RESEARCH

Psychiatric morbidity in puerperium: incidence, associated socio-demographic and obstetric risk factors

Sachin Ratan Gedam, Kamala Deka[1]

S Senior Resident, Department of Psychiatry, Shri MP Shah Medical College, Jamnagar, Gujarat, India

[1]Professor and Head, Department of Psychiatry, Jorhat Medical College Hospital, Jorhat, Assam, India

Abstract

Introduction: The puerperium is the period during which the maternal organs, particularly the reproductive organs, return to the non-pregnant or near normal state. It is during this critical postpartum period that the mother and her infant are the most vulnerable to both physical and emotional problems.

Aim: To study psychiatric morbidity; assessment of various obstetric factors; correlation between obstetric factors and psychiatric morbidity; correlation of socio-demographic variables in validation to psychiatric morbidity in postpartum period.

Study design: This was hospital based cross-sectional study of women in postpartum period.

Materials and methods: A sample of 100 was recruited through systematic random sampling over a period of one year from October 2010 to September 2011. They were screened using Mini-International Neuropsychiatric Interview (M.I.N.I.-Plus), and then severity of psychiatric illnesses was assessed using Hamilton Rating Scale for Depression (HRSD) and Brief Psychiatric Rating Scale (BPRS). The statistical analysis was done using t-test, chi-square test, and Pearson's and Spearman's correlations.

Results: Twelve, three, and one per cent of cases had postpartum depression, panic disorder, and mixed anxiety and depressive disorder. There were significant correlation between socio-demographic variables such as age, education, socioeconomic status, religion, residence, type of family, and psychiatric morbidity (P value < 0.01). The obstetric variables such as birth order, mode of delivery, and gender of baby were significantly correlated with psychiatric morbidity (P value < 0.01).

Conclusion: The postpartum depression is the most common psychiatric morbidity in puerperium. The socio-demographic and obstetric variables have significant impact on the occurrence of psychiatric diseases in puerperium.

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Correspondence: sachinrgedam@gmail.com

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Introduction

The puerperium is the period during which the maternal organs, particularly the reproductive organs, return to the non-pregnant or near normal state with the exception of the lactating breasts, which remain active throughout this period. Following delivery, the complex pregnancy adaptations become redundant and gradually regress. This period of change lasts for about six weeks. The restorative changes are generally accomplished quite rapidly and the uterus regresses to almost the non-pregnant shape and size, a process termed involution, by the end of six weeks.[1] According to the fourth edition of the Statistical Manual of Mental Disorders (DSM-IV),[2] brief psychotic episode with postpartum onset may be noted if the onset of psychotic symptoms is within four weeks postpartum. The nature of the association between childbirth and mental disturbance is of great interest. It is during this critical postpartum period that the mother and her infant are the most vulnerable to both physical and emotional problems. During this time, there must be increased concern for women who are the most vulnerable to postpartum depression. Postpartum mood disorders are generally divided into three categories: postpartum blues or "baby blues", postpartum depression, and postpartum psychosis.[3,4] Postpartum blues is characterised by mild dysphoria, with symptoms such as tearfulness, fatigue, sleep disturbances, and physical exhaustion that lasts a few days following delivery, occurring in 50 to 90% of new mothers.

The majority of women experiencing postpartum blues recover spontaneously within three to five days, maximum in ten to 14 days.

The symptoms of postpartum depression are similar to the symptoms of any major depressive disorder occurring in approximately ten to 14% of new mothers. Symptoms usually occur shortly after childbirth but can occur as late as one year after delivery. The third type of postpartum mental disturbance, postpartum psychosis occurs in one to two of every 1000 new mothers and even leads to infanticide in rare cases.

Screening, detection, and treatment for postpartum mood disorders as early as possible following childbirth are essential, because there is a greater likelihood of complete symptom relief in a shorter time span than if detection and treatment is delayed. The aetiology of postpartum mood disorders is complex and not readily understood by many healthcare professionals. Neurophysiologic changes, underlying postpartum changes, the stress of childbirth, and predisposing factors, such as genetics, environment, and psychological stressors, combine to produce postpartum mood disorders in some women.[5]

We need more research into the area of psychiatric morbidity in the postpartum period. A precise understanding of the problems, pattern, risk factors, maintaining factors etc. is essential for any interventions in this area. There are many factors which are responsible for psychiatric morbidity in puerperium. This study is an attempt in this direction.

Aims and objectives

The aims and objectives of the study were to assess the psychiatric morbidity in puerperium, to assess various obstetric factors, to find correlation between obstetric factors and psychiatric morbidity, to assess correlation of socio-demographic variables in validation to psychiatric morbidity in postpartum period.

Material and method

The study was conducted at the Department of Obstetrics and Gynaecology, Assam Medical College Hospital (AMCH), Dibrugarh, Assam, India. The study duration was of one year from October 2010 to September 2011. It received ethical approval from the institutional review board. Written informed consent was obtained from all subjects/attendants and they were free to withdraw at any time.

A total of 100 women in the postpartum period (from delivery to six weeks) were selected by systematic random sampling. In the sampling method, every 50th patient in the age group of 18 to 45 years was included in the study. Patients who agreed and given a written informed consent were included for the study and others excluded from the study. Patients with any existing psychiatric disorder, substance abuse within the past six months, and presence of comorbid severe medical disorders were excluded.

A semi-structured profroma was used to collect information about the socio-demographic profile of the patients. The patients were interviewed through questionnaire such as medical and family history with special attention focused on the type of marriage, type of family (nuclear/joint), availability of social support, relationship with spouse and in-laws, whether current pregnancy was planned or not, and whether a particular gender of infant was favoured. Attention was also focused on past history and family history of psychiatric illness.

All the participants were assessed for psychiatric illness, severity of illness if present, and various obstetrics factors during peripartum period. Predetermined scales were applied on the patients, namely Mini-International Neuropsychiatric Interview (M.I.N.I.-Plus),[6] Brief Psychiatric Rating Scale (BPRS),[7] and Hamilton Rating Scale for Depression (HRSD) (17-item).[8]

1. A semi-structured proforma

A semi-structured proforma constructed by the Department of Psychiatry, AMCH for collection of socio-demographic data.

1. Mini-International Neuropsychiatric Interview (M.I.N.I.-Plus)

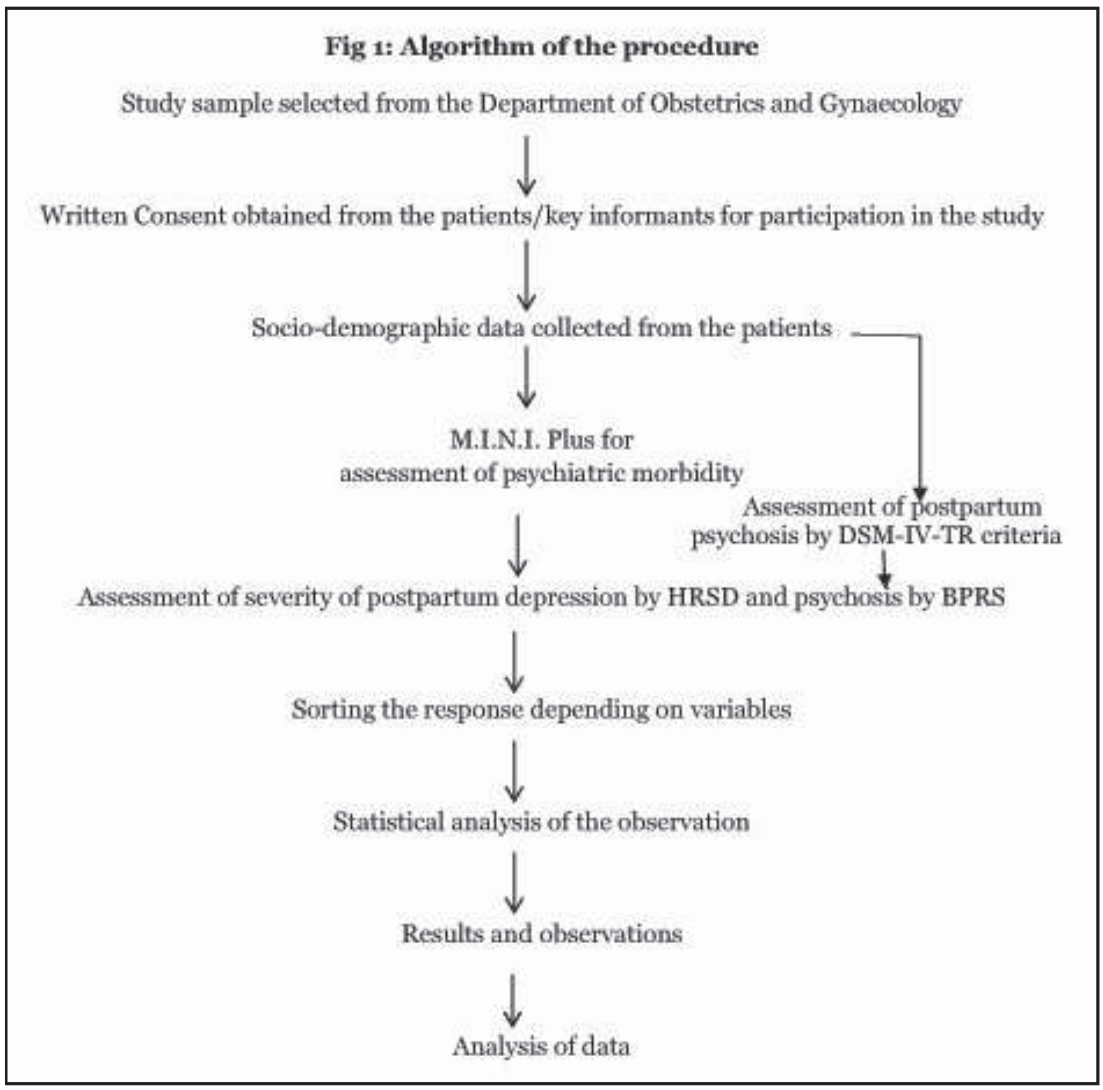
This brief structured diagnostic interview aimed at the identification of a set of DSM-IV and the tenth edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10)[9] mental disorders in multi centre clinical trials and epidemiological studies.[6] It takes approximately 30 minutes to administer. It uses decision tree logic to assess the major adult Axis I disorders in DSM-IV and ICD-10. It elicits all the symptoms listed in the symptom criteria for DSM-IV and ICD-10 for 15 major Axis I diagnostic categories, one Axis-II disorder and for suicidality. Its diagnostic algorithms are consistent with DSM-IV diagnostic algorithms. M.I.N.I.-Plus was used in the present study to generate ICD-10 and DSM-IV diagnosis. The investigator was trained in the administration of M.I.N.I.-Plus.

3. Brief Psychiatric Rating Scale (BPRS)

BPRS is one of the most frequently used instruments for evaluating psychopathology in patients with schizophrenia. This is a short scale used to measure the severity of psychiatric symptomatology.[7]

4. Hamilton Rating Scale for Depression (HRSD) (17-item)

HRSD was developed in the early 1960 to monitor the severity of major depression with a focus on somatic symptomatology. There are many versions of HRSD



available. The 17-item version was used in the present study. HRSD is scored from zero to four with total score ranging from zero to 50. Score of seven or less than seven may be considered as normal. A score of eight to 13 on HRSD is indicative of mild depression, 14-18 suggests moderate depression, and a score of 19 and above is generally seen in those with severe depression.[8]

5. Diagnostic and Statistical Manual for Mental and Behavioural Disorders, Fourth Edition, Text Revision (DSM-IV-TR)

It is the diagnostic manual for the diagnosis of mental and behavioural disorders published by American Psychiatric Society in the year 2000 from Washington DC, United States of America.[10] According to DSM-IV,[2] brief psychotic episode with postpartum onset may be noted if the onset of psychotic symptoms is within four weeks postpartum.

Data analysis

Data analysis was done by using statistical software namely the Statistical Package for Social Sciences (SPSS) version 16. The t-test was used to assess interval data and chi-square test was used to assess categorical data. We used both Pearson's correlation and Spearman's correlation. Pearson's correlation was used for quantitative data and Spearman's correlation was used for the qualitative data, respectively.

Results and observations

Subject characteristics

At the end of one year, total of 100 subjects in the puerperium, i.e. within a period of four weeks after delivery of child were collected. The demographic details of the subjects have been tabulated in the Table 1.

Major portion of the subjects were Hindu by religion (88%) and small portion of the study subjects were Muslim (11%) and the only one per cent were followers of Christian. The major portion of the participants was literate and most of them educated up to school (71%) and high school (23%). Only two per cent of them are graduates. As shown in the table 1, most of the subjects were housewife (99%) by occupation and small portion of them were working (one per cent). Majority of the participants belong to middle (73%) and lower (23%) socioeconomic class whereas small portion belong to higher status (four per cent). In the collected sample, majority of the participants came from the rural (75%) and urban (19%) areas whereas few participants came from semi-urban (six per cent) background.

Similarly, majority of the participants lived in the joint (67%) and nuclear (31%) families and small portion of participants lived in the extended joint family (two per cent). All the participants found to be married and majority of them had duration of marriage from one to four years (72%) and five to eight years (22%) while some of them married from nine to 12 years (five per cent) and >12years (one per cent).

Among the participants, 64% were primiparas and 36% multiparas, 59% of participants undergone full term normal delivery and 41% undergone caesarean section, 45% of subjects had male baby and 56% had female baby. Most of the subjects had support of their husband (73%) and 27% had support from other family members. Few subjects had

Table 1: Demographic details of the subjects in puerperium

Demographic details	Number of subjects (n=100)	%age	Demographic details	Number of subjects (n=100)	%age
Religion			**Type of family**		
Hindu	88	88%	Nuclear	31	31%
Christian	1	1%	Extended	2	2%
Muslim	11	11%	Joint	67	67%
Education			**Birth order**		
Illiterate	4	4%	Primi	64	64%
School	71	71%	Multi	36	36%
High school	23	23%	**Mode of delivery**		
Degree	2	2%	Full term normal delivery	59	59%
Occupation			Full term caesarean section	41	41%
Housewife	99	99%	**Gender of the baby**		
Service	1	1%	Male	45	45%
Socioeconomic status			Female	56	56%
Upper class	4	4%	**Caretakers**		
Middle class	73	73%	Husband	73	73%
Lower class	23	23%	Other	27	27%
Residence			**Complications**		
Urban	19	19%	Absent	68	68%
Semi-urban	6	6%	Present	32	32%
Rural	75	75%	**Past psychiatric illness**		
Years of marriage			Yes	0	0%
1-4 years	72	72%	No	100	100%
5-8 years	22	22%	**Family psychiatric illness**		
9-12 years	5	5%	Yes	0	0%
>12 years	1	1%	No	100	100%

complications (32%) like preeclampsia, cephalo-pelvic disproportion, foetal distress and precipitous delivery while 68% of subjects had uncomplicated pregnancy. None of the participants had past psychiatric illness or family history of psychiatric illness.

Table 2 shows the number of subjects with the psychiatric morbidity diagnosed using the M.I.N.I. Plus. Out of the 100 subjects, 16% suffered from psychiatric illness.

Table 3 shows the psychiatric diagnosis among the subjects with psychiatric morbidity. Out of the 100 subjects, 12% had major depressive disorder, three per cent had panic disorder, and one per cent had mixed anxiety and depressive disorder.

Table 4 shows the severity of major depressive disorder according to HDRS (17-item) scale. Among the participants, five per cent had mild depression, three per cent had moderate depression, while four per cent had severe depression.

Table 5 shows the correlation of socio-demographic variables with subjects with psychiatric morbidity using chi-square test. Significant chi-square with significant P-value indicates influential impact on socio-demographic factors.

In connection to this, smaller P-value is more significant than the larger one. When the distribution of age difference were placed in chi-square frequency distribution, the test result showed that chi-square value was 19.75 and P-value less than 0.01 for age groups 18-22 and 23-27, suggesting significant correlation between these age groups and psychiatric morbidity.

The statistical analysis for the religion showed the chi-square value was 17.23 and P-value < 0.01 for Hindu and P-value > 0.01 for Muslim, suggesting significant correlation between subjects with Hindus and psychiatric morbidity. The statistical analysis for the literacy revealed the chi-square value was 19.27 and P-value <0.01 for school and high school education while P-value > 0.01 for illiterate and degree, suggesting significant correlation between school-high school education and psychiatric morbidity.

There was no significant correlation obtained between occupation and psychiatric illness as chi-square value was 2.35 and P-value > 0.01. The significant correlation was found between middle-lower socioeconomic status and psychiatric illness (chi-square 14.38 and P-value < 0.01). The statistical analysis revealed significant correlation between the subjects with rural background and psychiatric illness (chi-square value 19.33 and P-value < 0.01) while no significant correlation for urban and semi-urban areas (P-value > 0.01).

The significant correlation was found between subjects with nuclear and joint family and psychiatric illness (chi-square 20.22 and P-value < 0.01), whereas no significant correlation was found between extended family and psychiatric illness.

Table 6 shows the correlation of obstetric variables with subjects with psychiatric morbidity using the single t-test and Spearman's correlation. Among the various obstetric variables, birth order, mode of delivery, and gender of the baby had a good significant correlation with psychiatric morbidity (r values 0.845, 0.862, and 0.886, respectively). The statistical analysis revealed significant correlation between primipara and psychiatric morbidity (t-value 3.83 and P-value < 0.01), while no correlation was found between multipara and psychiatric morbidity (P-value > 0.01). The significant correlation was found between caesarean section and psychiatric morbidity (t-value 5.32 and P-value < 0.01), whereas no correlation was found for normal vaginal delivery (P-value > 0.01). The statistical analysis revealed no significant correlation between complications of pregnancy and psychiatric illness (P-value > 0.01).

Table 2: Subjects with psychiatric morbidity

Study subjects	Number of subjects with psychiatric morbidity	%age
100	16	16%

Table 3: Psychiatric diagnosis according to M.I.N.I. Plus

M.I.N.I. Plus diagnosis	Number of subjects with psychiatric morbidity (n=16)	%age
Major depressive episode	12	12%
Panic disorder	3	3%
Mixed anxiety and depressive disorder	1	1%

Table 4: Severity according to HRSD for depression

HRSD	No. subjects with postpartum depression (n=12)	%age
Mild depression	5	5%
Moderate depression	3	3%
Severe depression	4	4%

Discussion

The study was carried out to study the psychiatric morbidity and the impact of socio-demographic and obstetric variables in the puerperium. The study samples were drawn from the inpatient Department of Obstetrics and Gynaecology, AMCH aged between 18-45 years. At the end of one year, a total of 100 women in the postpartum period (within six weeks from the delivery of child) were included. The socio-demographic data were collected through a semi-structured proforma. The assessment tools used were M.I.N.I. Plus, BPRS, and HRSD. M.I.N.I. Plus is a standard tool for the diagnosis of psychiatric disorders.

Socio-demographic characteristics

Most of the subjects in the present study were from the age group of 18-27 years. Traditionally, the Indian women tend to get married in their early twenties and conceive early. Majority of the subjects in our study were married for less than five years. Thus in our study, most of the mothers were young and early period of their married life. In addition, most mothers in the study were primiparas. Majority of the mothers were Hindu (88%), had school and high school education (94%), were housewives (99%), belonged to middle class socioeconomic status (73%), from the rural setting (75%), and staying in joint family (67%) as shown in Table 1. Majority of the mothers had full term

normal delivery with few pregnancy related complications. This may be the reflection of their education and economic status. The mothers were physically healthy and came regularly at the antenatal clinic. Studies have shown that mothers who attended antenatal clinic regularly and delivered in a hospital setting were more likely to have normal deliveries with few obstetric complications. Majority of the subjects had the support of their husband (73%). None of the participants in our study had past history of psychiatric illness or family history of psychiatric illness.

The psychiatric morbidity

In our study, out of 100 subjects, 16 (16%) mothers suffered from psychiatric illnesses. Out of those, 12% suffered from major depressive episode, three per cent from panic disorder, and one per cent from mixed anxiety and depressive disorder, according to M.I.N.I. Plus (Table 2 and 3). The major psychiatric morbidity was found to be postpartum depression and severity of depression was assessed according to HRSD (17-item) scale. Among the participants, five per cent had mild depression, three per cent had moderate depression, while four per cent had severe depression (Table 4). The present observation is almost similar to the western pattern of prevalence of psychiatric morbidity in postpartum women as reported by Navarro *et al.*[11]

Kalita *et al.*[12] carried out a cross-sectional study in the departments of Psychiatry and Obstetrics and Gynaecology, Gauhati Medical College and Hospital, Guwahati, Assam to determine the prevalence of anxiety disorders in postpartum period. The prevalence of generalised anxiety disorder was 11% and four per cent in experimental and control group.

Table 5: Correlation of socio-demographic variables with M.I.N.I. Plus cases

Variables	M.I.N.I. Plus non-cases (n1=84)	M.I.N.I. Plus cases (n2=16)	Correlation	Chi-square test	P-value
Age					
18-22	36 (42.857%)	4 (25%)	0.938	19.75*	0.008*
23-37	35 (41.67%)	10 (62.5%)			0.006*
28-32	11 (13.095%)	2 (12.5%)			0.323
>32	2 (2.38%)				
Religion					
Hindu	76 (90.47%)	12 (75%)	0.76	17.23*	0.004*
Christian	1 (1.19%)				
Muslim	7 (8.33%)	4 (25%)			0.086
Education					
Illiterate	3 (3.571%)	1 (6.25%)	0.83	19.27*	0.463
School	59 (70.238%)	12 (75%)			0.002*
High school	21 (25%)	2 (12.5%)			0.006*
Degree	1 (1.19%)	1 (6.25%)			0.501
Occupation					
Housewife	84 (100%)	15 (93.75%)	0.11	2.35	0.632
Service		1 (6.25%)			0.173
Socioeconomic status					
Upper class	4 (4.761%)		0.63	14.38*	
Middle class	62 (73.809%)	11 (68.75%)			0.007*
Lower class	18 (21.428%)	5 (31.25%)			0.003*
Residence					
Urban	14 (16.66%)	5 (31.25%)	0.72	19.33*	0.346
Semi-urban	5 (5.952%)	1 (6.25%)			0.282
Rural	65 (77.38%)	10 (62.5%)			0.002*
Type of family					
Nuclear	26 (30.952%)	5 (31.25%)	0.85	20.22*	0.008*
Extended	2 (2.38%)				
Joint	56 (66.67%)	11 (68.75%)			0.001*

**Value is significant. P-value is significant at 1% level. Cases: Study subjects with psychiatric morbidity. Non-cases: Study subjects with no psychiatric morbidity.*

While prevalence of mixed anxiety and depressive disorder was four per cent in both the groups.[12]

Relationship of postpartum psychiatric morbidity and socio-demographic characteristics

Postpartum psychiatric morbidity diagnosed according to M.I.N.I. Plus with onset of symptoms within four weeks postpartum. In our study, 16% of mothers suffered from psychiatric illnesses. Studies that have compared the age distribution of postpartum depression with non postpartum depressives have found the former to be of younger age. Maternal age however was not associated with postpartum depression in other studies. In our study, majority of mothers with psychiatric illness were young (18-27 years) signifying young age onset of postpartum disorders which is similar to data reported by Adefuye *et al*.[13] and Figueiredo *et al*.[14] Keeping similarity with the national and regional distribution of religion, majority of subjects were the followers of Hindu religion. It may be the reason that in the study Hindu mothers showing high incidence of postpartum illnesses.

The majority of mothers with psychiatric morbidity were educated up to school (75%) which is similar to the finding shown by Muneer *et al*.[15] As shown in Table 5, majority of mothers with the psychiatric illnesses belonged to lower (31.25%) and middle (68.75%) socioeconomic status, coming from rural background (62.5%), and staying in joint family (68.75%), which is almost similar to the observations shown by Muneer *et al*.[15] and Irfan *et al*.[16] that the majority of patients with postpartum depression had a low level of education (below the matriculate level) and came from the lower socioeconomic class, from rural areas. In the study, most of the participants belonged to rural background as most of the people in this region living in rural areas. In our study, all the socio-demographic variables showed significant correlation with psychiatric illnesses except for occupation of participants.

Relationship of postpartum psychiatric morbidity and obstetric variables

As shown in Table 6, the obstetric variables such as birth order, mode of delivery, and gender of baby, except for complications of pregnancy, have significant impact on the occurrence of postpartum psychiatric illnesses.

Birth order: Majority of the subjects in our study was primipara and many authors have found an association between primiparity and postnatal psychiatric disorders. The reason for an increased association between primiparity and postpartum disorders could be that the birth of first child constricts the mother's physical and psychological space. It forces the mother to resign her work, stay at home, and have additional responsibility of taking care of the child. If the mother is not prepared or inclined to accept this new responsibility, depression could ensue.

Mode of delivery: Most of the subjects had caesarean delivery. There was significant association between the mode of delivery and postnatal depression.

Gender of the baby: Many Indian studies showed a statistically significant relationship between the birth of a female child and the puerperal depression. This may be related to the prevailing cultural belief that having a female or girl child is a burden to the family. Most of these studies that have found this association have been based on postulations from lower socioeconomic status. Beliefs against girl child are more prevalent in communities from low socioeconomic status.

Complications during pregnancy: Fifty per cent of subjects had complications like preeclampsia, cephalo-pelvic dispropor-

Table 6: Correlation of obstetric variables with M.I.N.I. Plus cases

Sl. No.	Variables	M.I.N.I. Plus non-cases (n1=84)	M.I.N.I. Plus cases (n2=16)	Correlation (r)	t-test	P-value
1	**Birth order**					
	Primipara	52 (61.904%)	12 (75%)	0.845*	3.83*	0.003*
	Multipara	32 (38.095%)	4 (25%)		1.21	0.098
2	**Mode of delivery**					
	Normal	52 (61.904%)	7 (43.75%)	0.862*	1.13	0.563
	Caesarean	32 (38.095%)	9 (56.25%)		5.32*	0.002*
3	**Gender of the baby**					
	Male	39 (46.428%)	7 (43.75%)	0.886*	6.27*	0.0023*
	Female	46 (54.761%)	10 (62.5%)		8.31*	0.0011*
4	**Complication during pregnancy**					
	Absent	60 (71.428%)	8 (50%)	0.212	1.35	0.583
	Present	24 (28.571%)	8 (50%)		1.67	0.282

**Correlation is significant.*

tion, foetal distress, precipitous delivery, and others. In our study, there was no significant correlation between postpartum illness and complicated pregnancy. Many studies have correlated pregnancy and delivery related complications with postpartum psychiatric disorders. According to them, the physical stress of labour and delivery compounded by the psychological stress of childbirth could be the reasons for this association. Also, other authors reported a significant number of postpartum cases experiencing perinatal loss. Failure to find an association in our study may be due to the fact that 50% of participants have pregnancy related complications and 50% have uncomplicated pregnancy.

The above observations are almost similar to findings as reported by Amr and Hussein Balaha,[17] Savarimuthu *et al*.,[18] Adefuye *et al*.,[13] and Ndosi and Mtawali[19] that postpartum psychiatric disorders are strongly associated with primiparity, caesarean mode of delivery, and girl childbirth.

In our study, none of the participants suffered from postpartum psychosis. This may be due to the fact that our study has very less number of sample. Most of the studies carried out were community based studies and contained a very large number of participants.

Conclusion

The present study makes it clear that major depressive episode is more common in postpartum period among various psychiatric morbidities. The socio-demographic and obstetric variables have significant impact on the occurrence of psychiatric diseases in puerperium. So, the present study showed the possibility that by decreasing the above risk factors, the psychiatric disorders can be limited. Pregnant women should be screened to identify those at risk for psychiatric illness. Necessary prevention and treatment should be offered.

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