

Post-Partum Depression: A Study of its Incidence and Association of Risk FactorsFozia Jeelani Wani¹, Meka Krishna Kumari², Nisha Bhatia³, Sheri Vennela⁴, Neha Gala⁵¹Assistant Professor, Department of Obstetrics and Gynaecology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India²Professor, Department of Obstetrics and Gynaecology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India³Associate Professor, Department of Obstetrics and Gynaecology, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India⁴Resident, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India⁵Assistant Professor, Department of Psychiatry, Apollo Institute of Medical Sciences and Research, Hyderabad, Telangana, India

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Abstract:**Background:** Postpartum depressive episode of mild to major severity is one of the major contributors of pregnancy-related morbidity and mortality. Maternal depression in low- and middle-income countries remains under-reported, under-treated and under-studied.**Aim and Objectives:**

1. The first aim of our study is to estimate the incidence of PPD.
2. Second aim is to assess various risk factor associated with the post-partum depression.

Materials and Methods: It is a prospective study of post-partum mothers who delivered at our hospital and gave consent for the study. The study was performed in Apollo Institute of Medical Sciences Hyderabad from January 2022 to December 2022. A total of 150 mothers were included in the study. A questionnaire based on Edinberg Postnatal Depression Scale (EPDS) was answered by post-natal mother on post-natal day 6 or 7. Simultaneously socio-demographic data and other obstetric and baby related data of all patients were collected and recorded.**Results:** EPDS score of 13 or above was considered to be significant for identifying women with PPD. Out of 150 postpartum 31 mother had a EPDS score of 13 or more, with an incidence rate of PPD as 20.7%. Various risk factors were found to be significantly associated with PPD. Twenty percent of women under 20 years were found to have significant association with PPD. History of psychiatric illness in family was found to be significantly associated with PPD (p value of 0.015). Women with preterm delivery were more at risk for PPD and this association was statistically significant (p-value of 0.009). Mothers with Low birth weight babies (p-value of 0.002) were associated with PPD.**Conclusion:** Post-partum period is very crucial period in a women life. We as clinicians should help them to acclimatize to this transition and should be able to identify women with PPD. Appropriate and timely management can improve maternal and neonatal care.**Keywords:** Post- partum depression, EPDS, risk factors.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Childbirth is a significant event in women's life with various factors like hormonal, social and medical conditions affecting it. In our society mothers rarely seek help especially for ailment that are not related to their physical health. Post-partum depression is a relatively common condition among mothers, particularly in the first month following childbirth. Not recognizing PPD early in post-partum period can lead to recurrence and chronicity of this condition affecting both mother and child.[1] The

global incidence of PPD is 10-15% [2] with higher rates of approximately 18.6% in low- and middle-income regions.[3] Post-partum depression is the most under reported, under studied and under treated complication after child birth in the low- and middle-income regions. On one hand, such a depressive disorder affects the mother's well-being, while on the other hand it negatively affects care provided to the baby. Such mothers may even refuse to breastfeed or take care of the baby. Also,

such mothers do not utilize the preventive healthcare, vaccination and recommended safety practice for their babies.[4] Lack of mother-infant bonding can result in long term cognitive impairment, emotional issues and behavioural problems in such children.[5]

Various studies identified different risk factor associated with PPD which include demographic, clinical, psychosocial, partner-related and child-birth related factors. Identification of such factors and screening of all mothers during immediate postpartum period can help to alleviate PPD in mothers. The purpose of this study was to examine the incidence of post-partum depression and evaluate the risk factors associated with it.

Material and Methods

It is a prospective study of post-partum mothers who delivered in Apollo Institute of Medical Sciences Hyderabad from January 2022 to December 2022. A total of 150 mothers were included in the study. We adopted a questionnaire based on Edinberg Postnatal Depression Scale (EPDS).[6] The study and consent procedures were approved by the institutional review ethics committee of Apollo Institute of Medical Sciences and Research, Hyderabad, India. After an informed and written consent, all participants were guided to fill the questionnaire. EPDS questionnaire contains 10 questions regarding how a mother has felt in previous one week. EPDS questionnaire is available in many versions and we had Hindi, Urdu and Telugu version available for mothers. Participants were given a questionnaire and instructed to answer the questions about their experience after the birth of their baby. Each item is scored from 0 to 3 with four responses ('no, not at all, quite often, yes') on the severity of symptoms during the last one week. The total score was calculated by computing the scores for each of 10 items with seven (items 3, 5,

6, 7, 8, 9, 10) of the 10 items being scored reversely. Those who score above 13 were considered to be most likely suffering from PPD.

However, clinical assessment of individual cases was performed and immediate treatment was instituted if needed.

Data was collected regarding sixteen socio-demographic, socio-psychiatric data, personal and obstetric variables including maternal age, socio-economic status, type of housing, family type-nuclear or joint, relation with in-laws and partner, partner violence, addictions in partner, history of psychiatric illness in the family, physical or emotional support from family, gravidity, parity, antenatal complications, favourable infant gender, mode of delivery and neonatal outcome.

Inclusion Criteria

All postpartum mothers in our hospital who gave consent for study.

Exclusion Criteria

1. Women with difficulty to understand the informed consent form and those who did not fill out the survey completely.
2. Women with known case of psychiatric disorder or on antipsychotic medication.
3. Women with twin/triplet deliveries.

Descriptive and statistical analysis were performed using SPSS 20.0 software (IBM). Analysis using Chi square test was done to evaluate significance of association of various risk factors with PPD. Significance was considered at p-value <0.05.

Results

Out of 150 postpartum women, 31 mother had a score of 13 or more suggesting a incidence rate of PPD as 20.7% in our study. (Table 1)

Table 1: Frequency and Percentage of PPD

PPD	Score	Frequency (n)	Percent (%)
Absent	<13	119	79.3
Present	>13	31	20.7

Statistical analysis revealed a significant association of PPD with the age of mothers, gestational age at delivery, partner violence, family history of psychiatric illnesses, low birth weights of babies and anaemia (Table 2 and Table 3).

Table 2: Frequency and percentage of variables (age, parity, SES, type of family and residence, partner violence, addiction and family history of psychiatric illnesses) and their significance (p-values) with post-partum depression.

Variables	EPDS score		P value, Significance (Sig)
	< 13 n (%)	> 13 n (%)	
Age			
< 20 years	7 (5.9)	6 (19.4)	0.005, Sig
>30 years	9 (8.4)	6 (19.4)	
21-29 years	103 (86.5)	19 (61.3)	
Parity			
Multigravida	61 (51.3)	13 (41.9)	0.355 NS

Primigravida	58 (48.7)	18 (58.1)	
Socio-economic status			
Lower class	21 (17.6)	7 (22.6)	0.689, NS
Middle class	96 (80.7)	23 (74.2)	
Upper class	2 (1.7)	1 (3.2)	
Residence			
Rural	22 (18.5)	2 (6.5)	0.104, NS
Urban	97 (81.5)	29 (93.5)	
Type of family			
Joint	70 (58.8)	18 (58.1)	0.939, NS
Nuclear	49 (41.2)	13 (41.9)	
Partner Violence			
No	107 (89.9)	22 (71.0)	0.007 Sig
Yes	12 (10.1)	9 (29.0)	
Alcohol Addiction			
No	91 (76.5)	22 (71.0)	0.527, NS
Yes	28 (23.5)	9 (29.0)	
History of psychiatric illness in family			
No	116 (97.5)	27 (87.1)	0.015, Sig
Yes	3 (2.5)	4 (12.9)	

Table 3: Frequency and percentage of variables (gestational age, mode of delivery, baby's birth weight and gender, breast feeding, NICU admission, maternal anaemia and thyroid status) and their significance (p-values) with postpartum depression

Variables	PPD		P value, Sig
	< 13 n (%)	> 13n (%)	
Gestational age			
Preterm	6 (5.0)	6 (19.4)	0.009, Sig
Term	113 (95.0)	25 (80.6)	
Mode of delivery			
LSCS	66 (55.5)	17 (54.8)	0.95, NS
VD	53 (44.5)	14 (45.2)	
Baby's birth weight			
< 2.5 kgs	25 (21.0)	15 (48.4)	0.002, Sig
> 2.5 kgs	94 (79.0)	16 (51.6)	
Gender			
Female	64 (53.8)	13 (41.9)	0.24, NS
Male	55 (46.2)	18 (58.1)	
Breast feeding			
Exclusive	96 (80.7)	28 (90.5)	0.206, NS
Nonexclusive	23 (19.3)	3 (9.7)	
NICU admission			
No	57 (47.9)	12 (38.7)	0.361, NS
Yes	62 (52.1)	19 (61.3)	
TSH			
< 3	93 (78.2)	24 (77.4)	0.93, NS
> 3	26 (21.8)	7 (22.6)	
Anaemia			
No	96 (80.7)	16 (51.6)	0.001, Sig
Yes	23 (19.3)	15 (48.3)	

Young teenage mothers and women more than 30 years (p- value 0.005) were found to have greater association with PPD than mothers in other age groups. Preterm gestational age and low birth weight were significantly associated with PPD with p value of 0.009 and 0.002 respectively. Anaemia was determined by hemoglobin levels less than 10g/dl in third trimester at the time of delivery. Almost 48 % of women with PPD in our study were anaemic at the time of delivery which was significant (p value 0.001). In our study we found that 13 (59%) out of 31 mothers with PPD had suicidal tendency as per our EPDS questionnaire with answer as 'quite often' or 'sometimes' for suicidal tendency.

Discussion

The main aim of our study was to identify incidence of PPD in our society and evaluate the effect of various socio-demographic and maternal factors. In addition to socio-demographic or maternal factors the incidence of PPD, among various studies are affected by the type of scale used, cut-off values and the time of application of instrument. Jardri et al in 2006 validated EPDS for use in early postpartum, a time when it can be used for primary prevention of PPD.[7] Their study confirmed valid use of EPDS between day 3 and day 5 with a sensitivity of 82% and a positivity threshold lowered to 9.5/30, as opposed to its classical use at six weeks postpartum. In our study we employed EPDS scale in early post-partum period at the end of first week. Through this study we want to emphasize that there is need to increase awareness about PPD among practitioners who can use instrumental tools like EPDS for early recognition of PPD. In our study we found incidence rate of PPD as 20.7% at the end of first week of post-partum period as measured by EPDS scale with cut-off score of 13. Many other studies have shown comparable results regarding incidence of PPD. A study by Ghosh et al in a tertiary hospital in Kolkata reported incidence of PPD as 25% by EPDS score during first week postpartum[8] and a community based study from rural South India depicted the incidence of PPD as 26.3%.[9] A higher prevalence of 48.5 % was reported from a study in Gujarat using EPDS score of 10.5 as the cut-off.[10] A systemic review conducted by Fisher J et al found that the prevalence of common mental disorders in the postpartum period in low- and lower-middle income countries is 19.8%.[3]. However, a systematic review in India in 2017 depicted that the prevalence of PPD was 24% in studies that used the EPDS scale as the study instrument.[11]

The second aim of the study was to identify socio-demographic factors, maternal factors and factors related to baby for development of post-partum depression. There was a significant association be-

tween age of mother and risk of PPD as per our study. Young teenage mothers (less than 20 years) and women more than 30 years had significant association with PPD. Our finding was similar to a study by Mayberry et al which depicted higher rate of PPD in women less 20 years of age [12] and a study by Bjerke et al which reported PPD to be associated with women more than 30 years of age.[13] Our study did not reveal any significant association between PPD and socio-economic status of women, similar to a study by Sadaf et al in 2015 in which none of the demographic factor was associated with PPD.[14] However significant association between PPD and low SES especially from low-income countries has been reported in literature where the addition of new member to family may pose extra financial burden on them and may be a cause of PPD in early postpartum period.[2]

Various studies have shown that social support has positive impact on mental health of mothers especially in early post-partum period.[15,16] However ,our study did not reveal any association of reduced social support with PPD. A study by Tani et al however revealed significant effect of maternal perceived social support in primiparous women on PPD.[17] In their study PPD was influenced negatively by maternal perceived social support and positively by negative clinical birth indices. Contribution of partner violence has shown a significant increase in incidence of PPD in post-partum women in our study which is similar to studies done by Ghosh et al and Records et al.[8,18]A study in Gujarat by Patel et al showed that women facing violence from husband have 9.78 times higher risk of PPD compared to other women.[10]

Childbirth is an important event in a woman's life where social, physical and psychological factors are highly connected and influenced by one another. None of the mothers in our study received epidural analgesia during labour as it was not feasible in our hospital setting so patients who delivered vaginally had to endure labour pains with minimal analgesia. However, there was no significant relation of PPD in women who delivered vaginally or by LSCS. Sibouni et al reported that the rate of PPD was 30% among women who underwent cesarean section and 17% among women who delivered vaginally.[19] Delivery before term can be stressful for both mother and her family. Our study found that preterm birth was significantly associated with PPD (p- value 0.009). A systemic review and the meta-analysis conducted by de Paula Eduardo et al in 2019 provided evidence of higher risk for PPD among mothers of preterm infants.[20] Therefore maternal mental health care is vital in mother who deliver preterm, as preterm birth experience seem to affect both babies and mothers. Unwell babies due to prematurity or low birth weight can contribute

significantly to PPD. Our study showed a significant association between low-birth-weight babies with PPD. This is similar to a study conducted by Sabouni et al in 2009 that reported women with low-birth-weight babies (40%) were associated with high risk of PPD and should be monitored closely.[19] Female gender of the baby is associated with PPD of varying severity especially in many Asian countries.[21] where male is considered to be the sole bread earner and heir of the family. Our study did not find any significant association of gender with PPD which is similar to various other studies conducted by Goker et al and Al Dallal et al.[22,23] In our study anaemia at the time of delivery was significantly associated with PPD. Literature search showed that postpartum anaemia affects up to 80% of women in low-income and rural populations, and is associated with postpartum depression, fatigue, impaired cognition, and altered maternal-infant bonding.[24]

Post-partum mother with depression account for approximately 20% of postpartum deaths, suicide being the most common cause in such cases.[25] Fifty-nine percent of women with PPD were found to have suicidal tendency in our study as per EPDS questionnaire where they answered either 'quite often' or 'sometimes' for suicidal tendency. These patients were referred for psychiatric consultation and counselling.

The present study emphasizes on the various risk factors responsible for development of PPD. During routine antenatal visits, early recognition of such risk factors in pregnancy and early postpartum period can help clinicians to counsel such case and institute appropriate management in form of psychiatric counselling or treatment. Limitations of our study is that we could not follow our patients for longer duration as most of our patient do not revisit for follow-up. However early implementation of EPDS questionnaire was advantageous as it helped us to identify patients especially those with suicidal tendency and refer them for appropriate counselling.

Conclusion

Post-partum period is very crucial period in women's life that can have varied effects on her and baby's health. We as clinicians should help them to acclimatize to this transition and should be able to identify women with PPD. Despite many limitations our study will provide an opportunity to improve our health policy in regard to complete care of women's wellbeing. Appropriate and timely management can improve maternal and neonatal care.

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