

**Assessment of Antenatal Depression and Its Associated Risk Factors in Pregnant Women: A Tertiary Care Hospital Study**Neha Ninama<sup>1</sup>, Hardikkumar Yagnik<sup>2</sup>, Nilesh R. Prajapati<sup>3</sup>, Arpit Jani<sup>4</sup><sup>1</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Nootan Medical College and Research Centre, Visnagar, Gujarat<sup>2</sup>Assistant Professor, Department of Community Medicine, Ananya College of Medicine & Research, Kalol, Gujarat<sup>3</sup>Assistant Professor, Department of Community Medicine, Swaminarayan Institute of Medical Sciences and Research, Kalol, Gandhinagar, Gujarat<sup>4</sup>Assistant Professor, Department of Psychiatry, Nootan Medical College and Research Centre, Visnagar, Gujarat

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**Abstract:****Introduction:** Antenatal depression (AND) is a significant mental health concern that affects both pregnant women and their offspring. Studies have reported varying prevalence rates of AND in different regions of India.**Objective:** Assess the prevalence of prenatal depression and its risk variables in pregnant Indian women.**Methods:** The current investigation was conducted in a tertiary care that provides prenatal and postnatal care. The study comprised 630 pregnant women who went to the antenatal clinic for prenatal examinations using the consecutive sampling method. The Edinburgh Postnatal Depression Scale (EPDS) was utilised to determine the possibility of depression. To investigate the relationships between prenatal depression and various socioeconomic, obstetric, and medical characteristics, the chi-square test was used.**Results:** Among 154 depressed pregnant women, the highest number (37.7%) in the 25-29 years group (26.6%), followed by 37.7% in the 25-29 years group, and 18.8% in the 30-34 years group. Age shows a significant association with depression ( $p < 0.05$ ). Additionally, 42.2% of depressed pregnant women experienced health problems during pregnancy, while 31.1% of non-depressed women had health issues, indicating a statistically significant association ( $p < 0.05$ ). Other factors like education, occupation, family income, and spouse's alcoholism did not show significant associations with depression.**Conclusions:** This study focuses on antenatal depression among pregnant women, revealing its prevalence and highlighting two significant risk factors: age and the presence of health issues during pregnancy. Early screening and intervention for antenatal depression are deemed vital to minimize its adverse impact on both maternal and child health.**Keywords:** Antenatal Depression, Edinburgh Postnatal Depression Scale (EPDS), maternal health.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

A growing public health concern is postpartum and pregnancy depression, particularly in poorer nations. According to the World Health Organization, about one in three pregnant women in underdeveloped nations experience serious mental health issues. [1] One of the key factors affecting mental health is gender. In her lifespan, a woman goes through several stages, including menarche, puberty, the menstrual cycle, pregnancy, abortion, menopause, etc. Different stress levels are linked to these phases. Women may experience anxiety and sadness if they are unable to handle these challenges. Both in industrialised and developing nations, mental health issues like anxiety and sadness are prevalent during pregnancy

and after delivery. About one in ten women in industrialised nations and one in three to one in five women in developing countries experience serious mental health issues during pregnancy and after giving birth. [2] According to the World Health Organization (WHO), mental health is a state of wellbeing in which a person is aware of his or her own capabilities, able to handle everyday stressors, capable of productive and fruitful employment, and able to give back to the community. [3] By 2020, according to WHO predictions, depressive disorders will rank as the second most common cause of disease worldwide. [4] The development of the foetus is negatively impacted by the psychiatric disorders that emerge during the

prenatal period, which also have negative effects on the mother's health. [5] Reduced uterine blood flow in worried mothers may contribute to low birth weight, preterm delivery, and higher cortisol levels in infants. [6] Postpartum depression and anxiety may affect maternal-infant connection and consequently influence future infant development. [7] Children of depressed mothers are more prone to experience behavioural issues and developmental delays in their motor, cognitive, and emotional functions. [8] In light of this, the current study's objective is to ascertain the prevalence of prenatal depression among pregnant women as well as the risk factors that are related to it in the chosen tertiary care hospital in Gujarat state, India.

### Methods:

The Department of Obstetrics and Gynaecology of a chosen tertiary care teaching hospital in Gujarat state, India was the site of the cross-sectional study. The sample that satisfied the eligibility requirements and gave agreement to participate in the study was chosen using the consecutive sampling method. From last three months, 630 pregnant women who had registered at the antenatal clinic and provided the baseline data for the study were the subjects of the study. The eligibility criteria included women above or equal to 18 years of age, with confirmed pregnancies of above six months (more than 26 weeks). Women who were pregnant at high risk and anyone who had a history of mental problems that required medication were not included. Written informed consent was obtained before data collection. Demographic information and obstetric and medical characteristics were divided into two sections of a predesigned semi-structured questionnaire that we used. Personal data was gathered, including family type, age, education, occupation, and monthly family income. From the study participants, information on obstetric and medical characteristics, such as health issues during the present pregnancy, parity, history of miscarriage, thyroid dysfunction, history of psychiatric illnesses, and drunkenness in the spouse, was gathered. Edinburgh Postnatal Depression Scale (EPDS) was used to assess possible depression in pregnant mothers. The 10 questions that make up the EPDS ask about the respondent's emotional state and depressive symptoms from the preceding 7 days. According to a prior study conducted in India, which stated that the cut off 13 for the women was based on receiver operating curve analysis for their data, the cut off score of higher than or equal to 13 on the EPDS was taken into consideration. [9] The Institutional Ethics Committee granted authorization in accordance with ethical standards. The SPSS version 27 was used to statistically analyse the data. Descriptive statistics like frequency and

percentages were used to express the results. The chi-square test was used to analyse the relationship between prenatal depression risk and sociodemographic, obstetric, and medical factors.

### Results

The table presents the sociodemographic characteristics of 630 pregnant women and their distribution between those who are not depressed (EPDS score < 13) and those who are depressed (EPDS score > 13). The data offers insights into the prevalence of depression among pregnant women in different sociodemographic categories its relationship with Obstetric and medical characteristics.

Table 1 showed that Among the 154 depressed pregnant women, the highest number 41 (26.6%) belongs to the 20-24 years age group, followed by 58 (37.7%) in the 25-29 years age group, and 29 (18.8%) in the 30-34 years age group. The lowest number of depressed pregnant women (26, 16.9%) is observed in the 35-40 years age group. The chi-squared test indicates a significant association between age and depression ( $p < 0.05$ ). This suggests that age is an important factor associated with depression among pregnant women, with higher rates of depression observed in the younger age groups. Among the 154 depressed pregnant women, 59 (38.3%) have below secondary education, while 95 (61.7%) have secondary and above education and there are no statistically significant association between education and depression ( $p > 0.05$ ). Out of the 154 depressed pregnant women, 107 (69.5%) are homemakers, and 47 (30.5%) are employed and no statistically significant association between occupation and depression ( $p > 0.05$ ). Among the depressed pregnant women, 92 (59.7%) belong to households with a monthly family income of less than 15,000 Indian rupees, while 62 (40.3%) belong to households with an income of 15,000 and above Indian rupees & there is no statistically significant association between family income and depression ( $p > 0.05$ ). Among the 154 depressed pregnant women, 80 (51.9%) come from nuclear families, and 74 (48.1%) come from joint families & it indicates a statistically significant association between the type of family and depression ( $p < 0.05$ ). (Table 1)

The table 2 reveals valuable insights into the relationship between specific factors and the prevalence of depression during pregnancy. Out of the total 154 depressed pregnant women, 65 (42.2%) experienced health problems, while among the 476 non-depressed pregnant women, 148 (31.1%) had health problems & it indicates a statistically significant association between the presence of health problems during the current pregnancy and depression ( $p < 0.05$ ).

Among the 154 depressed pregnant women, 38 (24.7%) had a history of miscarriage, while among the 476 non-depressed pregnant women, 97 (20.4%) had experienced miscarriage before & result is not statistically significant ( $p > 0.05$ ).

Among the depressed pregnant women, 7 (4.5%) had a history of past psychiatric illness, while among the non-depressed pregnant women, 8 (1.7%) had such a history & it reveals a statistically

significant association between them ( $p < 0.05$ ). Among the depressed pregnant women, 22 (14.3%) had spouses with alcoholism, while among the non-depressed pregnant women, 69 (14.5%) had spouses with alcoholism & result is not statistically significant ( $p > 0.05$ ). Among depressed pregnant women, 84 (54.5%) are primigravida, while among the non-depressed pregnant women, 193 (40.5%) are Multigravida & it is not statistically significant. (Table 2)

**Table 1: Socio demographic profile of the study population (n=30).**

Socio demographic characteristics		Not depressed (EPDS < 13) (476) n (%)	Depressed (EPDS > 13) (154) n (%)	Total (630) n (%)	Significance
Age in years	20-24	32 (6.7)	41 (26.6)	73 (11.6)	$\chi^2 = 71.8$ P=0.0001
	25-29	215 (45.2)	58 (37.7)	273 (43.4)	
	30-34	198 (41.6)	29 (18.8)	227 (36)	
	35-40	31 (6.5)	26 (16.9)	57 (9)	
Education	Below secondary	159 (33.4)	59 (38.3)	218 (34.6)	$\chi^2 = 1.239$ P= 0.265
	Secondary and above	317 (66.6)	95 (61.7)	412 (65.4)	
Occupation	Homemaker	308 (64.7)	107 (69.5)	415 (65.9)	$\chi^2 = 1.18$ P=0.2773
	Employed	168 (35.3)	47 (30.5)	215 (34.1)	
Monthly family income (Rs.)	Less than 15,000	321 (67.4)	92 (59.7)	413 (65.6)	$\chi^2 = 3.053$ P= 0.080
	15,000 and above	155 (32.6)	62 (40.3)	217 (34.4)	
Type of family	Nuclear	296 (62.2)	80 (51.9)	376 (59.7)	$\chi^2 = 5.067$ P= 0.0243
	Joint	180 (37.8)	74 (48.1)	254 (40.3)	

**Table 2: Association between various factors with depression of the study population**

various factors	Not depressed (EPDS < 13) (476)	Depressed (EPDS > 13) (154)	Total (630)	Significance
<b>Presence of health problems during the current pregnancy</b>				
Yes	148 (31.1)	65 (42.2)	213 (33.8)	$\chi^2 = 6.42$ P= 0.0112
No	328 (68.9)	89 (57.8)	417 (66.2)	
<b>Previous history of miscarriage</b>				
Yes	97 (20.4)	38 (24.7)	164 (26)	$\chi^2 = 1.276$ P= 0.258
No	379 (79.6)	116 (75.3)	466 (74)	
<b>History of past psychiatric illness</b>				
Yes	8 (1.7)	7 (4.5)	15 (2.4)	$\chi^2 = 4.109$ P= 0.042
No	468 (98.3)	147 (95.5)	615 (97.6)	
<b>Thyroid problem</b>				
Yes	49 (10.3)	19 (12.3)	68 (10.8)	$\chi^2 = 0.505$ P= 0.477
No	427 (89.7)	135 (87.7)	562 (89.2)	
<b>Alcoholism in spouse</b>				
Yes	69 (14.5)	22 (14.3)	91 (14.4)	$\chi^2 = 0.004$ P= 0.949
No	407 (85.5)	132 (85.7)	539 (85.6)	
<b>Parity</b>				
Primigravida	283 (59.5)	84 (54.5)	367 (58.3)	$\chi^2 = 1.153$ P= 0.282

**Discussion**

In this study, pregnant women in a tertiary care hospital setting were examined for their prevalence of prenatal depression and its risk factors. The findings, as presented in Table 1 & 2, shed light on the relationship between various sociodemographic characteristics, obstetric, and medical factors with

antenatal depression. Overall 154 (24.4%) of the 630 participants had possible antenatal depression.

Studies done by R. Mahendran et al, who found that 24.3% had prenatal depression, and an Ethiopian study determined 21.28% of the prevalence of prenatal depression. [10,11] The pooled prevalence of prenatal depression across 173 studies with 182 reports determined was

20.7%. [12] Prior investigations conducted in India have reported a substantial variation in the prevalence of antenatal depression, ranging from 12.3% to 35.7%. [13–17] Pregnant women in the younger age groups, particularly those aged 20-24 years, demonstrated the highest prevalence of depression (26.6%).

This finding is consistent with some previous studies that have also reported higher rates of depression among younger pregnant women. [18-20] The vulnerability of younger individuals to stressors and emotional challenges during pregnancy may contribute to this observed association. Regarding education, occupation, and family income, the study found no statistically significant association with antenatal depression. This finding is consistent with some previous studies that found no statistically significant association between them. [11,13,18,23]

In our study, the type of family demonstrated a significant association with antenatal depression, that has highlighted the protective nature of joint families, providing additional emotional support during pregnancy. The role of social support in mitigating depression among pregnant women warrants further attention in future studies. This contrasts with certain prior research that has indicated not association between them. [11,13,16,18,23] These discrepancies could be influenced by regional variations or sample characteristics. More extensive multi-centric studies are necessary to obtain a comprehensive understanding of the interplay between these sociodemographic factors and antenatal depression in the Indian population. Pregnant women who experienced health problems during the current pregnancy had a significantly higher prevalence (42.2%) of depression.

This association is in line with previous research indicating that physical health issues can exacerbate emotional distress during pregnancy. [21,22] Thus, comprehensive antenatal care focusing on both physical and mental well-being is crucial in addressing depression risk. Interestingly, a history of past psychiatric illness demonstrated a statistically significant association with antenatal depression. Pregnant women with a prior psychiatric history were more likely to experience depression during the current pregnancy. This finding emphasizes the importance of early identification and management of mental health concerns before and during pregnancy. Integrating mental health screening and support into routine antenatal care can potentially improve outcomes for these vulnerable individuals.

## Conclusion

The study highlighted the importance of family type, with a statistically significant association between depression and living in nuclear or joint families. Additionally, the presence of health problems during pregnancy was identified as a significant risk factor for antenatal depression.

While the study did not find statistically significant associations between depression and history of miscarriage, the associations with these factors should not be disregarded, as they might still have clinical relevance in certain cases. These findings underscore the importance of early screening and intervention for depression, especially in younger pregnant women and those facing health issues during pregnancy. By identifying and addressing these risk factors, healthcare providers can work towards minimizing the adverse impact of antenatal depression on maternal and child health. Further research is warranted to explore additional risk factors and develop targeted strategies for effective care and support during pregnancy. Overall, this study contributes valuable insights to the understanding of antenatal depression and its associated risk factors, helping to inform evidence-based interventions and improve maternal mental health care in the context of antenatal and postnatal care.

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