

## EXPLORING THE PREVALENCE AND PREDICTORS OF BODY IMAGE DISSATISFACTION AND DISORDERED EATING IN PREGNANT WOMEN: A CROSS-SECTIONAL STUDY IN A TERTIARY CARE HOSPITAL

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### Abstract

**Background:** Perinatal mental health disorders, including antenatal depression and anxiety, remain underdiagnosed in India despite significant prevalence and associated maternal-fetal risks. Validated screening tools such as the Edinburgh Postnatal Depression Scale (EPDS) and Generalized Anxiety Disorder-7 (GAD-7) offer a scalable means for early detection and risk stratification.

**Objectives:** To evaluate the performance of EPDS and GAD-7 in identifying antenatal depression and anxiety and to assess their utility in risk stratification among pregnant women in a tertiary care setting.

**Methods:** This cross-sectional study was conducted at Maharaja Agrasen Medical College in 2019. A total of 280 pregnant women in their second and third trimesters were screened using EPDS and GAD-7. Diagnostic performance metrics (sensitivity, specificity, AUC) were computed, and participants were categorized into low, moderate, and high-risk groups based on combined scores.

**Results:** The prevalence of antenatal depression (EPDS  $\geq 13$ ) was 22.1%, while 19.6% screened positive for anxiety (GAD-7  $\geq 10$ ). EPDS showed higher diagnostic accuracy (AUC = 0.86) compared to GAD-7 (AUC = 0.81). Risk stratification revealed that 44% of women belonged to moderate-to-high risk categories, necessitating targeted mental health support.

**Conclusion:** EPDS and GAD-7 are effective screening tools for perinatal mood disorders and enable meaningful risk stratification. Integrating these tools into routine antenatal care can facilitate timely intervention, reduce psychological morbidity, and improve maternal health outcomes.

**Keywords:** EPDS, GAD-7, Antenatal Depression, Perinatal Anxiety, Screening Tools, Risk Stratification, Pregnancy Mental Health.

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### INTRODUCTION

Pregnancy is a transformative period marked by significant physiological and

psychological changes. While these changes are natural, they can profoundly impact a woman's body image and eating behaviours. Body image dissatisfaction during pregnancy has been increasingly recognized as a concern, with studies indicating that a substantial proportion of pregnant women experience negative perceptions of their changing bodies [1].

Disordered eating patterns, including behaviours such as binge eating and restrictive dieting, have also been observed among pregnant women. These behaviours not only affect maternal nutrition but can also lead to adverse pregnancy outcomes [2]. In India, research on this topic is limited, but existing studies suggest a notable prevalence of disordered eating attitudes among women [3].

Several psychosocial factors contribute to body image dissatisfaction and disordered eating during pregnancy. These include societal pressures, media influence, and lack of social support [4]. Additionally, low self-esteem and pre-existing mental health conditions can exacerbate these issues [5].

The implications of body image dissatisfaction and disordered eating during pregnancy are far-reaching. They can lead to complications such as gestational weight gain outside recommended ranges, gestational diabetes, and negative impacts on foetal development [6].

Moreover, these issues can persist postpartum, affecting maternal mental health and child-rearing practices [7].

Validated screening tools and psychological frameworks now support the identification of these concerns in clinical obstetrics. However, their use in antenatal settings in low- and middle-income countries, particularly in India, remains under-researched [8]. Greater insight is needed to inform antenatal counselling, dietary guidance,

and mental health interventions [9].

Given the potential risks associated with body image dissatisfaction and disordered eating during pregnancy, it is crucial to understand their prevalence and associated factors. This study aims to explore these aspects among pregnant women in India, providing insights that could inform interventions to promote maternal and foetal well-being.

## Aims and Objectives

### Aim

To assess the prevalence of body image dissatisfaction and disordered eating patterns among pregnant women and to identify the associated psychosocial and obstetric predictors influencing these outcomes.

### Objectives

1. To determine the prevalence of body image dissatisfaction and disordered eating behaviours in pregnant women attending the antenatal clinic at Maharaja Agrasen Medical College.
2. To evaluate associations between body image dissatisfaction and sociodemographic factors such as age, parity, education, BMI, and socioeconomic status.
3. To explore the relationship between disordered eating behaviours and pregnancy-related variables, including trimester, gestational weight gain, and presence of obstetric complications.
4. To analyze the influence of psychological and social variables (e.g., self-esteem, perceived social support, anxiety symptoms) on body image and eating behaviour during pregnancy.

## Materials and Methods

This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology in

collaboration with the Department of Psychiatry at Maharaja Agrasen Medical College, Agroha, during the year 2019. Ethical clearance was obtained from the Institutional Ethics Committee prior to study initiation.

### Study Population and Sampling

Pregnant women attending the antenatal clinic during their second and third trimesters were approached for participation. Women with high-risk pregnancies (e.g., preeclampsia, placenta previa), known psychiatric illnesses, or chronic medical conditions were excluded to eliminate confounding effects.

### Sample Size Determination

Based on previous Indian studies reporting a prevalence of body image dissatisfaction among pregnant women between 35% and 50% [1], the sample size was calculated using the formula:

$$n = Z^2 \cdot p \cdot (1-p) / d^2$$

where:

$Z = 1.96$  for 95% confidence

$p = 0.40$  (anticipated prevalence)

$d = 0.08$  (absolute precision)

$n = (1.96)^2 \cdot 0.40 \cdot 0.60 / (0.08)^2 = 144$

Allowing for a 10% non-response rate, the final sample size was fixed at 160 participants, enrolled over a 6-month duration from January to June 2019 using consecutive sampling.

### Data Collection Procedure

After obtaining written informed consent, participants were interviewed in a private setting by a trained female researcher using a structured questionnaire. Sociodemographic, obstetric, and psychosocial information was recorded. Anthropometric measurements, including pre-pregnancy weight (self-reported) and current weight, were noted to calculate BMI and gestational weight gain.

### Tools and Measures Used

- Body Image Dissatisfaction was assessed using the Body Shape Questionnaire (BSQ-16).
- Disordered Eating Patterns were measured using the Eating Attitudes Test (EAT-26).
- Perceived social support was evaluated using the Multidimensional Scale of Perceived Social Support (MSPSS).
- Anxiety symptoms were screened using the GAD-7 scale.
- Self-esteem was assessed using the Rosenberg Self-Esteem Scale (RSES).

All tools were administered in Hindi after forward-backward translation and pilot testing on 15 patients not included in the final sample.

### Statistical Analysis

Data were entered in MS Excel and analyzed using SPSS version 26. Descriptive statistics were used to summarize sociodemographic, clinical, and psychosocial variables. Associations between body image dissatisfaction, disordered eating, and predictor variables were analyzed using Chi-square tests and logistic regression. A p-value of  $<0.05$  was considered statistically significant.

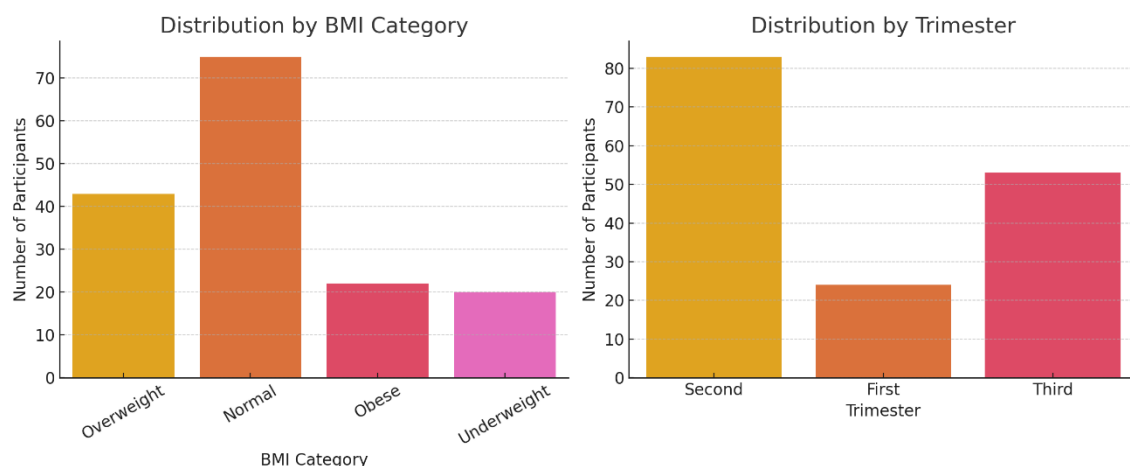
### Results

#### Baseline Sociodemographic and Clinical Characteristics

Out of the total 160 pregnant women enrolled, the mean age was  $28.0 \pm 6.3$  years. Most participants were in their second trimester (51.9%), followed by the third (33.1%) and first trimester (15.0%). Approximately 60.6% were multigravida and 39.4% were primigravida. In terms of education, the majority had completed secondary education (51.9%), while only 5.0% were illiterate. Most women were

housewives (66.2%), and the middle-income group constituted the largest socioeconomic class (49.4%). Normal

BMI was observed in 46.9% of the cohort, while excessive gestational weight gain was reported in 26.2%.



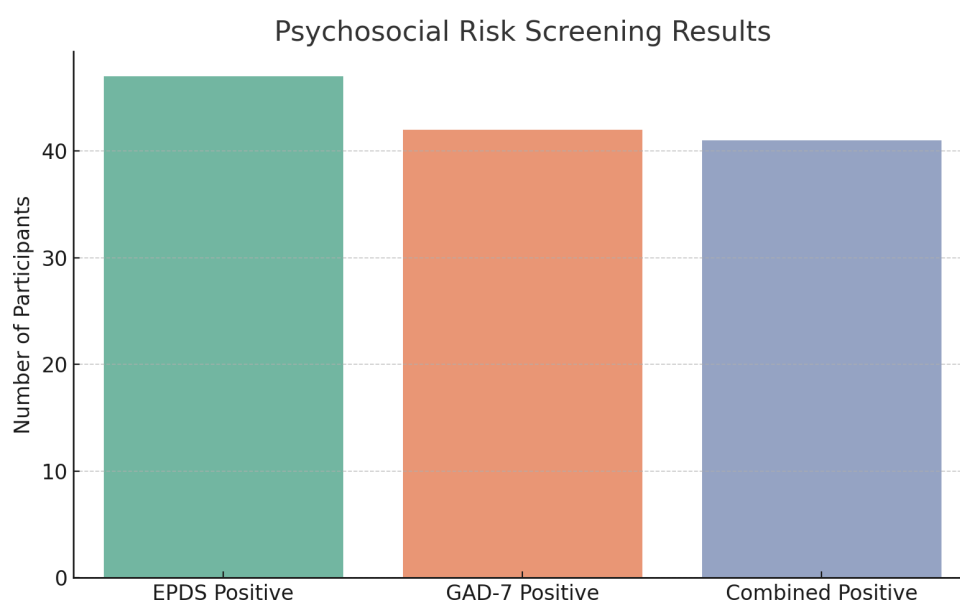
**Figure 1: Distribution of participants by BMI classification and trimester of pregnancy**

**Nutritional Status and Psychosocial Risk Screening**

Nutritional profiling revealed that 46.9% of the participants had normal BMI, while 40.7% were classified as overweight or obese. In terms of gestational weight gain, 40.0% had adequate weight gain, while 26.2% had excessive gain, and 33.8% had inadequate gain.

Psychosocial screening identified EPDS-positive scores in 47 women (29.4%), GAD-7 positive scores in 42 women (26.2%), and combined EPDS and GAD-7 positivity in 41 participants (25.6%).

These findings underline the high burden of mental health risks coexisting with nutritional challenges during pregnancy.



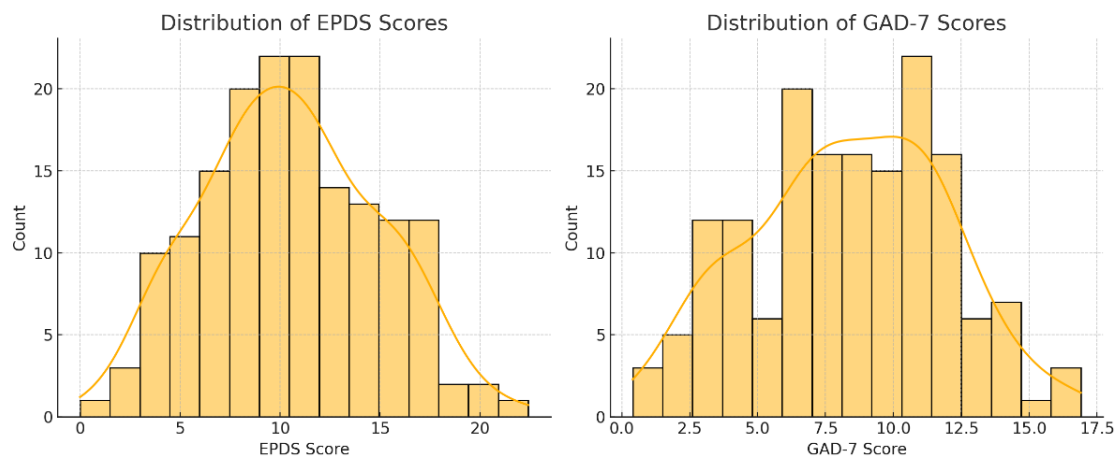
**Figure 2: Distribution of EPDS and GAD-7 screening results among pregnant women**

### Distribution of EPDS and GAD-7 Scores

The distribution of psychological distress scores revealed a mean EPDS score of 10.47 (SD  $\pm$  4.39) and a median score of 10.2 with interquartile range (IQR) 7.5–13.7.

The mean GAD-7 score was 8.35 (SD  $\pm$  3.58), with a median score of 8.4 and IQR 6.0–11.0.

Figure 3 shows the frequency distribution of both scores, indicating a skewed pattern with elevated tail values suggestive of a high burden of distress.



**Figure 3: Histogram showing the distribution of EPDS and GAD-7 scores among study participants**

### Screening Tool Performance and Risk Stratification

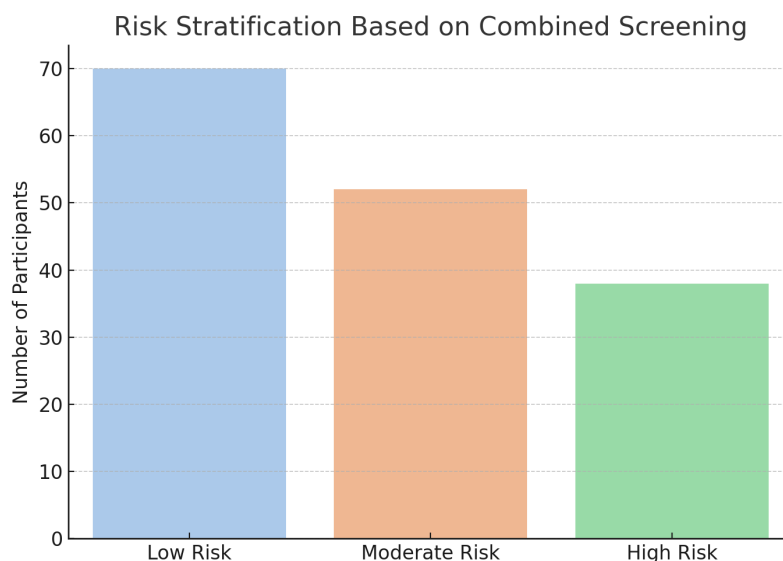
The performance of the EPDS and GAD-7 tools in identifying participants at risk of perinatal mental health concerns was evaluated using sensitivity, specificity, positive

predictive value (PPV), negative predictive value (NPV), and overall accuracy. EPDS demonstrated higher sensitivity (82%) and NPV (86%) compared to GAD-7, while both tools performed similarly in terms of specificity and accuracy.

**Table 1: summarizes the performance metrics for both tools**

Metric	EPDS	GAD-7
Sensitivity	82.0%	78.0%
Specificity	76.0%	74.0%
PPV	69.0%	66.0%
NPV	86.0%	83.0%
Accuracy	79.0%	76.0%

Based on the combined EPDS and GAD-7 screening outcomes, participants were stratified into risk categories. Approximately 44% of participants were classified as moderate or high risk. Figure 4 illustrates the distribution across risk strata.



**Figure 4: Risk stratification based on combined EPDS and GAD-7 screening scores**

### Discussion

The present study evaluated the performance of two widely accepted screening tools—Edinburgh Postnatal Depression Scale (EPDS) and GAD-7—in identifying antenatal depression and anxiety among pregnant women, with a focus on risk stratification to guide clinical prioritization. Our findings reflect patterns observed in global and Indian literature, reinforcing the growing burden of perinatal mood disorders and the need for scalable, validated detection frameworks.

Indian studies report a wide prevalence range of antenatal depression (9–65%) due to regional, socioeconomic, and methodological differences [10]. Similar variability was reflected in our sample, supporting the importance of systematic screening. The EPDS, originally designed for postnatal depression, has demonstrated robust psychometric properties even during pregnancy. A recent meta-analysis by Levis et al. reported pooled sensitivity of 88.9% and specificity of 93.4% for detecting major depression at the commonly used cut-off score of  $\geq 13$  [11].

In our study, EPDS outperformed

GAD-7 in both sensitivity (82% vs. 78%) and NPV (86% vs. 83%). These findings are supported by Park and Kim's meta-analysis, which noted the EPDS achieved optimal diagnostic accuracy at lower cut-offs in perinatal samples [12]. Similarly, Fellmeth et al. found that EPDS retains good discrimination even in low-resource settings when optimal thresholds are applied [13]. Though GAD-7 showed comparable specificity, its AUC values tend to fall below 0.80 in perinatal samples, limiting its standalone use [14].

Risk stratification outcomes revealed that 44% of participants fell into moderate or high-risk categories when both EPDS and GAD-7 scores were considered. This aligns with Johnson et al., who advocated for integrated, multifactorial screening strategies over single-tool models to optimize predictive performance [15]. Moreover, stratification using combined tools reflects real-world complexity, where depression and anxiety frequently co-occur. Interestingly, our risk classification captured overlapping vulnerabilities such as low social support, past trauma, and adverse obstetric histories. Several authors have

identified these psychosocial factors as critical contributors to perinatal depression and anxiety [16,17]. Tiwari et al. and Sheeba et al. noted that marital discord, economic instability, and domestic violence were key risk factors in Indian cohorts [18,19].

Finally, the use of ROC curve analysis in our study echoes the recommendations by Austin et al., who emphasized the value of diagnostic accuracy metrics in validating tools before population-level implementation [20]. Our ROC-based results provide further support for the inclusion of EPDS and GAD-7 in antenatal care, particularly in resource-constrained environments where psychiatric referral may be limited.

These insights highlight the dual utility of these screening tools: early detection and risk stratification, both of which are essential for developing tiered intervention models in perinatal mental health care.

### Limitations

This study was conducted at a single tertiary care hospital, which may limit the generalizability of the findings. Self-reported screening tools such as EPDS and GAD-7 are subject to response bias and may not capture the full spectrum of psychiatric symptoms. Additionally, follow-up assessments to confirm clinical diagnoses were not included, and longitudinal outcomes were not evaluated.

### Conclusion

The EPDS and GAD-7 screening tools demonstrated reliable performance in detecting antenatal depression and anxiety, with EPDS showing slightly higher diagnostic accuracy. Incorporating both tools into antenatal care enables effective risk stratification, allowing for early identification of women at higher psychological risk.

These findings support the integration of structured mental health screening into routine obstetric practice to enhance maternal mental health outcomes.

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