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Postnatal weight gain and exclusive breastfeeding practices in less than 6 months old babies of mother with postpartum depression

Dr.Mary A Seles X[1], Dr.Mithila Das Mazumder[2], Dr.Chimata Divyasree[3*], Dr.Ghouseya Begam[4], Dr.Shwetha Saravanan[5], Dr.Rakshitha Prasad[6]

[1]Post Graduate, Department of Paediatrics, Vydehi Institute of Medical Sciences and Research Centre
[2]Associate Professor, Department of Paediatrics, Vydehi Institute of Medical Sciences and Research Centre
[3]Senior Resident, Department of Paediatrics, Vydehi Institute of Medical Sciences and Research Centre
[4]Assistant Professor, Vydehi Institute of Medical Sciences and Research Centre
[5]Post Graduate, Department of Paediatrics, Vydehi Institute of Medical Sciences and Research Centre
[6]Post graduate, Vydehi Institute of Medical Sciences and Research Centre

Abstract

The five major components of Nurturing Care for Early Childhood Development (NC ECD) are good health, good nutrition, early learning opportunities, safety and security, and responsive caregiving. Responsive caregiving is not only being able to understand and attend to baby's cues but also giving attention to the needs of caregivers. Maternal illness affects the mother and the child dependent on her for nutrition, emotional and basic needs. Doubtlessly, maternal mental illness has a negative impact on infant growth and development. Postpartum depression (PPD) occurs within initial weeks after childbirth and lasts till 1year post-delivery. Recent studies have suggested an association between PPD with the early interruption of Exclusive breastfeeding feeding. The aim of this study is to show the prevalence of PPD and its effect on the infant. Mothers with infants fulfilling inclusion criteria were enrolled in this cross-sectional study. PPD was screened through EPDS score. Weight gain per day and details regarding breastfeeding were recorded. Among 153 enrolled, 68 mothers have PPD. The increased prevalence of PPD was associated with inadequate weight gain and early weaning pattern. These findings emphasize care to caregivers and maternal mental health. The increased prevalence of PPD and its strong association with inadequate infant weight gain and early weaning is alarming signal to provide importance to maternal mental health as part of Pediatric health care.

Keywords: Postpartum depression, Breastfeeding, Maternal mental health, Infant care, Responsive care giving

Introduction

Early childhood development (ECD) needs nurturing care in order to have a positive impact on future mental and physical health of a child. To ensure that this is given utmost importance, the World Health Organization (WHO) recommends it by promoting it under 5 main domains that are - good health, adequate nutrition, promotion of early childhood learning, responsive caregiving, and safety and security [1].

Responsive caregiving is an upcoming novel concept in pediatrics, which focuses on caregivers, in order to equip the caregivers to give their full potential so that the child reaches its full potential later in life. It also includes counseling to promote maternal mental health and recognition of psychological and mental health problems in caregivers. Pregnancy, delivery, and the adjustment to parenting an infant can be highly rewarding experiences, but they can also be physically and psychologically challenging [2].

According to WHO, a meta-analysis stated that about 20% of mothers in developing countries experience clinical depression after childbirth. Post-birth, the mother with depression suffers a lot, to the extent that she may even fail to take care of herself even for day-to-day activities. Risk of suicide is also present; infanticide, though rare, may not be totally neglected, especially in the case of neonates. Prolonged mental illness hinders the mother-infant attachment, breastfeeding, and newborn well-being [3,14]. Maternal mental health should be prioritized because it impacts both maternal health and neonatal health. Psychological disturbances before delivery are associated with low birth weight and preterm delivery, whereas postpartum, it has an impact on

Correspondence: Chimata Divyasree, Senior Resident, Department of Paediatrics, Vydehi Institute of Medical Sciences and Research Centre, **e-mail:** divyasreechimata@gmail.com, **Received:** August 7, 2025 **Accepted:** September 30, 2025

emotional involvement, neglect, poor attachment, and lack of affectionate bond towards the newborn [4].

The pathogenesis of PPD is not clearly explained. It is suggested that multifactorial genetics, hormonal, and social life stressors play a role in the development of PPD. Reproductive hormones play an important role in postpartum depression, indicating neuroendocrine pathophysiology contributing to PPD. Oxytocin and prolactin play an important role in the pathogenesis of PPD. It is often observed that failure to lactate and the onset of PPD occur at the same time. Low levels of oxytocin are observed in early weaning [5]. Studies show that postpartum depression affects infants, especially in the first six months of life. Infants of depressed mothers gained less weight than infants of non-depressed mothers [6,13]. Mothers affected with postpartum depression had a negative impact on breastfeeding, to the level of discontinuing breastfeeding, and were involved in less healthy feeding practices. Higher depression scores in postpartum depression-affected mothers also showed early weaning practices [7].

Although awareness of postpartum depression exists in society, it does not appear to have a positive impact. It is often associated with stigma, and many mothers, despite being aware of the condition, were unwilling to seek family support or medical help[8]. One in 8 women experience PPD. It is ironic that a health issue of such magnitude is not paid due attention [9]. Postpartum depression can be screened in outpatient or even at home visits using screening questionnaires such as the Edinburgh Postnatal Depression Scale (EPDS). Cut-off scores ranging from 9 to 13 points are considered as screened positive for PPD [10].

In several countries (for example, USA, Sweden, Australia, and Scotland) the EPDS plays a vital role in national screening programs for maternal mental health. The EPDS has been translated and used in 60 languages, and the initial validation in Edinburgh is a frequently cited publication [11].

Health care professionals play a vital role in PPD, but due to the setting of postpartum admission of only 2-5 days in hospital post-delivery and poor follow-up post-delivery, it is difficult to guide mothers with postpartum depression to seek medical support. This is why, during clinic visits for immunization and routine check-ups for babies, maternal mental health should also be given importance. Pediatricians should be equally involved as it affects growth and nutrition, which in turn prevents the children from reaching their full potential [12].

Materials and Methods

The type of study was Prospective cross-sectional study during the period from June 2023 to June 2024. Prior to initiation of the study, Ethical and Research Committee clearance from Vydehi Institute of Medical Sciences and Research Centre has been obtained (Annexure 1). Subjects were included in the study based on the inclusion and the exclusion criteria as mentioned below.

Inclusion criteria

Mothers with babies under 6 months of age visiting Vydehi Institute of Medical Sciences and Research Centre Bangalore.

1. Exclusion criteria:
2. Parents who do not give consent.
3. Babies with LBW < 2.5KG Birth weight.
4. Babies with no other developed systemic illness.
5. Sample size: 153

Results

Based on the data collected from 153 mother and infant pairs regarding Postpartum depression and its effect on postnatal weight gain and Exclusive breastfeeding practices, the following statistical analysis was performed:

Table 1. Infant characteristics (N=153)

Characteristic	Category	Frequency (n)	Percentage
Gender	Female	85	55.6

	Male	68	44.4
Average daily weight gain	≤20g / day	66	43.1
	>20g / day	87	56.9
Exclusive Breastfeeding	Yes	87	56.9
	No	66	43.1

Table 2. Socio-demographic and awareness characteristics of the mothers (N=153)

Characteristic	Category	Frequency (N)	Percentage (%)
Age group	18-30	115	75
	>30	38	25
Level Of Education	None	5	3.3
	Up to high school	79	51.6
	Undergraduate	43	28.1
	Post Graduate	26	17
Occupation	Employed	52	34
	Homemaker	101	66
Awareness of PPD	Yes	101	66
	No	52	34
Willingness to seek medical support	Yes	115	75.2
	No	38	24.8

Table 3. Association Of ppd with infant factors (N=68)

Variable	Category	Ppd present n=68 (%)	Ppd absent n=85 (%)	Test statistic	P value	Odds ratio (95% ci)
Infant gender	Female	38 (44.7)	47 (55.3)	0.005	0.942	1.024 (0.539-1.946)
	Male	30 (44.1)	38 (55.9)			
Infant weight gain/day	≤20 g	51 (77.3)	15 (22.7)	50.660	0.0001*	14.00 (6.402-30.616)
	>20 g	17 (19.5)	70 (80.5)			
Exclusive	No	50 (75.8)	16 (24.2)	46.092	0.0001*	11.979 (5.571-

Breastfeeding	Yes	18 (20.7)	69 (79.3)			25.756)
Birth order	1	19 (18.4)	84 (81.6)	-	<0.0001 *	-
	2	39 (97.5)	1 (2.5)			
	3	7 (100)	0			
	4	3 (100)	0			

Table 4. Association of ppd with maternal factors (n=68)

Variable	**Category**	**Ppd present n=68 (%)**	**Ppd absent n=85 (%)**	**Test statistic**	**P value**	**Odds ratio (95% ci)**
Maternal Age	18-30 years	54 (47)	61 (53)	1.183	0.277	1.518 (0.714-3.226)
	> 30 years	14 (36.8)	24 (63.2)			
Education level	Up to high school	35 (41.7)	49 (58.3)	0.582	0.446	0.779 (0.410-1.480)
	Undergraduate & above	33 (47.8)	36 (52.2)			
Maternal occupation	Employed	42 (80.8)	10 (19.2)	42.095	0.0001*	12.115 (5.329-27.544)
	Homemaker	26 (25.7)	75 (74.3)			
Awareness of PPD	Yes	44 (43.6)	57 (56.4)	0.093	0.760	0.901 (0.460-1.746)
	No	24 (46.2)	28 (53.8)			
Willingness to seek support	Yes	54 (47)	61 (53)	1.183	0.277	1.518 (0.714-3.226)
	No	14 (36.8)	24 (63.2)			

*Statistical test: Chi-square test; p<0.05 considered statistically significant

Table 5. Binary logistic regression for ppd

Binary logistic regression						**95% Confidence Interval**	
Predictor	Estimate	SE	Z	P	Odds ratio	Lower	Upper

Intercept	-2.812	0.454	-6.196	0 .001	0.06	0.025	0.146
Weight Gain							
>20	Reference						
≤20	2.177	0.514	4.232	0 .001	8.824	3.219	24.188
Baby Exclusively Breast Fed							
Yes	Reference						
No	2.468	0.506	4.876	0 .001	11.799	4.375	31.82
Occupation of the mother							
Homemaker	Reference						
Employed	1.651	0.547	3.019	0.003	5.213	1.785	15.26

The binary logistic regression analysis reveals significant predictors of postpartum depression. Weight gain ≤20 is significantly associated with postpartum depression, with an odds ratio of 8.824 (95% CI: 3.219-24.188). Babies not exclusively breastfed by mothers have a higher likelihood of postpartum depression (OR=11.799 (95% CI: 4.375-31.82). Mothers who are employed also show a significant association, with an odds ratio of 5.213 (95% CI: 1.785-15.226). Overall, all predictors are significantly associated with postpartum depression.

Discussion

In our study including 153 mother and infant pairs, the prevalence of postpartum depression is 44.4%.

No statistically significant association was found between postpartum depression and the baby's gender, the mother's age, or the mother's level of education.

In our study, postpartum depression is significantly higher in working mothers compared to homemakers.

In our study, 68 mothers were diagnosed with postpartum depression (PPD). A higher proportion of these mothers had infants of birth order greater than one. Specifically, only 19 mothers with PPD had a first-born child, while the remaining 49 had children of higher birth order. In contrast, among the 85 mothers without PPD, 84 had a first-born infant, and only 1 had a second-born child. The association between higher birth order and the presence of PPD was found to be statistically significant in our study

A significant association was observed between postpartum depression (PPD) and inadequate postnatal weight gain in infants. Mothers with a PPD score greater than 13 were more likely to have babies with inadequate weight gain. Among the 68 mothers with PPD, 51 (75%) had infants with inadequate weight gain (<20 g/day), while only 17 (25%) had infants with adequate weight gain (>20 g/day). In contrast, among the 85 mothers without PPD, 70 (82.4%) had infants with adequate weight gain and only 15 (17.6%) had infants with inadequate weight gain. These findings highlight the significant adverse impact of maternal PPD on infant growth.

Out of the 68 mothers who had postpartum depression, 50 (75.8%) mothers could not exclusively breastfeed for 6 months and was associated with early weaning. In contrast, out of the remaining 85 mothers who did not have postpartum depression, 69 mothers were able to exclusively breastfeed for 6 months and only 16 did not exclusively breastfeed for 6 months. The EBF practices in this study is also supported by the literature with statistical significance further reinforcing the findings.

No statistically significant differences were observed among mothers with postpartum depression in terms of awareness and willingness to seek medical support.

Conclusion

The study observed a significant rise in Postpartum depression incidence compared to the previous studies conducted. This study showed that maternal mental health clearly affects infants weight gain and thus affecting the overall health of infants. Thus providing care to caregivers is an essential component of nurturing care for early childhood development. Postpartum depression had a strong association with early weaning practices and thus affecting the babies receiving exclusive breastfeeding for 6 months.

The study population seemed to have awareness regarding postpartum depression and the majority were willing to get medical support if needed. This is a good change in the trend as most of the postpartum depression patients earlier were not ready for medical support because of stigma.

A strong correlation was observed between birth order and postpartum depression. Mothers with babies of higher birth order were significantly more likely to experience postpartum depression, highlighting the importance of providing additional support to mothers with older children.

In this study Postpartum depression was strongly associated with mothers who were employed indicating that mother's employment status had a significant role to play in postpartum depression.

The study has several limitations that need to be considered. The sample size, although adequate for initial findings, may not be large enough to generalize the results to a wider population. Additionally, the study focuses on a specific age group (less than and equal to 6 months), which may not capture the full spectrum of impacts across different growth and developmental domains of pediatric health care.

Overall, this study provides a comprehensive look at the effects of Postpartum depression in postnatal weight gain and exclusive breastfeeding practices and the other factors associated with postpartum depression, emphasizing the importance of care to caregiver

Need for interventions

The study underscores the need for targeted interventions to support infant's well-being by covering maternal mental health. Maternal mental health can be addressed during regular pediatric well baby follow ups for the baby post-delivery and also during the immunization visits. Timely identification and referral might bring a huge change in maternal mental health.

References

1. Improving Early Childhood Development: WHO Guideline [Internet]. Geneva: World Health Organization; 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK555073/
2. Depressive disorders. In: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision DSM-5-TR. American Psychiatric Association; 2022. https://dsm.psychiatryonline.org. Accessed May 9, 2022.
3. Maternal mental health (internet). WHO.int. [cited 2024 Aug 9] Availablefrom: https://www.who.int/teams/mental-health-and-substance-use/promotion-prevention/maternal-mental-health
4. Carlson K, Mughal S, Azhar Y, Siddiqui W. Perinatal Depression. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2025. PMID: 30085612.
5. Rupanagunta GP, Nandave M, Rawat D, Upadhyay J, Rashid S, Ansari MN. Postpartum depression: aetiology, pathogenesis and the role of nutrients and dietary supplements in prevention and management. Saudi Pharm J. 2023 Jul;31(7):1274-1293. doi: 10.1016/j.jsps.2023.05.008. Epub 2023 May 15. PMID: 37304359; PMCID: PMC10250836.
6. Ahmadi Gharaei H, Nematollahi S, Moameri H, Madani A, Parsaeian M, Holakouie-Naieni K. Effect of maternal mental health during pregnancy on infant growth at six months of age in Suburban communities in South of Iran. Med J Islam Repub Iran. 2020 Nov 18;34:157. doi: 10.47176/mjiri.34.157. PMID: 33500884; PMCID: PMC7813148.
7. Pope CJ, Mazmanian D. Breastfeeding and Postpartum Depression: An Overview and Methodological Recommendations for Future Research. Depress Res Treat. 2016; 2016:4765310. doi: 10.1155/2016/4765310. Epub 2016 Apr 11. PMID: 27148457; PMCID: PMC4842365.
8. Bibi, Aliya & Rustam, Zainab & Riaz, Ifrah & Syed, Saadan & Shah, Muhammad & Adil, Kiran & Iqbal, (2019). Awareness about postpartum depression among women in Peshawar: a cross-sectional study. Volume 5.
9. CDC. Symptoms of depression among women (internet). Reproductive Health 2024 [cited 2024 Aug 9]. Available from: https://www.cdc.gov/reproductive-health/depression/index.html
10. Aap.org [cited 2024 Aug 9]. Available from:

https://ohioaap.org/wp-content/uploads/2024/01/Maternal-Depression-Screening-OhioAAP-Lazaron-1-24-2024-final26-Read-Only.pdf

11. Cox J. Thirty years with the Edinburgh Postnatal Depression Scale: voices from the past and recommendations for the future. Br J Psychiatry. 2019 Mar;214(3):127-129. doi: 10.1192/bjp.2018.245. PMID: 30774059.
12. Sim CSM, Chen H, Chong SL, Xia OJ, Chew E, Guo X, Ng LP, Ch'ng YC, Ong JLH, Tan J, Ng DCC, Tan NC, Chan YH. Primary health level screening for postpartum depression during well-child visits: Prevalence, associated risk factors, and breastfeeding. Asian J Psychiatr. 2023 Sep; 87:103701. doi: 10.1016/j.ajp.2023.103701. Epub 2023 Jul 18. Erratum in: Asian J Psychiatr. 2023 Dec; 90:103829. doi: 10.1016/j.ajp.2023.103829. PMID: 37517174.
13. Ahmed, F., Naqshbandi, M. M., Waheed, M., & Ain, N. U. (2024). Digital leadership and innovative work behavior: impact of LMX, learning orientation and innovation capabilities. Management Decision, 62(11), 3607-3632.
14. Moghavvemi, S., Jam, F. A., & Iqbal Khan, T. (2025). The Impact of Motivation, Opportunity, Financial Ability, and Willingness on Resident Support for Tourism Development. Tourism Planning & Development, 22(1), 63-84