ORIGINAL RESEARCH ARTICLE

Prevalence and Predictors of Postpartum Depression among Mothers Attending Tertiary Care Hospital, Jammu, India

Jyoti Bala[1], Rashmi Kumari[2], Rajiv K Gupta[3], Bhavna Langer[4]*, Richa Mahajan[5], Imran Zaffer[6]

[1-6]Government Medical College, Jammu, India

A B S T R A C T

Background: Postpartum depression refers to non-psychotic depressive episode that begins immediately after childbirth. Although delivering a baby is a happy event but many females develop depressive symptoms. About 13% of postpartum women experience a mental disorder, primarily depression worldwide. The aim is to estimate the prevalence of Postpartum depression among the mothers and to determine the association of Perceived Social Support, socio demographic and other obstetric variables with Postpartum depression.

Methodology: The study was conducted among the Postpartum mothers attending the immunization section of a Tertiary care hospital, Jammu, India. Tools used are- Edinburgh Postnatal Depression Scale (EPDS), Hamilton depression Rating Scale (HDRS) and Multidimensional Scale of Perceived Social Support (MSPSS). SPSS software was used to analyse the data.

Results: Prevalence of Postpartum Depression was found to be 16.1%. Variables like residence, occupation, h/o domestic violence, family h/o mental illness, eventful antenatal period, h/o hospitalization of baby, unwanted parenthood and low social support emerged to be independent predictors of Post Partum depression.

Conclusions: Postpartum mothers particularly those, who were having poor social support are highly vulnerable to depression. Every postpartum mother should be screened for postpartum depression and timely referred to the psychiatrists. Also, family members need to be counselled.

Keywords: Postpartum depression, EPDS, Social support, prevalence

INTRODUCTION

Postpartum (or postnatal or puerperal) period begins immediately after parturition and lasts up to first six weeks.[1] During this time while recovering from childbirth, a woman is adjusting to changing hormones, adapting to multiple physical, social and psychological changes and at the same time, also learning to feed and care for her new born.[2] Although delivering a baby is typically a happy event, many postpartum women had an increased vulnerability for the development of mental illness especially depression in the postpartum period.[3] Pregnancy and postpartum period are reported as the high risk periods for the emergence of the psychiatric disorders. Women are twice more prone to depression than men due to their reproductive nature, minding, nurturing and rearing of children.[4] Postpartum depression is defined as depression occurring within the first six weeks postpartum with a list of ten symptoms, which must occur most of the day, nearly every day, for at least 2 weeks.[5] About 10% of pregnant women and 13% of postpartum women experience a mental disorder, primarily depression worldwide. The prevalence is even higher in developing countries, i.e.15.6% during pregnancy and 19.8% after child birth.[6] Postpartum depression (PPD) seems to have multifactorial etiology including demographic, psychosocial, obstetric, economic, medical and family history as risk factors. Screening of females for postpartum depression at the earliest is crucial for the prompt treatment. Review of literature has revealed that although some research in this regard has been conducted in India, but there is a dearth of studies from North India. It was in this context that the present study was planned with the aim to estimate the prevalence of Postpartum depression among the mothers attending the immunization section and to determine the association of Perceived Social Support, socio demographic and other obstetric variables with Postpartum depression.

METHODOLOGY

Study design, setting and study period: This cross-sectional study was conducted in the immunization section of Pediatrics department in SMGS HOSPITAL, Jammu, which is a tertiary care teaching hospital in Jammu province. The study was conducted for a period of one year after seeking the approval from Institutional Ethics Committee (IEC), GMC, Jammu (No: IEC/GMC/2022/886 Dated: Feb 28, 2022).

Study population: The study population comprised of postpartum mothers of age 18 years and above, attending the immunization section of Pediatric department of the Hospital for getting their children immunized against vaccine preventable diseases.

Sample size calculation and Sampling Technique: Assuming the prevalence of postpartum depression to be 13%[6], with 20 % relative precision, confidence level of 95% and non-response rate of 10%, the sample size was calculated as 736 using the formula $4pq/d^2$. Considering an average daily attendance of 20-25 Postpartum mothers in the immunisation section, every 3rd mother fulfilling the eligibility criteria was approached on three alternate days of a week for the entire duration of data collection. Daily 5-6 mothers were interviewed to ensure the quality of data.

Inclusion criteria: Postpartum mothers who were aged 18 years & above, were in the period of 4- 7 weeks following delivery, had delivered a live healthy baby and had given written informed consent were included in the study.

Exclusion criteria: Postpartum mothers with any previously diagnosed psychiatric illness for which she has received medication/was on medication, any medical problem in mother or child and child born with any abnormality (physical/mental)

Study procedure: After taking approval from IEC, GMC Jammu, permission was sought from the head of department of Pediatrics before the actual start of study. The investigator explained each eligible participant about the purpose of study in her local dialect and assured that all the information gathered shall be kept confidential. Thereafter, written informed consent was taken from the willing women and only those who gave consent were interviewed. Interview was conducted in accordance to predesigned and semi structured study proforma and specific questionnaires. Researcher begun the interview by administering the proforma containing information about details of socio-demographic variables, Obstetric variables and personal history. It was followed by screening each eligible participant for Postpartum Depression (PPD) with a predesigned scale - Edinburgh Postnatal Depression scale (EPDS). Those women who scored more than 10 were further rated as mild , moderate and severe depression on the basis of Hamilton Depression Rating Scale (HDRS).Multidimensional scale of perceived social support (MSPSS) scale was also administered to all the participants to measure social support in all postpartum women irrespective of any depressive symptoms. The mothers who were screened as having moderate and severe depression were advised for psychiatrist consultation.

Study Tools:

Edinburgh Postnatal Depression scale (EPDS)[7]: The Edinburgh Postnatal Depression Scale is a predesigned, validated and most commonly used scale. It consists of 10 questions, each question is scored as 0,1,2, or 3 and maximum score is 30. Score of more than 10 is considered as Postpartum depression with higher scores suggestive of increasing the severity of depression.

The Hamilton Depression Rating Scale[8](HDRS also known as HAM-D) is the most commonly used scale for the assessment of Depression. The original

version of this scale contains seventeen items pertaining to symptoms of depression experienced over the past week. Based on the symptoms, the following are the severity ranges for the HAM-D: no depression: 0-7, mild depression: 8-16, moderate depression: 17-23 and severe depression: ≥24.

The Multidimensional Scale of Perceived Social Support[9](MSPSS) is a scale of 12-items which measures perceived adequacy of social support from three sources: family, friends, & significant other; using a 7-point Likert scale. The total score obtained was divided by 12 and then mean score was calculated which was further categorised as:1 to 2.9: low support, 3 to 5: moderate support and 5.1 to 7 as high support.

Statistical analysis: Data so collected was entered into Microsoft Excel sheet and then transferred to Statistical Package for the Social Sciences (SPSS version 20.0) for conducting statistical analysis. Qualitative data was reported as proportions while mean (± SD) were used to report quantitative variables. Association of PPD with risk factors was evaluated by calculating crude Odd's ratio along with corresponding 95% confidence intervals and its statistical significance was assessed by using chi square / Fischer Exact test. A p-value of <0.05 was taken as significant and all p-values reported were two tailed. All the variables found to be significant on univariate analysis were entered into Logistic regression analysis to assess the independent effect of variables on Postpartum Depression. "ENTER" method was used for Logistic Regression Analysis.

RESULTS

A total of 750 postpartum mothers were interviewed to estimate the prevalence of Postpartum Depression (PPD). The prevalence of PPD in the present study was found to be 16.1% (121/750). It was found that among those who were found to be depressed, 85.1% (103/121) were graded as mild depression, 13.2% (16/121) as moderate depression and only 1.7% (2/121) were graded as severely depressed on HDRS scale. Socio demographic characteristics of the study population are given in the Table 1 and it is revealed that Mean age of the participants was 27.24±4.39 years and Mean (±SD) age at the time of their marriage was 23.01±4.12 years. Majority of the participants were in the age group of 20-30 years (77.7%) and more than half (58%) were resident of rural areas. Hinduism was the dominant religion (72.8%) and majority of the participants were housewives (81.7%). This was also revealed that women who were aged less than 20 years, living in nuclear families, belonging to urban areas, employed, educated up to graduate and above, having monthly family income less than $300 (US dollars) and not living with their spouse (divorced/ widowed/ separated)-were more at a risk of Post Partum Depression.

Table1. Sociodemographic Variables and their association with Postpartum Depression (PPD)

Variables	Total (%)	PPD		Crude Odd's Ratio (CI)	P-Value
		Absent (%)	Present (%)		
Age (Yrs)					
<20	20(2.7)	16(80.0)	4(20.0)	1.02(0.32-3.27)	0.352
20-30	583(77.7)	495(84.9)	88(15.1)	0.72(0.45-1.15)	
>30	147(19.6)	118(80.3)	29(19.7)	Ref (1.00)	
Residence					
Rural	442(58.9)	381(86.1)	61(13.8)	Ref (1.00)	0.038
Urban	308(41.1)	248(80.5)	60(19.5)	1.51(1.02-2.23)	
Religion					
Hindu	546(72.8)	451(82.6)	95(17.4)	Ref (1.00)	0.043
Muslim	162(21.6)	145(89.5)	17(10.5)	0.56(0.32-0.96)	
Sikh	35(4.7)	29(82.9)	6(17.1)	0.98(0.40-2.43)	
Others (Christian, Buddhist and Jains)	7(0.9)	4(57.1)	3(42.9)	3.56(0.78-16.16)	
Family Type					
Nuclear	171(22.8)	139(81.3)	32(18.7)	1.27(0.81-1.98)	0.297
Joint	579(77.2)	490(84.6)	89(15.4)	Ref (1.00)	
Occupation					
Housewife	613(81.7)	522(85.2)	91(14.8)	Ref (1.00)	0.042
Employed	137(18.3)	107(78.1)	30(21.9)	1.61(1.01-2.55)	
Educational Status					
Illiterate	36(4.8)	32(5.1)	4(11.1)	Ref (1.00)	
Primary To Higher Secondary	411(54.8)	357(56.8)	54(13.1)	1.21(0.41-3.56)	0.016
Graduate And above	303(40.4)	240(38.2)	63(20.8)	2.10(0.72-6.16)	
Monthly Family Income (US Dollars)					
< $300	441(58.8)	367(58.3)	74(16.8)	1.35(0.66-2.75)	
300- 600	232(30.9)	195(31.0)	37(15.9)	1.27(0.60-2.70)	0.703
>600	77(10.3)	67(10.7)	10(12.98)	Ref (1.00)	
Current Marital Status					
Living with spouse	745(99.3)	629(84.4)	116(15.5)	Ref (1.00)	<0.0001
Widow/Separated	5(0.7)	0(0.001)	5(100)	Undefined	

Table2. Association of Obstetric and other Variables with Postpartum Depression (PPD)

Variables	Total (%)	PPD		Crude Odd's Ratio (CI)	P Value
		Absent (%)	Present (%)		
Mode Of Delivery					
Normal Vaginal	379(50.5)	325(85.8)	54(14.2)	Ref (1.00)	0.156
Caesarean Section	371(49.5)	304(81.9)	67(18.1)	1.33(0.90-1.96)	
Parenthood					
Wanted	702(93.6)	599(95.2)	103(14.7)	Ref (1.00)	<0.0001
Unwanted	48(6.4)	30(4.8)	18(37.5)	3.49(1.88-6.50)	
Baby's Gender					
Male	420(56.0)	355(84.5)	65(15.5)	Ref (1.00)	0.581
Female	330(44.0)	274(83.4)	56(17.0)	1.12(0.75-1.65)	
Preference For Male Baby					
Yes	132(17.6)	105(79.5)	27(20.0)	1.43(0.89-2.31)	0.137
No	618(82.4)	524(84.8)	94(15.2)	Ref (1.00)	
Time Since Delivery					
4-5 Wks	48(6.4)	36(5.7)	12(25.0)	1.81(0.91-3.60)	0.084
6-7wks	702(93.6)	593(94.3)	109(15.53)	Ref (1.00)	
History Of Domestic Violence					
Yes	25(3.3)	6(24.0)	19(76.0)	19.34(7.54-49.58)	<0.0001
No	725(96.7)	623(86.0)	102(14.0)	Ref (1.00)	
Family History of Mental Illness					
Yes	27(3.6)	13(48.1)	14(51.9)	6.20(2.83-13.56)	<0.0001
No	723(96.4)	616(85.2)	107(14.8)	Ref (1.00)	
Duration Of Pregnancy					
Preterm	22(2.9)	13(2.1)	9(40.9)	3.81(1.57-9.02)	0.001
Term/Post term	728(97.1)	616(97.9)	112(15.4)	Ref (1.00)	
Hospitalisation Of Baby					
Yes	43(5.7)	22(51.2)	21(48.8)	5.79(3.07-10.92)	<0.0001
No	707(94.3)	607(85.9)	100(14.1)	Ref (1.00)	
Antenatal Period					
Eventful	16(2.1)	10(62.5)	6(37.5)	3.23(1.15-9.06)	0.019
Uneventful	734(97.9)	619(84.3)	115(15.70)	Ref (1.00)	
Social support					
Low support	52(6.9)	10(19.2)	42(80.8)	113.18(49.45-258.99)	
Moderate support	167(22.3)	107(64.1)	60(35.9)	15.11(8.66-26.36)	
High support	531(70.8)	512(96.4)	19(3.6)	Ref (1.00)	<0.0001

Figure 1: Correlation between postpartum Depression and social support
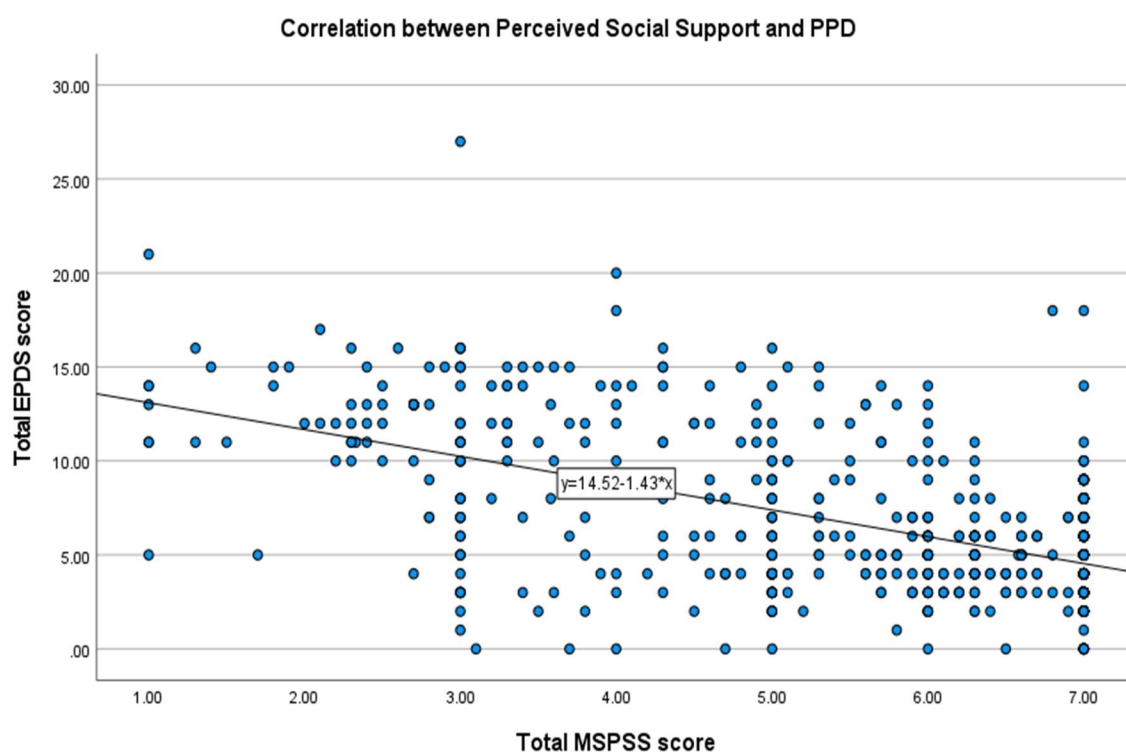
Table 3: Predictors of PPD on Logistic Regression Analysis

Variables	Estimate (B)	S. E	Significance	Adjusted Odd's Ratio	95% C I
Intercept	-0.719	0.456	0.115		
Religions other than Hindu	0.228	0.288	0.429	1.256	0.71-2.21
Urban Residence	0.511	0.252	0.042	1.667	1.02-2.73
Illiterate	-1.580	0.832	0.058	0.206	0.04-1.04
History Of Domestic Violence	1.948	0.667	0.003	7.017	1.90-25.93
Family H/O Mental Illness	1.635	0.498	0.001	5.132	1.93-13.625
Term/Post term Pregnancy	-0.388	0.702	0.580	0.678	0.17-2.69
Housewife	-0.726	0.285	0.011	0.484	0.27-0.84
Eventful Antenatal Period	1.309	0.595	0.028	3.703	1.15-11.87
Hospitalisation of Baby	1.780	0.448	<0.001	5.932	2.46-14.26
Planned Parenthood	-1.630	0.381	<0.001	0.196	0.09-0.41
Low Social support	3.365	0.433	<0.001	28.92	12.37-67.59

The variables that were found to be significantly associated with PPD included residence, religion, occupation, educational and current marital status.

As depicted in Table 2, Unwanted Parenthood, preterm delivery, history of domestic violence, family history of mental illness, hospitalization of baby, eventful antenatal period, and low social support were found to be significantly associated with postpartum depression. It was observed that postpartum depression was more (80.8%) in mothers with low social support as compared to mothers with high social support (3.6%). Also, figure 1 shows that there is a negative correlation between postpartum depression and social support which implies that to protect the women from Postpartum depression, social support plays a significant role.

On multiple Logistic regression analysis as depicted in Table 3, it was found that variables like housewives, urban residence, h/o domestic violence, family h/o mental illness, eventful antenatal period, h/o hospitalization of baby, unwanted parenthood and low social support emerged to be independent predictors of Postpartum depression.

DISCUSSION

The results of the present study have revealed the prevalence of Post partum depression to be 16% in new mothers who came to hospital for Immunisation of their kids and healthcare check-up between 4-7 weeks after delivery. These results are in agreement with those reported by other authors from northern India.[10-13] In contrast, lower prevalence rates were reported in studies[14-16] whereas others[17-19] reported higher prevalence rates of PPD.

The varying rates of PPD have been attributed to various reasons. The use of different diagnostic tools e.g. EPDS, Beck Depression Inventory questionnaire in studies is one of the reasons for varied prevalence rates. Besides different cut off point in a same tool and assessment of PPD at different times of postpartum are among the other reasons for difference of prevalence rates of PPD. Among the other reasons besides mentioned above, different geographical settings and study samples do play a role in varied prevalence rates. The mean age of the respondents in the present study was 27.24±4.392 years and these results are in consonance with those reported by Shenoy HT et al.[20]

The results of the present study further revealed that PPD prevalence was highest in the respondents aged less than 20 years and more than 30 years in comparison to 20–30-year age group respondents. The results are in conformity to those reported by Shenoy HT et al[20] who reported higher prevalence in respondents aged more than 30 years.

A plethora of factors like demographic, psychological, biologic , obstetric/pediatric and variables, religion and residence were found to be significantly associated with PPD(<0.05).These results were similar to those reported by Mishra k et al [17]who also reported religion to be significantly associated with PPD .In contrast, results reported by Modi VP et al [19]didnot find any association of PPD with religion .Educational status and occupation among the socio-demographic variables were also significantly associated with PPD (p<0.05). Bener A et al[21]and Vaezi A et al[22] did not find any association between mother's educational level and Postpartum depression. Maqaard JL[23]demonstrated that low literacy levels among respondents decrease help seeking behaviour in individuals with major depression. Dennis and ching Lee[24] also recommended that education about PPD is important so that respondents can seek help. The present study conducted in hospital setting with more than half of respondents (55%) in primary to higher secondary literacy levels and in all probability lacking awareness about PPD could be the reason for significant association. In our study, neither baby's gender nor preference for male baby was significantly associated with PPD, these findings are consistent with the findings of other similar studies [25]

Among the other influencing factors for development of PPD, domestic violence and unplanned pregnancies were found statistically significant (p<0.05). These results are congruent with those reported by Modi VP et al [19]and Nakku et al[26]. Contrasting results were reported by Vaezi A et al[22]. Family history of mental illness, preterm delivery and antenatal events were also statistically significant in the present study (p<0.05). These results were also documented by

Shivalli S and Gururaj N[27], Vaezi A et al[22] and Ravi singh et al[28]. In view of the above results, it would be pertinent to conclude that an emotional pressure with no chance to moderate is likely to result in PPD.

Majority of the available literature suggests that ample social support system moderates the stress related to pregnancy, intranatal period and increases self-efficacy of mothers[29-31] Which in fact is a belief of one's own capability to do certain specific behaviours[32].The results of the present study have also elucidated that respondent with low social support were 113.1 times more at risk of PPD than those with high social support. These results were supported by the findings reported by Akbari V et al[33]and Ozmen D et al[34].

STRENGTH AND LIMITATIONS

One of the strengths of our study remains the large sample size (750 mothers) that is sufficient enough to support our findings and the study was conducted in a tertiary hospital, which is the only tertiary hospital in Jammu province that caters the population from both rural and urban areas of Jammu. The limitation of our study remains its study design, authors chose the cross-sectional method to avoid the loss to follow up. However, authors recommend further studies based on longitudinal study designs for better generalizability of results.

CONCLUSION

Current study's results revealed that the prevalence of postpartum depression was 16.1% among the postpartum mothers. Residence, occupation, h/o domestic violence, family h/o mental illness, eventful antenatal period, h/o hospitalisation of baby, unplanned parent-hood and low social support emerged to be independent predictors of Postpartum depression.

On assessment of social support perceived by the postpartum mothers, results revealed that social support from a special person, family and friends play a significant role in protecting the postpartum mothers from depression.

RECOMMENDATIONS

This study suggests that postpartum mothers particularly those, who are having poor social support are highly vulnerable to depression. Therefore, every postpartum mother should be screened for PPD and monitored regularly during postnatal visits. They should be timely referred to the psychiatrist/counsellor for the management of the same. Also, family members need to be counselled regarding protective action of social support on PPD.

REFERENCES

1. Romano M, Cacciatore A, Giordano R et al. Postpartum period: three distinct but continuous phases. journal 0f prenatal medicine. 2010 (2):22-25.

2. American college of Obstetrics and gynaecology, www.acog.org,last accessed on dated 27-02-2024.

3. Howard K, Maples JM, Tinius RA. Modifiable Maternal Factors and Their Relationship to Postpartum Depression. International Journal of Environmental Research and Public Health. 2022; 19(19):12393.

4. Patel V, RodriguesM, DesouzaN. Gender, poverty, and postnatal depression: a study of mothers in Goa, India. American journal of Psychiatry 2002;159(1):43-47.

5. Hasin D, Hatzenbuehler ML, Keyes K et al. Substance use disorders: diagnostic and statistical manual of mental disorders, (DSM-IV) and International Classification of Diseases, (ICD-10). Addiction. 2006 Sep;101:59-75.

6. World Health Organisation. Mental Health, Brain Health and Substance Use 2020. https://www.who.int/teams/mental-health-and-substance-use/promotion-prevention/maternal-mental-health Last accessed on dated 27-02-2024.

7. Regmi S, Sligl W, Carter D et al. A controlled study of postpartum depression among Nepalese women: validation of the Edinburgh Postpartum Depression Scale in Kathmandu. Tropical Medicine & International Health. 2002 ;7(4):378-82.

8. Hamilton M. A rating scale for depression .journal of neurology, Neurosurgery and psychiatry 1960;23:56-62.

9. Zimet GD, Dahlem NW, Zimet SG et al. The multidimensional scale of perceived social support. Journal of personality Assessment 1988;52:30-41

10. Gupta S, Kishore J, Mala YM et al. Postpartum depression in north Indian women: prevalence and risk factors. The Journal of Obstetrics and Gynecology of India. 2013 ;63(4):223-9.

11. Singh G, Ranjan A, Agarwal N et al. Assessment of magnitude and predictors of postpartum depression among mothers attending immunization clinics in Bihar, India. Journal of Family Med Prim Care. 2021 (1):312-320.

12. George M, Johnson AR, Sulekha T. Incidence of Postpartum Depression and Its Association With Antenatal Psychiatric Symptoms: A Longitudinal Study in 25 Villages of Rural South Karnataka. Indian J Psychology Med. 2022 ;44(1):37-4

13. Chalise M, Karmacharya I, Kaphle M et al. Factors associated with postnatal depression among mothers attending at Bharatpur Hospital, Chitwan. Depression research and treatment. 2020.

14. Kale DP, Tambawala ZY, Rajput NM. Postpartum Depression Prevalence in a Tertiary Care Hospital in Mumbai, Maharashtra, India. Journal of South Asian Federation of Obstetrics and Gynaelogy 2019;11(4):239–242.

15. Amipara T, Baria H, Nayak S. A study on postpartum depression and its association with infant feeding practices and infant nutritional status among mothers attending the anganwadicenters of Valsad district, Gujarat, India. Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine. 2020 ;45(3):299.

16. Mishra K, Mohapatra I, Rout RN. An epidemiological study on depression among women during postpartum period in an urban slum of Bhubaneswar. Journal of Family Medicine and Primary Care. 2020 (9):4736.

17. Dubey A, Chatterjee K, Chauhan VS et al . Risk factors of postpartum depression. Industrial Psychiatry Journal. 2021 ;30(Suppl 1):S127.

18. Al Nasr RS, Altharwi K, Derbah MS et al. Prevalence and predictors of postpartum depression in Riyadh, Saudi Arabia: A cross sectional study. PLoS One. 2020 ;10;15(2)

19. Modi VP, Parikh MN, Valipay SK. A study on prevalence of postpartum depression and correlation with risk factors. Annals of Indian Psychiatry. 2018 ;2(1):27.

20. Shenoy H, Remash K, Shenoy S. Prevalence and determinants of postnatal depression in a tertiary care teaching institute in Kerala, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2019 ;8(9):3757-65.

21. Bener A ,Burgut FT, Ghuloum S et al ,A study of postpartum depression in a fast developing country: prevalence and related factors . The international Journal of Psychiatry in Medicine. 2012;43(4):325-27.

22. Vaezi A, Soojoodi F,Banihashemi AT et al .The association between social support and postpartum depression in women : A cross sectional study .Women and Birth .2019;32(2):e238-42.

23. Magaard JL et al factors associated wth help seeking behaviour among individuals with major depression :a systematic review.Plos one 2017;12(5)e0176730

24. Dennis CL, Chung-Lee L .postpartum depression help seeking barriers and maternal treatment preferences : a qualitative systematic review.Birth 2006;33(4):323-31

25. Moya, E., Mzembe, G., Mwambinga, M. et al. Prevalence of early postpartum depression and associated risk factors among selected women in southern Malawi: a nested observational study. BMC Pregnancy Childbirth 23, 229 (2023). https://doi.org/10.1186/s12884-023-05501-z

26. Nakku J,Nakasi G, Mirembe Fet al . postpartum major depression at six weeks in primary health care : prevalence and associated factors .African health science 2006; 6(4).

27. Shivalli S, Gururaj N. Postnatal depression among rural women in South India: do socio-demographic, obstetric and preg-

nancy outcome have a role to play?.PLoS One. 2015 ;10(4): e0122079

28. Singh R, Jamir B, Vashum H.A study of the prevalence of postpartum depression in a secondary care hospital in Dimapur, Nagaland, Northeast-India. Inernational Journal of Reproductive Contraceptive, Obstetric and Gynecology2023;12:3134-40.

29. Morikawa M, Okado Takashi ,Ando Masahiko et al,Relationship between social support during pregnancy and postpartum depression:a prospective study.Sci Rep 2015;5:10520.

30. Kim TH,Cannolly JA,Tamim H.The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the maternity experiences survey.BMC Pregnancy Childbirth 2014;14(1):162.

31. Haslam DM,Pakenhem KL, Smith A et al. Social support and postpartum depressive symptomatology : the mediating role of maternal self – efficacy. Infant Mental Health Journal 2006;27(3):276-91

32. Bandura A. self – efficacy : towards a unifyimg theory of behaviourl change. Psychol Rev 1977;84(2):191- 215.

33. Akbari V, Rahmatinejad P, Shater MM et al. Investigation of the relationship of perceived social support and spiritual well-being with postpartum depression. Journal of Education and Health Promotion. 2020;9 :174

34. Ozmen D, Çetinkaya AÇ, Ulas SC et al. Association between perceived social support and postpartum depression in Turkey. British Journal of Medicine and Medical Research. 2014 ;4(10):2025.