Is Maternal-Fetal Attachment Affected In Women With Severe Mental Illness?

S.V. Sivaraman, H. Thippeswamy, M. Philip, G. Desai and P.S. Chandra

Abstract**:** Maternal-fetal attachment (MFA) is a process in which a mother-to-be engages in affiliative behaviors with her unborn child. MFA has a bearing on the dyad's future mother-infant attachment, which in turn is necessary for adequate emotional and physical growth of the baby. Women with severe mental illness are likely to be at risk for impaired MFA. This study compared MFA in women with and without severe mental illness in order to study the relationship between MFA and maternal psychopathology. Forty pregnant women with severe mental illness (cases) were compared with 40 pregnant women without any mental illness (controls) in the study. MFA and psychopathology were assessed using the Maternal Fetal Attachment Scale (MFAS), Brief Psychiatric Rating Scale (BPRS), and Edinburgh Postnatal Depression Scale (EPDS). It was found that asymptomatic women with severe mental illness do not have significant impairments in attachment to the fetus during pregnancy. This finding is reassuring to women with severe mental illness who wish to become mothers during less symptomatic periods.

Keywords: attachment, disorders and diseases, literature review

Dr Shilpa V. Sivaraman was formerly a Junior Resident at Department of Psychiatry, National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore, India and is currently working as a Senior Resident at Department of Psychiatry, RML Hospital and PGIMER, New Delhi. She is interested in the area of clinical aspects of Women s Mental Health. **Dr. Harish Thippeswamy** is an Additional Professor at Department of Psychiatry, NIMHANS, Bangalore, India. He is interested in the areas of consultation-liaison psychiatry; psychosocial aspects and neurobiology of postpartum psychiatric disorders. Email: docharisht@gmail.com. **Dr. Mariamma Philip** is an Associate Professor at Department of Biostatistics, NIMHANS, Bangalore. Her areas of interest include applied multivariate analysis, application of artificial neural networks in medicine, and incomplete data analysis. **Dr. Geetha Desai**, Professor of Psychiatry, consultant perinatal psychiatrist at NIMHANS, Bangalore. Her areas of research interest include women's mental health, chronic pain and medically unexplained symptoms. **Dr. Prabha S. Chandra** is a Professor of Psychiatry and in charge of the Perinatal Psychiatry services at NIMHANS, Bangalore. Her areas of interest include mother infant bonding, prenatal mental health and its impact on infant outcomes, psychotropics in pregnancy and trauma and partner violence.

Research

Literature Review

Pregnancy and birth are considered important life events in a woman's life. Nine months of gestation is needed, not only for the physical development of the fetus, but also for the vital transformation of a woman into the role of a mother (Cranley, 1981). A mother who is initially concerned about the pregnancy itself, and about her own safety, gradually becomes protective of the fetus as pregnancy advances (Rubin, 1976). Maternal-fetal attachment is a process in which a mother-to-be engages in behaviors that represent an affiliation with her unborn child (Cranley, 1981; Brandon, Pitts, Denton, Stringer, & Evans, 2011). The conceptual understanding of the phenomena of maternal-fetal attachment is still being debated. There is a controversy regarding whether the fetus is a conscious being, capable of interacting with the mother, or whether the reactions shown by the fetus to pain, touch, smell, and sound are the result of non-conscious origins (Derbyshire, 2006).

Despite the limitations in conceptual understanding of the attachment phenomena, methods such as descriptive accounts and structured instruments such as the Maternal Fetal Attachment Scale, Maternal Antenatal Attachment Scale, and Prenatal Attachment Inventory are being used to measure the attachment phenomena (Alshusen, 2008). Bonding is a term that is often used to describe the reciprocal mother-infant relationship following the birth of the child. However, conceptually, it is difficult to delineate the terms "bonding" and "attachment" as separate entities. In the paper, we have used the term attachment to describe the emotional tie with the unborn fetus and bonding to describe the reciprocal interaction between mother and infant, following the birth. Among the factors that influence maternal-fetal attachment, social support during pregnancy and prenatal testing have been reported to have a greater effect as compared to other factors (Yarcheski, Mahon, Yarcheski, Hanks, & Cannella, 2009). However, the nature and role of the factors influencing the phenomenon of maternal-fetal attachment is still not well established. The importance of maternal-fetal attachment is highlighted by the finding that antenatal attachment predicts future maternal-infant attachment (Condon and Corkindale, 1997; Dubber, Reck, Muller, & Gawlik, 2015; Muller, 1996; Taffazoli, Asadi, Aminyazdi, & Shakeri, 2015).

Healthy mother-infant attachment is necessary for adequate emotional and physical growth of the baby. One study found that mothers with severe mental illness during the postpartum period are at risk for deficient interaction and bonding with their infants (Hornstein et al., 2006). Emerging evidence suggests that maternal-fetal attachment is a

predictor of mother-infant bonding in the postpartum period. Hence, it becomes important to assess maternal-fetal attachment in pregnant women with a history of mental illness, as appropriate interventions may minimize the risk of postpartum impairment in mother-infant bonding. Poor mother-infant attachment has been found to be a risk factor to later life problems, such as social and cognitive difficulties, anxiety, depression and eating disorders in children (Murray et al., 2011; Tetley, Moghaddam, Dawson, & Rennoldson, 2014). Additionally, a good antenatal attachment is likely to result in positive health-related behaviors, such as obtaining prenatal care, maintaining a balanced diet, and learning about the process of pregnancy and mothering (Lindgren, 2001). Though most of the available evidence suggests a positive relationship between maternal-fetal attachment and later development of mother-infant bonding following the birth, there is some evidence to point towards the lack of such a relationship (Davis and Akridge, 1987). In view of the conflicting research evidence regarding the link between maternal-fetal attachment and later mother-infant bonding, there is a need for further research among normal pregnant women and also among different clinical populations from different socio-cultural backgrounds.

Previous studies have linked maternal anxiety and depression during pregnancy with lower levels of maternal-fetal attachment, but there is not much evidence regarding a link between maternal-fetal attachment and severe mental illness (McFarland et al., 2011; Seimyr, Sjogren, Welles-Nystrom, & Nissen, 2009). A modest increase in the fertility rates in women with severe mental illness has been noted and most women with bipolar illness and schizophrenia during reproductive age do become mothers (Jones, Chandra, Dazzan, & Howard, 2014). Planned pregnancies tend to have a protective effect on the development of prenatal attachment, but most often pregnancies in women with severe mental illness are unplanned (Damato, 2004; Desai, Babu, & Chandra, 2012). The presence of psychopathology may also affect maternal-fetal attachment similar to the way it affects the mother-infant bonding (Hornstein et al., 2006). Hence, pregnancies in women with severe mental illness are potentially at risk for poor maternal-fetal attachment. Despite a link between psychological distress and maternal-fetal attachment, the literature in the area of maternal-fetal attachment in women with severe mental illness is sparse (Alhusen, 2008). Assessing problems in maternal-fetal attachment assumes the importance in view of emerging literature on maternal-fetal attachment interventions. Moreover, focus of the expectant mother shifts from the thoughts about "arrival of the baby" to "baby is already here and I am connected to my baby" following the birth of the baby. Skill development classes not only help prenatal attachment, but also foster later mother-infant bonding (Schroth, 2010).

In the present study we have tried to assess maternal-fetal attachment in women with severe mental illness. We expected to observe impairments in maternal-fetal attachment in mothers with severe mental illness as compared to normal healthy mothers. We have also tried to examine the relationship between severity of psychopathology and maternal-fetal attachment among women with severe mental illness.

Methods

This study was conducted at the perinatal psychiatry outpatient services at the National Institute of Mental Health and Neuro Sciences (NIMHANS), Bengaluru, India. Perinatal psychiatry at NIMHANS is a specialized service that addresses the mental health issues related to pregnancy and the postpartum period. Forty consecutive cases and 40 consecutive healthy controls, who both met the inclusion and exclusion criteria and agreed to participate in the study, were recruited after obtaining informed consent. The study did not face any refusal to participate in the research by the subjects. The study protocol was approved by the Institute Ethics Committee. Women in their second or third trimester (gestational age 20 to 40 weeks) with severe mental illness were recruited as cases in the study. A diagnosis of schizophrenia, schizo-affective disorder, acute psychosis, severe depression, or bipolar affective disorder was considered as severe mental illness in the study. As a routine, patients were provided with counseling related to psychotropics and treatment decisions about the prescription of relatively-safer psychotropics were made after discussion with patient and family. Women with intellectual impairment and those with ultrasonography evidence of fetal anomaly were excluded from the study. Healthy pregnant women in the gestational period between 20-40 weeks were recruited as controls from an antenatal clinic at a neighboring general hospital. Socio-demographic and clinical details were noted using a semi-structured history taking protocol. The Modified MINI Screen (MMS) was used as a screening tool for detection of mental health problems in healthy controls.

The Brief Psychiatric Rating Scale (BPRS), Edinburgh Postnatal Depression Scale (EPDS), and Clinical Global Impressions-Severity (CGI-S) scale were used to assess the severity of psychiatric symptoms, depression, and overall clinical condition, respectively. The Maternal Fetal Attachment Scale (MFAS) was used to assess maternal-fetal attachment.

Measures

The *MFAS* has 24 items that are distributed under five subscales: role taking, differentiation of self from the fetus, interaction with the fetus, attributing characteristics to the fetus, and giving of self. Each item is scored on a five-point scale, with points ranging from one to five corresponding to the statements described as strongly disagree, disagree, neutral, agree, and strongly agree, respectively. A greater total score indicates better maternal-fetal attachment. The scale is usually applied to pregnant women during the gestational age of 20-40 weeks. This tool has been previously used in an Indian setting (Lingeswaran & Bindu, 2012). In the current study, the scores of three and above were categorized as good attachment and the scores lesser than three were categorized as poor attachment. This cut-off was reached through consensus among the authors as scores one and two indicate "strongly disagree" and "disagree," respectively (Cranley, 1981).

The *MMS* is a 22-item scale used to screen for mood disorders, psychotic spectrum disorders and anxiety disorders. The questions are designed to elicit a yes/no response. A score of six or greater after totaling the "yes" answers indicates a likely presence of a psychiatric disorder (Spotts, 2008).

The *BPRS is a* 24-item scale used to measure psychotic and non-psychotic symptoms in individuals with a major psychiatric disorder. Greater scores suggest more severity of the illness (Overall & Gorham, 1962).

The *EPDS* contains 10 items that are scored from zero to three. We have taken nine as the cut-off score in the current study. This tool is validated to screen for depression in the postpartum period, but can also be used during the period of pregnancy (Cox, Holden, & Sagovsky, 1987).

The *CGI-S* is a three-item observer-rated scale that measures illness severity. It is rated on a seven-point scale using a range of responses from one (normal) through to seven (amongst the most severely ill patients) (Busner & Targum, 2007).

Data Analysis

Descriptive statistics; such as mean, standard deviation, frequency, percentage, etc., were used to describe the data. Data was checked for normality using the Shapiro-Wilk test. Comparisons between groups were done by the Chi square test for categorical variables. The independent sample t test/Mann Whitney test was used to compare continuous variables between the groups. P values <0.05 were considered as statistically significant. Spearman's rho was calculated for correlation statistics. Ancova analysis was done for comparison of scores of MFAS scores between cases and controls by controlling for parity, gestational age

and the gestation period at which the mother experienced fetal movements for the first time (i.e. quickening).

Results

Cases and controls were comparable in terms of age, education, years of marriage and income distribution. All the women recruited for the study were married. The groups differed in geographical distribution, employment status, and type of family (Table 1). None of the participants in the study had any history of substance abuse including tobacco smoking. None of the cases were on valproate, lithium, or carbamazepine at the time of study and fetal anomaly scans of all participants were normal. All subjects recruited as cases were on psychotropics such as atypical antipsychotics or selective serotonin reuptake inhibitors (SSRIs), as clinically indicated. The psychotropics were prescribed at the lowest possible effective doses following the counseling sessions regarding psychotropic exposure.

Table 1: Socio-demographic details and Obstetric details

Variable	Cases	Controls	Chi Square / Mann Whitney U	P value
Age	25.70 ± 4.34	25.77 ± 5.11	-0.071	0.944
Income (in Rupees)	8600 ± 5419.81	12325± 12574.67	647.5	0.139
Years of education	10.57 ±4.07	12.00 ± 5.47	-1.32	0.191
Years of marriage	4.08 ± 3.34	4.043 ± 3.12	785	0.884
Occupation				
Housewife	37 (92.5%)	27 (67.5%)	7.813	0.005*
Employed / student	3 (7.5%)	13 (32.5%)		
Background				
Rural	24 (60.0%)	08 (20.0%)	13.333	0.001*
Urban	16 (40.0%)	32 (80.0%)		
Family Type				
Joint / Extended	29 (72.5%)	18(45.0%)	6.241	0.012*
Nuclear	11 (27.5%)	22 (55.0%)		
Parity				
Nullipara	20 (50.0%)	28(70.0%)	3.333	0.068
Multipara	20 (50.0%)	12 (30.0%)		
Trimester				
2nd	27 (67.5%)	20 (50.0%)	2.527	0.112
3rd	13 (32.5%)	20 (50.0%)		
Gestational age	24.38 ± 5.54	26.95±5.61	573	0.025*
Week of Quickening	19.68 ± 1.51	18.60±1.28	573	0.001*

Primigravida constituted 20/40 (50%) of the cases and 28/40 (70%) of the controls. There was a significant difference between the groups in terms of mean gestational age, and mean gestational age at quickening. Controls had a significantly higher gestational age at the time of assessment and also had an earlier date of quickening (Table 1). None of the participants had any history of prior perinatal loss or had a child with a congenital anomaly. Among cases, 20/40 (50%) subjects had a diagnosis of bipolar disorder, 11/40 (27.5 %) had a diagnosis of unipolar depression and 9/40 (22.5%) had a diagnosis of non-affective psychotic disorder. The mean BPRS score in cases was 30.08±9.35 and the mean EPDS score in cases was 1.65±4.28. The CGI-Severity score was more than one in 15/40 (37.5%) cases and equal to one in 25/40 (62.5%) cases indicating that most subjects were not symptomatic at the time of study. The total MFAS scores among cases and controls were 77.28±15.98 and 82.78±16.97 respectively and the difference between two groups was statistically not significant. The subscale scores of MFAS did not show any significant difference between cases and controls (Table 2).

Table 2: Comparison of Subjects on Maternal Fetal Attachment Scale

Variables	Cases N= 40	Controls N=40	t	P
MFAS Total	77.28±15.98	82.78±16.97	-1.492	.140
Role taking	14.78±4.74	15.33±4.62	-.525	.601
Differentiation of self from the fetus	11.95±2.28	13.15±3.70	-1.630	.107
Interaction with the fetus	13.98±4.15	15.18±3.82	-1.347	.182
Attributing characteristics to the fetus	16.58±6.45	19.23±5.79	-1.935	.057
Giving of self	20.00±3.55	19.90±3.75	.123	.903

Among cases, maternal BPRS scores did not correlate with the total score or subscale scores of MFAS. However, women with higher EPDS scores had lower scores on the subscale of 'giving of self' of MFAS. There was no relationship between CGI-severity and MFAS scores.

Discussion

The present study assessed maternal-fetal attachment in pregnant mothers with severe mental illness in comparison to mothers without severe mental illness. The maternal-fetal attachment scores among cases and controls were similar, despite the cases having a significantly later date of quickening. Our results were contrary to the assumption that maternal-fetal attachment would be impaired in mothers with severe mental illness. This could be due to several reasons, such as relatively-asymptomatic phases of illness as suggested by lower BPRS, EPDS and CGI-severity scores, frequent ultrasound examinations, seeing the ultrasound images, opportunities to discuss with doctors about the developing fetus, and/or good antenatal care and family support. These factors are probably involved in promoting antenatal attachment with the fetus and hence have to be examined in future studies with a larger sample size. It is also important to examine the roles of both the mother's psychological trauma and her own parenting during childhood in assessing maternal-fetal attachment, as these factors have been reported to influence later postnatal mother-infant bonding (Alshusen, 2008).

Our study showed a negative correlation of EPDS with the "giving of self" subscale on MFAS indicating that the ability of the mother to sacrifice and give the self to the baby was less in mothers with depressive symptoms. Our finding is similar to earlier literature, which reports that mothers with depression are less positive about pregnancy and exhibit impairments in attachment with their babies (Lindgren, 2001; Seimyr et al., 2009). The overall EPDS scores were low in our study since depression was not the only diagnosis, and all women were under adequate treatment and were relatively asymptomatic. Though none of the participants in our study were smokers, it is interesting to note from a recent study that a lower score on "giving of self" is associated with more smoking during pregnancy (Massey et al., 2015).

In the present study, the total MFAS scores were at the lower end of the range in both groups; this finding is similar to an earlier study from India that reported lower total MFAS scores (Lingeswaran & Bindu, 2012). These findings suggest a likely role for socio-cultural factors in the development of maternal-fetal attachment and also suggest the need for a culturally-relevant instrument to assess maternal-fetal attachment. In our study, most cases were asymptomatic at the time of recruitment. This could be owing to the fact that the women with severe mental illness decided to conceive during a relatively-asymptomatic phase. Factors influencing the planning of pregnancy in women with severe mental illness need further study. In our study, a greater proportion of healthy controls were found to be employed. This is likely to be due to a limitation

in sampling. It could also be for the well-known reason that subjects with severe mental illness tend to have difficulties in employment.

Based on the study findings, we wish to suggest that a lifetime diagnosis of severe mental illness is not necessarily associated with impaired maternal-fetal attachment as compared to pregnant women without severe mental illness. Women with severe mental illness who conceive during relatively-less symptomatic phases are likely to develop a strong attachment with their fetuses. Our study subjects were in the second and third trimester and the results of the present study need to be generalized accordingly.

The study being cross-sectional in nature prevents us from making causal inferences. It is possible that factors other than the positive history of mental illness may have played a role in the development of maternal-fetal attachment. However, due to the small sample size, we could not perform a multivariate analysis.

The sparse literature on maternal-fetal attachment in mothers with severe mental illness prevents us from making any direct comparisons with other studies. The limitations of this study include a small sample size, cases being drawn from specialty perinatal psychiatry services, and concerns about generalizability due to variations in socio-cultural backgrounds across the regions. Also, our study has limitations in matching for gestational age, gestational week at quickening, and geographical background. The cases and controls were actually comparable as the difference in terms of gestational age between cases and controls was marginal, though significant. We faced difficulty in recruiting a larger number of cases for the reason that the study required participation of women who were diagnosed to be suffering from severe mental illness. It is important to note that as compared to common mental disorders, the overall prevalence of severe mental illnesses is low, and hence it is difficult to recruit such subjects (Kessler et al., 2009; Steel et al., 2014). Moreover, a study of this kind requires recruitment at a particularly narrow time period of pregnancy.

It is likely that the results of future studies in this area may be contrary to our findings, especially in settings where specialized services are not available, or if studies include women who are acutely symptomatic.

Conclusions

The phenomena of maternal-fetal attachment in women with severe mental illness is an under-researched area. This exploratory study finds that relatively-asymptomatic women with severe mental illness are able to bond well with their fetuses, highlighting that attachment need not be

abnormal in women with severe mental illness. This information would be reassuring to women who are planning their pregnancy during the phase of clinical remission. The results from the study are encouraging in that women with severe mental illness are not necessarily at a disadvantage for maternal-fetal attachment. This finding needs to be further studied across diverse socio-cultural backgrounds, as the concept of attachment to the fetus may be discouraged in some cultures where the rates of infant mortality and maternal mortality are higher. It is important to address the role of other contributing factors as well, such as perceived stress, social support, substance abuse, adult attachment style, and mothers' own parenting in a larger sample. Mothers who are more symptomatic are likely to have poorer maternal-fetal attachment, which needs to be further studied. Longitudinal studies may also reveal if poor attachment to the fetus among pregnant mothers with mental illness predicts later mother-infant bonding problems during the postnatal period.

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