



## Evaluation of Mood Changes Among Peripartum Women at PK DAS Institute of Medical Science, Vaniyamkulam, Palakkad: A Prospective, Observational, Longitudinal Study

Manjunath G N<sup>1\*</sup>, Haritha C<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Obstetrics & Gynaecology, PK DAS Institute of Medical Science, Vaniyamkulam, Kerala, India.

Email: drmanjunath77@gmail.com

Orcid ID: 0000-0002-5028-9565

<sup>2</sup>Assistant Professor, PK DAS Institute of Medical Science, Vaniyamkulam, Kerala, India. Email: haritha930@gmail.com

Orcid ID: 0000-0003-2199-2427

\*Corresponding author

### Abstract

**Background:** The perinatal period is well established as an increased risk for development of serious mood disorders. Maternal mental health in developing countries gets less than its due attention. The present study was undertaken to evaluate mood changes in Peripartum period in our population and to identify demographic, obstetric, social and psychosocial risk factors associated with Peripartum depression using established scales. **Material & Methods:** A prospective, observational, longitudinal study conducted in PK das institute of medical science, vaniyamkulam, with 387 perinatal women for 12 months (February 2018– January 2019). Various scales EPDS (Edinburgh Postnatal Depression Scale), CMSS (Couple Marital Satisfaction Scale, IMS (Index of Marital Satisfaction), LES (Life Event Scale) were studied in Peripartum Period. **Results:** Among a total of 387 participants about half 189 (48.8%) were in 19-25 years of Age. Almost 30% and 40% had dissatisfied married life as per the CMS and IMS scales respectively. Just above 42% were screen positive for depression antenatally with EPDS & 39% (n = 151) in the immediate postpartum period. From these 151 screen positive cases in immediate postpartum period, 138 participants were followed up at 4-6 weeks (13 were lost to follow up) and up to 115 of 138 (83.3%) were screen positive for depression (N= 387, 29.7%), which was statistically significant (p<0.001). With EPDS during antenatal period there was no statistically significant relationship of depression with Education (p = 0.195), Occupation (p = 0.651) and pregnancy planned or unplanned (p = 0.223), whereas, Joint family, participants with dissatisfied marital relationship had increased risk of depression as evidenced by IMS and CMSS (p < 0.001). Participants with a previous male gender baby had less risk of developing depression (p< 0.001) & participants with previous 2 female children had increased risk of depression (p< 0.001). **Conclusions:** This study highlights importance of screening for maternal mental health problems during Peripartum period. Depression in immediate postpartum period is good predictor for increased risk of depression at 4-6 weeks postpartum.

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## INTRODUCTION

The postnatal period is well established as an increased risk for development of Serious mood disorders.<sup>[1,2,3,4]</sup> There are three common forms of postpartum affective illness.<sup>[5,6]</sup> The blues (baby blues, maternity blues), postpartum (or postnatal) depression and puerperal (postpartum or postnatal) psychosis each of which differs in its prevalence, clinical presentation, and management.<sup>[7,8,9]</sup> Many women experience overwhelming emotions such as joy, excitement, happiness, anticipation, fulfilment, at one end of the spectrum as well as anxiety, frustration, confusion, or sadness/guilt at the other end of the spectrum during pregnancy and especially in the postpartum period. the Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th edition (DSM-5) now classify major depressive episodes “with Peripartum onset,”

Encompassing cases with symptom onset during pregnancy or in the 4 weeks following delivery.<sup>[10]</sup> An estimated one in seven women experiences Peripartum depression. in pregnancy, reproductive hormone levels in a woman's body are 20-30 times greater than normal. At delivery, hormone levels drop abruptly, along with changes in amino acids, neurotransmitters, and thyroid hormones, the sudden drop in oestrogen, progesterone, endorphins, and other hormones may trigger depression pregnancy and especially in the postpartum period.<sup>[3]</sup>

### Objectives

The study was conducted with the following objectives

- To identify risk factors associated with postnatal depression, if any and associated with other mood changes.
- To assess Prevalence and risk factors for the psychological Morbidities using Edinburgh postnatal depression scale (EPDS), Depression, Anxiety and Stress scale (DASS) and other questionnaire in perinatal women.

## MATERIAL AND METHODS

**Study site:** The present study was carried out in, PK das institute of medical sciences, a referral care teaching hospital. After the approval by the ethical research committee, a systematic method of sampling was used. Term Pregnant women meeting eligible criteria were consecutively selected.

**Period of study:** 12 months (February 2018 – January 2019)

**Sample size:** 387.

### Methodology of the study

Preparation of scales to the Malayalam speaking population.

Various rating scales like Edinburgh Postnatal Depression Scale (EPDS),

Depression Anxiety Stress Scale (DASS-21), Life Event Scale (LES), Couple Marital Satisfaction self-report Scale (CMSS) and Index of Marital Satisfaction (IMS) scale were translated to Malayalam with input from staff nurses, collated, and verified with Google translator. However several times, Google Translator was not conveying the precise meaning and intention of the questions. Precise

idiomatic equivalents in the local vernacular were considered as far as possible.

### Statistical Method

The data was collected and entered into MS excel; coding, refining and cleaning of the data was done. Results were explained in terms of descriptive and inferential statistics. Descriptive statistics explained by frequencies, mean, SD, and range of numeric variables and by proportions and percentage for categorical variables, the scores obtained during the antenatal and postnatal period grouped and described using mean score with SD, proportions, percentages. Chi-squared test of independence was used to test the association between the dependant variable postnatal depressive symptoms and each of the socio demographic, maternal, infant, social support and psychiatric health conditions.

### RESULTS

[Table 1] and adjacent [table 2] show that Maximum of the study participants was Educated up to high school (43.9%).

[Table 3] show that Most of the study participants were homemakers (87.9%).

[Table 5] shows that 241 (62.3%) had Spontaneous Vaginal deliveries (SVD) While LSCS was required in 36.4%.

[Table 6] shows Distribution of study participants based on gender of babies born in this study population. Out of 387 babies, Majority 205 (52.9%) were male babies while 182 (47.1%) were female babies.

[Table 7] shows the distribution of study population based on maritalDissatisfaction

assessed in the Antenatal period. According to CMSS 112 (28.9%) were not satisfied with their marital life, Whereas 154 (39.8%) patients were not satisfied according to IMS scale.

[Table 8] shows that before delivery using Edinburgh postnatal depression scale with cut off >09 for screen positive depression, 166 (42.9%) pregnant women were having screen positive for depression. Whereas 221 (57.1%) were normal. After delivery prevalence of depression decreased to 151 (39%), and 236 (61%) were normal.

[Table 9] shows Distribution of study population based on Depression before and after Delivery as Evaluated by DASS scale, Prior to delivery 35.4% of the study participant did not have any form of depression. However, this proportion decreased to 32.2% after delivery using the same scale. 11 (2.8%) patients were severely depressed before delivery which increased to 23 (5.9%). Also, this difference between before and after delivery in proportion of participants with depression was found to be statistically significant ( $p < 0.001$ ).

[Table 10] shows that on evaluation by DASS scale prior to delivery 22.7% of the study participant did not have any form of anxiety. However this proportion decreased to 16.0% after delivery using the same scale. However, this difference in proportion of participants with anxiety was not found to be statistically significant ( $p$  value = 0.122).

[Table 11] shows that on evaluation by DASS scale prior to delivery 234 (60.5%) of the study participant did not have any form of stress. However this proportion. Decreased to 56.1% after delivery using the same scale. Around 134



(34.6%) patients had mild to moderate stress. However, this difference in proportion of participants with stress was not found to be statistically significant (p value = 0.100).

[Table 12] shows that on evaluation by EPDS scale prior to delivery 40.6% of the study participant did not have any form of depression. However this proportion decreased to 16.7% four to six weeks after delivery using the same scale. Also, this difference in proportion of participants with depression was found to be statistically significant (p value <0.001).

Data derived from table 11 after combining normal, mild and moderate Stress scores to be not having clinical Stress and severe and very severe Stress scores to be designated as having Stress) [Table 13] shows Depression, Anxiety & Stress as measured using DAS scale before delivery out of 387 patients 77 (19.9%) patients had Severe Depression out of which 72 patients also had Severe Anxiety and 5 patients had severe stress and only 2 patients had Depression alone. 156 (40.3%) had Anxiety out of which 72 patients also had Depression and 2 patients had severe stress and 84 (21.7%) patients had Anxiety alone.

Same shows that depression, anxiety & stress immediately after delivery, Out of 387, 81 (20.9%) patients had severe depression and 4 patients had depression only, 77 of them had Anxiety also and 2 had severe stress. Whereas 173 (44.7%) patients had Anxiety out of which 77 of them had depression also, 5 of them had severe stress and only 93 (24.03%) patients had Anxiety alone. As comparable to before delivery only 5 patients had severe stress in immediate postpartum also.

[Table 14] shows the Prevalence and Incidence of antenatal and postnatal Depression, Anxiety and Stress using DAS scale, Out of 387 study population 77 (19.9%) were having Antenatal depression which increased to 81 (20.9%) in immediate postpartum period, while incidence of Depression was 25 (6.45%). Anxiety was found in 156 (40.3%) in antenatal period and 173 (44.7%) in postpartum period, with incidence of Anxiety being 88 (22.7%). Interestingly, Severe to very severe Stress was found in very few 5 (1.3%) of the study population in antenatal period and postnatal period 5 (1.3%) also.

[Table 15] shows the association of risk factors with depression using EPDS before delivery, Joint family type had increased risk of depression (p= 0.001), patients with dissatisfied marital relationship had increased risk of depression as evidenced by IMS and CMSS (p <0.001), patients with Previous baby male gender had less risk of developing depression (p <0.001) and Patients with previous 2 female babies had increased risk of depression (p <0.001) whereas there was no difference with previous one female child. Patient with Life event scale showing 80% illness due to stress had significant risk of depression (p <0.001). Patient with Education, planned or un planned Pregnancy and occupation of the patient did not have any association.

[Table 16] shows that Marital Dissatisfaction as measured by IMS scale was associated with depression in immediate postpartum period (p=0.013) whereas, those with CMSS was not statistically significant (p=0.071). Gender of the present child being male was associated with less risk of depression (p=0.013) However,





there was no association between depression during immediate postpartum mode of delivery and education of patient, planned / un planned pregnancy, type of family, life event related stress, occupation, spontaneous / induced labour ,maternal sense of control during labour and mode of delivery.

[Table 17] shows relation between depression (EPDS) and certain selected risk factors. Marital dissatisfaction as measured by IMS and CMSS was significantly associated with immediate postnatal depression ( $p=0.001$ ). Those with present baby being male ( $p<0.001$ ) and previous baby being male ( $p=0.034$ ) had statistically significant less risk of developing depression ( $p<0.001$ ). Whereas,

sex of present baby being female, there was no difference

Noted. Most 121(65.8%) patients with life event scale showing only 30% illness did not have depression compared to 63 (34.2%) who had depression which was statistically significant. There were no statistically significant association noted between educations of patient, pregnancy planned / Unplanned, occupation, type of family. Maternal sense of control during labour as measured by LAS, spontaneous / induced labour and mode of delivery also did not show any statistically significant association with immediate post natal depression.

**Table 1:** Distribution of study participants based on Age (n=387).

Age (in years)	Frequency	Percent (%)
19-25	189	48.8
26-30	158	40.8
31-38	40	10.3
Total	387	100.0

**Table 2:** Distribution of study participants based on Educational status (n=387)

Educational Status	Frequency	Percent
Up to High School	170	43.9
Higher Secondary	148	38.2
Graduate	59	15.2
Postgraduate	10	2.6
Total	387	100.0

**Table 3:** Distribution of study participants based on occupation (n=387)

Occupation	Frequency	Percent
Unskilled	1	0.3
Semiskilled	32	8.3
Professional	14	3.6
Home Maker	340	87.9
Total	387	100.0

**Table 4:** Distribution of study participants based on type of family (n=387)

Type of family	Frequency	Percent
Nuclear	293	75.7
Joint	94	24.3

**Table 5:** Distribution of study participants based on mode of delivery (n=387)

Mode of delivery	Frequency	Percent
SVD	241	62.3
Assisted/ Instrumental	5	1.3
LSCS	141	36.4
Total	387	100.0

**Table 6:** Distribution of study participants based on Gender of baby (n=387)

Gender of baby	Frequency	Percent
Male	205	53.0
Female	182	47.0
Total	387	100.0

**Table 7:** Distribution of study participants based on presence of marital dissatisfaction evaluated by CMSS and IMS scale (n=387)

Marital Dissatisfaction	CMSS (Couple Marital Satisfaction Scale)	
	Frequency(n)	Percent (%)
Present	112	28.9
Absent	275	71.1
IMS (Index of Marital Satisfaction) scale		
Present	154	39.8
Absent	233	60.2

**Table 8:** Comparison of Edinburgh Postnatal Depression Scale (EPDS) scores before and Immediately after delivery.

	Before delivery n =387	After delivery n=387
Cut off score >9	Frequency (%)	Frequency (%)
Possible depression	166(42.9%)	151(39.0%)
Normal	221(57.1%)	236(61.0%)
Total	387(100%)	387(100%)



**Table 9:** Depression before & after Delivery: Evaluated by DASS scale (n=387)

Depression Before delivery		Depression after delivery				
	Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	V severe n (%)	Total n (%)
Normal	56(14.5)	26(6.7)	40(10.3)	10(2.6)	5(1.3)	137(35.4)
Mild	25(6.5)	12(3.1)	10(2.6)	4(1.0)	5(1.3)	56(14.5)
Moderate	26(6.7)	14(3.6)	45(11.6)	26(6.7)	6(1.6)	117(30.2)
Severe	15(3.9)	9(2.3)	19(4.9)	16(4.1)	7(1.8)	66(17.1)
V. Severe	3(0.8)	1 (0.3)	5 (1.3)	2(0.5)	0(0)	11(2.8)
Total	125(32.3)	62(16.0)	119(30.7)	58(15.0)	23 (5.9)	387(100)

**Table 10:** Anxiety before & after delivery: Evaluated by DASS scale (n =387)

Anxiety Before delivery	Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	V.severe n (%)	Total N (%)
Mild	18 (4.7)	18 (4.7)	21 (5.4)	14 (3.6)	21 (5.4)	92 (23.8)
Moderate	6 (1.6)	15 (3.9)	7 (1.8)	12 (3.1)	11 (2.8)	51 (13.2)
Severe	5 (1.3)	10 (2.6)	9 (2.3)	13 (3.4)	14 (3.6)	51 (13.2)
V Severe	8 (2.1)	22 (5.7)	14 (3.6)	15 (3.9)	46 (11.9)	105 (27.1)
Total	62 (16.0)	83 (21.4)	69 (17.8)	71(18.3)	102(26.4)	387(100)

\*McNemar Test was applied P value = 0.122

**Table 11:** Stress before & after delivery: Evaluated by DASS scale (n = 387)

Stress before Delivery	Stress after delivery					Total
	Normal	Mild	Moderate	Severe	V Severe	
Normal	154 (39.8)	32 (8.3)	44 (11.4)	4 (1.0)	0 (0.0)	234 (60.5)
Mild	18 (4.7)	9 (2.3)	13 (3.4)	6 (1.6)	0 (0.0)	46 (11.9)
Moderate	35 (9.0)	10 (2.6)	32 (8.3)	10 (2.6)	1 (0.3)	88 (22.7)
Severe	9 (2.3)	1 (0.3)	7 (1.8)	1 (0.3)	0(0.0)	18 (4.7)
V Severe	1 (0.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
Total	217 (56.1)	52 (13.4)	96 (24.8)	21 (5.4)	1 (0.3)	387 (100)

\*McNemar Test was applied P value = 0.100

**Table 12:** Presence of depression immediately after delivery and 4-6 weeks after delivery evaluated by EPDS scale (n = 138).

Depression Immediately After deliver	Depression 4-6 weeks after delivery			p value
	Normal n (%)	Possible n (%)	Total n (%)	
Normal	8 (5.8)	48 (34.8)	56 (40.6)	<0.001 *McNemar Test was applied
Possible	15 (10.9)	67 (48.6)	82 (59.4)	
Total	23 (16.7)	115 (83.3)	138 (100)	

**Table 13:** Presence of Depression before and after delivery using Depression Stress Anxiety Scale (DASS). (Derived from table 12)

Depression Stress Anxiety Scale (DASS)			Depression after delivery		total	chi-square test
Depression Before delivery	NO	Count (%)	No 254 (65.6%)	Yes 56(14.5%)	310(80.1%)	Mc Nemar test For no=387
	YES	Count (%)	52,13.4%	25,6.5%	77,19.9%	Exact sig. 2-sided,p value773
Total		Count (%)	306 (79.1 %)	81 (20.9% )	387 (100%)	Binomial Distribution used

**Table 14:** Prevalence and Incidence of Antenatal and Postnatal Depression, Anxiety and Stress using DAS Scale.

DASS (Depression Anxiety Stress) scale	Number(N/n)	Rate (%)	95% CI
<b>Depression</b>			
Ante partum Prevalence	77/387	19.9	15.9-23.8
Postpartum Prevalence	81/387	20.9	16.8-24.9
<b>Incidence of depressionAnxiety</b>			
Ante partum Prevalence	156/387	40.3	35.4-45.2
Postpartum Prevalence	173/387	44.7	39.7-49.6
<b>Incidence of AnxietyStress</b>			
Ante partum Prevalence	5/387	1.3	9.6-16.3
Prevalence of Postpartum stress	5/387	1.3	9.6-16.3
Incidence of Stress	0/387	0	0





**Table 15:** Association between antenatal depression (EPDS Scale) and certain selected factors

Risk factors	Antenatal Depression EPDS		Total n(%)	p value	OR (95% CI)
	Present n(%)	Absent n(%)			
A) Pregnancy Planning					
Planned	73 (39.7)	111(60.3)	184 (100.0)	0.223	
Unplanned	93 (45.8)	110(54.2)	203 (100.0)		
B) Education					
Up to High school	80 (47.1)	90 (52.9)	170 (100.0)	0.195	1
Higher Secondary	57 (38.5)	91 (61.5)	148 (100.0)		
Graduate	27 (45.8)	32 (54.2)	59 (100.0)		
Postgraduate	2 (20.0)	8 (80.0)	10 (100.0)		
C) Occupation					
Unskilled	1 (100.0)	0 (0.0)	1 (100.0)	0.651	NA
Semiskilled	14 (43.8)	18 (56.3)	32 (100.0)		
Professional	5 (35.7)	9 (64.3)	14 (100.0)		
Home maker	146 (42.9)	194 (57.1)	340 (100.0)		
D) Type of family					
Nuclear	112(38.2)	181(61.8)	293 (100.0)	0.001	
Joint	54 (57.4)	40 (42.6)	94 (100.0)		
E) Marital Satisfaction (IMS)					
Satisfied	65 (27.9)	168(72.1)	233 (100.0)	<0.001	0.5 (0.2-1.1)
Dissatisfied	101(65.6)	53 (34.4)	154 (100.0)		
F) Relationship dissatisfaction (CMSS)					
_ Present	96 (85.7)	16 (14.3)	112 (100.0)	<0.001	0.068 (0.02-0.189)
Absent	70 (25.5)	205(74.5)	275 (100.0)		
G) LES(LIFE EVENT SCALE) due to stress					
30% illness	48 (26.1)	136(73.9)	184 (100.0)	<0.001	1(Ref) 0.87 (0.39-01.(90).0 )
50% illness	93 (52.8)	83 (47.2)	176 (100.0)		
80% illness	25 (92.6)	2 (7.4)	27 (100.0)		
H) Sex of the previous child*					
Female	61 (53.0)	54 (47.0)	115(100.0)	<0.001	NA
Male and female	4 (100.0)	0 (0.0)	4 (100.0)		
Male and male	0(0.0)	4 (100.0)	4 (100.0)		
Female and female	11 (91.7)	1 (8.3)	12 (100.0)		

**Table 16:** marital dissatisfaction as measured byIMS scale and its association with depression

Risk factors	Postnatal Depression		Total	p value	qr95%CI
	Present n(%)	Absent(%)			
I) Sex of the previous child*					
Male	24 (20.7)	92 (79.3)	116 (100.0)	0.612	NA
Female	27 (23.5)	88(76.5)	115(100.0)		
Male and female	0 (0.0)	4 (100.0)	4 (100.0)		
Male and male	0(0.0)	4 (100.0)	4 (100.0)		
Female and female	2 (16.7)	10 (83.3)	12 (100.0)		
J) Mode of delivery					
SVD	55(22.8)	186 (77.2)	241(100.0)	0.498	1.37(0.81-2.32) 1.16(0.12-10.8) 1(Ref)
Assisted/ Instrumental	1(20.0)	4(80.0)	5(100.0)		
LSCS	25(17.7)	116(82.3)	141(100.0)		
K) Sex of the present baby					
Male	33 (16.1)	172(83.9)	205(100.0)	0.013	1.86(1.13-3.09)
Female	48(26.4)	134(73.6)	182(100.0)		
L) Spontaneity of delivery#					
Spontaneous	22 (18.5)	97 (81.5)	119 (100.0)	0.190	1.5 (0.79-3.08)
Induced	22 (26.2)	62 (73.8)	84 (100.0)		

\*N=251, only among multi para with live child; # N=203, only among mothers with normal delivery.

**Table 17:** relation between depression(EPDS)and certain related risk factors

(EPDS Scale)					
	Present n(%)OR95%CI	Absentn(%)	Total n (%)	p value	OR95%CI
A) Sex of the previous child*					
Male	42(36.2)	74(63.8)	116(100.0)	0.034	NA
Female	61(53.0)	54(47.0)	115(100.0)		
Male and female	0(0.0)	4(100.0)	4(100.0)		
Male and male	1(25.0)	3(75.0)	4(100.0)		
Female and female	5(41.7)	7(58.3)	12(100.0)		
B) Mode of delivery					
SVD	91 (37.8)	150(62.2)	241(100.0)	0.498	1.18(0.77-1.8) 2.9(0.314-26.4) 1(Ref)
Assisted/ Instrumental	1(20.0)	4(80.0)	5(100.0)		
LSCS	59(41.8)	82(58.2)	141(100.0)		
C) Sex of the present baby					
Male	63 (30.7)	142(69.3)	205(100.0)	<0.001	2.1(1.39-3.2)
Female	88 (48.4)	94 (51.6)	182(100.0)		



D) Spontaneity of delivery#					
Spontaneous	42 (35.3)	77 (64.7)	119 (100.0)	0.683	1.13(0.63-2.02)
Induced	32 (38.1)	52 (61.9)	84 (100.0)		

## DISCUSSION

There were few and far studies in this region regarding mental health surveys during pregnancy, delivery and few months after delivery. Women admitted for delivery were screened for eligibility using inclusion and exclusion criteria.

From these participants. We studied various scales EPDS, DASS, CMSS, IMS, LES, LAS, We used the EPDS as a screening tool to identify women with depressive signs and DASS as a screening tool to identify Depression, Anxiety and Stress among these women. The prevalence of postpartum depression (PPD) was 39% using EPDS. The present study, thus, strengthens the findings of previous studies and signifies the importance of identifying PPD, more so because none of these mothers had sought help for these symptoms, although

Their day to day functions impaired in high numbers with various shades of severity. The present study suggests that more than a third of the women had significant Depressive symptoms in the immediate postnatal period (within first 24-48 hours after delivery).<sup>[11,12,13]</sup> In the majority of such cases, the depressive symptoms persisted at six weeks follow-up. The strongest predictor of depressive symptoms at follow-up was the presence of depressive symptoms at baseline (i.e. prior to delivery).<sup>[14,15]</sup>

The rates were higher at 39% than reported from other studies from India. One of the

reasons could be that the present study assessed women in the immediate postpartum period still under the stress of labour.

Cut-off points: Cut off score is very essential for the screening purpose. At a cut off score there should be a balance between the sensitivity and specificity, so the test wouldn't lose its value either by having high false positive cases if the sensitivity is very high, or by having false negative cases if the specificity is very high. The recommended cut-off score for EDPS is 10.<sup>[16,17,18]</sup> Our finding is consistent with other studies" findings showing variability in the optimal cut-off scores between population studies.<sup>[19,20,21]</sup>

## CONCLUSIONS

In conclusion this study highlights importance of screening for maternal mental health problems during Peri partum period. Along with Depression, we found higher prevalence of maternal Anxiety during Peripartum period which has to be given its due importance. Depression in immediate postpartum period is good predictor for increased risk of depression at 4-6 weeks postpartum. We found overlapping of depression, anxiety and stress symptoms in Peripartum period which need to be considered.

We found no statistically relevant differences in maternal sense of control during labour with mode of delivery.



### In Antenatal Period:

- Marital dissatisfaction, Stressful life events, and joint family and previous both female children were significantly associated with depression.
- Whereas pregnancy planned / un planned, education and occupation of the mother was not associated with depression.

### In Immediate Post Partum Period:

- Mode of delivery, planned/unplanned pregnancy, type of family, and induction of labour, maternal sense of control during labour, education and occupation of the mother did not have significant association with depression.
- Marital dissatisfaction, stressful life events and sex of the present baby being female were significantly associated with depression in immediate postpartum period.

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