and health related variables, husband and family related variables, obstetric factors and Edinburg depression scale.

Postpartum depressive symptoms were assessed using the Standard EDPS.[9] A cutoff EPDS score of ≥10 was used to evaluate postnatal depressive symptoms among the study participants, with a sensitivity of 91% and specificity of 84%.[10] The questionnaire was pretested in Rajapur Municipality. Quantitative data analysis involved editing, coding, entering, and analyzing using SPSS version 21. Descriptive statistics such as frequency, percentage were utilized to express the results. The data was analyzed and interpreted based on objectives. For bivariate analysis, chi-square test was applied, while logistic regression was used for multivariate analysis. The significance level of the p-value was set at less than 0.05 for the analysis.

Operational definitions

Postpartum period: The postpartum period was operationally defined as a period begins immediately after the birth of the baby and extends up to six weeks(42 days) after birth.[11]
The EPDS scale: Tools used to screen depression among post-partum mothers. The EPDS tool is

ten item scale that measures the intensity of depression experienced within last 7 days. Each statement is rated on a scale 0-3 in a total possible score ranging from 0-30. Score above 10 is considered as postpartum depression.[10] **Parity:** Parity is defined as the number of times a female is or has been pregnant and carried the pregnancies to a viable gestational age(24 weeks). **Gravida:** Gravida describes the total number of confirmed pregnancies that a woman has had, regardless of the outcome. **Chronic disease:** A chronic disease is one lasting 3 months or more which generally cannot be prevented by vaccines or cured by medication, nor do they just disappear. It includes diabetes, obesity, arthritis, cardiovascular diseases, cancer, and asthma.

Result

Among 163 respondents in a survey for post-partum depression, half (53.4%) were aged over 25 years, (65.5%) belonged to the Brahmin/Chhetri caste, nearly half (41.1%) were literate, majority (81.6%) were housewife, and over half (60.7%) lived in joint families, nearly half 54.6% earned less than NRs. 30,000 monthly, Table 1.

Table 1. Socio-demographic characteristics of participants in a survey for postpartum depression (n=163)

Variables	Category	n(%)
Age	≤25 years	76(46.6)
	>25 years	87(53.4)
Ethnicity	Brahamin/chettri	107(65.6)
	Dalit	25(15.5)
	Janajati	31(19.0)
Religion	Hindu	130(79.8)
	Buddhist	8(4.9)
	Christian	20(12.3)
	Islam	5(3.1)
Respondent education level	Illiterate	53(32.5)
	Literate	67(41.1)
	Basic	24(14.7)
	Secondary	17(10.4)
	University or above	2(1.2)
Respondent occupation	Housewife	133(81.6)
	Government employee	11(6.7)
	Business	19(11.7)
Family type	Joint	99(60.7)
	Nuclear	64(39.3)
Family monthly income Rs	10,000-20,000	1(0.6)
	20,000-30,000	88(54.0)
	Above 30,000	74(45.4)

Based on the cut-off point ≥10 of EPDS, 48(29.4%) had postpartum depression, Table 2.

There was a significant association between postpartum depression and ethnicity with 15(48.4%) Janjati and 32(36%) with a family monthly income of <30000 NRs reported depression, Table 3.

More mothers with drinking habits 8 (80% of 10), smokers 8 (72.27% of 11) and child being hospitalized reported depression, and factors were significantly associated, p<0.05, Table 4.

Husband's occupation, drinking smoking habits, and conflicts were found significantly associated with depression, Table 5.

Significant associations were found between gravida (p=0.002), number of living children (p=0.003), sex of present child (p=<0.001), abortion/miscarriage (p=<0.001), preferred child of present child (p=0.031), ANC visits site (p=0.001), type of delivery (p=0.001), and complications within the first 7 days of delivery (p=<0.001) with postpartum depression, Table 6.

The multivariate logistic regression analysis identified three statistically significant variables associated with postpartum depression. Mothers with a family income of ≤30,000 were 4.90 times more likely to experience postpartum depression compared to those with incomes >30,000 (AOR=4.90, 95% CI: 1.13-21.15). Multiparous were 10.42 times more likely to experience depression than primiparous and those who faced complications within the first seven days after delivery were 10.21 times more likely to have postpartum depression, Table 7.

Table 2. Prevalence of post-partum depression (n=163)

Variable	Category	n(%)
Post-partum Depression	Yes	48(29.4)
	No	115(70.6)

Table 3. Association between socio-demographic characteristics and post-partum depression (n=163)

Variables		Postpartum depression		X^2 Statistic	p-value
		Yes, n(%)	No, n(%)		
Age	≤25 Years	21(27.6)	55(72.4)	0.226	0.634
	>25 Years	27(31)	60(69)		
Ethnicity	Brahamin/Chhetri	25(23.4)	82(76.6)	7.336	0.026
	Dalit	8(32.0)	17(68.0)		
	Janajati	15(48.4)	16(51.6)		
Religion	Hindu	34(26.2)	96(73.8)	3.354	0.067
	Others	14(42.41)	19(57.6)		
Occupation	Housemaker	37(27.8)	96(72.2)	1.660	0.436
	Govt. Employee	3(27.3)	8(72.7)		
	Business	8(42.1)	11(57.9)		
Education	Illiterate	18(34.0)	35(66.0)	0.770	0.380
	Literate	30(27.3)	80(72.7)		
Family type	Joint	25(25.3)	74(74.7)	2.136	0.144
	Nuclear	23(35.9)	41(64.1)		
Family income (monthly Rs)	≤30,000	32(36.0)	57(64.0)	3.995	0.046
	>30,000	16(21.6)	58(78.4)		

Table 4. Association between respondent substance use, health related factor and post-partum depression (n=163)

Substance use		Postpartum depression		Test statistics X^2	p-value
		Yes n(%)	No n(%)		
Drinking habit	Yes	8(80.0)	2(20.0)	10.640*	0.001
	No	40(26.1)	113(73.9)		
Smoking habit	Yes	8(72.7)	3(27.3)	10.635*	0.004
	No	40(26.3)	112(73.7)		
Child being hospitalized	Yes	22(55.0)	18(45.0)	16.658	0.001
	No	26(21.1)	97(78.9)		

*Yates correction

Table 4. Association between husband and family related factors and post-partum depression (n=163)

Factors		Postpartum depression		Test statistic	p-value
		Yes, n(%)	No, n(%)	X^2	
Husband education	Illiterate	1(100)	0(0)	Fisher's	0.294
	Literate	47(29.0)	115(71)		
Husband occupation	Foreign employee	17(24.6)	52(75.4)	9.214	0.010
	Business	23(45.1)	28(54.9)		
	Others	8(18.6)	35(81.4)		
Husband drinking	Yes	34(79.1)	9(20.9)	69.224	<0.001
	No	14(11.7)	106(88.3)		
Husband smoking	Yes	35(79.5)	9(20.5)	72.805	<0.001
	No	13(10.9)	106(89.1)		
Conflict with family	Yes	24(85.7)	4(14.3)	51.517	<0.001
	No	24(17.8)	111(82.2)		

Table 5. Association between obstetric factors and post-partum depression (n=163)

Obstetric factors		Postpartum depression		Test statistics X^2	p-value
		Yes, n(%)	No, n(%)		
Gravida	Primi	6(12.2)	43(87.8)	9.980	0.002
	Multi	42(36.8)	72(63.2)		
Age at first delivery	≤25 years	46(30.5)	105(69.5)	0.463*	0.496
	>25 years	2(16.7)	10(83.3)		
Parity	Primi parity	6(12.2)	43(87.8)	9.980	0.002
	Multi parity	42(36.8)	42(63.2)		
Sex of present child	Male	21(19.4)	87(80.6)	15.416	0.001
	Female	27(49.1)	28(50.9)		
Intent of pregnancy	Intended	45(30.0)	105(70.0)	0.043*	0.835
	Unintended	3(23.1)	10(76.9)		
Preferred sex of present child	Male	38(26.6)	105(73.4)	4.635	0.031
	Female	10(50.0)	10(50.0)		
Abortion/miscarriage	Yes	12(66.7)	6(33.3)	13.491	0.001
	No	36(24.8)	109(75.2)		
ANC visits	Complete	16(23.9)	51(76.1)	1.697	0.193
	Incomplete	32(33.3)	64(66.7)		
ANC visits site	District hospital	40(38.1)	65(61.9)	10.621	0.001
	Health post	8(13.8)	50(86.2)		
Type of delivery	Normal	9(14.5)	53(85.5)	10.738	0.001
	Caesarian	39(38.6)	62(61.4)		
Complication in early 7 d of delivery	Yes	38(63.3)	22(36.7)	52.477	0.001
	No	10(9.7)	93(90.3)		

*Yates correction

Table 6. Multivariate logistic regression for factors associated with post-partum depression among Postpartum mothers (n=163)

Variables	β	COR	AOR	95% CI		p- value
				lower	upper	
Family monthly income Rs						
≤30,000	1.59	2.03	4.90	1.13	21.15	0.033
>30,000		1	1			
Parity						
Primi		1	1			
Multi	2.34	4.18	10.42	1.68	64.51	0.012
Complications in early 7 d of delivery						
Yes	2.32	16.06	10.21	2.30	45.36	0.002
No		1	1			

Note: COR=crude odds ratio, AOR=adjusted odds ratio, 1 denotes the reference indicator

Discussion

The prevalence of postpartum depression (PPD) in our study was 29.4% (48 out of 163). This finding is similar to studies from Nepal[12] and a PPD rate of 31.4% in a research from a rural tertiary care hospital in Karnataka[13] in India. However, studies in Janaki Medical College, Dhanusha district, and Godavari Municipality of Lalitpur districts in Nepal reported lower PPD rates of 15.2% and 19% respectively.[14,15] This lower rate was possibly cutoff point of ≥13 on the EPDS Scale compared to a cutoff of ≥10 in our other previous studies.

In the bivariate analysis, ethnicity showed a significant association with postpartum depression, aligning with findings from a study in Dhanusha, Nepal.[14] Conversely, variables such as age, religion, respondent education, occupation, and family type displayed no significant association. Similarly, family income demonstrated a significant association with postpartum depression, consistent with research in Iran[16] but not with a study from China[17] possibly due to difference in socio-economic contexts.

Notably, our study revealed a significant association between husbands' smoking and drinking habits, similar findings from research in Dhanusha and Morang, Nepal.[14,18] Further analysis revealed that in Rajbansi women no significant association was found.[18] This disparity may stem from cultural differences.

Husband's education level did not show a significant association with postpartum depression, in alignment with a cohort study in Mazandaran province in Iran.[16]

Our study highlighted a significant correlation between infant hospitalization and postpartum depression, consistent with findings from a cross-sectional study in Zoba Maekel Central Region in Eritrea.[19]

Among the obstetric factors, significant association was found between parity and postpartum depression, consistent with studies in Dhanusha Nepal and North West Ethiopia.[14,20] This findings is in contrary to previous findings in Zoba Maekel Central Region in Eritrea.[19] This inconsistent findings might be due to variations in socio-demographic factors and sample sizes.

Intent of pregnancy did not show a significant association with postpartum depression, aligning with studies in South India and Dhulikhel, Nepal.[13,21] We found a significant association between delivery type and depression, which is similar to the study conducted in Tamil Nadu, India.[22] Likewise, complications during delivery showed a significant association with postpartum depression, aligning with research in the Central Region, Eritrea.[19] However, preferred sex of the present child exhibited a significant association, contradicting findings from a study in North West, Ethiopia,[20] possibly due to varying gender norms and attitudes in Nepalese society.

In Multivariate Logistic Regression, significant association was detected with multiparity but it was insignificant in the study conducted in Kathmandu, Nepal.[23] This difference might be due to more than half of the respondents had more than one child which may be the reason for insignificant results. Abortion and child hospitalization showed no significant association with postpartum depression, aligning with research in Addis Ababa, Ethiopia, indicating consistent findings between the studies.[24]

Regarding Desired sex of child/Preferred sex of child, our study did not show the significant association between the preferred sex of child and post-partum depression, differing from research in Addis Ababa, Ethiopia[24], possibly reflecting cultural variations. Similarly, no significant association was found between the child's sex and postpartum depression, aligning with a study in south-western Uganda.[25] Respondents who had multiparity were 10.42 time more likely to experienced postpartum depression in comparison with primiparity (AOR=10.42, 95% CI: 1.68-64.51) which is higher than the study conducted in Karnataka, India[26], likely due to sample size differences. Type of delivery showed no significant association with postpartum depression, consistent with research in Bahir Dar Town, Northwest Ethiopia.[27]

Conclusion

This study highlights a high prevalence (29.4%) of postpartum depressive symptoms. Significant risk factors were low family income, multiparity, and post-delivery complications. Emphasizing the Ministry of Health and Population's role, it calls for guidelines and interventions to screen and address postpartum depression, advocating routine screening at health posts and primary healthcare centers, along with prompt referrals for counseling and treatment.

Author contribution

Concept design- SP; Literature search, Data collection, Data analysis, Draft manuscript and Final manuscript and accountability - all.

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Conflict of interest

None

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Supplementary material

The data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

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