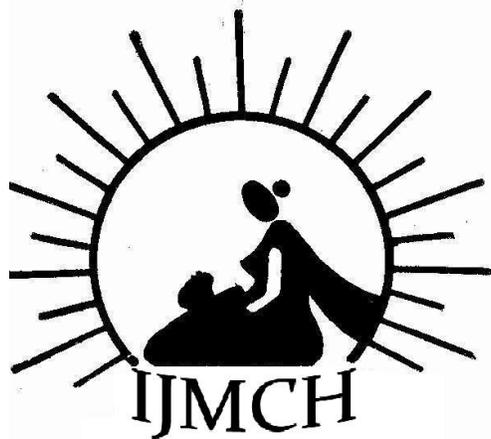


**A prospective study on the effect of  
antenatal depression on pregnancy  
outcome in a rural health care facility**

*Mulla SK  
Ansari SM  
Akarte SV  
Mankeshwar R*

[www.ijmch.org](http://www.ijmch.org)



# **INDIAN JOURNAL OF MATERNAL AND CHILD HEALTH**

What is prevalence of antenatal depression and what is its impact in terms of pregnancy outcome in rural area?

## A prospective study on the effect of antenatal depression on pregnancy outcome in a rural health care facility

\*Mulla SK, \*\*Ansari SM, \*\*\*Akarte SV, \*\*\*\*Mankeshwar R

\*Assistant Professor, Dept. of PSM, Jhalawar Medical College, Jhalawar

\*\*Senior Resident, Dept. of Psychiatry, Jhalawar Medical College, Jhalawar

\*\*\*Professor and Head, \*\*\*\*Associate Professor, Dept. of PSM, Grant Medical College, Mumbai

### Abstract:

**Research question:** What is prevalence of antenatal depression and what is its impact in terms of pregnancy outcome in rural area?

**Settings:** Study was carried out at Rural Health Training Centre (RHTC), Palghar, Maharashtra.

**Methodology:** Prospective study was conducted on 400 antenatal women. PRIME MD-PHQ (Primary Care Evaluation of Mental Disorders- Patient Health Questionnaire) was used for assessment of antenatal depression. Pregnancy outcome was noted during follow-up.

**Results:** Prevalence of antenatal depression was 37.9%. Poor weight gain and anaemia were significantly higher in women with antenatal depression. In terms of pregnancy outcome, percentage of LBW (Low Birth Weight) and preterm delivery was high in pregnant women with depression. Stillbirth and abortion were significantly associated with antenatal depression.

**Conclusion:** Problem of antenatal depression is much bigger than our expectation. Screening for antenatal depression should be initiated during routine antenatal check-up right from the primary health care level to improve pregnancy outcome.

**Key-words:** *Antenatal depression, PRIME-MD PHQ, Pregnancy outcome*

**Introduction:**

Pregnancy has historically been described as a time of emotional well-being. Unfortunately this scenario no longer exists. Pregnancy and childbirth can affect the mental health of women adversely in a variety of ways. At any rate, depression is very common in the child bearing age.<sup>(1)</sup> Till date, maximum concern has been given to a condition called post partum psychosis. Post-partum psychosis is the most severe form of maternal mental disturbance, occurring in one or two in every thousand mothers.<sup>(2)</sup> In contrast, depression during pregnancy is a relatively neglected condition. Indeed, pregnancy was thought to protect women against depression. Now, studies of antenatal psychopathology have mostly examined antenatal mood as a predictor of postnatal depression.<sup>(3)</sup>

Up to 20% of pregnant women experience clinical depression.<sup>(4)</sup> Antoinette M. Lee et al. (2007) found antenatal depression in 37.1% of pregnant women in one of the Asian countries.<sup>(5)</sup> In WHO bulletin (2007), Rupa Chinai reported prevalence of antenatal depression as 15-25% in India.<sup>(6)</sup>

Depression during pregnancy may have adverse consequences for the woman and her baby. In addition, pregnant women with depression are less likely to attend regular obstetric visits and may lack compliance with prenatal care.<sup>(7)</sup> Pregnancy is a time of repeated contact with health services and it may, therefore, be possible to develop and evaluate methods for the prevention or early treatment of maternal mental disorders.<sup>(8)</sup>

In recent time, attention is being given to antenatal depression but only in developed countries. Antenatal depression may have adverse impact on pregnancy outcome and on postnatal mental state of mother, so it is high time to study this condition in pregnant women. As the studies on antenatal depression are scarce in India, the present study was an attempt to focus on antenatal depression. Keeping the objectives to study prevalence of antenatal depression in pregnant women and to assess adverse pregnancy outcome in women having antenatal depression, current study was conducted in a rural set-up.

**Material and Methods:**

Study was carried out at Rural Health Training Centre (RHTC), Tehsil Palghar, District Thane - a rural field practicing area of tertiary care teaching institute at Mumbai, Maharashtra.

It was an observational prospective study and the total study period was from August 2007 to September 2008. Approval for the study was obtained from Institutional Ethics Committee of the parent institute in the month of August 2007. Consent was obtained from each enrolled woman. Enrollment of antenatal women was started in September 2007 after ruling out general medical conditions and substance use except for presence of anaemia. As anaemia is the most prevalent condition in reproductive age group women, it was included in the study. From October 2007, follow-up of enrolled antenatal women was started simultaneously along with the enrollment, as women in the last trimester come for frequent ANC checkup. Antenatal women enrollment was carried out weekly at the time of Antenatal clinic. Enrollment was done till January 2008 and 400 antenatal women were recruited in the study. Follow up of antenatal women continued till pregnancy outcome of the entire sample was obtained.

With the help of predesigned, pretested proforma; preliminary data regarding socio-demographic profile of antenatal women was noted. While assessing antenatal depression, past history of depressive disorder was ruled out. Only the presence of depression during pregnancy was assessed and not the etiology of depression. PRIME MD-PHQ (Primary Care Evaluation of Mental Disorders- Patient Health Questionnaire) was used for assessment of

antenatal depression. PRIME MD-PHQ is designed for use in primary care that actually diagnoses specific disorders using diagnostic criteria from Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Physician's time required to review PRIME MD-PHQ is less than 3 minutes.<sup>(9)</sup> It has diagnostic validity demonstrated by agreement with an independent Mental Health Professional diagnosis; Sensitivity 73% and Specificity 94%. One Indian study (2008) has shown that PRIME MD-PHQ is a valuable instrument for diagnosis of psychiatric morbidity in primary care and medical practice.<sup>(10)</sup>

Laboratory investigation included test for haemoglobin which is being carried out at the laboratory of RHTC. Haemoglobin estimation was carried out by Sahli's method using Haemoglobinometer by qualified laboratory technician.

Follow-up was done at antenatal clinic which included general examination. Pregnancy outcome was noted and studied in detail.

Statistical analysis: For qualitative data, Pearson's chi-square test was applied to test the relationship of categorized independent and dependent variables. Odds ratios (OR) and their 95% Confidence intervals (95% CI) were calculated. For quantitative data, Mean and Standard Deviation were calculated. 't' test was performed for weight gain during pregnancy. A 'p' value of <0.05 is deemed statistically significant (Sig.), <0.01 as highly significant (HS) and <0.0001 as very highly significant (VHS). Stata SE 10.1 was used to analyse data. SPSS 16.0 was used to enter and code data.

#### Observations:

The current study enrolled 400 registered pregnant women at RHTC. Out of 400, 23 antenatal women lost to follow-up. These 23 women failed to visit RHTC for delivery, where the study was conducted. This drop-out led to the final sample size of 377. Table I shows the pregnancy outcome in 377 antenatal women.

**Table I: Pregnancy outcome in Antenatal Women**

Sr. No.	Outcome of Pregnancy (n=377)	Number	Percentage
1.	Low Birth Weight (LBW) babies	112	32.8
2.	Preterm birth	50	14.2
3.	Live Birth	342	90.7
4.	Stillbirth	11	2.9
5.	Abortion	24	6.4
6.	Caesarian section delivery	31	8.8

Presence of antenatal depression was found in 143 (37.9%) pregnant women out of total sample of 377 followed-up antenatal women. Pregnant women with antenatal depression and those with no antenatal depression were similar in all socio-demographic indicators.

Apart from pregnancy outcome, antenatal depression was also correlated with weight gain during pregnancy and presence of anaemia. Table II shows that mean weight gain in women with antenatal depression was less (3.96 Kg) than mean weight gain in women not suffering from antenatal depression (4.51 Kg). This difference was found statistically highly significant after applying 't' test.

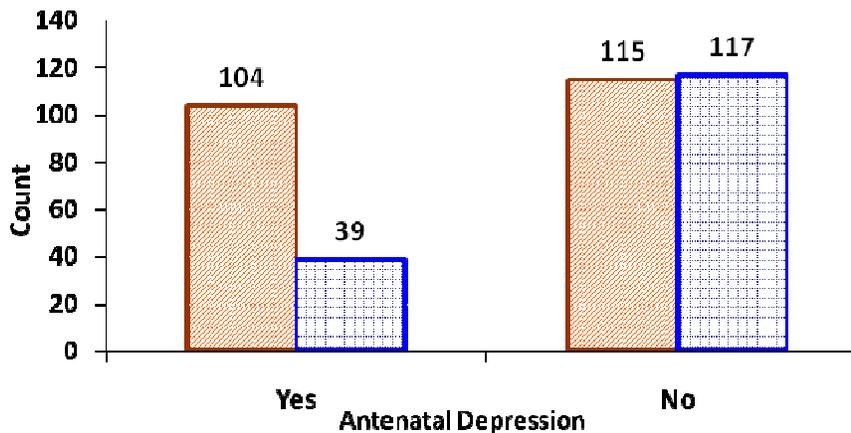
**Table II: Weight gain and Antenatal Depression**

Antenatal depression	Observations	Mean (Weight gain)	Standard deviation
Present	143	3.96	2.08
Absent	234	4.51	1.94

[t = 2.598, Degree of Freedom = 375, p = 0.0097 (HS)]

72.7% of women having antenatal depression were anaemic as compared to 49.6% not having antenatal depression (Figure 1), which was statistically very highly significant (p<0.0001).

**Figure 1: Antenatal depression and Anemia**



■ Anaemia throughout pregnancy ■ No anaemia throughout pregnancy

Among antenatal women with depression, LBW was present in 38.7% and preterm birth was present in 16.3%. Among women with no antenatal depression, LBW was present in only 29.6% and preterm birth was present in 12.9%. Though there are differences in percentages, after applying Pearson's Chi-square test, correlation of antenatal depression with LBW was just non-significant (p=0.086) and with preterm birth was non-significant (p=0.406).

13.3% of women having antenatal depression had stillbirth and abortion as their pregnancy outcome as compared to 6.8% in women not having antenatal depression. The chi-square value was statistically significant (p=0.039). This is also borne out by odds ratio, which is 2.068 and 95%CI as 0.966-4.463. Thus antenatal depression is an important factor causing adverse pregnancy outcome.

**Discussion:**

Though India has evolved in terms of mother and child health care services, still we have poor maternal health indicators. This scenario is very much depicted in the current study.

Prevalence of antenatal depression was found to be 37.9%. Such high prevalence in pregnant women of rural area is an alarming situation. Depression can be easily missed during assessment but it is more concerning when it occurs during pregnancy.

While studying weight gain during pregnancy, a very disastrous condition was observed. Normally we expect total weight gain of 10-12 Kg at the end of pregnancy but the average weight gain in study population of antenatal women was less than 5 Kg. Important finding of the current study is that antenatal depression is adversely affecting the already existent hazardous situation of poor weight gain. Antenatal depression was observed to be highly

associated with anaemia. Antenatal depression may present with either reduced food intake or excess food intake. In the present study, depressed women were found to have less intake of food. Reduced food intake and faulty eating habits might have led to high prevalence of anaemia in women with antenatal depression.

Though correlation of antenatal depression was found just non-significant with LBW and preterm birth, percentage of LBW was very high (38.7) in depressed women as compared to women without antenatal depression (29.6). This indicates that antenatal women with depression have a high risk of LBW baby.

Antenatal depression was found significantly associated with Stillbirth and Abortion. Antenatal depression causes increased activity within the gestational cortisol system via placental secretion of corticotrophin releasing hormone leading to abortion and premature delivery. Another mediating pathway is the unhealthy behavior associated with depression, such as poor attendance for obstetric care causing adverse pregnancy outcome.<sup>(11)</sup>

### Conclusion:

Considering the prevalence found in this study, antenatal depression is a burning problem during pregnancy. Presence of antenatal depression poses additional risk of poor weight gain during pregnancy. Antenatal depression exaggerates presence of anaemia which concomitantly increases the prevalence of LBW babies, stillbirth and abortion. Thus antenatal depression is contributing silently to the adverse pregnancy outcome as it is not being detected during routine antenatal check-up.

### Recommendation:

Detection of antenatal depression can be done at primary health care level. Screening for antenatal depression should be incorporated during routine antenatal check-up.

### References:

1. JN Vyas, Niraj Ahuja, Textbook of Postgraduate Psychiatry, Jaypee brothers medical publishers, New Delhi, 2<sup>nd</sup> Edition; 2003:p931
2. Kaplan & Sadock's Synopsis of Psychiatry, Behavioral sciences/Clinical Psychiatry, 10<sup>th</sup> Edition, 2007:p865
3. Jonathan Evans, Jon Heron, Helen Francomb and Sarah Oke. Cohort study of depressed mood during pregnancy and after childbirth; BMJ 2001;323:257-260
4. Patkar AA, Bilal L, Masan PS. Pharmacotherapy of anti-depressants in pregnancy. Ann Clin Psychiatry 2004;16:87-100
5. Antoinette M. Lee, Lam Siu Keung, Sze Mun Lau Stephanie Marie, Chong Catherine Shiu Yin, Chui Hang Wai, Fong Daniel Yee. [Prevalence, Course and Risk Factors for Antenatal Anxiety and Depression](#); Am J Obstet Gynecol 2007;110:1102-12
6. WHO Bulletin, Rupa Chinai, Indian paradise takes novel approach to mental health 2007;[85:569-648](#)
7. Bonari L, Pinto N, Ahn E, Einarson A, Steiner M, Koren G. Perinatal risks of untreated depression during pregnancy. Can J Psychiatry 2004;49:726-35
8. R. Kumar and Kay Mordecai Robson, A Prospective Study of Emotional Disorders in Childbearing Women; Br J Psychiatry 1984;144:35-37
9. Robert L. Spitzer, Kurt Kroenke, Janet B. W. Williams and the Patient Health Questionnaire Primary Care Study Group. Validation and Utility of a self-report version of PRIME-MD; JAMA 1999;282:1737-44

10. Avasthi A, [Varma SC](#), [Kulhara P](#), [Nehra R](#), [Grover S](#) and [Sharma S](#). Diagnosis of common mental disorders by using PRIME-MD PHQ; Indian J Med Res 2008;127: 159-164
11. Veronica Keane and Michael Marsh. Depression during pregnancy; BMJ 2007;334: 1003-05