

## ASSESSMENT OF MAGNITUDE AND RISK FACTORS OF POSTPARTUM DEPRESSION AMONG MOTHERS ATTENDING IMMUNIZATION CLINICS OF IGIMS, PATNA

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### Abstract

**Background:** Postpartum Depression is a complex mix of physical, emotional and behavioural changes that happen in some women after giving birth. There are several identified risks factors which effects not just the individual but also has devastating effects on the whole family, and consequently on the healthcare system. The objective is to estimate the magnitude and determine the risk factors of Post-Partum Depression. **Materials and Methods:** A prospective cross-sectional study was conducted on 300 mothers (up to 6 months after delivery) attending the immunization clinics at the urban health training centre and rural health training centre of IGIMS, Patna. Purposive sampling technique was used for the study. EPDS scale was used for assessment of PPD. Data was collected in the designed Performa and data was analysed using statistical software SPSS. **Result:** A total of 300 mothers were interviewed. The overall proportion of PPD came out to be 19.0%, while the median EPDS score was 1. Preterm or low birth weight baby, complications during pregnancy, bad relations with in-laws and marital disharmony, lack of support from family networks were found to be predictors of PPD. **Conclusion:** Complications in pregnancy or known medical illness of new born and bad family dynamics are major risk factors of PPD. Early screening and counselling of mother and their family is important to reduce the adverse outcomes.

## INTRODUCTION

Postpartum Depression (PPD) is an insidious, complex mix of physical, emotional and behavioural changes that happen in some women after giving birth. Postpartum psychiatric disorders can be broadly categorized into three categories, postpartum blues (anxiety), postpartum psychosis and postpartum depression. Postpartum anxiety may resolve in a few days to a week, has fewer negative sequelae and usually requires only reassurance. Postpartum psychosis is a severe disorder that begins within four weeks postpartum and requires hospitalization. Postpartum Depression is a common occurrence in the pre, peri and postnatal periods of pregnancy.<sup>[1-5]</sup>

Postpartum depression can start soon after childbirth or as a continuation of antenatal depression. This may predispose to chronic or recurrent depression, which

may affect the mother–infant relationship, marital harmony and the child’s growth and development. Children of mothers with postpartum depression have greater cognitive, behavioural and interpersonal problems compared to children of non-depressed mothers. There is growing recognition that the burden of postpartum depression is more in the low- and middle-income countries. A systematic review and meta-analysis of postpartum depression in India reported a pooled prevalence of 22%.<sup>[6,7]</sup>

Maternal mental health is still not a priority despite a National Mental Health Programme. Dedicated maternal mental health services are largely deficient in present health-care facilities, and health workers lack mental health training and sensitization. The availability of mental health specialists is limited or non-existent in peripheral health-care facilities. Furthermore, there is currently no screening tool designated for use in current clinical practice and no

data is routinely collected on the proportion of perinatal women with mental health problems. There are several identified risk factors (prior history of depression, unwanted pregnancy, complications during pregnancy, preterm birth, working status of mother, relationship and family dynamics) which effects not just the individual but also has devastating effects on the whole family, and consequently on the healthcare system.<sup>[8,9]</sup>

Less than 10 % of cases of PPD are identified, but this is just the tip of the iceberg. It requires early assessment, detection and prompt management and much more work is needed into mechanics of this insidious but critical condition.<sup>[10,11]</sup>

#### Objectives:

1. To estimate the magnitude of Post-Partum Depression Among Mothers Attending Immunization Clinics of IGIMS, Patna
2. To determine the risk factors of Post-Partum Depression Among Mothers Attending Immunization Clinics of IGIMS, Patna

## MATERIALS AND METHODS

**Study Design:** This is prospective cross-sectional study.

**Study period:** This study was carried out from 1st April to 31st September 2022.

**Study population:** All mothers (up to 6 months after delivery) attending the immunization clinics at the Urban Health Training Centre, Shastri Nagar and Rural Health Training Centre, Maner of IGIMS, Patna were included in the study.

**Sample Size:** At 95% confidence interval, 5% margin of error, and considering 22% as the estimated prevalence of postpartum depression and also accounting for 10% non-response rate, the sample size was calculated to be 301 and rounded off to 300.

**Sampling Method:** Purposive sampling technique was used.

**Data Collection tool:** Written informed consent was taken from each study participant. A pre designed and pre tested questionnaire was used for collecting information regarding socio-demographic details, obstetric history and other information. We checked the completeness and consistency of questionnaires filled by the data collectors to ensure the quality of data and also visited the data collectors as many times as possible to check whether he/she collected the data appropriately. PPD was evaluated using Edinburgh Postnatal Depression Scale (EPDS). EPDS scale has ten components in it. Each item is rated from 0 to 3, yielding a total score of 0-30. Participants who scored  $\geq 13$  are considered to have postpartum depression.

**Data analysis:** Data entry was done with MS Excel and data analysis was done using SPSS version 15.0.

#### Selection Criteria:

##### Inclusion Criteria

All mothers in the postpartum period (within 6 months following delivery) who were willing to take part in the study were included in the study.

##### Exclusion criteria

Those who were not willing to give consent for participation and mentally ill patients/ those who were on psychiatric treatment.

Criteria for screening PPD: According to the Edinburgh Postnatal Depression Scale (EDPS), study participants who scored  $\geq 13$  are considered to have postpartum depression.

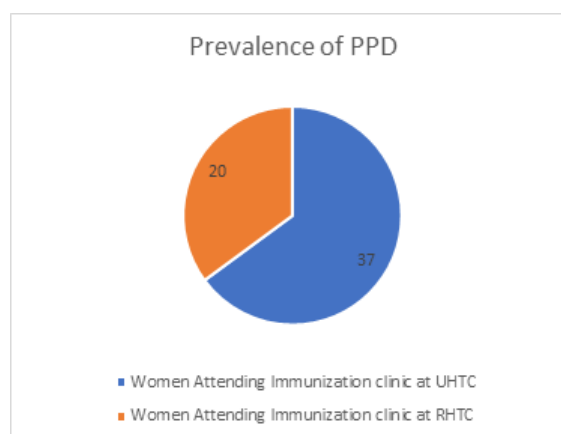
**Ethical approval:** This study was reviewed and approved by the Institutional Ethics Committee of Indira Gandhi Institute of Medical sciences, Patna (Letter No.433/IEC/IGIMS/2022, dated 01/04/2022.)

## RESULTS

A total of 300 mothers were interviewed, out of which majority 213 (71%) were more than 25 years old with the mean age of 28.3 years. Among the participants, 251(83.7%) were Hindus, 163 (54.3%) women were educated up to Intermediate Level or beyond 222(74 %) mothers were unemployed and 166 (55.3%) women belonged to lower socioeconomic class.

The overall prevalence of PPD was estimated to be 19 %, and the median EPDS score was 11 (Q1 = 9; Q3 = 12).

[Table 1] represents the prevalence of PPD among the postnatal mothers attending the 2 different health centers. The proportion of PPD was much higher at UHTC (24.7%) as compared to RHTC (13.3%). Similarly, the mean EPDS score of UHTC ( $12.06 \pm 3.64$ ) was slightly more than RHTC ( $9.97 \pm 3.86$ ) and this difference was not found to be statistically significant.



[Table 2] enlists the various sociodemographic factors which might be associated with PPD. Prevalence of PPD was found to be higher among women belonging to lower socioeconomic status (Grade IV and V) and women living in urban areas, and the difference was found to be statistically

significant ( $p < 0.05$ ). Additionally, women of age > 25 years, hindu religion, higher educational levels, employment, living in joint families were found to have higher chances of developing PPD, however the difference was not significant in both the groups.

[Table 3] presents the association between various obstetric factors and PPD among the women. Birth of low birth weight or preterm baby led to higher chance of developing depression which was found to be statistically significant ( $P < 0.001$ ). Similarly, those women suffering from any medical illness during pregnancy had a higher chance of developing PPD which was also statistically significant ( $P < 0.05$ ). In addition to this, variables such as primipara, having

more than one girl child, unwanted pregnancy, birth of female child, cesarian section and any complications during delivery were also associated with postnatal depression though not statistically significantly.

[Table 4] presents the association between psychosocial factors and PPD among mothers. There was a significant association ( $P < 0.05$ ) between presence of probable postnatal depression and poor relationship with in laws, marital disharmony, substance abuse by husband. However, Family dynamics, Lack of Support from family, substance abuse, recent stressful factor did not have a significant association with PPD.

**Table 1: Prevalence of Postpartum depression among study population (n=300)**

Health Centres	Depressed N %	Non depressed N %	Total
RHTC (N=150)	20 13.3%	130 86.7%	150 100.0%
UHTC (N=150)	37 24.7%	113 75.3%	150 100.0%
Total = 300	57 19%	243 81%	300 100.0%

**Table 2: Association of Socio-demographic factors with PPD.**

Sociodemographic factors	Depressed EPDS >13 No %	Non depressed EPDS < 13 No %	Total No %	P value
Age (years)				
<25	11 12.6%	76 87.4	87 100.0%	.073
>25	46 21.6%	167 78.4	213 100.0%	
Religion				.79
Hindu	48 19.1%	203 80.9%	251 100.0%	
Muslim	9 19.1%	38 80.9%	47 100.0%	
Others	0 0	2	2 100.0%	
Educational Status				.063
High school	10 15.2%	56 84.8%	66 100.0%	
Matriculation	11 15.5%	60 84.5%	71 100.0%	
Intermediate	28 27.5%	74 72.5%	102 100.0%	
Higher	8 13.1%	53 86.9%	61 100.0%	
Occupation				.952
Unemployed	42 18.9%	180 81.1%	222 100.0%	
Employed	15 19.2%	63 80.8%	78 100.0%	
Socio-economic status				.016
Class I	7 23.3%	23 76.7%	30 100.0%	
Class II	7 23.3%	32 82.1%	39 100.0%	
Class III	4 6.2%	61 93.8%	65 100.0%	
Class IV	21 19.8%	85 80.2%	106 100.0%	
Class V	18 30.0%	42 70.0%	60 100.0%	
Area of Residence				.012
Urban	37 24.7%	113 75.3%	150 100.0%	
Rural	20 13.3%	130 86.7%	150 100.0%	

**Table 3: Association between various obstetric factors and postpartum depression**

Obstetric Factors	Depressed No %	Non depressed No %	Total No %	P
Age of marriage				.304
<20	13 15.3%	72 84.7%	85 100.0%	
>20	44 20.5%	171 79.5%	215 100.0%	
Gender of baby(newborn)				.419
Male	28 21.1%	105 78.9%	133 100.0%	
Female	29 17.4%	138 82.6%	167 100.0%	
Parity				.904
Primipara	26 18.7%	113 81.3%	139 100.0%	
multipara	31 19.3%	130 80.7%	161 100.0%	
Mode of delivery				.000
LSCS	40 30.8%	90 69.2%	130 100.0%	
Vaginal	17 10.0%	153 90.0%	170 100.0%	
Preterm/LBW				.000
Yes	40 44.9%	49 55.1%	89 100.0%	
No	17 8.1%	194 91.9%	211 100.0%	
Any complication during pregnancy				.030
Yes	28 25.5%	82 74.5%	110 100.0%	
No	29 15.3%	161 84.7%	190 100.0%	

Any complication during delivery				
Yes	16 25.0%	48 75.0%	64 100.0%	.168
No	41 17.4%	195 82.6%	236 100.0%	

**Table 4: various other factors and postpartum depression (n=300)**

	Depressed No %	Non depressed No %	Total No %	P
Family dynamics				
Nuclear	31 19.9%	125 80.1%		
Joint	26 18.1%	118 81.9%	156 100.0% 144 100.0%	.689
Lack of Support from family				
Yes	31 22.3%	108 77.7%	139 100.0%	.176
NO	26 16.1%	135 83.9%	161 100.0%	
Tobacco use				
Yes	7 46.7%	8 53.3%	15 100.0%	.005
No	50 17.5%	235 82.5%	285 100.0%	
Physical activities				
Yes	48 23.9%	153 76.1%	201 100.0%	.002
no	9 9.1%	90 90.9%	99 100.0%	
Relation with in laws				
Good	23 10.4%	199 89.6%	222 100.0%	.000
Not good	34 43.6%	44 56.4%	78 100.0%	
Relation with husband				
Good	47 16.9%	231 83.1%	278 100.0%	
Not good	10 45.5%	12 54.5%	22 100.0%	.001

## DISCUSSION

The present study was done in a tertiary health care centre in Patna, and it included 300 postpartum women. PPD was screened using the EPDS scale. Our study revealed PPD in 57 (19.0%) of postnatal women. Most of the studies from the India and Western countries revealed the prevalence of PPD in the range of 10%–15%.<sup>[12-14]</sup> The reported prevalence of PPD in rural areas among different studies in India have been found to be in the range of 12% to 31.4%,<sup>[15-17]</sup> whereas the prevalence in urban areas was found to be in the range of 12.75–25.08%.<sup>[18-20]</sup> According to our study, the prevalence in rural and urban areas was 13.3% and 24.7%, respectively, indicating the estimated prevalence which aligns with the range of various studies conducted across the country. The reasons for differences in the PPD prevalence could be ascribed to varied study tool and technique, sociocultural norms and poverty levels. Owing to widespread illiteracy and ignorance among the mothers in the study region, there is a general lack of awareness toward such mental health issues. Stress is supposed to contribute to illness by causing the mind and body to become exhausted, weakening immunity and motivating unhealthy behaviour patterns.

In most of the Indian studies,<sup>[21,22]</sup> the study group mostly constituted of house wives as compared with western studies where a significant number were employed,<sup>[23]</sup> However on the contrary, we found no statistically significant association between employment status and PPD. It is unclear in what way the relationship between maternal unemployment and depression is related. It may reflect low self-esteem of non-working mothers or the substantial role change for women who were previously employed, but who following childbirth have no future employment planned. The association of PPD

with socioeconomic status was evident as the proportion was higher, that is, 35.3% and 20% among Class IV and V, respectively, which was statistically significant. Most other studies have also reported that financial burden was a risk factor for depression and that lower socio-economic status is related with poor mental health.<sup>[24,25]</sup> This is also consistent with several other studies,<sup>[15,18]</sup> indicating higher prevalence of depression among the lower income group compared to other income group. We also observed a significant increasing trend of depression with decreasing socio economic status. Poverty results in financial issues which becomes an add on stress factor, especially when another family member is increased leading to depression.

There was no association between marital age and PPD. The risk of PPD has been found to be greater when the child born is a girl, but it was not statistically significant.

There was no statistically significant relationship between parity and sex preference of baby with the onset of PPD. There was an association of pregnancy complications with regard to PPD. This was similar to the study done by Burger et al. in which they found that women with severe antenatal complications were more likely to develop PPD than are those without.<sup>[24]</sup> 110(36.6%) mothers who had obstetric complications 28(25.45%) developed PPD. The overall high incidence of obstetric complications in this study could have because of high risk pregnancies, pregnancy induced hypertension (PIH) and assisted conceptions. We did not find any association between the complication during delivery with the depressed and the non-depressed mother.

Out of 57 depressed mother 40 mother had a low birth wt or preterm babies having a low birth weight or preterm baby was observed to be a predisposing factor for PPD which is similar to a study<sup>18</sup> where 45% of depressed mothers as against 9.5% of

nondepressed mothers reported their newborn babies to be low birth weight and unwell. However, no mother complained of any psychiatric problems during antenatal period or in the past life. This could be attributed towards the lack of knowledge or some cultural perceptions influencing the reporting of their symptoms.

Psychosocial factors have a direct bearing on the maternal mental health. We observed a significant association of having family pressure to have a male child with PPD. Desire or preference for a male baby, which is deep rooted in the Indian culture causes stressful events during gestational period and a significant association ( $P < 0.05$ ) was revealed between postnatal depression with poor relationship with in laws, marital disharmony however lack of support from family, substance abuse, domestic violence and financial difficulties is not significantly associated with PPD. Similar findings were obtained by Saguna A's study where being "unhappy with in laws" was linked with PPD (OR = 3.4,  $P = 0.03$ ).<sup>[16]</sup> Shriram V et al. study reported marital disharmony (17.5%) and lack of social support from family as associated factors.<sup>[25]</sup> Out of the 78 in the study group who disclosed to be having strained relations with in laws 34 were found to be depressed. A supportive relationship helps to mitigate the stresses while strained relationships can precipitate depression.

## CONCLUSION

Many women experience a serious health problem called postpartum depression (PPD). Unfortunately, a lack of understanding and social stigma often prevents women from getting the help they need, leading to many undiagnosed and untreated cases. PPD has various risk factors with varying degrees of influence. The strongest factors we got from our study include complications in pregnancy or known medical illness of new born and bad family dynamics. Additional contributors include difficult pregnancies, cesarean section, poverty, and stressful events. Early screening and counselling of mother and their family is important to reduce the adverse outcomes of PPD.

**Limitations:** This is a hospital based study and the sample size is relatively small which may restrict the generalizability of the findings. EPDS is a screening tool for PPD and it is not diagnostic. Despite these limitations, this study's strength lies in the fact that only few studies have been done in Bihar on PPD and so there's a significant gap in data, and this study highlights the need for more focused research in this area.

**Follow Up:** Mothers having  $\geq 13$  EPDS score were counselled and offered referral to IGIMS Psychiatry Dept for further evaluation and treatment.

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