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Original Article

Risk Factors and Prevalence of Postpartum Depression in One Year after Birth

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ABSTRACT

Introduction: *PPD is a complicated combination of physical, mental, and behavioral changes that occur in some women after having birth. Postpartum depression is neither a shortcoming nor a weakness. Sometimes it's just a side effect of giving birth.* ***Aim of the study:*** *The aim of the study was to observe the prevalence of postpartum depression (PPD) as well as the possible risk factors among participants.* ***Methods & Materials:*** *This cross-sectional observational study was conducted at the Department of Obstetrics and Gynecology, Gonoshasthaya Nagar Hospital, Dhanmondi, Dhaka, Bangladesh. The study duration was a total of 1 year, from July 2020 to June 2021. During the study period, a total of 100 postpartum mothers were selected for different neonatal and maternal complications.* ***Result:*** *Among the social characteristics of the patients, 58% were planned pregnancies, 20% were preterm, 88% had a normal delivery, while 12% needed cesarean section. 24% of neonates had some form of complications post-birth. 18% were of low-birth-weight and 82% were of normal weight. The cost of the birth was carried by the family through borrowing in 24% of cases, 10% had sold assets to afford the childbirth and following care, while 8% had mortgaged their property or things to cover the cost. The remaining 58% of the cases managed the cost through other*

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means. ***Conclusion:*** *The study showed that possible depression is not uncommon among women after giving birth, but confirmed postpartum depression was only observed in about one-fourth of those participants.*

Keywords: *Depression, Neonate, Birth, Pregnancy*

INTRODUCTION

The first year postpartum is when postpartum depression (PPD), a common, non-psychotic mood or mental disease, frequently appears in women [1],[2]. Dramatic changes in steroid and peptide hormone levels throughout pregnancy and after delivery affect the mothers' hypothalamic pituitary adrenal (HPA) and hypothalamic pituitary gonadal (HPG) axis. Since abnormalities in these endocrine axes are linked to mood disorders, it should not be shocking that pregnancy and the postpartum period can have a significant impact on a mother's mood. The frequency of PPD among mothers varies considerably over the world, from 0.5 percent to 60.8 percent [2]. Those in impoverished nations have greater rates of PPD than women in industrialized countries [3],[4]. Postpartum depression prevalence rates in Asian nations ranged from 3.5 to 63.3 percent [5]. A study conducted in India showed the incidence of depression ranging from 11%-16% just in the first few months among postpartum women [6]. However, postpartum depression can occur well after 1 year or more following pregnancy, which in turn can increase the incidence rate of PPD greatly. Several studies conducted in rural Bangladesh indicated PPD prevalence ranging from 18% to 35% among rural women [7]-[9]. PPD has been demonstrated to have detrimental impacts on moms, children, and families, resulting in a slew of undesirable outcomes [10]. According to Beck's meta-analysis, parents with PPD exhibited a variety of distinct patterns of behavior, including less loving behavior with their children, less reaction to baby cues, being withdrawn with a flat affect, and/or displaying hostility and intrusiveness with their infants [11]. It can also have severe short- and long-term effects on the neonate's health. In addition to physical symptoms, PPD has an effect on the mental health of the child of afflicted moms. PPD impairs mother-infant connection and bonding, resulting in the inadequate social, emotional, and cognitive development of the child [12],[13]. According to research, recurrent bouts of depression are associated with high levels of chronic stress later in life [12]. Furthermore, PPD has a negative influence on family and social life [14]. PPD is caused by a variety of causes, and the effects of PPD differ depending on the age, education level, race, and ethnicity of the woman [15]. Preterm or low birth-weight infants, unemployment, socioeconomic deprivation, inadequate social or emotional support, housing problems, first-born child, childcare stress, infant temperament, high parity, obstetric complications, sleep disturbances, low self-esteem, negative attitude toward pregnancy, antenatal depression or anxiety, previous history of depression, poor marital relationship, history of domestic abuse, major adverse life events in the preceding one year [16]-[18]. The present study was conducted to assess the prevalence and risk factors of

post-partum depression (PPD) within the first year after giving birth among the population of a local hospital.

OBJECTIVES

General Objective

- To observe the prevalence of postpartum depression among women in a local scale.

Specific Objective

- To observe the risk factors of postpartum depression among women in a local scale.

METHODS & MATERIALS

This cross-sectional observational study was conducted at the Department of Obstetrics and Gynecology, Gonoshasthaya Nagar Hospital, Dhanmondi, Dhaka, Bangladesh. The study duration was a total of 1 year, from July 2020 to June 2021. During the study period, a total of 100 postpartum mothers with children under the age of one year were selected from those visiting the study hospital for different neonatal and maternal complications. For patient selection, purposive sampling was done following the inclusion and exclusion criteria. Informed consent was obtained from the participants, and ethical approval was also obtained from the ethical review committee of the study hospital. The patient's basic information was collected using a pre-prepared data sheet, and the patient's mental state was recorded using the Edinburgh Postnatal Depression Scale (EPDS) scale [19]. The EPDS scale measured patients' depression at a scale of 0-30, and the present study had a cut off value at 10. Patients with an EPDS value of > 10 were recognized as postpartum depression cases.

Inclusion Criteria

- Patients with recent pregnancy whose child is under 1 year of age.
- Patients ≤40 years of age
- Women with at least 3 scores on EPDS
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Women over 40 years of age
- Women who had given birth to twins
- Unable to answer the criteria question.
- Exclude those affected with other chronic diseases etc.

RESULTS

Among the social characteristics of the patients (Table I), over half (52.0%) were between the ages of 15-24 years, and 46% were between the age of 25-34 years. Only 2 patients were over the age of 34, and the age range of the participants was 18-40 years.

Table I: Baseline characteristics of the participants (n=100)

Characteristics	n	%
Age Groups		
15-24	52	52.0%
25-34	46	46.0%
≥35	2	2.0%
Range	18-40	
Mean ± SD	24.82 ± 4.943	
Religion		

Hindu	8	8.0%
Muslim	92	92.0%
Education		
No education	6	6.0%
Primary or Below	14	14.0%
High School	54	54.0%
HSC	16	16.0%
Higher education	10	10.0%
Family Members		
1-3	34	34.0%
4-6	56	56.0%
>6	10	10.0%
Currently Employed		
Yes	4	4.0%
No	96	96.0%
Recent Job Loss		
Yes	12	12.0%
No	88	88.0%

The mean age was 24.82 years. The majority were Muslim, and 8% were Hindu. 54% of the participants were educated up to high school level, while 16% had education up to HSC levels. Very few (10%) had higher education, while 3 patients were illiterate. 34% had between 1-3 family members, while over half (56.0%) had between 4 and 6 family members. The remaining 10% had over 6 family members. Only 4% of the participants were currently employed, while 12% had been through recent job loss.

Table II: Distribution of the participants by pregnancy related complications (n=100)

Characteristics	n	%
Pregnancy Type		
Unplanned Pregnancy	42	42.0%
Planned pregnancy	58	58.0%
Pregnancy Term		
Preterm birth	20	20.0%
Term Birth	80	80.0%
Mode of Delivery		
Normal Vaginal Delivery	88	88.0%
Lower Uterine Cesarean Section	12	12.0%
Parity		
Primipara	48	48.0%
Multipara	52	52.0%

Among the present study participants (Table II), 58% were planned pregnancies, however 42% of the cases were unplanned pregnancies. 20% of the births were preterm, while 80% had term birth. 88% had normal delivery, while 12% needed cesarean section. For 48% of the participants, this was their first pregnancy, while 52% had previously given birth.

Table III: Distribution of the participants by neonatal characteristics (n=100)

Neonatal Characteristics	n	%
Neonatal complication		
Yes	24	24.0%
No	76	76.0%
Birth weight		
Low Birth Weight	18	18.0%
Normal weight	82	82.0%
Sex		
Male	48	48.0%
Female	52	52.0%

Table III shows that 76% of the neonates presented no complications at birth or immediately after, while 24% had some form of complications. 18% were of low-birth-weight and 82% were of normal weight. Among the neonates, 48% were male and 52% were female.

Table IV: Distribution of participants by management of the cost of delivery (n=100)

Cost managed by	n	%
Borrowing	24	24.0%
Sold Asset	10	10.0%
Mortgage	8	8.0%
Others	58	58.0%

The cost of the birth (Table IV) was carried by the family through borrowing in 24% of cases, 10% had sold assets to afford the childbirth and following care, while 8% had mortgaged their property or things to cover the cost. The remaining 58% of the cases managed the cost through other means.

Table V: Distribution of participants by postpartum characteristics (n=100)

Postpartum characteristics	n	%
Breast feeding		
Yes	80	80.0%
No	20	20.0%
Medical Disorder		
Diabetes	2	2.0%
Hypertension	6	6.0%
Anemia	6	6.0%
Urinary Tract Infection	4	4.0%
No Complication	82	82.0%
Marital Status		
Married	96	96.0%
Divorces	4	4.0%
Partner Violence		
Yes	10	10.0%
No	90	90.0%
History of Depression		
Yes	24	24.0%
No	76	76.0%

Among postpartum findings (Table V), 80% had breastfed their child and 20% didn't, 82% had no medical complications, 6% had hypertension, 6% had anemia, 4% had urinary tract infection and 2% of patients had diabetes. 96% of the participants were married, while 4% were divorced. 10% faced violence from their marital partner. It was noted that 24% had a past history of depression.

Table VI: Distribution of participants by Edinburgh Postnatal Depression Scale (EPDS) scale cut-off value (n=100)

EPDS Score	N	%
<10	78	78.0%
≥10	22	22.0%

According to the EPDS scoring scale (Table VI), 78% had <10 score on EPDS scale, while 22% had 10 or higher scores.

Table VII: Cross-tabulation of possible risk factors with EPDS score cut-off value (n=100)

Variable	EPDS Score				P-Value
	≥10 (N=22)		**<10 (N=78)**		
	n	**%**	**n**	**%**	
Preterm Birth	5	22.73%	15	19.23%	0.851
Neonatal Complication	9	40.91%	15	19.23%	0.2
Low Birth Weight	4	18.18%	14	17.95%	0.545
History of Depression	22	100.00%	2	2.56%	**0.001**
Cesarean Section delivery	4	18.18%	8	10.26%	0.738
Primipara	10	45.45%	41	52.56%	0.324
Intimate Partner Violence	9	40.91%	1	1.28%	**0.05**
Medical Disorders					
Diabetes Mellitus	0	0.00%	2	2.56%	0.16
Hypertension	4	18.18%	2	2.56%	
Anemia	2	9.09%	4	5.13%	
Urinary Tract Infection	1	4.55%	3	3.85%	
Cost of Delivery managed By					
Borrowing	7	31.82%	14	17.95%	0.268
Sold Asset	1	4.55%	14	17.95%	
Mortgage	2	9.09%	0	0.00%	
Others	13	59.09%	50	64.10%	

With a significance value of <0.05, the present study showed a significant relationship between intimate partner violence and a history of depression (Table VII).

DISCUSSION

The present study was conducted to observe the risk factors and prevalence of postpartum depression after one year of childbirth. PPD can have a devastating effect on both the children and the mother, as well as other family members. Oftentimes, PPD can lead to a distancing between the mother and the child, which is not ideal and oftentimes can lead to abandonment and even child mortality [20],[21]. For the diagnosis of PPD, the present study used the Edinburgh Postnatal Depression Scale (EPDS) scoring system, with a score of 10 as the cut-off value. Among the participants, the majority were under 25 years of age, and the mean age of the participants was 24.82 years. This was similar to the findings of other studies with similar age distributions [22]-[24]. However, the age range of the participants was higher in that study. 92% of the participants were Muslim, which was understandable as Bangladesh is a Muslim-majority country. The majority of the participants had received education up to the high school level, while only 10% had higher educational degrees. This is common in our social demographic as a majority of families tend to marry off their daughters without providing them with higher educational opportunities. Other Bangladeshi studies also supported this finding [25],[26]. 56% of the participants had over 3 family members, while 10% had over 6. It is assumed that a higher number of family members can have a significant effect on the overall mental health and well-being of a family [27],[28]. 4 of the participants were working during the postpartum period, while 12% had lost their previous job due to pregnancy. Job loss during pregnancy can have an effect on PPD [29], but as the number of previously working participants was very low in our study, the significance could not be determined in this case. For 58% of the participants of the present study, the pregnancy was planned, while the remaining 42% had an unplanned pregnancy. 20% of the births were preterm, while 80% had term birth. 88% had a normal delivery, while 12% needed cesarean section. For 48% of the participants, this was their first pregnancy, while 52% had previously given birth. The majority of the cases were normal delivery cases, while only 12% had cesarean section delivery. Generally, postpartum depression is commonly associated with cesarean sections [30],[31], but our study showed otherwise. For 48% of the participants, this was their first childbirth. 24% of the neonates had reported some form of complications, while 38% of the neonates had no observable complications following birth. 82% of the neonates were of normal weight, while 18% were of low birth weight. Low birth weight can often lead to the child having further complications down the line and can lead to PPD in the mother. The cost of the birth was carried by the family through borrowing in 24% of cases, while 10% had sold assets to afford the childbirth and following care, and 8% had mortgaged their property or things to cover the cost. Financial strain could be a primary cause in causing PPD in many cases. This is even more true for women of low socio-economic backgrounds [32],[33]. Among postpartum results, 80 percent had nursed their kid and 20% had not, 82 percent had no medical issues, 6% had hypertension, 6% had anemia, 4% had urinary tract infection, and 2% had diabetes. 96 percent of those polled were married, while 4%

were divorced. 10% experienced domestic abuse from their spouse. It was discovered that 24% had a history of depression. Although through the selection criteria of the present study, only those with an EPDS score of 3 or higher were selected, the cut-off value of PPD was set at 10. In our study, 78% had not been confirmed with PPD, but had a likelihood of depression, while 22% had an EPDS score of 10 or higher, and were diagnosed with postpartum depression. In evaluating the EPDS score, cross-analysis was done with various possible risk factors among the participants. It was observed that a history of depression was strongly associated with PPD, as all patients with an EPDS score of 10 or higher had a history of depression. Intimate partners' violence also had some significant association with EPDS scores.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The study showed that possible depression is not uncommon among women after giving birth, but confirmed postpartum depression was only observed in about one-fourth of those participants. Among the various possible risk factors of PPD, a significant association was only observed in regard to a history of depression and spousal violence. PPD was less common among women of Primipara compared to multipara, while hypertension was more common among women with PPD.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. *Stewart, D.E., Robertson, E., Dennis, C.L., Grace, S.L. and Wallington, T., 2003. Postpartum depression: Literature review of risk factors and interventions. Toronto: University Health Network Women's Health Program for Toronto Public Health, pp.1-289.*
2. *Halbreich, U. and Karkun, S., 2006. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. Journal of affective disorders, 91(2-3), pp.97-111.*
3. *Brummelte, S. and Galea, L.A., 2016. Postpartum depression: Etiology, treatment and consequences for maternal care. Hormones and behavior, 77, pp.153-166.*
4. *Field T. Infants of depressed mothers. Infant behavior & development. 1995 Jan.*
5. *Kitamura, T., Yoshida, K., Okano, T., Kinoshita, K., Hayashi, M., Toyoda, N., Ito, M., Kudo, N., Tada, K., Kanazawa, K. and Sakumoto, K., 2006. Multicenter prospective study of perinatal depression in Japan: incidence and correlates of antenatal and postnatal depression. Archives of women's mental health, 9(3), pp.121-130.*
6. *Hegde, S., Latha, K.S., Bhat, S.M., Sharma, P.S.V.N. and Kamath, A., 2012. Postpartum depression: prevalence and associated factors among women in India. Journal of Women's Health, Issues and Care, 1(1), pp.1-7.*
7. *Dolan, M. and Fullam, R., 2004. Theory of mind and mentalizing ability in antisocial personality disorders with and without psychopathy. Psychological medicine, 34(6), pp.1093-1102.*
8. *Nasreen, H.E., Edhborg, M., Petzold, M., Forsell, Y. and Kabir, Z.N., 2015. Incidence and risk factor of postpartum depressive symptoms in women: a population based prospective cohort study in a rural district in Bangladesh. J Depress Anxiety, 4(1000180), pp.2167-1044.*

9. *Islam, M., Baird, K., Mazerolle, P. and Broidy, L., 2017. Exploring the influence of psychosocial factors on exclusive breastfeeding in Bangladesh. Archives of women's mental health, 20(1), pp.173-188.*
10. *Alici-Evcimen, Y. and Sudak, D.M., 2003. Postpartum depression. Primary care update for OB/GYNS, 10(5), pp.210-216.*
11. *Beck CT. The effects of postpartum depression on maternal-infant interaction: a meta-analysis. Nursing research. 1995 Sep.*
12. *Hammen, C., 2003. Social stress and women's risk for recurrent depression. Archives of Women's Mental Health, 6(1), pp.9-13.*
13. *Murray, L. and Cooper, P.J., 1997. Postpartum depression and child development. Psychological medicine, 27(2), pp.253-260.*
14. *O'Hara, M.W. and Swain, A.M., 1996. Rates and risk of postpartum depression—a meta-analysis. International review of psychiatry, 8(1), pp.37-54.*
15. *Dennis CL, Chung-Lee L. Postpartum depression help-seeking barriers and maternal treatment preferences: A qualitative systematic review. Birth. 2006 Dec;33(4):323-31.*
16. *Vigod, S.N., Villegas, L., Dennis, C.L. and Ross, L.E., 2010. Prevalence and risk factors for postpartum depression among women with preterm and low-birth-weight infants: a systematic review. BJOG: An International Journal of Obstetrics & Gynaecology, 117(5), pp.540-550.*
17. *Milgrom, J., Gemmill, A.W., Bilszta, J.L., Hayes, B., Barnett, B., Brooks, J., Ericksen, J., Ellwood, D. and Buist, A., 2008. Antenatal risk factors for postnatal depression: a large prospective study. Journal of affective disorders, 108(1-2), pp.147-157.*
18. *Rich-Edwards, J.W., Kleinman, K., Abrams, A., Harlow, B.L., McLaughlin, T.J., Joffe, H. and Gillman, M.W., 2006. Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. Journal of Epidemiology & Community Health, 60(3), pp.221-227.*
19. *Cox, J.L., Holden, J.M. and Sagovsky, R., 1987. Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. The British journal of psychiatry, 150(6), pp.782-786.*
20. *Surkan, P.J., Patel, S.A. and Rahman, A., 2016. Preventing infant and child morbidity and mortality due to maternal depression. Best practice & research Clinical obstetrics & gynecology, 36, pp.156-168.*
21. *Hagen, E.H., 1999. The functions of postpartum depression. Evolution and Human Behavior, 20(5), pp.325-359.*
22. *Kozyrskyj AL, Letourneau NL, Kang LJ, Salmani M. Associations between postpartum depressive symptoms and childhood asthma diminish with child age. Clinical & Experimental Allergy. 2017 Mar;47(3):324-30.*
23. *Ross LE, Campbell VL, Dennis CL, Blackmore ER. Demographic characteristics of participants in studies of risk factors, prevention, and treatment of postpartum depression. The Canadian Journal of Psychiatry. 2006 Oct;51(11):704-10.*
24. *Petrosyan D, Armenian HK, Arzoumanian K. Interaction of maternal age and mode of delivery in the development of postpartum depression in Yerevan, Armenia. Journal of affective disorders. 2011 Dec 1;135(1-3):77-81.*
25. *Gausia K, Fisher C, Ali M, Oosthuizen J. Magnitude and contributory factors of postnatal depression: a community-based cohort study from a rural subdistrict of Bangladesh. Psychological medicine. 2009 Jun;39(6):999-1007.*
26. *Islam MJ, Broidy L, Baird K, Mazerolle P. Intimate partner violence around the time of pregnancy and postpartum depression: the experience of women of Bangladesh. PloS one. 2017 May 4;12(5):e0176211.*
27. *Goker A, Yanikkerem E, Demet MM, Dikayak S, Yildirim Y, Koyuncu FM. Postpartum depression: is mode of delivery a risk factor?. International Scholarly Research Notices. 2012;2012.*
28. *Cunningham, P.J. and Freiman, M.P., 1996. Determinants of ambulatory mental health services use for school-age*

children and adolescents. Health services research, 31(4), p.409.

29. *Azad R, Fahmi R, Shrestha S, Joshi H, Hasan M, Khan AN, Chowdhury MA, Arifeen SE, Billah SM. Prevalence and risk factors of postpartum depression within one year after birth in urban slums of Dhaka, Bangladesh. PloS one. 2019 May 2;14(5):e0215735.*
30. *Boyce PM, Todd AL. Increased risk of postnatal depression after emergency caesarean section. Medical journal of Australia. 1992 Aug;157(3):172-4.*
31. *Sword W, Kurtz Landy C, Thabane L, Watt S, Krueger P, Farine D, Foster G. Is mode of delivery associated with postpartum depression at 6 weeks: a prospective cohort study. BJOG: An International Journal of Obstetrics & Gynaecology. 2011 Jul;118(8):966-77.*
32. *Epperson CN, Huang MY, Cook K, Gupta D, Chawla A, Greenberg PE, Eldar-Lissai A. Healthcare resource utilization and costs associated with postpartum depression among commercially insured households. Current medical research and opinion. 2020 Oct 2;36(10):1707-16.*
33. *Ganann R, Sword W, Thabane L, Newbold B, Black M. Predictors of postpartum depression among immigrant women in the year after childbirth. Journal of women's health. 2016 Feb 1;25(2):155-65.*