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Child Health

The Impact of Sociodemographic Factors on Postpartum Depression in Rural Mothers

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Abstract **Original Research Article**

***Introduction*:** Post-partum depression (PPD) is a cross-cultural phenomenon observed in widely diverse cultures. PPD is defined as major depression, without psychotic features, that begins within 4 weeks after birth and may last up to 1 year. The global prevalence of postpartum depression among childbearing-age women ranged from 5.0% to 74.0%. This study aimed to determine the impact of sociodemographic factors on postpartum depression in rural mothers. ***Methods*:** This was a cross-sectional study conducted in Banchanagar village, Laxmipur Sadar Upazila, Laxmipur District, Bangladesh, from January 2014 to December 2014. This study included 219 rural mothers in their postnatal period (within 1 year) who had a history of one delivery within the study period. ***Result*:** In this study, the level of depression was higher (35.7%) in more than 25 years of age group of mothers. Depression was higher (28.6%) among the mothers who had two or more daughters. Among depressive mothers, 51.8% were not satisfied with the sex of their children as well as 76% of their husbands were not satisfied with the sex of their children. The level of depression of the mothers was higher (71.4%) among those who had a family history of depression and the association was found significant ($p<0.05$). ***Conclusion*:** Our findings showed that mothers' age, husbands' age, sex of the child, and the number of children were associated with symptoms of PPD. The higher prevalence of PPD associated with sociodemographic factors suggested the importance of a mental health support system for women in rural areas.

Keywords: Sociodemographic Factors, Postpartum Depression, Rural Mothers, Sex Preference.

INTRODUCTION

The post-partum period is recognized as a time when many women are vulnerable to a variety of emotional symptoms [1]. The most prevalent mental or emotional problem associated with childbirth is post-partum depression (PPD); having some adverse effects on the whole family [2-4]. PPD is a cross-cultural phenomenon observed in widely diverse cultures and its outbreak rate was reported as high as 60% - 80.2% in the developing world [1-5]. Villegas *et al*., reported a prevalence rate ranging from 21.5% to 31.3% in rural residents of developed and developing counties, respectively [6].

As one of the most critical issues for public health postpartum depression (PPD) affects many women, regardless of country of origin or culture [7, 8]. According to the American Psychiatric Association (2013), PPD is defined as major depression, without psychotic features, that begins within 4 weeks after birth and may last up to 1 year [9]. Feelings of depression during the postpartum period can have critical effects on the health of women and their children.[10] In a meta-analysis of PPD research, Beck (2001) identified 13 risk factors for PPD: prenatal depression, prenatal anxiety, child care pressure, infant temperament, life stress, lack of social support, single marital status, marital dissatisfaction, history of depression, postpartum blues, low self-esteem, low socioeconomic status, and unwanted pregnancy. Other factors included the mother's employment status [11, 12]. Infant sex has also been associated with maternal feelings of depression during the postpartum period [13]. In two studies, the undesired sex of an infant increased feelings of depression during the postpartum period [14, 15].

The global prevalence of postpartum depression among childbearing-age women ranged from 5.0% to 74.0% [16, 17]. The burden of PPD in low and middle-income countries is comparatively larger than in developed countries, but they share less than 20% of the global mental health resources [18, 19]. Postpartum depression among women living in resource-poor settings is often under-identified, undiagnosed, and untreated which hugely affects the health and social life of both mother and child. Children of mothers with postpartum depression are at higher risks of malnutrition, poor physical and neurocognitive outcomes, and behavioral and interpersonal problems [20, 21]. The various risk factors of postpartum depression include women's age, race, ethnicity, and cultural context [22].

Maternal living in rural areas is defined by low incomes, limited social security, low levels of education, insufficient access to healthcare, and a lack of knowledge about depression. Although women have comparatively little family and societal support and men rule the home and society, the custom of having boys may also put pressure on women to have children. Mothers in rural locations may be more susceptible to PPD and may be less likely to seek care due to the physical, psychological, and family structure changes that women will experience after giving birth. Thus, it is crucial to understand their PPD status and the factors influencing it at this particular and critical point in time.

Therefore, in this study, we aimed to determine the impact of sociodemographic factors on postpartum depression in rural mothers.

METHODOLOGY & MATERIALS

This was a cross-sectional study conducted in Banchanagar village, Laxmipur Sadar Upazila, Laxmipur District, Bangladesh, from January 2014 to December 2014. This study included 219 rural mothers in their postnatal period (within 1 year) who had a history of one delivery within the study period.

These are the following criteria to be eligible for enrollment as our study participants: a) Women aged between 15-49 years; b) Postnatal mothers having at least one child under 1 year; c) Residents of that area at least for 5 years; d) Mothers who were willing to participate were included in the study And a) Mothers who were unable to understand the study's purpose; b) Mothers with physical or mental illness during the study period; c) Mothers with chronic calcific pancreatitis, ampullary tumor, and pancreatic malignancy were excluded from our study.

Data Collection

Data were collected using a semi-structured, pre-tested questionnaire covering socio-demographic details, obstetric history, and maternal health factors with postpartum depression. Postpartum Depression (PPD) was defined as a clinical depression affecting women after childbirth, measured using the Edinburgh Postnatal Depression Scale (EPDS) screening with the postnatal period estimated as 1 year after delivery. Interviews in Bengali lasted about an hour per participant. The questionnaire, pretested and modified based on feedback, was translated into Bengali. Quality assurance included double data entry. Daily checks ensured data completeness and consistency, with follow-ups for any missing information. The dependent variable was postpartum depression. Independent variables included socio-demographic, gender-based, and depression-related aspects.

Statistical Analysis

All data were recorded systematically in preformed data collection form. Quantitative data was expressed as mean and standard deviation; qualitative data was expressed as frequency distribution and percentage. The association between sociodemographic variables and level of depression was analyzed using chi-square (X^2) tests. A p-value <0.05 was considered as significant. Statistical analysis was performed by using SPSS 16 (Statistical Package for Social Sciences) for Windows version 10. The Ethical Review Committee of Bangabandhu Sheikh Mujib Medical University approved the study.

RESULTS

Table 1: Association between age of mothers, husband's age, and level of depression

Age of mothers	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
≤ 25 years	32	19.6	131	80.4	163(100.0)	5.954	0.01
> 25 years	20	35.7	36	64.3	56(100.0)		
Total	52	23.7	167	76.3	219(100.0)		
Age of husband							
≤ 30 years	23	16.4	117	83.6	140(100.0)	11.472	0.001
> 30 years	29	36.7	50	63.3	79(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 1 shows that among 219 study subjects, the level of depression was higher (35.7%) in more than 25 years age group of mothers compared to other groups of mothers. The level of non-depressive mothers was higher (80.4%) in less than 25 years age group of mothers. There was a highly statistically significant association between the age of mothers and their level of depression ($p<0.05$). The level of depression was higher (36.7%) in more than 30 years husband age group of mothers compared to other groups. The level of non-depressive mothers was higher (83.6%) in less than 30 years husband age group of mothers. There was a highly statistically significant association between and their level of depression ($p<0.05$).

Table 2: Association between education of mothers and level of depression

Education of mothers	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Illiterate	21	29.6	50	70.4	71(100.0)	1.974	0.16
Literate	31	20.9	117	79.1	148(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 2 shows that the level of depressive mothers was higher (29.6%) among the Illiterate than the educated mothers and the level of depression gradually decreased with the higher level of education. However, the test statistics were not significant. So, there was no significant association was noted between the education of the mothers and the level of depression ($p>0.05$).

Table 3: Association between occupation of mothers, husbands, and level of depression

Occupation of mothers	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Housewife	43	26.2	121	73.8	164(100.0)	2.210	0.13
Others (service & business)	9	16.4	46	83.6	55(100.0)		
Total	52	23.7	167	76.3	219(100.0)		
Occupation of husband							
Service & business	19	23.5	62	76.5	81(100.0)	0.006	0.93
Others (Labor, farmer & Rickshaw puller)	33	23.9	105	76.1	138(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 3 shows that among 219 study subjects the level of depression of the mothers was higher (26.2%) among housewives than those of other groups of mothers which was service and business. No statistically significant association was found between the occupation of the mothers and their level of depression ($p>0.05$). The level of depression of the mothers was higher (23.9%) among other occupations of the husband which were labor, farmer & rickshaw pulling than the service and businessman. No statistically significant association was found between the occupation of the husbands of mothers and their level of depression ($p >0.05$).

Table 4: Association between total monthly family income and level of depression

Monthly family income	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Taka ≤ 10000	27	21.3	100	78.7	127(100.0)	1.031	0.31
Taka > 10000	25	27.2	67	72.8	92(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 4 shows that the level of depression of the mothers was higher (27.2%) among those whose total monthly family income was more than 10000 taka and non-depressive mothers were higher whose total monthly family income was less than 10000 taka. There was no statistically significant association between total monthly family income and their level of depression ($p>0.05$).

Table 5: Association between the sex of the present child and level of depression

Sex of the child at present	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
One son & daughter	2	4.5	42	95.5	44(100.0)	11.209	0.001
Others (Two or more daughters, sons)	50	28.6	125	71.4	175(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 5 shows that the level of depression of the mothers was higher (28.6%) among the sex of the child at present which was two or more daughters and non-depressive mothers were higher at present which was one son & daughter. There was a highly statistically significant association between the sex of the child at present and their level of depression (p <0.05).

Table 6: Association between thinking or desire about the preference of sex and level of depression

Thinking about sex preference	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Yes	38	39.6	58	60.4	96(100.0)	23.683	0.000
No	14	11.4	109	88.6	123(100.0)		
Total	52	23.7	167	76.3	219(100.0)		
Husband thinks about sex preference							
Yes	42	33.6	83	66.4	125(100.0)	15.623	0.000
No	10	10.6	84	89.4	94(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 6 shows that the level of depression of the mothers was higher (39,4%) among those who think about their preference of sex and non-depressive mothers were higher (88.6%) who didn't think about their preference of sex. There was found statistically highly significant association between thinking or desire about the preference of sex and their level of depression (p<0.05). Depressive mothers whose husbands think about the sex of their child were higher (33.0%) and non-depressive mothers were higher (89.4%) whose husbands didn't think about the sex of their child. There was a highly statistically significant association between the husband's thoughts or desires about the sex of the child and their level of depression (p>0.05).

Table 7: Association between satisfaction with the sex of child and level of depression

Satisfaction about sex of child	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Satisfied	23	14.1	140	85.9	163(100.0)	32.675	0.000
Not satisfied	29	51.8	27	48.2	56(100.0)		
Total	52	23.7	167	76.3	219(100.0)		
Husband satisfaction about the sex of child							
Satisfied	33	17.0	161	83.0	194(100.0)	42.562	0.000
Not satisfied	19	76.0	6	24.0	25(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 7 shows that depressive mothers were higher (51.8%) were not satisfied with the sex of their children and non-depressive mothers were higher (85.9%) were satisfied with the sex of their children. There was a highly statistically significant association between satisfaction with the sex of the child and their level of depression (Here p<0.05). Among all subjects, depressive mothers were higher (76%) whose husbands were not satisfied with the sex of the child and non-depressive mothers were higher (83%) whose husbands were satisfied with the sex of the child. There was found statistically highly significant association between the husband's satisfaction about the sex of the child and their level of depression (p<0.05).

Table 8: Association between family history of depression and level of depression

Family history of depression	Had depression		Had no depression		Total (%)	X^2	P-value
	No	%	No	%			
Yes	10	71.4	4	28.6	14(100.0)	18.782	0.000
No	42	20.5	163	79.5	205(100.0)		
Total	52	23.7	167	76.3	219(100.0)		

Table 8 shows that the level of depression of the mothers was higher (71.4%) among those who had a family history of depression and non-depressive mothers were higher (79.5%) among those who had no family history of depression. There was a statistically highly significant association found between a family history of depression and their level of depression (p<0.05).

DISCUSSION

Studies are comparing PPD prevalence rates among rural and urban women living in developed countries, such as Australia, which reported higher rates of PPD in rural (8.5%) compared to urban (6.6%)

women with no significant difference [23, 24]. A PPD-related study from Lebanon, reported a higher rate of PPD among the rural women (26%) to the urban ones (16%) [25]. In a systematic review, PPD prevalence was higher among rural women than urban ones, especially in developing countries (21.5% in developed countries rural women vs. 31.3% in developing countries' rural ones) [26]. Low socioeconomic status such as low income and low education as well as poor life quality and lack of mental health services may contribute to the onset of mental illness among rural women [26].

Our findings reported a significant relationship between the age of mothers and their level of depression. A prospective cohort study by Rich-Edwards *et al*., (2006) found that Hispanic women ages 23 years and younger developed PPD [27]. A systematic review by Graham and McDermott (2006) reported that teenage mothers were more depressed after birth from a lack of confidence or the inability to care for their newborns [28]. A study by Bottino *et al*., (2012) found that maternal age was significantly associated with depression for the first 5 months postpartum [29]. A phenomenological study done by Hannan (2016) identified that new mothers ages 30 years and older experienced more feelings of depression during the postpartum period. Low education level, unemployment, cesarean birth, and more than one young child were significantly related to an increased risk of postpartum depression symptoms. Thus, findings in the extant research are not consistent about the relationship between maternal age and PPD [30].

We found no association between income level and symptoms of PPD, and there was also no association between low education level and level of depression. Rich-Edwards *et al*., (2006) found that household income and employment were risk factors for PPD among Hispanic women [27]. In their study of 61 women, Hutto *et al*., (2011) showed that low-income rural women in the United States were at risk of developing feelings of depression after birth [31]. Katon *et al*., (2014) found that women at risk for symptoms of PPD were more likely to be unemployed. Thus, support for the association of education, income, and unemployment with PPD is mixed [32].

This study found that mothers who belong to low-income families (<10000 TK/month family income) were associated with depressive symptoms, even though the association was not significant. These findings are supported by the evidence from a systematic review undertaken in 17 low-middle-income countries, where mothers who had low income or financial difficulties were more likely to have PPD [33]. Financial problems and low-income sources among women before or during pregnancy may affect the mental health of mothers during postpartum periods [34]. Likewise, various studies have reported that the low socioeconomic factor constitutes strong risk factors for depressive symptoms in postpartum mothers [34].

Another contradiction in factors associated with PPD is the sex of the infant. Among the participants in our study, we found a significant association between the sex of the infant and their level of depression. In some cultures, the preferred sex of the infant could be an important factor in the development of symptoms of maternal depression [35]. In the current study, we assessed participants' preference for the sex of their infants before birth and we found a significant association between preference for sex and the level of depression.

Among our participants, those who only had more than one child were at greater risk of symptoms of PPD. Kim & Dee found that women who only had one child were at greater risk of symptoms of PPD [36]. Similarly, Csatordai *et al.*, (2007) reported that women with more children had a lesser chance of developing PPD during the postpartum period [37].

A family history of psychopathology has constantly been identified to be a significant risk factor for PPD [38]. The socio-demographic variable associated with PPD in this study was age at marriage, sex of the present child, and preference for the sex of the child. Further research is necessary to verify findings regarding the sociodemographic characteristics and PPD. In this study, a previous history of depression was a significant risk factor for PPD, while Escribà-Agüir & Artazcoz found no significant association in the final multiple logistic regression model [39].

Limitations of the Study

We took a small sample size due to the short study period. The study population was purposively selected from a specific rural community for convenience. Therefore, the findings may not be fully representative of the broader population of Bangladesh. Due to time and resource constraints, the results may not align with those of a large-scale survey. After evaluating those women, we did not follow up with them for the long term and did not know other possible interference that may happen in the long term with these women.

CONCLUSION AND RECOMMENDATIONS

In this study, we explored the significant impact of sociodemographic factors such as age, low income, gender inequality perceptions, and limited social support on the occurrence of PPD in rural mothers. Our findings showed that mothers' age, husbands' age, sex of the child, low education level, low income, and the number of children were associated with symptoms of PPD. The higher prevalence of PPD associated with sociodemographic factors suggested the importance of a mental health support system for

women in rural areas. Rural women should receive education about the symptoms of PPD during their pregnancy.

So further study with a prospective and longitudinal study design including a larger sample size needs to be done to validate the findings of our study.

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

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