Frequency of postpartum depression and its association with breastfeeding: A cross-sectional survey at immunization clinics in Islamabad, Pakistan

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Abstract

Objective: To calculate the point frequency of post-partum depression among mothers.

Methods: This cross-sectional, quantitative study was conducted at the immunisation clinics of General Hospital, Islamabad, and Tehsil Headquarters Hospital, Kahuta, Pakistan, in November 2015, and comprised women aged 18-44 years. Primary data collection was done through Edinburgh post-natal depression scale questionnaire. SPSS 20 was used for data analysis.

Results: There were 434 participants in the study. Frequency of post-partum depression was 75(17.3%). The odds of post-partum depression was 2.3 times more among non-exclusive breastfeeding mothers, 6.6 times more among women with no husband support, 6.1 times more among women with no family support, and 1.92 times more among women with youngest female child.

Conclusion: Exclusive breastfeeding had a strong association with post-partum depression.

Keywords: Post-partum/Post-natal depression, PPD prevalence, Breastfeeding, Pakistan. (JPMA 67: 1151; 2017)

Introduction

Post-partum depression (PPD) is a serious mental health condition experienced by mothers within the first 4[1] to 6[2] weeks after child's birth. According to the National Institute of Mental Health (NIMH), 10-15% of women suffer from maternal depression worldwide. In low- and middle-income countries, the percentage is even higher, i.e. 18-25%.[3] PPD is a significant public health issue which affects women as well as child's physical and mental health and cognitive and interactive development,[4] thus making the child vulnerable to develop psychiatric disorders during adolescence.[5] Infants of depressed mothers have shown poor nutrition, poor general health and more frequent diarrhoeal episodes.[6] If left untreated, PPD may lead to poor mother-infant attachment and long-term maternal morbidity.[7]

The prevalence rate of PPD varies vastly (3.5 - 63.3%) across Asian countries,[8] with the lowest rates reported in Malaysia (<4%), and some extremely high rates in Pakistan (28-63%).[9,10] Evidence shows hugely variable rates (i.e. 28-63%,[1] 25.5%[10] and 36%[11]) in Pakistan. This variance may be due to cultural norms, lack of screening tools or under-reporting due to lack of national screening programme.[12] The exact causes of PPD in Pakistan have not been well-understood; however, evidence suggests its relevance with various factors such as poverty,[8,10] five or more children,[10] female youngest child,[10] lack of social support,[10,12] stressful events[10,12] and illiteracy.[13]

According to Pakistan Demographic and Health Survey 2012-13, 27.2% of children are breastfed in the initial first hour of delivery, 65.5% are breastfed on the same day of delivery and 37.7% are exclusively breastfed for six months and above 90% infants are breastfed at some stage during the first year of their life. A prospective cohort study recruiting 42 days' post-natal mothers in Argentina, Guatemala, India, Pakistan, Kenya and Zambia showed that Pakistan had the lowest rates of early initiation of breastfeeding and the lowest rates of exclusive breastfeeding at 42 days postnatal.[14] Child Rights Movement (CRM) calls for support of working mothers issued in World Breastfeeding Week 2015, Pakistan has the lowest exclusive breastfeeding rates in the whole of Asia.

A large body of evidence exists to support a positive relationship of lower PPD prevalence with prolonged breastfeeding in western countries.[15,16] However, some studies countered the above evidence.[17,18] Contrary to this evidence, a prospective community-based quantitative study conducted in Philadelphia, Pennsylvania[19] and a population-based longitudinal quantitative study conducted in Canada[20] found no association between breastfeeding and PPD. A recent British survey shows that mother's intention is pivotal in determining the association of breastfeeding with PPD.[21] Moreover, some studies report that the association of PPD and breastfeeding may be bidirectional, i.e. not engaging in breastfeeding may lead to PPD, but PPD may also result

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in reduced rates of breastfeeding practices.[22]

A majority of the above studies are conducted in western countries. To our knowledge, the association between PPD and breastfeeding has never been studied before in Pakistan. It is important to conduct such a study in Pakistan, as there may be a difference in association between the two variables compared to western countries due to cultural differences, religious and spiritual traditions and customs practised during puerperium in Pakistan.[23] Recommendations based on such a study may be made to authorities concerned regarding encouraging breastfeeding by mothers. The current study was planned to assess the frequency rates of PPD among women.

Subjects and Methods

This quantitative, cross-sectional study was conducted in the immunisation clinics of General Hospital Islamabad (GHI) and Tehsil Headquarters (THQ) Hospital Kahuta, Pakistan, in November 2015, and comprised mothers. All the recruited women were not depressed, but this study identified the frequency of PPD among them, and also determined the association of PPD with breastfeeding.

All mothers aged 18-44 years with children aged 6 weeks to 1 year presenting at the immunisation clinic on survey days, including first time mothers, mothers who had uncomplicated pregnancies, no previous history of diagnosed depression and who had given birth to healthy babies were included.

Mothers below 18 years and above 44 years, those with previous history of diagnosed major depression/anxiety disorders and who used medication for that, and mothers having children with congenital abnormality or those who had pre-mature babies were excluded.

As evidence shows variable rates (i.e. 28-63%,[1] 25.5%[10] and 36%[11]) in Pakistan, the expected frequency was calculated at 38% (i.e. 28+63+36+25)/4). Keeping the confidence limits at 5%, the sample size calculated was 362. However, considering 20% refusal rate, the sample size was increased. All those women determined eligible by criteria set out above were invited to meet the researcher by the receptionist. They were briefed about the study significance and given survey packs by the researcher which comprised of information pamphlet on PPD, participant's information sheet (PIS), informed consent form and validated Edinburgh Postnatal Depression Scale (EPDS) questionnaire; all the material had been translated into local language Urdu. Volunteer participants were provided with a private room, where they signed the consent forms and completed the questionnaires and returned them back to the researcher. Completed questionnaires were returned to the administration of the hospitals. A score of 10 or above on EPDS indicated existence of possible depression,[25] thus such cases were referred to psychiatrists, by the hospital administration within two weeks of completion of the study.

Data collection was started after obtaining official approval of the research proposal and approvals from the ethics review committees of the hospitals. Confidentiality was maintained by allotting identity (ID) codes to the questionnaires. The consent forms had the link between the ID codes and personal information, and were kept safe and confidential with administration of the hospitals. SPSS 20 was used for data analysis. To check whether there was any difference between the expected and observed event rates in the final model, Hosmer-Lemeshow test for goodness of fit[26,27] was done and it was tested if appropriate statistical model was adopted in the study. All the variables determined in association with PPD were categorical, hence chi-square test was applied and p-values were determined. As recommended by Bursac,[28] all the variables with p-value equal to or less than 0.25 were chosen for multivariate analysis by logistic regression. $P<0.05$ on Hosmer-Lemeshow test for goodness of fit model indicated the adopted model did not fit the obtained data well.

Results

Of the 434 women, 75(17.3%) (confidence interval (CI): 13.74 - 20.86) were self-reported with the symptoms of PPD in their initial 6 weeks after delivery. Point frequency of PPD reported by women presenting at GHI was 35(18%) and at THQ was 40(16.7%)and 95% CI range for PPD prevalence overlapped for GHI (12.59 - 23.41) and THQ (11.98 - 21.42), (p=0.71) (95% CI: 0.55 - 1.49); hence, no statistically significant difference was found in PPD rates among rural and urban women.

Initially data was collected for three groups: 1) exclusively breastfed, 2) breastfed + bottle-fed, and 3) only bottle-fed. But later on, groups 2 and 3 were combined because the number of exclusive bottle-fed children was small and only 5(1.15%) women reported exclusive bottle feeding in THQ, and because there was no data collected on what proportion of feeding was through bottle and what proportion was breastfed for the combined group.

Among the participating women, 216(49.9%) reported that they breastfed exclusively for at least 6 weeks post-natal, whereas 218(50.1%) reported they breastfed or bottle-fed. A significant difference was found in the feeding status of women across the two hospitals,

Table-1: Association of feeding status self-reported by women aged 18-44 years at 6 weeks post-natal with urban/rural divide.

	General Hospital Islamabad (Urban) % (n)	THQ Hospital Kahuta (Rural) % (n)	Total % (n)
Exclusively breastfed	36.1 (70)	60.8 (146)	49.9 (216)
Non-exclusively breastfed	63.9 (124)	39.2 (94)	50.1 (218)
Generally breastfed	54.6%	30.8%	
Bottle-fed	9.3%	8.4%	
Total	100 (194)	100 (240)	100 (434)

Table-2: Association of variables among women aged 18-44years across Urban and Rural Populations.

		General HospIsb (Urban) (%)	THQ Kahuta (Rural) (%)	p-value
Women Educational Status	Below Secondary	8.8 (Illiterate=4.6, Primary=2.6, Middle=1.5)	48.8 (Illiterate=21.7, Primary=12.9, Middle=14.2)	0.001
	Secondary & Higher Secondary	21.6 (Secondary=6.7, Higher Secondary= 14.9)	37.1 (Secondary=22.9, Higher Secondary= 14.2)	
	Bachelors & above	69.60% (Bachelors= 39.7%, Post-graduate & above= 29.9%)	14.20% (Bachelors= 8.8%, Post-graduate & above= 5.4%)	
Husband's Educational Status	Below Secondary	3.1 (Illiterate=1, Primary=0.5, Middle=1.6)	37.1 (Illiterate=11.7, Primary=6.3, Middle=19.1)	0.001
	Secondary & Higher Secondary	22.7 (Secondary=12.4, Higher Secondary= 10.3)	53.8 (Secondary=43.8, Higher Secondary= 10)	
	Bachelors & above	74.2 (Bachelors= 34.5, Post-graduate & above= 39.7)	9.2 (Bachelors= 9.2, Post-graduate & above= 0)	
Women Employment Status	Housewives	90	97	0 .002
	Employed	10	3	
Husband's Employment Status	Employed	90.2	55.4	0.001
	Unemployed	9.8	44.6	
Family Support in puerperium	Supported	85.6	77.5	0.03
Husband Support in puerperium	Supported	95.9	85.4	0.001
Number of Children	Male	-	-	0.37
	Female	-	-	0.33
	Total	-	-	0.17
	Sex of last baby	-	-	0.27

THQ: Tehsil Headquarters.

(p=0.001) (Table-1).

The comparison of confounders such as employment status, husband and family support, education of women and education of husband, rural/urban divide, number of children and sex of last baby was done, followed by exploring the influence of these confounders and breastfeeding on PPD frequency across rural and urban population by logistic regression through multivariate analysis (Table-2).

Table-3: Multivariate analysis for studying the effect of various variables on PPD.

Variables in the Equation	Wald Test	p-Value	ORs	95% C.I. for ORs	
				Lower	Upper
Husband's employment	1.84	0.17	1.61	.81	3.2
Family Support in puerperium	29.14	0.001	6.08	3.16	11.72
Husband Support in puerperium	19.15	0.001	6.62	2.84	15.42
Sex of last Baby	4.62	0.03	1.92	1.06	3.48
Rural/urban divide	4.06	0.04	.49	.25	.98
Feeding Status	7.43	0.006	2.38	1.27	4.44

PPD: Post-partum depression
CI: Confidence interval
OR: Odds ratio.

Hosmer-Lemeshowtest for goodness showed the model was a good fit to the data (p=0.63).

PPD showed significant association with family support (p=0.001), husband's support (p=0.001) and feeding status (p=0.02) and showed insignificant association with the age of mothers (p=0.15), educational status (p=0.69), husband's education (p=0.65), employment status (p=0.93), husband's employment (p=0.08), selection of hospital (p=0.71), number of children (p=0.16), male children (p=0.36), female children (p=0.13), sex of last baby (p=0.13) and first-time mother (p=0.77). As p-values of the variables husband's employment, sex of last baby, family support, husband support and feeding status in association with PPD in univariate analysis were less than 0.25, they were used in multivariate analysis. Although the association of hospital selection with PPD wasn't statistically significant (p=0.71), it shows the rural-urban divide and is an important variable, thus it was explored more in multivariate analysis (Table-3).

P-values of the variables family support (0.001) and husband support (0.001) remained the same as in univariate analysis. It meant these variables had strong significant association with the prevalence of PPD. P-values for employment status changed slightly from 0.08 to 0.17, which meant employment status may not be of significance to the prevalence of PPD; however, the synergic effects of other variables made it less statistically significant.[29] P-values for the variable 'sex of last child' changed from 0.13 in univariate analysis to a statistically significant result of 0.03 in multivariate analysis. It was probably due to the fact that the association of this variables with PPD was not significant in itself rather the synergic effect of other variables made it significant.[29] The other probable variables might be family and husband's support and reaction to gender of the baby, which may be linked with maternal health. Also, p-value for the variable 'selection of hospital' changed from a non-significant (p=0.71) in univariate to a statistically significant value

(p=0.04) in multivariate analysis. Selection of hospital was probably not significantly associated with the prevalence of PPD in univariate analysis, however, the synergic effect of other variables such as better education, better employment, better family and husband support in urban population made selection of the hospital statistically significant in multivariate analysis.

P-value of the variable 'feeding status' changed from statistically significant value (p=0.02) in univariate to highly statistically significant value (p=0.006) in multivariate analysis. This showed breastfeeding was significantly associated with PPD in itself; however, the synergic effects of other variables such as better education, family and husband support, better mother-infant attachment and better maternal and infant health secondary to breastfeeding made it even more significant.

The odds ratio (OR) calculated showed that the odds of PPD was 2.3 (95% CI: 1.27 - 4.44) times more among non-exclusive breastfeeding mothers during the initial 6 weeks after delivery as compared to exclusive breastfeeding women (p=0.006).

The odds of PPD was 6.6 times more among women with no husband's support (p= 0.001) and 6.1 times more among women with no family support (p=0.001) during puerperium. The odds of PPD was 1.92 times more among those women with youngest female child as compared to those with youngest male child (p=0.03) and 1.6 times more among those women with unemployed husbands as compared to those with employed husbands (Table-3).

Discussion

PPD is a vital public health issue that affects women around the globe.[3] Previous studies report the prevalence rates of PPD 18-25% in developing countries,[3] whereas evidence shows extremely high rates of PPD in Pakistan, i.e. 28-63%,[1] 25.5%[10] and 36%.[11] Considering the rate

evidenced in this study, (17.3%; 95% CI = 13.74% - 20.86%), it is justified again that PPD is a vital public health issue and routine PPD assessment needs to be implemented nationwide in Pakistan. However, the frequency of PPD calculated in this study may not truly represent the actual rates because only those women presenting at immunisation clinics in a specific time duration were recruited, and the frequency is likely to be even higher.

A large body of evidence exists across the world to support a positive relationship of lower PPD frequency with prolong breastfeeding.[15,16,22] This study supports this evidence in Pakistan, as odds of PPD among the participants were 2.6 times lower in exclusive breastfeeding mothers as compared to non-exclusive breastfeeding mothers. Hence, exclusive breastfeeding needs to be encouraged among women across the country.

Previous studies have shown an association of lower socio-economic status,[8,10] number of kids,[10] female youngest child,[10] low income,[10,12] lack of social support,[10,12] rural/urban divide[12] and lower education[13] with higher frequency of PPD. This study supports the evidence on the association of family and husband's support, employment status and sex of last child with PPD; however, educational status and number of children didn't show a significant association with PPD. The study findings report that the odds of PPD was 6.1 times more among the participating women with no family support, 6.6 times more among those with no husband's support, 1.6 times more among women with unemployed husbands and 1.9 times more among those with female youngest child. Sex of the child was not significant in itself (p=0.128), but the synergistic effect of other variables made it significant (p=0.041), including probably family and husband's support, as family's reaction to gender of the baby may be linked with maternal health. The association of rural-urban divide with PPD was not significant (p=0.707) in itself, but the synergic effect of other variables such as better education, employment, husband and family support in urban population seemed to make it significant (p=0.044) in multivariate analysis.

The study had its limitation as well. The study recruited only those mothers aged between 18- 44 years, presenting at immunisation clinics in specific hospitals during specific time-frame. The sample may under-represent all the rural areas. Also, considering the literacy and employment rates of the participants, the sample was likely reflective of a city (i.e. Islamabad) but not rest of the cities of Pakistan.

Also, according to the United Nations International Children's Fund (UNICEF) report of 2004, the rate of uptake of immunisation scheme for children is 65-80% in Pakistan. Thus, immunisation clinics were chosen for recruitment. However, studies have shown that depressed mothers are comparatively less responsive to their children[30] and are less likely to participate in infants' essential preventive health practices,[31] such as fastening seat belts and vaccination. Thus, the study may have missed a significant percentage of women with PPD.

Besides, for non-exclusive breastfeeding mothers, no data was collected on what proportion of feeding was bottle and what proportion was breastfeed.

Moreover, 62% of the women asked for researcher's help in completing the questionnaires, so there may be a bias related to answering the questions honestly.

Finally, it was appropriate to mark and score the close-ended questions to provide evidence on PPD, but the questionnaire was so structured that the mothers didn't have ample opportunity to talk and express; so, probably a mixed methodology, including qualitative approach, for some aspects would be better. Quantitative approach provided descriptive data which was not that straightforward as the analysis shows.

Despite the limitations, this study can be taken as a starting point and can be extended on national level to include the remaining hospitals and also secondary and primary health care units in other cities and villages.

Conclusion

Exclusive breastfeeding has a strong association with PPD. Women across the country need to be supported and educated about many benefits of exclusive breastfeeding, including potential protective effect from PPD. There is also a need to introduce PPD screening after 6 weeks of child's birth at local and national levels for timely and appropriate management.

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