Original Article

A Study on Postpartum Depression and its Association with Infant Feeding Practices and Infant Nutritional Status among Mothers Attending the Anganwadi Centers of Valsad District, Gujarat, India

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Abstract

Background: Systematic reviews on postpartum depression (PPD) suggest that PPD mothers are more likely to interrupt exclusive breastfeeding with inappropriate feeding practices resulting malnutrition in child. A community-based study was planned with the objective to find the risk factors associated with PPD and its possible association on infant feeding practices and infant nutritional status. **Materials and Methods:** This was a cross-sectional study conducted among 116 postpartum mothers attending Anganwadi centers under the Urban Health Training Centre and Rural Health Training Centre of Medical College. A purposive sampling technique was applied. Informed and written consent in local language was taken. Data were collected in predesigned, pretested, and semi-structured pro forma. The mothers were screened for possible PPD using the 10-item well-validated Edinburgh PPD Scale in Gujarati language. The cutoff point is score more than 10.5 based on previous studies. Infant's nutritional status and breastfeeding practices were assessed according to the WHO Growth Chart and Infant and Young Child Feeding guidelines. **Results:** (1) 6.8% of the prevalence of PPD was reported in the study; (2) sociodemographic factors such as relationship of mothers with in-laws/husbands, help at home in childcare, literacy status, age at marriage and first child, and own desired/in-laws of sex of child are found to be significantly associated with PPD. (3) The Association of PPD and poor nutritional status of child was statistically significant. **Conclusions:** The study highlights the need of screening for PPD in the community. The potential risk factors for PPD can be taken into consideration during routine antenatal/postnatal care and for planning of preventive strategies.

Keywords: Depression, Edinburgh Postpartum Depression Scale, infants, malnutrition, mothers, postpartum

Introduction

Maternal mental well-being is important for the well-being and proper growth of her child. Mental health problems such as depression during antenatal or postnatal periods are very common. One in three to at least one in five in developing countries, and one in ten in developed countries, have a significant mental health problem during pregnancy and after childbirth.[1] Postpartum nonpsychotic depression is the most common complication of childbearing affecting approximately 10%–15% of women.[2] Studies conducted at different times also show various rates of postpartum depression (PPD).[3-5] The prevalence of antepartum depression is as high as 26% among women in poor, urban communities.[6]

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PPD usually begins within 1–12 months after delivery. The patterns of symptoms in women with PPD are similar to those in women who have depression unrelated to childbirth.[7] Majority of epidemiological studies reported that the time period for postpartum onset ranges from 3 months to up to 12 months after delivery.[8,9]

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In a systematic review of literature conducted in Portugal, it was documented that PPD predicts a shorter breastfeeding duration but not breastfeeding intention or initiation. Breastfeeding period is related to postnatal depression in majority of studies, suggesting that pregnancy and PPD are associated with shorter breastfeeding duration.[6]

Rationale for study

The mental health of mothers not only adversely affects them but also has an impact on their developing infant. Improper feeding practices and diarrheal disease are important determinants of malnutrition. According to NFHS-3, only 46% of children under 6 months are exclusively breastfeed. A systematic review of literature on PPD and breastfeeding also indicates that postpartum depressed mothers are more likely to tend to interrupt early exclusive breastfeeding before 6 months with inappropriate feeding practices.[6]

Maternal mental health status can also be one of the factors affecting the child nutritional status at any point of time.

The above findings suggest that maternal mental health plays a key role in improving the nutritional status of child while maternal mental health is also affected by various sociodemographic factors. Hence, this community-based study was planned to find the sociodemographic risk factors associated with depression and the possible association of PPD on infant feeding practices and infant nutritional status in infants of depressed mothers.

Materials and Methods

A cross-sectional study was conducted among 116 postpartum mothers irrespective of their socioeconomic status, attending the Anganwadi centers (AWCs) under the Urban Health Training Centre and Rural Health Training Centre area of Medical College of Valsad district during the period of from June 2017 to August 2017. A purposive sampling technique was applied. Informed and written consent in local language was taken from each mother before starting the data collection for the study. The sociodemographic characteristics are collected in a local language, predesigned, pretested, and semi-structured pro forma with detailed obstetrics and gynecology history such as type of delivery, any medical conditions associated with pregnancy or delivery, history of high-risk pregnancy, parity, number of ANC visits taken, etc., by a one-to-one interview of mothers. The flow of data collection is as follows.

First, the mother was screened for possible PPD using the 10-item well-validated Edinburgh PPD Scale (EPDS) in Gujarati language with responses varying from 0 to 3 for each item. The cutoff point to screen the PPD is decided as score more than 10.5 based on a study done by Desai *et al.* to validate the EPDS in Gujarat language with a specificity of 98% and sensitivity 100%.[10]

Second, the study is proceeded forward in likely depressed and nondepressed mothers (as per results of screening according to EPDS) to assess their breastfeeding practices according to the WHO Infant and Young Child Feeding (IYCF) guidelines.

Third, we have assessed the nutritional status of infants of depressed and nondepressed mothers using the WHO Growth Chart based on weight for age criteria separate chart for girls and boys. Weight of the child more than 4 weeks was taken in the infant weighing scale and plotted on the WHO Growth Chart to classify the child nutritional status while height was measured by a measuring tape as per standard protocols for height measurements for children. Children with age <4 weeks will be assessed for gain in weight per week after delivery. Proper counseling of all depressed mothers was done at the end of the study.

Inclusion criteria

1. Mothers who gave consent and willing to participate
2. Mothers who do not have any present history of undergoing any psychiatric treatment
3. Mothers who are in postpartum period of 1 week to 1 year of delivery were included in the study.

Exclusion criteria

1. Mothers who did not give consent and not willing to participate
2. Mothers with any present history of undergoing any form of psychiatric treatment
3. Mothers with more than 1 year of delivery period were excluded from the study.

Ethical approval

Ethical approval was taken from the Medical College Research Ethical Committee before starting the study.

Data entry and statistical analysis

Data were entered and analyzed in Microsoft Office Excel. The Chi-square test was applied to find possible association with various risk factors.

Results

6.8% of the prevalence of PPD was reported in the present study. Sociodemographic factors such as relationship of mothers with in-laws/husbands, help at home in childcare, literacy status, age at marriage and first child, and own desired/in-laws of sex of child are found to be associated with PPD and highly significant [Table 1]. Our study found a statistically significant association of PPD and poor nutritional status of child [Tables 2 and 3], and no association was found between time of initiation of breastfeeding after delivery and PPD [Table 4].

Discussion

The present study was undertaken with one of the objectives to find any association among sociodemographic factors and the occurrence of PPD among mothers attending the AWCs and the other objective to find any impact of PPD on infant feeding practices and infant nutritional status.

In our study, the prevalence of PPD was found to be 6.8%. Out of the total mothers (116), 8 mothers were found depressed according to the EPDS with a cutoff of score >10.5, which is comparable to a study done in a tertiary-based hospital in North India in a region close to our present study that reported a 6% prevalence in 506 peripartum women using EPDS with a cutoff

Table 1: Association of sociodemographic factors and mental status of mothers (*n*=116)

Sociodemographic variables	Depressed (*n*=8), *n* (%)	*P*
Age of mother		
20-25	4 (7.2)	>0.05
26-30	2 (4.6)	
>30	2 (11.1)	
Educational status		
Illiterate	4 (21)	<0.05
Literate	4 (4)	
Occupation		
Working	2 (11)	>0.05
Nonworking	6 (6)	
Age at marriage (years)		
<18	3 (33.3)	<0.005
18-20	4 (8)	
>20	1 (2)	
Age at first child		
<18	2 (50)	<0.005
18-20	3 (13)	
>20	3 (3)	
Own desired sex of child before delivery		
Girl	2 (17)	<0.005
Boy	5 (28)	
No desired for specific sex	1 (1)	
In-laws desired for sex of child before delivery		
Girl	2 (22)	<0.005
Boy	4 (22)	
No desired for specific sex	2 (2)	
Number of previous female child		
None	1 (2.5)	>0.05
1-2	5 (7.3)	
>2	2 (22)	
Relation with husband/in-laws		
Good	5 (4.5)	<0.005
Not good	3 (60)	

Table 2: Association between nutritional status of children and mental status of mothers of child more than 4 week

Nutritional status of children according to the WHO Growth Chart	Depressed, *n* (%)	Total, *n* (%)	*P*
Well nourished	2 (3)	71	<0.05
Malnourished	1 (7)	15	
Severely malnourished	2 (25)	8	
Total	5	94	

limit of >12.5. Different regions, cultures, and countries reported a varied prevalence of PPD.[11-15] A prospective observational cohort study suggested 12% prevalence of PPD while a study from rural south India noted prevalence of 26.3% using both EPDS and ICD10 whereas prevalence of PPD was found to be as high as 31.4% in a study done in south India by Shivali.[16,17]

In the present study, majority of the mothers (47.4%) belong to 20–25 years of age group, among whom 7.2% of mothers were found of having PPD, which is similar to other studies.[18,19] Sociodemographic factors also play an important role in mental well-being of women during the postpartum period. Our study suggested the potential risk factors that need to be screened during the early antenatal period for possible risk of PPD. A statistically significant association ($P < 0.005$) was found between the literacy status and the mental status of mothers while other sociodemographic factors such as age at marriage, age at first child, in-laws and own desired sex of child before delivery, helping hand in childcare after delivery, and marital relationship were found to be significantly associated with PPD, and no association was seen in relation to gender of child after delivery with the occurrence of PPD. Similar studies had been conducted among 270 pregnant women by Patel *et al.* in Goa, India in 2002 using EPDS at 6-8 weeks and 6 months after child birth found that economic deprivation, poor marital relationships, Gender of the infant is significantly associated with PPD.[20] While, in various similar studies, it was revealed that stressful recent life events, lack of social support (either perceived or received), and previous history of depression are strong predictors of PPD.[21,22]

Breastfeeding and postpartum depression

Our study founds no association in time of initiation of breastfeeding after delivery and postpartum mental status of mother; moreover, 100% of mothers in the depressed group self-reported of exclusive breastfeeding with appropriate complementary feeding practices according to IYCF guidelines, while in contrast a study by Dennis and McQueen, it was found that all mothers with an Edinburgh Postnatal Depression Scale score >12 at 1-week postpartum were significantly more likely at 4 and/or 8 weeks to discontinue breastfeeding, be unsatisfied with their infant feeding method, experience significant breastfeeding problems, and report lower levels of breastfeeding self-efficacy.[23] A similar impact of PPD was seen on duration of breastfeeding in a study by J. J Henderson *et al*. conducted among a cohort of 1745 women admitted in postnatal wards of two large Australian obstetric hospitals, and breastfeeding status was determined at each follow-up. The Edinburgh Postnatal Depression Scale was used to screen for symptoms of depression. The study reported that breastfeeding was initiated by 96% of the participants while the median duration of breastfeeding was 26 weeks for women with early-onset depression, 28 weeks for women with late-onset depression, and 39 weeks for women without depression suggestive of postnatal depression, which has a significant negative impact on breastfeeding duration.[24,25] In the present study, out of total 116 children, 94 children are in the age group of 1 month–12 months, which are assessed of nutritional status according to the WHO Growth Chart. Out of 94 children, 15 children were found malnourished of which 1 mother was found of having PPD and 8 children were found severely malnourished of which 2 mothers were having PPD as per EPDS, and the association of PPD and nutritional status of child was found statistically significant which was supported by evidence of a study done by Upadhyay and Srivastava that the proportion of stunted children was also higher among women with high

Table 3: Association between nutritional status of children and mental status of mothers in child <4 weeks

Nutritional status	Depressed	Total	*P*
Failure to thrive	2	7	>0.05
Gaining weight	1	15	
Total	3	22	

Table 4: Association between initiation of breastfeeding after delivery and mental status of mothers (*n*=116)

Initiation of breastfeeding after delivery	Depressed, *n* (%)	*P*
Immediately or within 1 h	4 (3.4)	>0.05
1-2 h	1 (0.8)	
>2 h	3 (2.5)	

postnatal depressive symptoms (35%) than the low level of depression (24%). Early childhood stunting was also associated with maternal postnatal depressive symptoms (adjusted odds ratio: 1.53; confidence interval: 1.21, 1.92).[12]

Limitations of the study

Because of time constraints not possible to screen more mothers, only those mothers attending the AWCs within the study time period were included in the study.

Conclusions

Our study reported the prevalence of PPD as 6.8% which highlights the need of screening for PPD in the community of rural and urban areas. The factors which were found associated with PPD are age at marriage, age at first child, in-laws and own desired sex of child before delivery, helping hand in childcare after delivery, marital relationship, and gender of child. Our study suggests that PPD is associated with poor nutritional status of child.

All potential risk factors can be taken into consideration during routine antenatal/postnatal care and for planning of preventive strategies.

Recommendations

Based on the findings of this study, we can recommend the integration of maternal mental health component in existing maternal and child health services provided by the government, and we can recommend the inclusion of validated screening procedures and counseling for PPD at field level, so that early and timely preventive measures and referral and treatment for the disease can be started as early as possible in severe cases and can decrease sufferings of the mother and prevent its harmful impact on the child growth.

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Conflicts of interest

There are no conflicts of interest.

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