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Prevalence and Risk Factors of Postnatal Depression in Females with Cesarean Section and Normal Vaginal Delivery

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ABSTRACT

Objectives: To find the prevalence and risk factors of postnatal depression and association of parenting sense of competence with postnatal depression among females with cesarean section and normal vaginal delivery.

Methods: This case-control study was conducted in Allied hospital and Children hospital Faisalabad during a period of 1-1-2019 to 30-06-2020. A non-probability purposive sampling technique was used to enroll 284 women. The Urdu version of Edinburg Postnatal Depression Scale was used to measure postnatal depression.

Results: The mean age (in years) ± SD was 27.39±5.26 (min 18 years, max 45 years). According to cut-off score ≥13 on EPDS 37.3% women were found depressed while 62.7% women were found non-depressed. The mean EPDS score ± SD was 10.12 ± 6.27 (min score 0; max score 27). The women's age, women's education, education of head of family, monthly income of family and socio-economic status, mode of delivery, delivery place, number of pregnancies, history of infant death, history of child death, history of miscarriage and number of living children and parenting sense of competence were significantly associated with postnatal depression ($p<0.05$).

Conclusion: Socio-demographic, obstetric risk factors, and parenting sense of competence are significant predictors of postnatal depression that need to be addressed in order to sustain safe motherhood.

Keywords: Postnatal Depression, Risk factors, EPDS, Parenting knowledge.

INTRODUCTION

Postpartum depression (PND) is currently an important public health problem due to its significant adverse effects on mothers and babies. In recent years, the prevalence of postpartum depression (PND) has been increasing, and it has become one of the most important public health problems. According to an estimate, nearly 10-15% of puerperal women are suffering from postnatal depression worldwide [1]. In high-income countries, the prevalence ranges from 10% to 15%. However, in low- and middle-income countries, the rate varies from 16% to 36% [2]. In Asian countries, the prevalence of postnatal

depression has been stated as between 0.5% to 60% [3] and between 3.5% to 63.3% [4]. Some of the risk factors include obstetrical history, biological factors, lifestyle, stressful life events, previous history of clinical depression and emotional support [5]. The high prevalence of postnatal depression in women signifies an important public health concern that is needed to address in order to improve the health of mother and child. Early identification and intervention is crucial for eliminating the adverse effects on child development and ensuring safe motherhood [3, 6, 7]. The Edinburgh Postpartum Depression Scale (EPDS), previously developed in the UK, is one of the most commonly used screening tools for measuring symptoms of depression and anxiety disorders in the perinatal period (PCMD) [8].

Since the prevalence of postpartum depression in Pakistan is very high according to the previous literature, it is necessary to evaluate the prevalence of postpartum depression and its related socio-demographic, economic and obstetric risk factors which can be modified in order to ensure better health of mother and child. This study aimed to find the prevalence and risk factors of postnatal depression and association of parenting sense of competence with postnatal depression among females with cesarean section and normal vaginal delivery.

METHODS

This Case-control study was conducted in Allied hospital and Children hospital Faisalabad during a period of 18 months (1st Jan 2019 to 30 June 2020). By using non-probability purposive sampling technique 284 puerperal women (142 with normal vaginal delivery and 142 with cesarean section) were included in the study. The sample size was calculated using 90% power of test, 95% confidence level, 5% margin of error, anticipated depression in females with normal vaginal delivery as 13.6% [9] and anticipated depression in females with C-section as 27.6% [9].

Women aged 18-45 years, who had recently given birth either by cesarean section or vaginal delivery were included in the study. Women who needed emergency care for any medical or psychiatric problem and women with neonatal deaths and fetal anomalies were not included in the study.

The Edinburgh Postpartum Depression Scale is used to measure postpartum depression. The questionnaire includes 10 questions based on the

four-point Likert scale. A score of 13 or more indicates postpartum depression[10]. Data collecting tool was a self-administered questionnaire translated into Urdu that contained variables related to socio-demographic and obstetric history of puerperal women and parenting sense of competence scale to measure the association of child raising skills/knowledge and parenting comfort with postnatal depression.

When conducting research, follow the rules and regulations established by the Ethics Committee of Lahore University and respect the rights of research participants.

Data Analysis:

Used SPSS 23 to analyze the data. Continuous data are expressed as mean ± SD. Nominal data is expressed as frequency and percentage. Chi-square independence test is used to measure the relationship between sociodemographic and obstetric risk factors and postpartum depression. Chi-square independence test is also used to measure the relationship between parental awareness of ability and postpartum depression. A p value <0.05 is considered to show a statistically significant result.

RESULTS

A total of 284 puerperal women were included in the study. The mean age (in years) ± SD was 27.39 ± 5.26. The minimum age was 18 years and maximum age was 45 years. According to cut-off score ≥13 on Edinburg postnatal depression scale 106 (37.3%) women were found depressed while 178 (62.7%) women were found non-depressed. The mean EPDS score ± SD was 10.12 ± 6.27 (min score 0; max score 27).

The chi-square test of independence revealed that the women's age, women's education, education of head of family, monthly income of family and socio-economic status were significantly associated with postnatal depression ($p<0.05$), whereas the occupation of head of family had no significant association with postnatal depression among puerperal women ($p>0.05$). (Table **1**)

The chi-square test of independence revealed that the mode of delivery, delivery place, number of

pregnancies, history of infant death, history of child death, history of miscarriage and number of living children were significantly associated with postnatal depression ($p<0.05$), however, the contraception had no significant effect on postnatal depression ($p>0.05$). (Table **2**)

The association of parenting skills/knowledge and parenting valuing/comfort with postnatal depression is elaborated in Table **3**.

Table 1. Chi-Square test of Independence to Measure Association of Socio-Demographic Variables with Postnatal Depression.

Socio-Demographic Risk Factors	Responses	N (%)	EPDS Categories		% of Depression	X^2 (df)	p-value
			Non-Depressed	Depressed			
Age Groups (in years)	**18 - 24**	79 (27.8)	42	37	46.8	18.35 (3)	<0.001
	25 - 31	150 (52.8)	101	49	32.7		
	32 - 38	48 (16.9)	35	13	27.1		
	39 - 45	7 (2.5)	0	7	100.0		
Women's Education	**Illiterate**	22 (7.7)	15	7	31.8	14.73 (6)	0.02
	Primary	25 (8.8)	14	11	44.0		
	Middle	38 (13.4)	18	20	52.6		
	Matric	79 (27.8)	43	36	45.6		
	Intermediate	53 (18.7)	42	11	20.8		
	Post Graduate	40 (14.1)	29	11	27.5		
	Professional Degree	27 (9.5)	17	10	37.0		
Education of Head of Family	**Illiterate**	18 (6.3)	13	5	27.8	16.39 (6)	0.01
	Primary	18 (6.3)	11	7	38.9		
	Middle	26 (9.2)	20	6	23.1		
	Matric	78 (27.5)	36	42	53.8		
	Intermediate	58 (20.4)	44	14	24.1		
	Post Graduate	54 (19.0)	34	20	37.0		
	Professional Degree	32 (11.3)	20	12	37.5		
Occupation of Head of Family	**Professional**	21 (7.4)	14	7	33.3	2.06 (4)	0.72
	Semi-Professional	103 (36.3)	62	41	39.8		
	Clerical	56 (19.7)	39	17	30.4		
	Skilled Worker	73 (25.7)	43	30	41.1		
	Semi-Skilled	31 (10.9)	20	11	35.5		
Monthly Income of Family	**≥ 52,734**	64 (22.5)	48	16	25.0	14.85 (6)	0.02
	26,355 - 52,733	57 (20.1)	43	14	24.6		
	19,759 - 26,354	61 (21.5)	34	27	44.3		
	13,161 - 19,758	49 (17.3)	25	24	49.0		
	7,887 - 13,160	21 (7.4)	12	9	42.9		
	2,641 - 7,886	21 (7.4)	10	11	52.4		
	≤ 2,640	11 (3.9)	6	5	45.5		
Socio-economic Status on Kuppuswamy's Scale	**Upper**	18 (6.3)	13	5	27.8	9.79 (3)	0.02
	Upper Middle	119 (41.9)	84	35	29.4		
	Lower Middle	107 (37.7)	55	52	48.6		
	Upper Lower	40 (14.1)	26	14	35.0		

Table 2. Chi-Square test of Independence to Measure Association of Obstetric Risk Factors with Postnatal Depression.

Obstetric Risk Factors	Responses	N (%)	EPDS Categories		% of Depression	X^2 (df)	p-value
			Non-Depressed	Depressed			
Mode of Delivery	**Vaginal Delivery**	142 (50.0)	101	41	38.7	8.67 (1)	0.003
	Cesarean Section	142 (50.0)	77	65	61.3		
Newborn Child's Age (in months)	**1**	105 (37.0)	78	27	25.7	18.19 (5)	0.003
	2	39 (13.7)	24	15	38.5		
	3	18 (6.3)	6	12	66.7		
	4	23 (8.1)	9	14	60.9		
	5	21 (7.4)	13	8	38.1		
	6	78 (27.5)	48	30	38.5		
Delivery Place	**Home**	56 (19.7)	38	18	32.1	12.06 (2)	0.002
	Hospital	211 (74.3)	136	75	35.5		
	Other	17 (6.0)	4	13	76.5		
Number of Pregnancies	**1**	62 (21.8)	53	9	14.5	24.04 (3)	<0.001
	2	91 (32.0)	59	32	35.2		
	3	58 (20.4)	30	28	48.3		
	≥ 4	70 (24.6)	33	37	52.9		
Infant Death (under 1 year)	**Yes**	53 (18.7)	23	30	56.6	10.35 (1)	0.001
	No	231 (81.3)	155	76	32.9		
Child Death (under 5 years)	**Yes**	36 (12.7)	6	30	83.3	37.31 (1)	<0.001
	No	248 (87.3)	172	76	30.6		
History of Miscarriage	**Yes**	71 (25.0)	31	40	56.3	14.63 (1)	<0.001
	No	213 (75.0)	147	66	31.0		
Number of Living Children	**1**	94 (33.1)	72	22	23.4	13.34 (3)	0.004
	2	99 (34.9)	51	48	48.5		
	3	67 (23.6)	41	26	38.8		
	≥ 4	24 (8.5)	14	10	41.7		
Contraception	**Yes**	42 (14.8)	29	13	31.0	0.85 (1)	0.35
	No	242 (85.2)	149	93	38.4		

Table 3. Chi-Square test of Independence to Measure Association of Parenting Sense of Competence With Postnatal Depression.

Parenting Sense of Competence Scale	Response	EPDS Categories		% of Depression	X^2 (df)	p-value
		Non-Depressed	Depressed			
(Skills/Knowledge Sub-scale questions)						
The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.	Agree Disagree	169 9	89 17	34.5 65.4	9.63 (1)	0.002
I would make a fine model for a new mother to follow in order to learn what she would need to know in order to be a good parent.	Agree Disagree	171 7	80 26	31.9 78.8	27.44 (1)	<0.001
Being a parent is manageable, and any problems are easily solved.	Agree Disagree	164 14	73 33	30.8 70.2	26.04 (1)	<0.001
A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one	Agree Disagree	112 66	81 25	42.0 27.5	5.55 (1)	0.02
I meet my own personal expectations for expertise in caring for my child.	Agree Disagree	162 16	63 43	28.0 72.9	40.25 (1)	<0.001
If anyone can find the answer to what is troubling my child, I am the one.	Agree Disagree	168 10	51 55	23.3 84.6	80.58 (1)	<0.001
Considering how long I've been a mother, I feel thoroughly familiar with this role.	Agree Disagree	161 17	68 38	29.7 69.1	29.42 (1)	<0.001
I honestly believe I have all the skills necessary to be a good mother to my child.	Agree Disagree	159 19	68 38	30.0 66.7	26.24 (1)	<0.001
(Valuing/Comfort Sub-scale questions)						
Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age.	Agree Disagree	114 64	91 15	44.4 19.0	15.73 (1)	<0.001
I go to bed the same way I wake up in the morning, feeling I have not accomplished a whole lot.	Agree Disagree	116 62	88 18	43.1 22.5	10.46 (1)	0.001
I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.	Agree Disagree	112 66	93 13	45.4 16.5	20.37 (1)	<0.001
My mother was better prepared to be a good mother than I am.	Agree Disagree	151 27	87 19	36.6 41.3	0.37 (1)	0.54
Sometimes I feel like I'm not getting anything done.	Agree Disagree	106 72	83 23	43.9 24.2	10.49 (1)	0.001
My talents and interests are in other areas, not being a parent.	Agree Disagree	103 75	56 50	35.2 40.0	0.68 (1)	0.41
If being a mother of a child were only more interesting, I would be motivated to do a better job as a parent.	Agree Disagree	133 45	86 20	39.3 30.8	1.54 (1)	0.21
Being a parent makes me tense and anxious.	Agree Disagree	151 27	86 20	36.3 42.6	0.65 (1)	0.42
Being a good mother is a reward in itself.	Agree Disagree	177 1	70 36	28.3 97.3	65.41 (1)	<0.001

DISCUSSION

In this study a total of 284 puerperal women were enrolled. The mean age (in years) ± SD was 27.39 ± 5.26. The minimum age was 18 years and maximum age was 45 years. According to cut-off score ≥13 on Edinburg postnatal depression scale 37.3% women were found depressed while 62.7% women were found non-depressed. The mean EPDS score ± SD was 10.12 ± 6.27 (min score 0; max score 27). The mean EPDS scores in a similar study conducted by Demiroz *et al* were 12 ± 4.7. The prevalence of postnatal depression was found as 47.3% [11]. Eckerdal *et al* in their study found the prevalence of postnatal depression as 13% in their study and Gebregziabher *et al* found prevalence of postnatal depression as 7.4% [12, 13].

Women's age, women's education level, household head's education level, family monthly income and socioeconomic status are closely related to postpartum depression in the current study, whereas the occupation of head of family had no significant association with postnatal depression among puerperal women. Akin to findings of this study, the higher age of women was found as a important analyst of postnatal depression in a study carried out by Smorti *et al* [14]. The education of women was also associated with postnatal depression in a study conducted by Dadi *et al*, Matsumura *et al*, Chien *et al*, and Huang *et al* [15-18]. However, Roomruangwong and Smorti *et al* [14, 19] could not establish a significant relationship of women's education with postnatal depression in their studies. The low family income and economic status was found as significant predictor of postnatal depression in studies carried out by Gebregziabher *et al*, Dadi *et al*, Chien *et al* and Huang *et al*, [13, 15, 17, 18] whereas, Ozmen *et al* reported no significance of family income with postnatal depression [20]. Similar to the findings of this study, various studies reported no association of occupation with postnatal depression [19] [14, 20].

In this study, delivery method, delivery location, number of pregnancies, history of infant deaths, history of child deaths, history of miscarriage and the number of living children were significantly associated with postnatal depression, however, the contraception had no significant effect on postnatal depression. Erkerdal *et al* and Malik *et al* found in their study that women who had cesarean section were found as having more risk of developing postnatal depression as compared to women who had normal vaginal delivery [12, 21]. The history of miscarriage, infant death and child death was not found significantly associated with postnatal depression in a study carried out by Eastwood *et a*l [22]. The study of Mathisen *et al* testified that the women who had two or more children were found as more depressed compared to women who had less children [23]. The contraception failure and unplanned pregnancy was considerably associated with postnatal depression in the study carried out by Gebregziabher *et al* [13]. Smorti *et al* and Roomruangwong found no significant association of contraception or planned pregnancy with postnatal depression [14, 19].

CONCLUSION

Socio-demographic, obstetric risk factors, and parenting sense of competence are significant predictors of postnatal depression that need to be addressed in order to sustain safe motherhood.

REFERENCES

1. Alzahrani AD. Risk Factors for Postnatal Depression among Primipara Mothers. Span J Psychol. 2019 Jul 12;22:E35.
2. Al Dallal FH, Grant IN. Postnatal depression among Bahraini women: prevalence of symptoms and psychosocial risk factors. East Mediterr Health J. 2012;18(5):439-45.
3. Halbreich U, Karkun S. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. Journal of affective disorders. 2006;91(2-3):97-111.
4. Klainin P, Arthur DG. Postpartum depression in Asian cultures: a literature review. International journal of nursing studies. 2009;46(10):1355-73.
5. Ghaedrahmati M, Kazemi A, Kheirabadi G, Ebrahimi A, Bahrami M. Postpartum depression risk factors: A narrative review. Journal of education and health promotion. 2017;6.
6. Slomian J, Honvo G, Emonts P, Reginster J-Y, Bruyère O. Consequences of maternal postpartum depression: A systematic review of maternal and infant outcomes. Women's Health. 2019;15:1745506519844044.
7. De Oliveira CVR, Rasheed M, Yousafzai AK. Chronic Maternal Depressive Symptoms Are Associated With Reduced Socio-Emotional Development in Children at 2 Years of Age: Analysis of Data From an Intervention Cohort in

Rural Pakistan. Frontiers in Psychiatry. [Original Research]. 2019 2019-November-20;10(859).

8. Shrestha SD, Pradhan R, Tran TD, Gualano RC, Fisher JR. Reliability and validity of the Edinburgh Postnatal Depression Scale (EPDS) for detecting perinatal common mental disorders (PCMDs) among women in low-and lower-middle-income countries: a systematic review. BMC Pregnancy Childbirth. 2016 Apr 4;16:72.
9. Dolatian M, Maziar P, Majd HA, Yazdjerdi M. The relationship between mode of delivery and postpartum depression. Journal of Reproduction & Infertility. 2006;7(3).
10. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. The British Journal of Psychiatry. 1987;150(6):782-6.
11. Demiröz HP, Taştan K. The effects of perceived social support on postpartum depression. J Surg Med. 2018;2(3):298-302.
12. Eckerdal P, Georgakis MK, Kollia N, Wikström A-K, Högberg U, Skalkidou A. Delineating the association between mode of delivery and postpartum depression symptoms: a longitudinal study. Acta Obstetricia et Gynecologica Scandinavica. 2018;97(3):301-11.
13. Gebregziabher NK, Netsereab TB, Fessaha YG, Alaza FA, Ghebrehiwet NK, Sium AH. Prevalence and associated factors of postpartum depression among postpartum mothers in central region, Eritrea: a health facility based survey. BMC Public Health. 2020;20(1):1614.
14. Smorti M, Ponti L, Pancetti F. A Comprehensive Analysis of Post-partum Depression Risk Factors: The Role of Socio-Demographic, Individual, Relational, and Delivery Characteristics. Frontiers in Public Health. [Original Research]. 2019 2019-October-24;7(295).
15. Dadi AF, Miller ER, Mwanri L. Postnatal depression and its association with adverse infant health outcomes in low- and middle-income countries: a systematic review and meta-analysis. BMC pregnancy and childbirth. 2020;20(1):416.
16. Matsumura K, Hamazaki K, Tsuchida A, Kasamatsu H, Inadera H. Education level and risk of postpartum depression: results from the Japan Environment and Children's Study (JECS). BMC Psychiatry. 2019;19(1):419.
17. Chien L-Y, Tai C-J, Yeh M-C. Domestic decision-making power, social support, and postpartum depression symptoms among immigrant and native women in Taiwan. Nursing Research. 2012;61(2):103-10.
18. Huang T, Rifas-Shiman SL, Ertel KA, Rich-Edwards J, Kleinman K, Gillman MW, *et al*. Pregnancy hyperglycaemia and risk of prenatal and postpartum depressive symptoms. Paediatric and perinatal epidemiology. 2015;29(4):281-9.
19. Roomruangwong C, Withayavanitchai S, Maes M. Antenatal and postnatal risk factors of postpartum depression symptoms in Thai women: A case-control study. Sexual & Reproductive Healthcare. 2016;10:25-31.
20. Ozmen D, Cetinkaya AC, Ulas SC, Ozmen E. Association between perceived social support and postpartum depression in Turkey. Journal of Advances in Medicine and Medical Research. 2014:2025-36.
21. Malik F, Malik B, Irfan M. Comparison of postnatal depression in women following normal vaginal delivery and caesarean section: A pilot study. Journal of Postgraduate Medical Institute. 2015 01/01;29:34-7.
22. Eastwood JG, Jalaludin BB, Kemp LA, Phung HN, Barnett BEW. Relationship of postnatal depressive symptoms to infant temperament, maternal expectations, social support and other potential risk factors: findings from a large Australian cross-sectional study. BMC pregnancy and childbirth. 2012 2012/12/12;12(1):148.
23. Mathisen SE, Glavin K, Lien L, Lagerløv P. Prevalence and risk factors for postpartum depressive symptoms in Argentina: a cross-sectional study. International journal of women's health. 2013;5:787.