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Original Research Article

A study of the prevalence of post-partum depression in a secondary care hospital in Dimapur, Nagaland, Northeast-India

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ABSTRACT

Background: Post Partum Depression (PPD) is a very common mental health issue emerging in pregnant woman worldwide. This research tries to find out prevalence of post-partum depression and factors leading to its development.
Methods: A structured interview was conducted involving 178 pregnant women of age >18 years. During their intra-natal period they were given an EPDS questionnaire and then after 2 weeks they were reassessed through telephonic interview. The results of two EPDS scores and variables was obtained on paper and analysed on Microsoft Excel.
Results: This study shows a prevalence of PPD to be 54.49%. It was also found in this study that Post-Partum Depression is very closely associated with history of miscarriage in previous pregnancies (p=0.042).
Conclusions: Prevalence of PPD is very high in Northeast India specially in urban areas. This study included in-patients and found 54.49% prevalence of PPD. Miscarriage being strongly associated.

Keywords: Edinburgh post-natal depression scale, Northeast India, Post-partum depression

INTRODUCTION

Depression is of many types like major depressive disorders, dysthymia, psychotic depression, bipolar disorders, premenstrual depression and postpartum depression. All these depressions in their mild to severe forms affect the normal functioning of the individual and sometimes to that extent that he/she is compelled to take their lives. According to the World Health Organization (WHO), depression is a leading cause of disability in women and a major public health concern. It is estimated that in 2012, India had over 258,000 suicides, with the age-group of 15-49 years being most affected.[1]

Postpartum depression (PPD), also called postnatal depression, is a type of mood disorder associated with childbirth, which can affect both sexes. Symptoms may include extreme sadness, low energy, anxiety, crying episodes, irritability, and changes in sleeping or eating patterns. Onset is typically between one week and one month following childbirth. PPD can also negatively affect the newborn child.[2]

Diagnosis of PPD

Criteria

Postpartum depression in the DSM-5 is known as "depressive disorder with peripartum onset". Peripartum onset is defined as starting anytime during pregnancy or within the four weeks following delivery. There is no longer a distinction made between depressive episodes that occur during pregnancy or those that occur after delivery. Nevertheless, the majority of experts continue to diagnose postpartum depression as depression with onset anytime within the first year after delivery.[3]

The criteria required for the diagnosis of postpartum depression are the same as those required to make a diagnosis of non-childbirth related major depression or minor depression. The criteria include at least five of the following nine symptoms, within a two-week period: feelings of sadness, emptiness, or hopelessness, nearly every day, for most of the day or the observation of a depressed mood made by others; loss of interest or pleasure in activities; weight loss or decreased appetite; changes in sleep patterns; feelings of restlessness; loss of energy; feelings of worthlessness or guilt; loss of concentration or increased; indecisiveness; recurrent thoughts of death, with or without plans of suicide.[4]

METHODS

This was hospital-based prospective study from January 2021 to December 2021 conducted at Christian Institute of Health Sciences and Research (CIHSR), Dimapur, Nagaland.

Inclusion criteria

All peri-partum Tribal women who got admitted in general or private ward through OPD or emergency with complaints of labor pain or for elective/emergency LSCS were included in this study. All Tribal women who delivered at home or other institute and came for follow-up and got admitted in CIHSR for some other indications, within 4 weeks post-delivery, were included in this study.

Exclusion criteria

Non-Tribal women; Age <18yrs; participants who were lost to follow-up were excluded from this study.

Variables**:** Age, socio-economic status, occupation, parity, willingness to marry, relationship with in-laws, relationship with husband, sex of newborn baby, child care stress, past/present IUD/death of baby at later age, history of major illness (DM, TB, HIV, PIH, GDM, pre-eclampsia, eclampsia), past history of depression or anxiety, family history of psychiatric problems.

Data Source/Collection

The Edinburgh Postnatal Depression Scale (EPDS) was used to diagnose PPD in the patient. EPDS is a 10 question self-assessment questionnaire in which Q1, Q2 and Q4 has scoring of 0, 1, 2, 3 for options a, b, c, d while other 7 questions have scoring of 3, 2, 1, 0 for options a, b, c, d respectively (30). If the response to Q10 was >0 it would suggest suicidal ideation and further evaluation was undertaken.[5]

An EPDS cut off of >=9 was used in this study to distinguish between case and non-case, as it has been suggested that this standard cutoff score had an overall sensitivity of 90% and a specificity of >85% at detecting postpartum depression.[6]

An EPDS score of following ranges was considered in this study to label severity of PPD as mild, moderate and severe PPD.[7] The (0–8) - None or minimal depression; (9–13) - Mild PPD; (14–19) - Moderate PPD; (20–30) - Severe PPD.

A written consent in English was presented and once subjects give consent, they were given a pre-structured EPDS questionnaire on the day of admission. The scale was presented in the language known to the patient for ease of understanding, which was English and Nagamese.

Then between 2nd week to 4th week of post-delivery, the subjects were again asked to fill the questionnaire during their follow-up in OPD or voice-over response over telephone was noted down on response sheet.

For telephonic responses, the participants were asked for their contact number and after their consent, the principal investigator maximally made 2 calls. If no response over phone after 2 calls or no follow-up in OPD, that participant was labelled as loss to follow-up (LTF).

Data collected on paper was fed into Microsoft Excel 2007 spreadsheet for analysis.

Sample size

For calculating sample size Cochran's formula (34) was used for finite population.

$$n_0 = \frac{Z^2 pq}{e^2} \ldots.(i) \text{ (Infinite population)}$$

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \ldots.(ii) \text{ (Finite population)}$$

[Z-score= 1.96 (95% Confidence); e=Precision (+- 5%), p= estimated proportion of population which has the attribute; q=1-p; N=finite population size].

In the study of Swapan et al, prevalence of PPD was found to be 15.8%. So in this study p=0.158; q=0.842 was used.[21]

Almost 1000 deliveries are conducted in CIHSR (DATA from Delivery Register of CIHSR, Dimapur), out of which 800 are Tribal women. (N=800).

Substituting all values in equation (i) – n_0= 204

Substituting value of n_0 in equation (ii) - n= 162

Considering loss to follow-up to be around 10%, the adjusted sample size = 162 + (10% of 162) = 162+16.2 ~ 178.

In the beginning of the study, expected loss to follow-up was around 10% of total sample. Total sample size of this study was 162 and so adding the expected LTF, makes the

total sample size to be 178. Total of 178 women were included in the study but 16 women were loss to follow-up since unable to contact them after 1st visit. So, after excluding 16 women from the study, total population (N) is 162.

RESULTS

Out of 162(N); 73 women had no depression with EPDS score <9; 89 of the women were found to have post-partum depression with EPDS score >=9 making the prevalence of PPD to be 54.94% in 1st visit. On following up the whole population for 4 weeks, no new women came positive for EPDS, while 30 out of 89 (PPD positive in 1st visit) were found to have mild depression in follow-up between 2 to 4 weeks. This shows that only 30(18.52%) females have residual depression while 59(81.48%) have no signs of depression during their second visit. PPD is self-cured without any medication or intervention.

Table 1: Total participants and number of PPD.

	Number of women	Percent
EPDS >=9 (1st visit) [PPD present]	89	54.94
EPDS >=9 (2nd visit) [PPD present]	30	18.52

Table 2: Table for association of various variables with post partum depression using chi-square test of association.

Variables	Parameters	Number of women (N=162)	Number of women WITH PPD (n=89)	Percent of women with PPD (%)	Chi-square value	P-value
Age	Age 18 to 30 yrs	60	37	61.67	0.67	0.19
	Age 31 to 45 yrs	102	52	50.98		
Socio-economic	Upper upper	0	0	0.00	0.69	0.74
	Upper middle	45	24	53.33		
	Lower middle	85	49	57.65		
Status	Upper lower	32	16	50.00		
	Lower lower	0	0	0.00		
Education	Post graduate	27	12	44.44	1	0.11
	Graduate	58	33	56.90		
	Intermediate	23	14	60.87		
	High school	26	19	73.08		
	Middle school	23	8	34.78		
	Primary school	0	0	0.00		
	Uneducated	5	3	60.00		
Occupation	Housewife	112	61	54.46	0.35	0.86
	In job	50	28	56.00		
Parity	Primigravida	69	40	57.97	0.48	0.5
	MULTIGRAVIDA	93	49	52.69		
Consent to	Willing	154	83	53.90	0.62	0.24
Marry	Not willing	8	6	75.00		
Relation with	Good	158	87	55.06	0.36	0.84
In-laws	Bad	4	2	50.00		
Relation with	Good	160	89	55.63	0.68	0.17
Husband	Bad	2	0	0.00		
Anxiety due to	Yes	16	9	56.25	0.34	0.91
Female sex	No	146	80	54.79		
Child care	Yes	64	38	59.38	0.55	0.36
Stress	No	98	51	52.04		
Planning of	Planned	141	78	55.32	0.37	0.8
Pregnancy	Unplanned	21	11	52.38		
Miscarriages &	Present	29	11	37.93	0.84	0.042*
Still births	Absent	133	78	58.65		
Substance abuse	Present	18	9	50.00	0.42	0.66
	Absent	144	80	55.56		
Major diseases	Total women with comorbidities	24	13	54.17	0.33	0.93

Continued.

Variables	Parameters	Number of women (N=162)	Number of women WITH PPD (n=89)	Percent of women with PPD (%)	Chi-square value	P-value
	Women with no comorbidities	138	76	55.07		
Past history	Present	10	6	60.00	0.39	0.74
Mental illness	Absent	152	83	54.61		
Family history	Present	3	1	33.33	0.5	0.45
Mental illness	Absent	159	88	55.35		

*statistically significant – (p-value <0.05)

The table 2 clearly shows that miscarriage in previous pregnancy was statistically significant in this study with p-value of 0.042 (<0.05). Along with miscarriage, education of the women and relationship with husband was also an important factor for post-partum depression but was not statistically significant in this study.

DISCUSSION

This study has found the prevalence of post-partum depression to be 54.49% which is quite high as compared to the studies conducted elsewhere in India. One study done in Lucknow, Uttar Pradesh, India found prevalence of PPD as high as 93%.[8] Most of the other studies done across India have found prevalence of PPD around 11-22%. The possible reason might be: different study group with different level of understanding for mental problems. One study done in Tamil Nadu (South India) found the prevalence to be 11%.[9]

This study also showed that 30(18.52%) women had residual depression (EPDS >=9) when they were followed-up between 2 to 4 weeks post-delivery. The drastic decrease from 54.49% to 18.52% can be explained by fact that the woman post-delivery was amongst her family with her husband and child in home. Therefore, sense of security and happiness had increased which brought down the level of anxiety and depression which they had while they were in the hospital.

EPDS scale had 10 questions which were offered to 162 women. Question number 10 referred to suicidal/infanticidal thoughts. Out of 162 women, 20 (32.4%) of them had thoughts of suicide or even throwing away their newborn. Such women were explained the need of proper psychiatric evaluation for which they were asked to contact psychiatrist as soon as possible. Their husbands were also intimidated about this result.

Age

Between 18 to 30 age, 37 (61.67%) were found to have PPD while between 31 to 45 age 52(50.98%) were found to have PPD. In the study by Swapan et al, PPD was also found to be high in women <30 years of age. In their study 87.50% of women below 30 years were found to have PPD.[10] Though there was no statistically significant data for association but many studies found that lower age group with early pregnancy was found to contribute towards PPD.

Socioeconomic status

The present study found that lower middle class of society (according to modified Kuppuswamy scale) were prone to suffer from PPD which was in accordance with other studies done in different parts of world. One study done in Iran found out significant relation between SES.[11]

Education

The present study found that PPD was maximum amongst the women who had education till high school. But there was no significant association seen with education of women and PPD. This was in accordance with studies done in many parts of world. One study done in Japan showed similar results with PPD risk higher in lower educated groups. They found that education is an important variable and hence can be used to asses level of PPD.[12]

Relation with in-laws and husband

The data in this study shows that interpersonal relationship with in-laws and husband does not have any significant role in PPD. Although it gives clues that a good and healthy relationship with in-laws and husband might decrease risk of woman going into PPD. Studies have revealed that good interpersonal relationship and caring husband has actually lower the risk of PPD.

In China mother in-law is the primary health care provider for post-partum mother. Study done in China shows that relationship with mother in-law was eventually affecting the women's mental health.[13] Similar study done in Bialystok in 2016 showed significant association between PPD and relationship with husband. Women who declared deeper satisfaction with their relationship displayed a greater sense of mental well-being.[14]

Gender of newborn

This study showed that PPD in women who had stress due to female child was 56.25% since they wanted a male child. This was not significant since 54.79% women had PPD and had no male baby preferences. A study done in

Goa, India showed that depression was lesser in females who had a male baby rather than females who had a female baby.[15]

Miscarriages or abortions

The experience of miscarriage is an important population-level problem that affects approximately 10–25% of pregnancies. The physical consequences of miscarriage have been researched extensively, but psychological sequelae less so.[16] Miscarriage, the spontaneous loss of a pregnancy before completion of 20 weeks gestational age, may result in intense grief for women who experience it. Emotional experiences during subsequent pregnancy may then be impacted by previous miscarriage experiences.[17] The current study found a significant association between previous pregnancy loss and PPD.

Out of 162 women, 29 had history of pregnancy loss. Out of these 29 women, 11(37.93%) had PPD. Chi-Square gave p-value of 0.042 showing a very significant association. Similar results were also found in studies around the globe. A study done in Lithuania, 84.7% women experienced miscarriage-related tension, 98.7% sadness, and 94.4% feelings of despair and had thoughts of self-harm (15.4%) and suicide (14.2%). Of the women, 59.1% were found to be at increased risk of postnatal depression and 48.9% of them at high risk of postnatal depression.[16] Another study done in Pennsylvania, reports that women with a history of miscarriage were 1.66 times more likely to have probable depression at 1 month postpartum compared to women with no history of miscarriage.[17] Another study in Naorobi found positive depression screen in 34.1% of the patients recruited, with p-value of 0.011 in women with prior miscarriage.[18] An Ethiopian study revealed a significant association between Miscarriage and PPD. [19]

Occupation of women

This study found that women who were into some kind of occupation/job suffered more from PPD. Out of 50 females who were into job, 28(56%) were having cut-off EPDS of >=9. Compared to this, amongst the housewives included in this study only 54.46% had PPD. This data was in accordance with study done in Nepal in 2019. This study found that, in reference to women who were engaged in any service sector like those who were engaged in agriculture and daily wage labor were found more likely to be depressed.[20]

Unplanned pregnancy

In this study out of women who had unplanned pregnancy 52.38% were found to have PPD. Similar results was shown in a meta-analytic study done in middle east in 2021. In their study, they identified unplanned pregnancy as a significant risk factor for PPD. They predicted that unwanted pregnancy makes it difficult to adapt to the roles and responsibilities of motherhood.[21]

Child care stress

This study shows 59.8% women who had child care stress were suffering from PPD. An Indonesian study showed similar results. Mothers with a higher level of childcare stress exhibited high PPD on all three time points. Childcare stress represents a relatively under-researched risk factor for the development of PPD. The impact of high infant sleep disturbance and frequent feeding on PPD demonstrates that childcare stress proposes an important place in research aimed at the contributions to PPD development.[22]

Substance abuse and chronic illness

In one metanalysis done in 2008 involving 17 authentic papers, it was reported that Substance abuse pre-conceptionally or post-delivery was significantly associated with PPD while history of Chronic illness was not so much responsible for PPD.[23] In this study also similar results were found which suggests that history of chronic illness is not significantly associated with PPD while 9 out 18 substance abuser females were found to have PPD.

Family history and personal history of depression

This study did not find any statistically significant data proving family history or personal history of depression to be associated with PPD. But this study shows that 60% of women with past history of depression had experienced PPD in present pregnancy. 33% women with family history of psychiatric illness also showed PPD symptoms in present pregnancy. In a Study done in eastern province of Saudi Arabia in 2014 revealed that family history of depression was associated with PPD in present pregnancy with p-value of 0.001.[24]

Parity

This study found out that Primigravida women were more prone to develop PPD in early post-partum as compared to Multigravida women. Out of 69 primigravida, 40(57.97%) were having EPDS >=9. This was in accordance with study done in Japan in 2016 which also showed significant association of PPD in Primigravida women. It also showed that the proportion of women with EPDS scores ≥9 significantly decreased during the same period for primiparas but not for multiparas.[25]

This study has some limitations. Less number of sample population; short duration of study; less area of coverage as only those women were included who visited CIHSR; only Tribal women of northeast were included in the study; Women <18 years were not included.

CONCLUSION

The study concludes that there is very high rate of prevalence of PPD in Northeast India specially in urban

areas. Prevalence of 54.49% in women attending secondary care hospital is very high since it included only in-patients. Most of the women of working background, Primigravida and early age of reproduction were found to have more chances of PPD. Significant association between PPD and previous miscarriages/abortions was found in this study. This association might be because of fear of recurrent abortions.

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REFERENCES

1. WHO. WHO is revamping its digital presence. Mental Health and Substance Abuse. 2020:2-3.
2. National Institute of Mental Health. Perinatal Depression. Available at: https://www.nimh.nih.gov/sites/default/finatal%20depression%20can%20be%20treated. Accessed on 22 August 2023.
3. Dekel S, Ein-Dor T, Dishy GA, Mayopoulos PA. Beyond postpartum depression: posttraumatic stress-depressive response following childbirth. Arch Wom Ment Heal. 2020;23:557-64.
4. Stewart DE, Vigod S. Postpartum depression. N Eng J Med. 2016;375(22):2177–86.
5. Knights JE, Salvatore ML, Simpkins G, Hunter K, Khandelwal M. In search of best practice for postpartum depression screening: is once enough? Euro J Obstet Gynecol Reprod Biol. 2016;206:99-104.
6. Venkatesh KK, Zlotnick C, Triche EW, Ware C, Phipps MG. Accuracy of brief screening tools for identifying postpartum depression among adolescent mothers. Pediatrics. 2014;133(1):e45-53.
7. McCabe-Beane JE, Segre LS, Perkhounkova Y, Stuart S, O'Hara MW. The identification of severity ranges for the Edinburgh Postnatal Depression Scale. J Reprod Infant Psychol. 2016;34(3):293-303.
8. Nigam A, Prakash A, Maheshwari N. Postpartum depression in an Indian community: more prevalent less addressed issue. Int J Reprod Contracept Obstet Gynecol. 2016;(January):2691-5.
9. Chandran M, Tharyan P, Muliyil J, Abraham S. Post-partum depression in a cohort of women from a rural area of Tamil Nadu, India. Incidence and risk factors. Brit J Psych. 2002;181(DEC.):499-504.
10. Swapan G, Jugal K. Postpartum depression in north Indian women : prevalence and risk factors. 2020;63(August 2013):223-9.
11. Taherifard P, Delpisheh A, Shirali R, Afkhamzadeh A, Veisani Y. Socioeconomic, psychiatric and materiality determinants and risk of postpartum depression in border city of Ilam, western Iran. Depress Res Treat. 2013;2013.
12. Matsumura K, Hamazaki K, Tsuchida A, Kasamatsu H, Inadera H, Kamijima M, et al. Education level and risk of postpartum depression: results from the japan environment and children's study (JECS). BMC Psych. 2019;19(1).
13. Qi W, Liu Y, Lv H, Ge J, Meng Y, Zhao N, et al. Effects of family relationship and social support on the mental health of Chinese postpartum women. BMC Pregnancy Childbirth. 2022;22(1).
14. Malus A, Szyluk J, Galinska-Skok B, Konarzewska B. Incidence of postpartum depression and couple relationship quality. Psychiatr Pol. 2016;50(6):1135-46.
15. Patel V, Rodrigues M, DeSouza N. Gender, poverty, and postnatal depression: a study of mothers in Goa, India. Am J Psych. 2002;159(1):43-7.
16. Kukulskienė M, Žemaitienė N. Postnatal depression and post-traumatic stress risk following miscarriage. Int J Environ Res Publ Health. 2022;19(11).
17. Bicking Kinsey C, Baptiste-Roberts K, Zhu J, Kjerulff KH. Effect of previous miscarriage on depressive symptoms during subsequent pregnancy and postpartum in the first baby study. Matern Child Health J. 2015;19(2):391-400.
18. Mutiso SK, Murage A, Mwaniki AM. Factors associated with a positive depression screen after a miscarriage 11 medical and health sciences 1103 clinical sciences. BMC Psychiatry. 2019;19(1).
19. Asaye MM, Muche HA, Zelalem ED. Prevalence and predictors of postpartum depression: Northwest Ethiopia. Psychiatry J. 2020;2020:1–9.
20. Chalise A, Bhandari TR. Postpartum depression and its associated factors: a community-based Study in Nepal. J Nepal Health Res Counc. 2019;17(2):200–5.
21. Alshikh Ahmad H, Alkhatib A, Luo J. Prevalence and risk factors of postpartum depression in the middle east: a systematic review and meta–analysis. BMC Pregnancy Childbirth. 2021;21(1).
22. Estiningtyas, Cahyaningtyas AY. Determinants of Postpartum Depression In Rural Area, Central Java, Indonesia. J Health Sci Prevent. 2021;5(1):49-57.
23. Ross LE, Dennis CL. The prevalence of postpartum depression among women with substance use, an abuse history, or chronic illness: a systematic review. J Womens Health. 2009;18(4):475-86.
24. Alasoom L, Koura M. Predictors of postpartum depression in the eastern province capital of Saudi Arabia. J Family Med Prim Care. 2014;3(2):146.
25. Iwata H, Mori E, Sakajo A, Aoki K, Maehara K, Tamakoshi K. Prevalence of postpartum depressive symptoms during the first 6 months postpartum:

Association with maternal age and parity. J Affect Disord. 2016;203:227-32.

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