



Fetomaternal Outcome of Major Psychiatric Problems in Pregnancy

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Abstract

Background: Women in childbearing age group are often vulnerable to mood and anxiety disorders. Approximately 30% of women experience some type of psychological disturbances during their life time. Women with these disturbances may experience profound changes during pregnancy. Evidence suggests that these disorders can adversely affect pregnancy outcome. So it is important that physicians understand the course of these disorders so that they can appropriately counsel women who are or intend to become pregnant. However systematic prospective data are limited on the outcome of mood and anxiety disorders in pregnancy. This study is designed to assess the fetomaternal outcome of major psychiatric disorders in pregnancy.

Methods: This is a hospital based cohort study conducted in the Department of Obstetrics and Gynaecology, Sree Avittom Thirunal Hospital, Govt. Medical College, Trivandrum, Kerala. Known psychiatric patients registered for antenatal checkup are included in the study. This includes patients with or without treatment and also drug defaulters. Details of psychiatric illness are collected using a structured questionnaire and analysis done by SPSS software and analyzed by calculating chi square and P value (<.05 is considered significant)

Results: The study identified three major psychiatric problems in pregnancy they are depression, bipolar mood disorders and schizophrenia. Pregnancy outcome measures showed higher incidence of miscarriage rates, preterm labour and cesarean section rates in these patients. Neonatal outcome analysis showed a significant increase in low birth weight, poor 1 minute Apgar scores and poor breast feeding in this group. Study also identified the need for continued psychiatric counseling and drug therapy in the puerperium to prevent postpartum exacerbation.

Conclusion: Pregnancy is a major psychological as well as a major physiological event. Virtually all women can develop mental disorders during pregnancy as poverty, extreme stress, marital conflict and low social supports tend to increase the risk for specific disorders. These can have adverse maternal and fetal outcome if left untreated. Hence a routine prenatal screening for mental illness and nonjudgmental and individualized care delivered by a multi-disciplinary team is critical for successful treatment and outcome.

Introduction

Severe psychiatric symptoms are prevalent among pregnant women. The magnitude of the problem is often not reflected by reported prevalence of major psychiatric disorders. These psychiatric

symptoms and stress are associated with grave negative outcomes for mother and fetus and also long term developmental consequences in offspring.

Although pregnancy has typically been considered as a time of emotional wellbeing, recent studies suggest that many women during pregnancy and motherhood suffer from mood and anxiety disorders. Among various psychiatric illnesses, depression constitutes a major proportion during pregnancy, although vulnerability to other psychiatric disorders like psychosis, bipolar mood disorders and anxiety disorders are also not uncommon.

Risk factors that confer heightened risk of psychiatric problems in pregnancy include pregnancy during adolescence, lack of social support, unmarried pregnancy, marital conflict and domestic violence, financial stress, negative past experiences, substance or sexual abuse, or even greater number of children. Particularly vulnerable are those women with previous history of psychiatric illnesses. Due to rampant poverty, hardships due to unemployment and low income, it is observed that increasing prevalence and severity of mental symptoms in pregnancy are high in developing countries.

Pregnancy is a state dealing with both mother and fetus. Affective symptoms during pregnancy are associated with both maternal and fetal complications. Increased rate of preeclampsia, placental abruption, preterm labor, instrumental deliveries and cesarean section and fetal complications like IUGR, low birth weight, low Apgar score, congenital malformations and overall increased perinatal mortality and morbidity are observed among these patients. A number of studies provided evidence of increased risk of stillbirth and neonatal deaths among women with schizophrenia.

Psychiatric disorders in pregnancy is in fact an independent risk factor for perinatal mortality. They are often under diagnosed because the symptoms are considered to be due to pregnancy related physiological changes in maternal temperament or attitudes. In addition, such conditions are often undertreated because of concerns about teratogenicity. Also among diagnosed patients, only few become compliant to

treatment and follow up. Hence there is a need for comprehensive epidemiological study to assess current mental scores among diverse populations using structured questionnaire. Such a study will definitely lead to development of targeted preventive intervention as well as to improve treatment modalities when warranted.

Sree Avittom Thirunal Hospital, Govt. Medical College, Trivandrum is a major tertiary referral center in south Kerala with an annual delivery rate of approximately 8000 – 10000. The prevalence of psychiatric problems in pregnancy is about 2-3% in SAT hospital. So we at SAT hospital conducted a study to assess the fetomaternal outcome of major psychiatric disorders in pregnancy.

Methods

This is a hospital based cohort study conducted in the department of obstetrics and gynecology, Sree Avittom Thirunal Hospital, Govt. Medical College, Trivandrum, Kerala during a period of 18 months from December 2013 to June 2015 with a sample size of 102 participants registered during Antenatal period at SAT hospital. The participants were known psychiatric pregnant women diagnosed prior to or during pregnancy with or without treatment. They were grouped as those having no treatment, those on regular treatment and follow up and those with history of drug default prior to or during the course of study. The effect of psychiatric problems on maternal and fetal outcome were evaluated. Disorders associated with psychiatry – like symptoms like pre-eclampsia, thyroid disease and anemia were excluded from this study.

Data collection was done using structured questionnaire regarding basic sociodemographic and obstetric factors and risk factors for psychiatric illness. Fetal and maternal outcome measures were analyzed. Data entered in excel sheet and analysis done by SPSS Software. The data are analyzed using chi square and p value < 0.05 is considered statistically significant.

Results

Table 1 Socio demographic profile of Participants

1. Age		
	N (102)	%
< 20	3	2.9
20 - 24	34	33.3
25 – 29	41	40.2
30 - 34	17	16.7
≥ 35	7	6.9
2. Socio economic status		
Class 4	16	15.7
Class 3	84	82.4
Class 2	2	2.0
3. Place of Residence		
Urban	24	23.5
Rural	78	76.5
4. Education		
Primary School	12	11.8
Middle School	40	39.2
High School	39	38.2
Graduation	11	10.8
5. Family		
Joint Family	43	42.2
Nuclear Family	59	57.8

Table 1 shows the sociodemographic profile of the patients included in the study.

40.2% of women belonged to the ideal age of pregnancy between 25-29 years. But 6.9% belonged to age group above 35 years which is to be considered significant when the total percentage of women delivering above 35years in considered. Statistics at SATH reports only.4. % of women belong to this advanced age group.

Study shows that 82.4% of psychiatric patients belong to class 3 socio economic status and majority (76.5%) of them belong to rural area. Educational status of the participants belong to middle or high school category (77.4%) while graduates constitute only a minority (10.8%) Couple living as nuclear family is having a higher predilection for psychological disturbances during pregnancy (57.8% v/s 42.2%) probably due to the stressful situation of handling pregnancy alone.

Analysis into the risk factors predisposing to psychological problems during pregnancy showed interesting data.

Table 2. Risk factors for Psychiatric illness

1. Family history		
	N (102)	%
Yes	27	26.5
No	75	73.2
2. Relationship		
Parents	17	16.7
Siblings	7	6.9
Others	3	2.9
3. Marital status		
Stable	84	82.4
Divorced	18	17.6
4. Peer Relationship		
Good	79	77.5
Poor	23	22.5
5. Substance abuse		
Yes	3	2.9
No	99	97.1
6. Sexual abuse		
Yes	1	1.0
No	101	99.0
7. Prior psychiatric treatment		
Yes	92	90.2
No	10	9.8

26.5% of the participants had family h/o of psychiatric disorders, of which parents had similar history in 16.7% and siblings suffering from psychiatric problem in 6.9%. Marital status is an important risk factor for psychological disturbances. 17.6% of the participants were divorced and another 22.5% although living together had poor family relationship. Substance abuse and sexual abuse, though few is number (2.9 % and 1% respectively), also play an important role is psychological disturbances which has to be handled both at family and social level. History of psychiatric illness in the past is one factor that has to be evaluated and stabilized is young females contemplating marriage and pregnancy as proper counselling and reassurance, compliance to treatment and follow up and optimization of drug schedule in the prepregnancy state has a major role in the successful outcome of future pregnancy and childbearing. Present study showed a significantly high prevalence of previous psychiatric illness in 90.2% of the participants.

Analysis of the behavioral changes in the participants (Table 3) showed a loss of appetite in

28.4%, disturbed sleep in 70.6%, poor scholastic performance is 10.8% and even suicidal attempts in 66.7% which is an observation that needs to be evaluated and monitored by a consultant psychiatrist in conjunction with routine obstetric care

Table 3.Behavioral changes in Participants

1. Loss of appetite		
Frequency	N (102)	%
Yes	29	28.4
No	73	71.6
2. Disturbed sleep		
Yes	72	70.6
No	30	29.4
3. Suicidal attempts		
Yes	68	66.7
No	34	33.3
4. School performance		
Yes	91	89.2
No	11	10.8

Pregnancy evaluation of these participants (Table. 4) showed that one third of pregnancy (37.3%) was unplanned and 11.8% of them had irregular antenatal care. Psychiatric disturbances were more in primi gravidas (52.9%) compared to multiparas who were better able to cope up with pregnancy and childbearing. Pregnancy outcome measures showed higher incidence of miscarriage rates (31.25%) and preterm labors (23.5%) compared to general population. Caesarean rates were also higher (34.3%) among these patients. 10.8% of patients shows postpartum exacerbation showing the need for continued psychiatric counselling and drug therapy in the puerperium.

Table 4: Maternal Outcome

1. Planned Pregnancy		
	N (102)	%
Yes	64	62.7
No	38	37.3
2. Antenatal care		
Regular	90	88.2
Irregular	12	11.8
3. Parity		
Primi	54	52.9
G2	36	35.7
G3 and above	12	11.8
4. Abortion		
Yes	15	31.25
No	33	68.75
5. Labor		
Preterm	24	23.5

Term	78	76.5
6. Mode of Delivery		
Vaginal	67	68.7
Cesarean	35	34.3
7. Postpartum exacerbation		
Yes	11	10.8
No	91	89.2

Analysis of neonatal outcome of study population (Table. 5) showed higher chance of low birth weight babies among psychiatric patients (41.1%) even in the absence of major obstetric complications like preeclampsia. One fourth the newborns (26%) had an Apgar score of < 9 at 1 minute showing the increased chance of perinatal asphyxia among these low birth weight babies. Timely initiation of breast feeding (TIBF) and successful exclusive breast feeding was another major issue encountered among psychiatric patients. Present study showed that 91.2 % were not compliant with proper breast feeding.

Table 5 : Neonatal outcome

1. Birth Weight (kg)		
	N (102)	%
≤ 1.5	8	7.8
1.6 – 2.5	34	33.3
>2.5	60	58.8
2. Apgar score		
< 9 at 1	26	26.0
9 at 1	74	74.0
3. Breast feeding Problems		
Yes	9	9.8
No	93	91.2

Present study analysed the types of major psychiatric disorders common in pregnancy. Results showed that majority was depression (69.6%) and others being mania (15.7%) and schizophrenia (14.7%).

Table 6 : Type of psychiatric disorders

Type	N (102)	%
Depression	71	69.6
Mania	16	15.7
Schizophrenia	15	14.7

Finally, a comparative analysis of overall fetal/maternal outcome of participants with regular versus irregular treatment (Tables 7 &8) showed the relevance of regular compliants with treatment of psychiatric disorders in pregnancy as an extremely important factor for favorable perinatal outcome

Table 7: Treatment compliance and outcome

Treatment	1. Feto maternal outcome measures				X ²	df	P value
	Gest age						
	Term		Preterm				
	N	%	N	%			
Irregular (38)	22	57.9	16	42.1	11.614	1	0.001
Regular (64)	56	87.5	8	12.5			
	2. Mode of Delivery				0.201	1	0.654
	Vaginal		Cesarean				
	N	%	N	%			
	Irregular (38)	26	68.4	12			
Regular (64)	41	64.1	23	35.9			
	3. Birth Weight				6.450	1	0.040
	Vaginal		Cesarean				
	N	%	N	%			
	Irregular (38)	20	52.6	18			
Regular (64)	22	34.4	42	65.6			

Table 8: Treatment compliance and outcome (contd)

Treatment	1. Feto maternal outcome measures				X ²	df	P value
	Apgar						
	9 at 1 minute		< 9 at 1 minute				
	N	%	N	%			
Irregular (38)	21	58.3	15	41.7	7.176	1	0.007
Regular (64)	53	82.8	11	17.2			
	2. Breast feeding initiation				2.403	1	0.121
	Yes		No				
	N	%	N	%			
	Irregular (38)	32	84.2	6			
Regular (64)	61	95.3	3	47			
	3. Post-partum exacerbation				6.637	1	0.010
	Yes		No				
	N	%	N	%			
	Irregular (38)	8	21.1	30			
Regular (64)	3	4.7	61	95.3			

Pre term delivery occurred in 41.5 % of those on irregular treatment compared to only 12.5% on regular antenatal care which is statistically significant (P value 0. 001).

Mode of delivery was found to be independent of the treatment compliance. Cesarean section was done in 35.9 % v/s 31.6% in regular v/s irregular treatment categories which was not statistically significant (P value 0.654).

Birth weight of babies showed correlation with treatment compliance. Those on regular treatment 65.6% delivered babies with birth weight > 2.5 kg's compared to only 47.4% in the irregular treatment group. The chance for IUGR in the latter growth was 52.6% with P value 0.040.

Perinatal asphyxia was also higher in irregular treatment group. Apgar of < 9 at 1 minute was 41.7% v/s 17.2% which was statistically significant (P value 0.007).

Timely initiation of breast feeding could be accomplished in 95.3% in the regular treatment group compared to only 84.2% in the irregular category (p value 0.121)

Post-partum exacerbation of symptoms was significantly correlated to treatment compliance only 4.7% on regular treatment had exacerbation compared to 21.1% in the irregular treatment group (P value 0.010)

This study highlight the need for proper care and treatment of antenatal women with psychiatric problems so that adverse maternal and fetal outcomes can be reduced

Discussion

Pregnancy is often described as a time of emotional wellbeing for the woman and her family. However for many women, pregnancy and motherhood increases their vulnerability to psychiatric conditions such as depression, anxiety disorders and psychosis. Emerging research shows that mental illness not only affects mothers' wellbeing but also have significant effects on fetal outcomes and future developments of infant¹. Hence perinatal psychopathology is a commonly

undertreated problem with wide-ranging consequences^{2, 3}.

The mechanism of mental health on pregnancy outcome involves complex interactions between health behaviors, hormonal regulation and genetic factors. Although psychiatric disorders are clearly associated with adverse birth outcomes, the exact mechanism of action is still elusive.

Neuroendocrine system changes occur during pregnancy in psychiatric patients. An upregulation of Hypothalamopituitary adrenal axis (HPA) results in higher levels of corticotrophin releasing hormone (CRH). This in turn leads to more maternal cortisol in patients with depression⁴. Approximately 10- 20%of maternal cortisol appears to pass through placenta to the fetus. Although these levels are small, they are still significant⁵.

HPA changes also stimulate maternal sympathetic nervous system which leads to higher levels of maternal as well as fetal epinephrine and norepinephrine⁶. This has impact on the fetus through cardiovascular mechanisms such as increasing uterine artery resistance and decreasing uterine blood flow⁷

Psychiatric illness causes imbalances in maternal inflammatory factors such as cytokines which in turn leads to abnormality in maternal blood supply early in pregnancy contributing to miscarriage⁸. Stress also impairs the maternal immune system, placing the mother at increased risk of infection during pregnancy⁹. Effects of psychiatric disorders on pregnancy outcome have also been linked to genetic susceptibility. Polymorphisms in the 5 – HTT serotonin transporter gene¹⁰ makes women and their babies particularly vulnerable to mental illness during their perinatal period.

Various studies have evaluated the risk factors for psychiatric illness and its impact on maternal and perinatal outcome. Study conducted by Liselott Anderson et al.¹¹ shows that psychiatric disorders are common in low socioeconomic status and has a mean age distribution of 26.4 years. According to Cynthia A Loveland Cook et al¹², majority of subjects are distributed among rural population

and the perinatal morbidity rates in rural areas are also unacceptably high in many communities. Furthermore accessibility to mental health treatment is limited in many rural areas.

The study conducted by Sharifa Mir et al showed illiteracy as an independent and statistically significant risk factor for psychiatric illness in pregnancy, which correlates well with our study. Studies from India in the 1960s and 1970s¹⁴ have indicated that nuclear families were conducive to depressive disorders and that joint family systems had a protective role in counteracting the pathogenic effects of bereavement and other losses.

Subjects with family history of psychiatric illness, h/o deceased persons in close relationship, h/o separation in childhood, marital disharmony were all factors that contributed to psychological disturbances in pregnancy. Study conducted by Dr. Chloe Borton et al^{15, 16} showed similar correlation.

Although in the present study primigravidae constituted majority (47.1%), studies by Anderson 2006¹⁷ showed no association between psychiatric disorders and parity. Study conducted by Kim HG et al¹⁸ in 2005 showed that psychiatric pregnant patients had significantly decreased utilization of prenatal care.

Bismarck et al¹⁹ in 2007 reported that 5 – 14 % had suicidal ideation which is associated with substance abuse. In our study about 66.7% of subjects had h/o suicidal attempts and 2.9% had substance abuse.

Among the various psychiatric disorders, depression constitutes the majority as reported by Liselott Anderson²⁰ followed by anxiety disorders. Present study also showed similar results. The risk of poor fetal/maternal outcomes were high in irregular treatment group. In a study conducted by Katherine J Gold²¹ showed the risk of poor outcomes rose by 5 - 7% for each point increase in the depression scale. The study also reported a higher risk of preterm delivery, low birth weight and low Apgar scores among these patients.

A study on maternal mental health and child health by WHO showed that stress hormone rise in psychiatric illness like depression can lead to gestational hypertension and preeclampsia. It also showed that psychiatric illness hampers mother-infant bond resulting in delayed initiation in breast feeding.

Pregnancy outcomes in psychiatric patients therefore depends on a number of factors such as type of mental illness, compliance to treatment, stressful events in life, interpersonal relationship, fear of childbirth etc. Hence in addition to routine prenatal screening for mental illness, a nonjudgmental, collaborative and individualized care delivered by a multidisciplinary team is critical for successful treatment and outcome.

Conclusion

Women with mental health problems need to be given proper care and treatment during pregnancy so that adverse maternal and perinatal outcomes can be reduced. Ideally women of reproductive age with preexisting significant mental illness should have preconception counseling. Treatment decisions can be challenging, as risks and benefits need to be considered in terms of welfare of both mother and fetus. A well-organized comprehensive care involving obstetrician and psychiatrist should be made available to such women. Obstetric psychiatry clinics should be organized at all tertiary centers thus ensuring optimal maternal and neonatal outcomes. Health care professionals should work to develop a trusting relationship with the women, her partner and family members. Both psychotherapy and pharmacotherapy should be considered as part of comprehensive care. More research should be done in this field of psychiatric problems in pregnancy as most research have mainly focused on neonatal outcome but have neglected to consider the maternal needs.

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