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Prevalence of post-partum depression and its association with sociodemographic factors in rural areas of Ambala District

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Abstract

Aim: The aim of this study was to determine the prevalence of postpartum depression (PPD) among recently delivered mothers and explore its association with Sociodemographic factors.

Methods: This research was conducted in rural healthcare facilities in Ambala district over a year. Recently delivered mothers were interviewed using a self-designed questionnaire and Edinburgh Postnatal Depression Scale (EPDS) was used.

Results: Among 400 participants, 42% were aged 25-29, 61% were Hindu, 63% were homemakers, and 49.5% had a high school education. The majority (69.3%) belonged to joint families, 41.3% had a normal BMI, and 67.8% had vaginal deliveries. The prevalence of PPD was 19.2%. Significant associations were found between PPD and those living in a nuclear family ($p < 0.001$).

Conclusion: This study identified a significant link between postpartum depression and type of family. Addressing these risk factors through targeted interventions is crucial for promoting maternal mental health.

Keywords: Postpartum depression, Edinburgh Postnatal Depression Scale (EPDS)

Introduction

Childbirth marks a pivotal moment in a mother's life, creating a lasting bond and sense of purpose. The postnatal period, while joyous, demands significant adjustments in women's roles and responsibilities, often accompanied by biological, social, and emotional changes, particularly for first-time mothers [1-3]. While families may have high hopes for this period, women are vulnerable to psychiatric disorders, including postpartum blues, depression, and psychosis [4]. Identifying risk factors for postpartum depression (PPD) during antenatal and postnatal periods is crucial for timely intervention [5].

Mental health issues during pregnancy and postpartum occur about twice as frequently in low-income countries compared to high-income ones, emphasizing the need to prioritize maternal mental health to achieve the United Nations Sustainable Development Goals by 2030 [6]. PPD is a major but often underrated public health issue [7]. According to the American Psychiatric Association, PPD involves a major depressive episode within four weeks post-delivery, with symptoms potentially emerging within the first 2-3 months postpartum [8]. A history of major depression increases the risk of PPD by 25%, and prior PPD episodes double this risk to 50% [9]. Postpartum psychiatric disorders can be classified into postpartum blues, psychosis, and depression [10-11].

This study is aimed to determine the prevalence of PPD among recently delivered mothers and its association with sociodemographic factors.

Materials and Methods

The study was conducted at the rural health care facility serving the rural field practice area of MMIMSR, Mullana, Ambala. The study population included the recently delivered mothers. The study was carried out over a period of one year i.e., January 2023-December 2023. 400 women were included in the study on the basis of record deliveries of previous years. Last three years data showed that average number of deliveries per year is 470. Hence it was decided to include at least 400 women considering non response and not willing to participate. A prior approval from the Institutional Ethics Committee was obtained project no IEC 2591.

Inclusion criteria

- Immediate post-partum women.
- Postpartum women who gave consent.

Exclusion criteria

- Postpartum women who didn't give consent.
- Postpartum women who had current delivery as still birth considering very low compliance from such female.

Women meeting the inclusion criteria were interviewed within 2-3 days after child birth and then reassessment was done at 6-8 weeks. Weeks for the follow up as with in first week there can be postpartum blues that normally resolve within 10 days as per APA, we assessed the women for development of PPD based on EPD scale [8].

The interview was carried out using a self-designed, (partially) pre-tested questionnaire.

It contains the socio-demographic profile, anthropometric details of the of study subjects. In this socioeconomic status was calculated according to Modified B.G. Parsad Scale 2024 [12].

The Body Mass Index for each patient was calculated using

the height and weight with the help of Excel BMI group calculator (metric). The categorization of each study patients was done according to WHO Asia Pacific criteria-BMI (kg/m²) [13].

Section 2: It consisted of reproductive characteristics of female like age at marriage of study subjects, age at first pregnancy, mode, and place of the delivery. Parity and gravida along with some common complications during pregnancy like hypertension, diabetes, and anemia were noted.

Section 3: this consisted of calculation of presence of post-partum depression using Edinburg Postnatal Depression scale [14]. In which EPDS score 13 or more PPD present, in which less than 13 PPD absent

The data was entered in excel sheet and analyzed using SPSS (Statistical Package for the Social Sciences) version 28.0. Qualitative variables were expressed as proportions in percentages. Quantitative variables i.e., Quality of life scores score was expressed as mean and standard deviation. Finally, Chi-square test was used to establish association (if any) among qualitative variables. *p*<0.05 was considered significant at 95% confidence interval.

Results

Demographic details

Age (years)	Frequency	Percent
Less than 20 years	15	3.8
20-24 years	98	24.5
25-29 years	168	42.0
30-34 years	81	20.2
35 years and above	38	9.5
Religion		
Hindu	244	61.0
Muslim	74	18.5
Sikh	62	15.5
Others	20	5.5
Education status		
Illiterate	32	8
Primary school	91	22.8
Middle school	18	4.5
High school and intermediate	198	49.5
Graduate and above	61	15.2
Type of family		
Joint	277	69.3
Nuclear	123	30.7
BMI (kg/m²)		
< 18.5 (Underweight)	19	4.8
18.5-22.9 (Normal)	165	41.3
23-24.9 (Over Weight)	121	30.3
> 25 (Obese)	95	23.6

The majority i.e., 168 (42%) of study subjects were from the age group 25-29 years and were Hindu 244 (61%)., 198 (49.5%) of study subjects were qualified up to high school, 277 (69.3%) of study subjects belongs to joint family and

123(30.7%) of study subjects were from nuclear family. The BMI of 165(41.3%) study subjects was normal, followed by 121(30.3%) were overweight and 95(23.6%) were obese. The rest i.e., 4.8%, were underweight.

Distribution of study subjects by socio economic status (BG Parsad Scale January 2024)

Modified BG prasad socioeconomic classification	Frequency	Percent
I (Upper Class)	-	-
II (Upper Middle Class)	12	3.0
III (Middle Class)	114	28.5
IV (Lower Middle Class)	251	62.7
V (Lower Class)	23	5.8

251(62.7%) study subjects belong to the lower middle class followed the by middle class 114(28.5)

Distribution of study subjects by age at marriage, at the first pregnancy and parity

Age group at marriage	Frequency	Percent
Less than 18	55	13.8
18-25	268	67.0
26-30	60	15.0
More than 30	17	4.2
Age group at first pregnancy		
Less than 20	36	9.0
20-24	162	40.5
25-29	145	36.3
30-34	44	11.0
35 and above	13	3.2
Parity		
2 or less	343	85.75
>2	57	14.25

The majority of 268(67%) study subjects were married in the age groups of 18-25 years of age, followed by 60(15%) of study subjects who got married in the age group of 26-30 years, 55 (13.8%) of the study subjects who got married in less than 18 years. 162(40.5%) got pregnant at the age of 20-24 years followed by 145(36.3%) of study subjects got

pregnant first time at age of 25-29 years, 44(11%) of study subjects got pregnant at the age of 30-34 years, 36(9%) of study subjects got pregnant at age less than 20 and 13(3.2%) got pregnant at age 35 and above. 343(85.75%) of study subjects had 2 or less children followed by 57(14.25%) of study subjects who had more than 2 children.

Distribution of study subjects by mode of delivery and gravida

Mode of delivery	Frequency	Percent
LSCS	129	32.2
Vaginal delivery (includes forceps/vacuum delivery)	271	67.8
Total no of pregnancies		
1	150	37.5
2	168	42
3 and more	82	20.5

271 (67.8%) of study subjects had normal vaginal delivery followed by 129 (32.2%) of study subjects who had delivery by LSCS. 168(42%) of study subjects had 2 pregnancies,

followed by 150 (37.5%) of study subjects had single pregnancy and 82 (20.5%) had 3 pregnancies and more

Distribution of study subjects on the basis of postpartum depression

PPD immediately after delivery	Frequency	Percent
Present	130	32.5
Absent	270	67.5
Total	400	100.0
PPD after follow up		
Present	77	19.2
Absent	323	80.8
Total	400	100.0

130 (32.5%) of study subjects experienced PPD immediately after delivery, while 67.5% did not report PPD at that time. PPD persist for 77 (19.2%) even after the

immediate postpartum period, as they were continuing to experience symptoms after follow-up.

Association of demographic details with postpartum depression

The association between age of study subject and postpartum depression was found to be statistically insignificant as p-value was > 0.05. The association between religion of study subjects and postpartum depression was found to be statistically insignificant as p value was > 0.05. The association between education of study subjects and postpartum depression was found to be statistically insignificant as p value was > 0.05. The association between type of family and postpartum depression was found to be highly statistically significant as p value was < 0.001. and the association of other factors with PPD was found to be statistically insignificant as p-value was > 0.05.

Age of study subjects	Postpartum depression		Total	Chi square
	Present	Absent		
Less than 20	5(33.3%)	10(66.7%)	15(100.0%)	X ² = 6.64, P=.156, DF=4
20-24	18(18.4%)	80(81.6%)	98(100.0%)	
25-29	29(17.3%)	139(82.7%)	168(100.0%)	
30-34	13(16%)	68(84%)	81(100.0%)	
35 and above	12(31.6%)	26(68.4%)	38(100.0%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	
Religion				
Hindu	40(16.4%)	204(83.6%)	244(100.0%)	X ² =3.48, P=.322, DF=3
Muslim	18(24.3%)	56(75.7%)	74(100.0%)	
Others	4(20%)	16(80%)	20(100.0%)	
Sikh	15(24.2%)	47(75.8%)	62(100.0%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	
Education of study subjects				
Illiterate	7(21.9%)	25(78.1%)	32(100.0%)	X ² =3.28, P=.511, DF=4
Primary school	22(24.2%)	69(75.8%)	91(100.0%)	
Middle school	4(22.2%)	14(77.8%)	18(100.0%)	
High school and intermediate	36(18.2%)	162(81.8%)	198(100.0%)	
Graduate and above	8(13.1%)	53(86.9%)	61(100.0%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	
Type of family				
Joint	35(12.6%)	242(87.4%)	277(100.0%)	X ² =25.35, p<.001, DF=1
Nuclear	42(34.1%)	81(65.9%)	123(100.0%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	

Association of socioeconomic status (BG Parsad Scale January, 2024) of study subjects with postpartum depression

Socioeconomic status	Postpartum depression		Total	Chi square
	Present	Absent		
Upper Middle	1(8.3%)	11(91.7%)	12(100.0%)	X ² =1.29, P=.730, DF=3
Middle	24(21.1%)	90(78.9%)	114(100.0%)	
Lower Middle	47(18.7%)	204(81.3%)	251(100.0%)	
Lower	5(21.7%)	18(78.3%)	23(100.0%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	

The association between socioeconomic status of study subject and postpartum depression was found to be statistically insignificant as p-value was > 0.05.

Association of Mode of delivery with postpartum depression

Mode of delivery	Postpartum depression		Total	Chi square
	Present	Absent		
LSCS	30(23.3%)	99(76.7%)	129(100%)	X ² =1.96, P=.161, DF=1
Vaginal	47(17.3%)	224(82.7%)	271(100%)	
Total	77(19.2%)	323(80.8%)	400(100.0%)	

This association between mode of delivery of study subject and postpartum depression was found to be statistically insignificant as p-value was > 0.05.

Discussion

Postpartum depression (PPD) is a mood disorder that manifests with several somatic and emotional symptoms [15] within the first 12 months after delivery [8]. It is estimated that 20 to 40% of women living in the low-income countries experience depression during pregnancy or the postpartum period [16]. The prevalence of PPD shows a wide variation, affecting 8-50% of postnatal mothers, across countries [17, 18]. The reason for the variation in reported prevalence of PPD has been attributed to the differences in health-seeking behavior, and the trans-cultural variations in interpreting the symptoms [19, 20].

The mean age of study subjects in the present study was 27.38 years. The maximum number of 168 (42%) study subjects were in the age group 25-29 years, followed by 20-

24 years 98 (24.5%). Similar study conducted by A. Agarwala *et al.*, shows that 55.4% of the study subjects were in the age groups 25-30 years and 22% of study subjects were in the age group less than 25 years [21]. In the present study the majority of study subjects were Hindu 244 (61%). Muslim study subjects were 74 (18.5%). Sikh were 62 (15.5%) and from other religions were 20 (5.5%). According to census 2011 87.5% of Haryana population was Hindu, Muslims were 7% and Sikhs were 5% [22]. In this study we found out that the majority i.e., 198 (49.5%) of study subjects were qualified up to high school and intermediate and 91(22.8%) till primary and 61(15.2%) who were graduate and above, followed by 32(8%) of the study subjects were illiterate and 18(4.5%) till primary. According to NFHS-5 data of Haryana (2019-21) 76.7% of women in rural areas were literate and 44.1% had completed 10 or more years of schooling [23]. In this we found out that the majority i.e., 277(69.3%) of study subjects belongs to joint family and 123(30.7%) of study subjects were from nuclear

family. Another study conducted by Basu *et al.* found out that 66.7% of study subjects belongs to joint family where as 33.3% were from nuclear family ^[24].

In this study the maximum number of study subjects i.e., 251(62.7%) belong to the lower middle class according to (BG Prasad Scale January 2024) followed by middle class 114(28.5%) and 23(5.8%) from the middle class. Minimum number of 12(3%) study subjects was from upper middle class. Similar study conducted by Aslam *et al.* ^[25] found out that majority 53.9% of study subjects were from lower middle class. In the present study the maximum number of study subjects i.e., 5(33.3%) with postpartum depression belongs to the age group of less than 20 years, followed by 12(31.6%) of study subjects belong to age group 35 and above and least number of study subjects i.e., 13(16%) belongs to the age group 30-34 years. This association between age of study subject and postpartum depression was found to be statistically insignificant as p value=0.156. Similar study conducted by Aslam *et al.* ^[25] found out that 37.9% of study subjects with postpartum depression belong to age group 21-25 years and 24.1% belong to age group less than 20 years. In their study there was no association between age of study subjects and postpartum depression as p value was 0.835.

In the present study the maximum number of study subjects i.e., 18(24.3%) with postpartum depression were Muslims, followed by 15(24.2%) of study subjects were Sikh and least 40(16.4%) belongs to Hindu religion. This association between religion of study subject and postpartum depression was found to be statistically insignificant as p value was =0.322. Similar study conducted by Jija *et al.* ^[26] found out that 13.3% of study subjects with PPD were Muslims and 9.2% were Hindu. In their study the association was statistically insignificant as p value was 0.43. In this study the maximum number of study subjects i.e., 5(21.7%) with postpartum depression belongs to lower class as per BG Prasad Scale, followed by 24(21.1%) belongs to middle class and the least number of study subjects belongs to 1(8.3%) upper middle class. This association between socioeconomic status of study subject and postpartum depression was found to be statistically insignificant as p value =0.73. Similar study conducted by Aslam *et al.* found that maximum number i.e., 48.3% of study subjects with postpartum depression belongs to lower middle class followed by 31% belongs to lower class. In their study the association between socioeconomic class of study subject and postpartum depression was found to be statistically insignificant as p value was 0.98 ^[25].

In the present study the maximum number of study subjects i.e., 42(34.1%) with postpartum depression were from nuclear family whereas 35(12.6%) of study subjects with postpartum depression were from joint family. This association between type of family and postpartum depression was found to be highly statistically significant as p value was < 0.001. Similar study conducted by Hirani *et al.* found out that maximum number of study subjects i.e., 34.4% with postpartum depression belongs to nuclear family where as 5.4% were from joint family. Their study is statistically significant as p value is < 0.0001 so there is association between type of family and postpartum depression. This may due to more responsibility of the child rearing along with all household work. All this work the women have to do alone in the nuclear family.

Conclusion

This study revealed a significant prevalence of Postpartum Depression (PPD) among participants, at 19.2%. The findings indicated a strong association between PPD and type of family. Conversely, other demographic and clinical factors did not demonstrate a statistically significant association with PPD. These results underscore the multifaceted nature of PPD, which is influenced by a complex interplay of biological, social, and psychological factors. Therefore, it is essential to develop targeted screening and intervention strategies that address these risk factors, ultimately aiming to mitigate the impact of PPD on maternal mental health and well-being.

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