

**ASSESSMENT OF POSTPARTUM DEPRESSION IN A TERTIARY CARE INSTITUTE**

ANJU, RAJAT GUPTA\*, PARNEET KAUR

Department of Obstetrics and Gynaecology, Government Medical College, Patiala, Punjab, India.  
Email: rajatgupta0423@gmail.com

Received: 09 November 2022, Revised and Accepted: 01 February 2023

**ABSTRACT**

**Objective:** The study aimed to find the incidence of postpartum depression (PPD) in a tertiary care institute and determine the associated risk factors contributing to PPD.

India is in a state of obstetric transition, where indirect causes of maternal morbidity and mortality are now more common. Depression is one such entity that goes unscreened and untreated, contributing to maternal morbidity.

**Methods:** This was a prospective cross-sectional study conducted in the Department of Obstetrics and Gynecology, Government Medical College and Rajindra Hospital, Patiala, from June 1, 2020 to July 31, 2022. All the patients who were in the postpartum period and gave consent were included in the study. They were subjected to the Edinburgh Postnatal Depression Scale (EPDS) questionnaire, and their responses were recorded. The same patients were subjected to the same EPDS questionnaire at 6 months, and the score was calculated. A score of more than or equal to 12 was considered statistically significant for depression, and patients were referred to a psychiatrist for further evaluation and management.

**Results:** In total, 102 were enrolled in the study. The incidence of PPD in the study participants was 12.75% at the immediate postpartum period and 15.69% at 6 months postpartum. Husband's unemployment ( $p < 0.05$ ), low family income ( $p < 0.05$ ), unplanned pregnancy ( $p < 0.05$ ), development of antenatal complications ( $p < 0.05$ ), lack of regular ANC care ( $p < 0.05$ ), neonatal death ( $p < 0.05$ ), bad relationship with in-laws ( $p < 0.05$ ), and low self-esteem ( $p < 0.05$ ) were the main contributors to the development of PPD in both immediate postpartum period as well as at 6 months postpartum. Only four patients agreed to visit the psychiatrist, the rest refused the evaluation and treatment.

**Conclusion:** In India, despite the National mental health program 1983, maternal mental health is still not a prominent component of the program which needs to be included. Screening tools should be used to identify and treat women.

**Keywords:** Edinburgh postnatal depression scale, Mental health, Pregnancy.

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**INTRODUCTION**

The WHO defines maternal mental health as a state of well-being, in which a mother realizes her ability and can cope with natural stressors in her life, can work proficiently and fruitfully, and is also able to contribute to her family [1]. Pregnancy and puerperium are stressful enough to provoke mental illness, which may be an exacerbation of a preexisting psychiatric disorder or signal the onset of a new disorder. Pregnancy-related dysfunction of the hypothalamic-pituitary-ovarian axis, thyroid dysfunction, alteration in immune response, and changes in sex steroid hormones, and monoamine neurotransmitter levels are all associated with increased risk of mood disorders [2].

Up to 15% of women develop a nonpsychotic postpartum depression (PPD) disorder within 6 weeks of delivery because puerperium is a particularly stressful time. Suicide is the common cause of death in the USA, followed by in the UK and India, during the perinatal period, with depression being its major risk factor. The spectrum of mental illness varies from postpartum blues to PPD and postpartum psychosis.

Association of perinatal depression is seen with young maternal age; unmarried status, smoking/drinking habits, substance abuse, hyperemesis gravidarum, preterm birth, high utilization of sick leave during pregnancy, low- and middle-income groups, absence of caretakers, household work, etc. [3-7].

Peripartum depression can predispose to chronic and recurrent depression, which affects the mother-infant relationship and child's growth and development, as compared to non-depressed mothers [5].

Despite the launch of India's National Maternal Health program in 1982, maternal mental health is still not a prominent component of the program [5].

There is no screening tool for use in clinical practice, and no data are routinely collected on perinatal women with PPD.

India is in a phase of obstetric transition, where maternal death from direct causes are decreasing and from indirect causes are increasing, and the focus is now on the care of maternal morbidity. There have been very few studies on peripartum depression, so the study was conceived to know the prevalence, the various risk factors that may lead to psychiatric disorders, and how they can be prevented.

**Aim**

- To determine the incidence of peripartum depression
- To determine the risk factors for the development of peripartum depression.

**METHODS**

It was a prospective cross-sectional study conducted in the Department of Obstetrics and Gynecology, Government Medical College and Rajindra Hospital, Patiala, from June 1 2020, to July 31 2022. All the patients who were in the postpartum period and gave consent were included in the study. They were subjected to the Edinburgh Postnatal Depression Scale (EPDS) questionnaire, and their responses were recorded. The same patients were subjected to the same EPDS questionnaire at 6 months and the score was calculated. A score of more than or equal to 12 was

Table 1: Demographic factors

Demographic factors	Number of patients (out of 102), n (%)
Age (years)	
<20	4 (3.92)
20-30	86 (84.31)
>30	12 (11.76)
Residence	
Rural	71 (69.61)
Urban	31 (30.39)
Patient's education	
Illiterate	13 (12.75)
<10 <sup>th</sup>	23 (22.55)
10 <sup>th</sup> -12 <sup>th</sup>	48 (47.06)
Graduate	18 (17.65)
Patient's husband's education	
Illiterate	15 (14.71)
<10 <sup>th</sup>	19 (18.63)
10 <sup>th</sup> -12 <sup>th</sup>	55 (53.92)
Graduate	13 (12.75)
Employment	
Unemployed	90 (88.24)
Employed	12 (11.76)

Table 2: Obstetric factors

Obstetric factors	Number of patients (out of 102), n (%)
Age at marriage (years)	
<20	40 (39.22)
20-30	61 (59.80)
>30	1 (0.98)
Planned pregnancy	
Yes	50 (49.02)
No	52 (50.98)
Parity	
Primi	41 (40.20)
G2	32 (31.37)
>G2	29 (28.43)
Gestation at delivery (weeks)	
<37	38 (37.25)
≥37	64 (62.75)
Regular ANC care	
Yes	97 (95.10)
No	5 (4.90)
Antenatal complications	
Yes	39 (38.24)
No	63 (61.76)
Mode of delivery	
NVD	59 (57.84)
C-section	43 (42.16)

ANC: Antenatal care, NVD: Normal vaginal delivery

Table 3: Neonatal factors

Neonatal factors	Number of patients (out of 102), n (%)
Baby's gender	
Boy	59 (57.84)
Girl	41 (40.20)
Twins	2 (1.96)
Baby's birth weight (g)	
<2500	57 (55.88)
>2500	45 (44.12)
Status of baby at birth	
Live	100 (98.04)
NND	2 (1.96)
ID	0
Breastfeeding	
Yes	86 (84.31)
No	16 (15.69)

NND: Neonatal Death, IUD: Intrauterine Death

considered significant for depression, and patients were referred to the psychiatrist for further evaluation and management.

Table 4: Psychosocial factors

Psychosocial factors	Number of patients (out of 102), n (%)
Caretaker at home	
Yes	101 (99.02)
No	1 (0.98)
Gender preference	
Yes	20 (19.61)
No	82 (80.39)
Type of marriage	
Arranged	96 (94.12)
Love	6 (5.88)
Relationship with husband	
Good	97 (95.10)
Not good	5 (4.90)
Relationship with parents	
Good	97 (95.10)
Not good	5 (4.90)
Relationship with in-laws	
Good	94 (92.15)
Not good	8 (7.84)
Sleep disturbance	
Yes	25 (24.51)
No	77 (75.49)
Self esteem	
Good	96 (94.12)
Low	6 (5.88)

Table 5: Edinburgh Postnatal Depression Scale scores

EPDS score	Number of patients (out of 102), n (%)
Baseline	
<12	89 (87.25)
≥12	13 (12.75)
No response	0
At 6 months	
<12	86 (84.31)
≥12	16 (15.69)
No response	0

EPDS is a 10-item self-rating scale designed to determine depression among women in the postpartum period. Total score = 30. A score equal to or more than 12 suggests depression [1] EPDS was administered during postpartum immediately till the patient stayed with us and followed up at 6 months. Because of COVID-19, consent for telephonic interviews was taken, and the questionnaire was administered, recorded, and analyzed.

Sociodemographic determinants, obstetric history, family history, neonatal outcome, and psychiatric illness were measured as per the questionnaire and analyzed statistically.

## RESULTS

The incidence of PPD in our studies was 12.75% in the immediate postpartum period and 15.69% at 6 months postpartum Table 5. There were 84.31% of women in the age group of 20-30 years, followed by more than 30 years (11.76%) and 3.92% in women of <20 years Table 1. Women in the age group <20 had a higher incidence of PPD (At immediate postpartum - 25% and at 6 months - 16.7%), as shown in (Table 6a), but the difference was not statistically significant.

69.6 1% of the population was from rural areas and 30.39% from urban areas. There was no significant effect of residence on EPDS score in our study (Table 6b).

47.06% of women were educated up to matric. 12.75% of participants' husbands were graduates. The education status of the study participants did not have any significant influence on the EPDS score (Table 6c).

Table 6: Demographic factors with Edinburgh Postnatal Depression Scale

<b>a. Age with EPDS score</b>					
Age group (years)	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
<20	4	3 (75)	1 (25)	3 (75)	1 (25)
20-30	86	76 (88.4)	10 (11.6)	73 (84.9)	13 (15.1)
>30	12	10 (83.3)	2 (16.7)	10 (83.3)	2 (16.7)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		42.238		56.692	
p		0.157		0.002	
<b>b. Residence with EPDS score</b>					
Residence	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Rural	71	58 (81.7)	13 (18.3)	55 (77.5)	16 (22.5)
Urban	31	31 (100)	0	31 (100)	0
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		25.305		14.132	
p		0.088		0.516	
<b>c. Education with EPDS score</b>					
Education	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Wife					
Illiterate	13	10 (76.9)	3 (23.1)	10 (76.9)	3 (23.1)
<10 <sup>th</sup>	23	19 (82.6)	4 (17.4)	17 (73.9)	6 (26.1)
10 <sup>th</sup> -12 <sup>th</sup>	48	43 (89.6)	5 (10.4)	43 (89.6)	5 (10.4)
Graduate	18	17 (94.4)	1 (5.6)	16 (88.9)	2 (11.1)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		6.475		5.683	
p		0.149		0.153	
Husband					
Illiterate	15	11 (73.3)	4 (26.7)	12 (80)	3 (20)
<10 <sup>th</sup>	19	15 (78.9)	4 (21.1)	12 (63.2)	7 (36.8)
10 <sup>th</sup> -12 <sup>th</sup>	55	51 (92.7)	4 (7.3)	50 (90.9)	5 (9.1)
Graduate	13	12 (92.3)	1 (7.7)	12 (92.3)	1 (7.7)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		6.832		5.973	
p		0.092		0.194	
<b>d. Employment with EPDS score</b>					
Education	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Wife					
Unemployed	90	80 (88.9)	10 (11.1)	76 (84.4)	14 (15.6)
Employed	12	9 (75)	3 (25)	10 (83.3)	2 (16.7)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		15.541		19.777	
p		0.557		0.181	
Husband					
Unemployed	2	1 (50)	1 (50)	2 (100)	0
Employed	100	88 (88)	12 (12)	84 (84)	16 (16)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		32.640		41.310	
p		0.013		0.001	
<b>e. Family income with EPDS score</b>					
Family income	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
High	3	3 (100)	0	3 (100)	0
Middle	35	33 (94.3)	2 (5.7)	32 (91.4)	3 (8.6)

(Contd...)

Table 6: (Continued)

e. Family income with EPDS score					
Family income	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Middle	35	33 (94.3)	2 (5.7)	32 (91.4)	3 (8.6)
Low	64	53 (82.8)	11 (17.2)	51 (79.7)	13 (20.3)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		60.936		33.042	
p		0.003		0.021	

EPDS: Edinburgh Postnatal Depression Scale

Table 7: Obstetric factors with Edinburgh postnatal depression scale

a. Planned pregnancy with EPDS score					
Planned pregnancy	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
No	50	40 (80)	10 (20)	37 (74)	13 (26)
Yes	52	49 (94.2)	3 (5.8)	49 (94.2)	3 (5.8)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		24.754		26.402	
p		0.100		0.034	

b. Gestation at delivery with EPDS score					
Gestation at delivery (weeks)	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
<37	38	31 (81.6)	7 (18.4)	30 (78.9)	8 (21.1)
≥37	64	58 (90.6)	6 (9.4)	56 (87.5)	8 (12.5)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		20.748		21.825	
p		0.238		0.112	

c. Regular antenatal care with EPDS score					
Regular ANC care	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Yes	97	85 (87.6)	12 (12.4)	83 (85.6)	14 (14.4)
No	5	4 (80)	1 (20)	3 (60)	2 (40)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		56.952		48.116	
p		0.001		0.001	

d. Antenatal complication with EPDS score					
Antenatal complication	n	EPDS Score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Yes	39	28 (71.8)	11 (28.2)	28 (71.8)	11 (28.2)
No	63	61 (96.8)	2 (3.2)	58 (92.1)	5 (7.9)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		34.367	25.613		
p		0.008	0.042		

e. Mode of delivery with EPDS score					
Mode of delivery	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
NVD	59	50 (84.7)	9 (15.3)	50 (84.7)	9 (15.3)
C-section	43	39 (90.7)	4 (9.3)	36 (83.7)	7 (16.3)

(Contd...)

Table 7: (Continued)

e. Mode of delivery with EPDS score					
Mode of delivery	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		10.379		15.574	
p		0.887		0.411	

EPDS: Edinburgh Postnatal Depression Scale, ANC: Antenatal care, NVD: Normal vaginal delivery

Table 8: Neonatal factors with Edinburgh Postnatal Depression Scale

a. Baby's gender with EPDS score					
Baby's gender	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Boy	59	51 (86.4)	8 (13.6)	48 (81.4)	11 (18.6)
Girl	41	36 (87.8)	5 (12.7)	36 (87.8)	5 (12.5)
Boy+girl (twin)	2	2 (100)	0	2 (100)	0
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		40.492		22.006	
p		0.206		0.854	

  

b. Baby's birth weight with EPDS score					
Baby's birth weight (g)	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
<2500	57	45 (78.9)	12 (21.1)	42 (73.7)	15 (26.3)
≥2500	45	44 (97.8)	1 (2.2)	44 (97.8)	1 (2.2)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		21.869		23.675	
p		0.190		0.071	

  

c. Status of baby at birth with EPDS score					
Child live/NND	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Live	100	87 (87)	13 (13)	85 (85)	15 (15)
NND	2	2 (100)	0	1 (50)	1 (50)
ID	0	0	0	0	0
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		20.502		26.232	
P		0.249		0.036	

  

d. Breastfeeding with EPDS score					
Breastfeeding	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Yes	86	76 (88.4)	10 (11.6)	74 (86)	12 (14)
No	16	13 (81.3)	3 (18.8)	12 (75)	4 (25)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		21.023		19.520	
p		0.225		0.191	

EPDS: Edinburgh Postnatal Depression Scale, NND: Neonatal Death, IUD: Intrauterine Death

About 88.2% of women were unemployed, while their husbands (98.4%) were employed. EPDS score was more in women whose husbands were unemployed, as shown in Table 6d. This can be explained by the fact that unemployed men could not bear the expenses associated with the birth of the baby, leading to higher mental stress and anxiety.

Low family income participants (64/102) had higher PPD (17.2% at immediate postpartum and 20.3% at 6 months) which was found statistically significant (Table 6e).

The pregnancy was not planned for 50.98% of couples and a higher EPDS score was found (20% to 26%) in this group which was statistically

Table 9: Psychosocial factors with Edinburgh Postnatal Depression Scale

a. Gender preference with EPDS score					
Gender preference	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
Yes	20	16 (80)	4 (20)	13 (65)	7 (35)
No	82	73 (89)	9 (11)	73 (89)	9 (11)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		18.516		20.365	
p		0.357		0.158	
b. Relationship of patient with husband/parents/parents-in-law with EPDS score					
Relationship	n	EPDS score			
		Baseline/immediate, n (%)		At 6 months, n (%)	
		<12	≥12	<12	≥12
With husband					
Good	97	85 (87.6)	12 (12.4)	82 (84.5)	15 (15.5)
Not good	5	4 (80)	1 (20)	4 (80)	1 (20)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		19.233		14.562	
p		0.315		0.483	
With parents					
Good	97	85 (87.6)	12 (12.4)	82 (84.5)	15 (15.5)
Not good	5	4 (80)	1 (20)	4 (80)	1 (20)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		19.233		14.562	
p		0.315		0.483	
With in-laws					
Good	94	84 (89.4)	10 (10.6)	80 (85.1)	14 (14.9)
Not good	8	5 (62.5)	3 (37.5)	6 (75)	2 (25)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		30.173		31.772	
p		0.025		0.007	
c. Sleep disturbance with EPDS score					
Sleep disturbance	n	EPDS score			
		Baseline/immediate, n (%)		Baseline/immediate, n (%)	
		<12	<12	<12	<12
Yes	25	22 (88)	3 (12)	21 (84)	4 (16)
No	77	67 (87)	10 (13)	65 (84.4)	12 (15.6)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		15.968		15.710	
p		0.526		0.402	
d. Self-esteem with EPDS score					
Self-esteem	n	EPDS score			
		Baseline/immediate, n (%)		Baseline/immediate, n (%)	
		<12	<12	<12	<12
Good	96	87 (90.6)	9 (9.4)	85 (88.5)	11 (11.5)
Low	6	2 (33.3)	4 (66.7)	1 (16.7)	5 (83.3)
Total	102	89 (87.3)	13 (12.7)	86 (84.3)	16 (15.7)
$\chi^2$		44.049		40.286	
p		0.001		0.001	

EPDS: Edinburgh Postnatal Depression Scale

significant. The practicality of having a new member unplanned does affect day-to-day life and mental health (Table 7a).

Gestational age at the time of delivery was < 37 weeks in 37.25% and more than 37 weeks in 62.75% of cases. Prematurity is a risk factor for the development of PPD. EPDS score was higher in patients with preterm birth (18.4% in immediate postpartum and at 6 months postpartum) (Table 7b).

95% of the patients had regular antenatal care (Table 2) and in EPDS score was higher in those who did not have access to Antenatal care (Table 7c).

In 38.24% of cases, there were antenatal complications in the form of preterm labor, pre-eclampsia, eclampsia, and fetal growth restriction. EPDS score was more than 12 in 28% of patients and was statistically significant, as in Table 7d.

**Table 10: Comparison of incidence of postpartum depression in various studies**

Studies	Incidence (%)
Chandran <i>et al.</i> [3]	11
Goyal <i>et al.</i> [4]	52
Upadhyay <i>et al.</i> [5]	22
Saldhana <i>et al.</i> [6]	21.5
Patel <i>et al.</i> [7]	48.5
Zaidi <i>et al.</i> [8]	12.75
Robertson <i>et al.</i> [9]	10-15
Agarwala <i>et al.</i> [10]	21.5
Present study	12-15.7

57.84% delivered vaginally and 42.16% had a cesarean done (Table 2). The mode of delivery did not have a statistically significant effect on the EPDS score (Table 7e).

99.02% reportedly claimed to have a caretaker at home in the form of a sister-in-law, mother-in-law, mother, or sister (Table 4).

57.8% give birth to a male baby and 40% give birth to a female. There was no significant effect of gender on EPDS score (Table 8a).

About 55.8% of babies had a birth weight of < 2500 g (Table 3). Mothers with babies' birth weights <2500 g had an increased risk of having PPD (Table 8b), which was statistically significant.

98% of babies were live born with 1.96% stillbirths. Although there were only two stillbirths, and of these, EPDS scores of more than 12 were seen in one patient (50%), making it a significant factor (Table 8c).

84.3% of babies were breastfed as compared to 15.69 % who were not breastfed. No relation was found with EPDS score in either group in our study (Table 8d).

19.6% preferred to have a son, while 80.3% did not have any gender preference (Table 4). EPDS score was more than 20% at immediate postpartum and 35% at 6 months postpartum in couples with gender preferences though not statistically significant (Table 9a).

It was an arranged marriage for 94.2% of couples, and 95.1% reportedly had a good relationship with their husbands and parents (Table 4). There was sleep disturbance reported by 24.5% of the patients, and a high EPDS score was noticed, although not statistically significant (Table 9c).

Participants with low self-esteem had higher EPDS scores than those with good self-esteem, and the difference was statistically significant (Table 9d).

## DISCUSSION

Pregnancy and puerperium are stressful enough to provoke mental illness. Postpartum depression major or minor develops in 10% to 20% of parturients, as was seen in our study (12.7% to 15.7%) and corresponding with other studies as well [2-5,8] Deepika Goyal in a study combined major and minor depressive illnesses to 50% and others too Table 10 [7,9].

Extremes of age, < 20 years and more than 30 are risk factors for the development of postpartum depression, as seen in our study and other studies as well [4,6,7]. A higher incidence was seen in women who were employed as there was a burden on them of bringing up a child as well as the responsibilities of the job to fulfill [5,6]. The educational status of parents in our study did not have any influence on the development of post part of depression, as seen in the study by Saldhana *et al.* [6].

The low-family income group had an increased incidence of PPD in our study. Most other studies also reported the same factor for depression [5-7]. The increasing cost of living and expenditure with the arrival of the new member of the family made holes in the pocket. Planning a pregnancy is an uncommon practice in India. Unplanned childbirth is a risk factor for PPD in our study which further increased at 6 months from 20% to 26% [10]. The happiness of having a baby, male or female, is more in the immediate period than the later period 6 months or more, when more social economic problems are encountered in day-to-day life [8]. However, Saldhana *et al.* showed no association between PPD and unplanned pregnancy.

Gestational age at delivery, especially <37 weeks, showed a higher incidence of PPD. Irregular antenatal care received and antenatal complications such as preeclampsia, prematurity, fetal growth restriction, and abruptio placentae do affect the mental health of postpartum patients (28.2% in both immediate and 6 months postpartum). This was supported by other studies as well [9,11,12].

Vaginal or cesarean delivery did not have a significant effect on the mental health of our patients in our study, but a study by Shri Ram *et al.* showed an increased prevalence of depression in patients with vaginal delivery [14].

Strong preference for a son has been reported in most of the studies as a cause of depression, but in our studies, no effect of gender was seen on EPDS score [7,9-12]. Neonatal death is another significant risk factor for the development of PPD, as seen in our study and other studies as well [5,11].

Breastfeeding does not affect PPD as in our study rather, it ameliorates the effect of emotional disturbance [6,13]. Postpartum depression develops in patients who do not have good relations with their husbands, parents, and parents-in-law as they may not be getting any physical, mental, or emotional support in bringing up the baby [1,5-7,9,11,12].

Sleep disturbance is another contributing factor in the development of PPD, as disturbance of night sleep does produce a state of anxiety and restlessness.

## CONCLUSION

- Pregnancy and childbirth, and the post-pregnancy period are the normal stresses of life that a woman has to undergo and transform both physically and mentally
- It is important to recognize the spectrum of maternal mood, signs, and symptoms of depression anxiety, and psychosis and manage accordingly
- As it is important in routine to assess the high-risk factors during pregnancy, high-risk factors for psychological illness should also be routinely screened [1]
- Identify those cases postpartum to prevent and treat PPD and its complications
- In India, not many women come out with the symptoms as they are shy and not vocal about their problems, so the paramedics should be made aware of the existing problem, and screening for PPD be made a regular part of postnatal care.

## AUTHOR CONTRIBUTIONS

All the authors have contributed equally toward the working of this manuscript.

## CONFLICT OF INTEREST STATEMENT

The authors whose names are listed immediately below certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial

interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

#### FUNDING

No funding was done by any institution or private party in the conduction of this paper.

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