

## Original Article

# Anxiety Disorder and its Determinants During Pregnancy and its Effect on Development of Postnatal Depression: A Prospective Study

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**Abstract**

**Background:** Pregnancy and childbirth can affect the mental health of women adversely in a variety of ways. Maternal prenatal anxiety has been associated with adverse outcomes during the pregnancy. This may further predispose to postpartum depression.

**Aim:** To assess the prevalence of anxiety during pregnancy and its impact on postnatal depression with its association of certain obstetric risk factors in pregnant women attending tertiary care hospital in Pondicherry.

**Method:** It was a hospital based analytical cross-sectional study where third trimester pregnant mothers (n=273) attending the antenatal service were included for the study purpose after consent. Data were collected using socio-demographic and clinical data proforma, Hamilton anxiety scale (HAM-A), Edinburgh postnatal depression rating scale (EPDS) and Hamilton depression scale (HAM-D). Epi-info and SPSS software were used for data entry. Chi-square test were used to find out association.

**Results:** 71(26%) Pregnant mothers were found to have anxiety. The risk factors, that were significantly associated were gender preference, levels of daily hassles, marital conflicts, adverse life events, previous abortion. Among the 71 pregnant mothers, 30(42.2%) showed symptoms of depression and found 26.7%(mild), 6.7%(moderate) and 13.3%(Severe) depressive disorder patients. The risk factors that were significantly associated were family pressure for male child and problem with in laws.

**Conclusion:** Regular maternal health care check-up for the early diagnosis and treatment of anxiety and to prevent the postpartum depression and its associated complications.

**Keyword:** Anxiety; Postpartum depression; Pregnancy; Risk factors.

**Introduction**

Pregnancy and its associated complications have been an issue of public health concern throughout the world. Pregnancy and the transition to parenthood involves major psychological and social changes in the mother, which have been linked to symptoms of anxiety and depression.<sup>1</sup> One of the existing problem faced by women during her pregnancy period are anxiety disorder due to multi factorial reason like hormonal change, poor social

support, lack of family support etc. This may further pre dispose to postpartum blues (or) postpartum depression (or) postpartum psychosis.<sup>2-6</sup> Prevalence of anxiety during pregnancy ranges from 1% to 26% in low- and middle income countries (LMIC)<sup>7</sup> Maternal prenatal anxiety has been associated with adverse outcome during pregnancy such as low birth weight, miscarriage, pre-eclampsia, pre-term delivery.<sup>8</sup> Depression is also the most prevalent psychiatric disorder during pregnancy. It is a matter of public health importance due to 3 prime reasons: Firstly, rate of depression during



pregnancy is high during antenatal period. 1, 10 Secondly, it is the strongest risk factor for postnatal depression.<sup>11-13</sup> Thirdly, it leads to adverse maternal and foetal outcomes. <sup>14</sup> Several studies have documented prevalence range from 4% to 25% 09-20 with point prevalence of 15.5% in early and mid-pregnancy, 11.1% in 3<sup>rd</sup> trimester, and 8.7% in post-partum period. <sup>1</sup> Risk factors predisposing to depression during pregnancy are poor antenatal care, poor nutrition, stressful life events like economic deprivation, gender-based violence, previous history of psychiatric disorders, previous puerperal complications, previous abortion and level of social support. Thus, assessment of depression during pregnancy is essential for detecting pregnant women in need of intervention in order to safeguard the well-being of mother and baby. With this background this study was conducted with an objective to (i) To find out the proportion of pregnant women with anxiety disorders during the last trimester, (ii) To study the risk factors associated with anxiety disorders among study participants. (iii) To measure the incidence of postnatal depression among those mothers diagnosed to have anxiety disorder. (iv) To identify the determinants of postnatal depression among those mothers who were followed up in pregnant women attending tertiary care hospital in Pondicherry.

## Material and Methods

### Study design and setting

The study is a hospital based analytical cross-sectional study carried out in the Department of Psychiatry and Department of Obstetrics and Gynaecology in a tertiary care teaching hospital is situated in one of the rural areas of the Union Territory of Puducherry, the study was carried out for a period of 18 months (December 2018 to May 2020).

### Study participants

Pregnant women attending the Obstetrics Department for antenatal service were included for the study purpose. Women of any age, women in 3<sup>rd</sup> trimester, who were willing for delivery in our institution, were included and Pregnant women with known psychiatric illness were excluded from the study.

### Sample size and Sampling

It was calculated to be 273 using the software

Open Epi version 3.0, taking into consideration the prevalence of anxiety disorder among pregnant mothers as 23% from previous study, with 95% confidence interval, 80% power and 10% non-rate. Pregnant Mothers were selected using systematic random sampling.

### Study procedure and tools

**Phase-I:** The study was started after obtaining clearance Institute Ethics Committee (EC/66/2018). Before collecting information from the eligible study participants written informed consent was obtained. With the help of pretested structured questionnaire information on socio-demographic variables and risk factors for anxiety disorders was collected. Hamilton Anxiety Rating Scale (HAM-A) was used to diagnose the anxiety disorder among study participants.

**Phase-II:** Mothers diagnosed with anxiety disorder were assessed for the development of depressive disorder using Edinburgh Postnatal Depression Scale (EPDS); it was administered within one week of delivery.

**Phase -III:** Mothers who had high scores in the screening EPDS were subjected to Hamilton Rating Scale for Depression (HAM-D) scoring system for the diagnosis of depression within 6 weeks of delivery.

HAM-A is a clinician rated scale used to measure the severity of anxiety symptoms. Consists of 14 symptom defined elements comprising anxious mood, tension, fears, insomnia, depressed mood, somatic, sensory, cardiovascular, respiratory, gastrointestinal, genitourinary, autonomic and observed behaviour at interview. Each item is scored on a scale of 0 (not present) to 4 (severe), with a total score range of 0-56, where <17 indicates mild severity, 18-24 mild to moderate severity and 25-30 moderate to severe.

The EPDS is a screening tool for postpartum depression. It consists of 10 statements for the mother has to select one of the four possible answers. The maximum score is 30, a score of 10 is considered as positive for depression.

The HAM-D is a clinician rated scale used to measure the severity of depression. It is a 17 items scale comprising of Depressed mood, Feelings of guilt, suicide, insomnia, work and activities, Retardation, Agitation, General Somatic Symptoms, Genital symptoms, Hypochondriasis, Loss Of Weight, Insight. A score of less than 7 is considered as normal where Mild (8-13), Moderate (14-18), Severe (19-22), Very severe (>23)

### Statistical analysis

The quantitative data collected were entered in the Epi\_Info. Statistical Package for the Social Sciences (SPSS) (Version 24.0) software was used for data analysis. Description of categorical variables like disease status, education, occupation of mothers, religion, family type, residence, risk factor with current pregnancy were measured using frequency and percentage. Continuous variables like age, monthly income were also summarized as frequency and percentage. Ordinal variables include scales like HAM-A, EPDS and HAM-D were expressed as frequency and percentage. Chi-square were used as the test of significance for the bivariate analysis to find the association. Association was found between the variables in the maternal factors and the scales (HAM-A, EPDS and HAM-D) with 95% confidence interval. Unadjusted odd's ratio of risk factors with 95% confidence interval were computed to measure the strength of association between variables. All statistical tests were considered significant if p value < 0.05.

### Result

Among our study population 69% of the study participants belongs to 21-25 years of age group, 8.4% belongs to less than 20 years of age and 22% belongs to more than 26 years of age. None of them were illiterate and majority of them have completed higher secondary (34.1%). Majority of them were unemployed (65.5%). Around 75% belong to the nuclear family. Most of them reside in urban area (69%). The socio demographic details of the study participants were given in Table 1. The study participants were assessed using HAM-A and 71 participants showed positive response where, 45(16.5%) of study participants categories to mild and 16 (5.9%) are moderate and around 10(3.6%) were belong to severe category group. These 71 participants were assessed with EPDS and 30(42.2%) participants showed positive symptoms of depression. These 30 participants were subjected to HAM D and 4(13.3%) of study participant belongs to the severe category, 2(6.7%) belong to the moderate category and 8 (26.7%) belong to the mild category of depression (Table 1).

The risk factors of current pregnancy were assessed and as per the distribution of age of marriage, 72.5% of study participant married at age between 21-25 years of age. Around 75.1% had arranged marriage. Around 42.1% were prefer to have male child 36.3% of participants were prefer to have female child. Around 74% participants

are not having any pressure from family for male child. Around 53.1% had normal level of hassles and 33.3% had mild level of hassles. Most of them (67.4%) did not have any marital conflicts. Majority (91.2%) does not have any adverse life event distribution. Around 46.9% had some problems with their in-laws. Most of study participants (90.8%) had unplanned pregnancy. Majority of study participants (88.3%) had not undergone any treatment. Around 90.8% did not have any previous abortion. Majority of participants (83.5%) had got enough emotional support of from husband (Table 2).

The association between the Maternal risk factors and HAM A scale was assessed and the pregnant women who were facing daily hassles are 10 times higher chances of developing anxiety and this association was found to be statistically significant. It was found that, the study participants who experienced marital conflicts were 3.4 times higher chance of developing anxiety and this association was found to be statistically significant. It is also found that the study mothers who were faced adverse life events in the past one year, previously aborted, underwent treatment for infertility, poor emotional support from spouse are at higher chances of developing anxiety and the association were found to be statistically significant. No statistically significant association was found between anxiety and maternal factors like age at marriage, type of marriage, problems created by in laws and unplanned pregnancy (Table 3).

The association between the maternal risk factors and EPDS of study participants was assessed and family pressure on male child had 6.3 times higher chance of getting depression than normal. Similarly, those who had problem with in laws had 3.1 times higher chance of getting depression than normal. Only these factors are statistically significant (Table 4).

The association between the maternal risk factors and HAM-D of study participants was assessed and the study participants, those who problem with in laws had 6 times higher chance of getting depression than normal. Only this factor is statistically significant (Table 5).

### Discussion

This study reveals that 26% had anxiety symptoms (16.5%, 5.9%, 3.6% showed mild, moderate and severe symptoms respectively) while 74% did not have any anxiety symptoms this was assessed by

applying the HAM A scale. This is concordance with the findings of the study done by Alqahtani AHet al<sup>21</sup> where the prevalence of anxiety in his study sample were 23.9%. In the present study EPDS was applied to 71 participants within one week of delivery who were diagnosed with anxiety according to the Ham-A scale in the antenatal period, among them 30(42.2%) showed positive symptoms of depression and 41(57.8%) showed no symptoms of depression. This is concordance with the findings of the study done by Georgiopoulous AM et al<sup>22</sup> where 35% of his study participants showed elevated levels of EPDS scores. In our study Ham-D scale was applied to 30 participants who showed positive response in EPDS and 14 (46.7%) was diagnosed with various degree of depression. Thus, elevated EPDS score serves as a predictive factor for postpartum depression.

According to our study the risk factors for anxiety that were statistically significant were gender preference, levels of daily hassles, marital conflicts, adverse life events, treatment for infertility, previous abortion, emotional support from spouse. YimIS et al.<sup>23</sup> conducted a study on psychosocial factors and the strongest factors associated with anxiety and depression were adverse life events, chronic strain, adequate support from husband and in laws. In our study pregnant women who are facing daily hassles were having 10 times chance of developing anxiety disorders and this finding is in concordance with that study. From our study it was observed that around 32.6% had marital conflict which is in concordance with the study done AliNS et al.<sup>24</sup> The adverse life events such as loss of closed relatives, economic deprivation, emotional stress, etc., play a major role in developing the anxiety disorder which was proven statistically in our study. Similar risk factors were yielded in the study done by Nath A et al.<sup>25</sup> The maternal factors such as previous abortion, treatment for infertility were statistically significant risk factor in our study for the development of anxiety in the antenatal period and development of postnatal depression. The findings were in concordance with a study by Skari H et al.<sup>26</sup> In our study Majority of participants agreed that they had emotional support from spouse while 45 claimed that there was a lack of emotional support. Among 45 patients who were devoid of emotional support 60% (27 patients) had anxiety according to HAM-A scale in antenatal period. When these patients who showed anxiety features were screened in the post-natal period with EPDS 55% (15 patients) had high risk for depression out of which 60% (9 patients) confirmed with depression with HAM-D scale.

This is in concordance with the study by Biaggi Aet al<sup>27</sup> where the lack of partner support was a most important factor associated with antenatal anxiety and depression.

According to our study the risk factors for postnatal depression that were statistically significant were family pressure for male child, problem with in laws. This is in concordance with study by Savarimuthu RJ et al<sup>28</sup> where girl child delivery in the absence of male child and preference of male child, physical abuse, family history of depression were the associated risk factors.

### Conclusion

Anxiety disorders are highly prevalent in women during pregnancy and earlier studies have found many risk factors that were associated with it. Detection and treatment of anxiety disorder is very essential, since it plays a major role in development of postpartum depression. In our study, it has been noted that issues with in-laws and preference for a male child are some of the risk factors for postpartum depression, which are deeply rooted in Indian society. So adequate awareness and regular check-up is needed for the early diagnosis and treatment of anxiety which in turn prevent the postpartum depression and its associated complications.

### Strengths and Limitations

The strength of our study is the inclusion of three scales namely HAM-A, EPDS and HAM-D for finding the risk factors and their association between anxiety and depression. The limitations of the study were the small sample size. A study on larger scale could have projected a more accurate picture. Since it is hospital based study the results can't be generalised.

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