

A study to compare body image satisfaction and self-esteem between normal-weight and overweight primigravida women of Khordha district, Odisha

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Research Article

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Abstract

Background

Body image satisfaction and self-esteem are important components of maternal psychosocial well-being during pregnancy. Pregnancy is associated with significant physical changes, including weight gain, abdominal enlargement, breast growth, and alterations in body shape, which may influence how women perceive themselves. These changes can affect self-esteem, emotional health, and overall quality of life in pregnant women.

Methods

A quantitative cross-sectional analytical study was conducted among 357 third-trimester (28–40 weeks) primigravida women attending antenatal outpatient departments at AIIMS Bhubaneswar and the District Headquarters Hospital, Khordha, Odisha. Participants were classified as normal weight or Overweight based on prepregnancy BMI. Data were collected using a sociodemographic and obstetric proforma, the Body Understanding Measure for Pregnancy Scale, and the Rosenberg Self-esteem Scale. Data were analyzed using descriptive and inferential statistics, including independent *t*-tests, Fisher's exact test, and Pearson's correlation coefficient.

Results

Overall body image satisfaction and its domains did not differ significantly between normal-weight and overweight primigravida women ($P = 0.535$). However, overweight primigravida women had significantly lower self-esteem than normal-weight women ($P = 0.02$). A significant correlation between body image satisfaction and self-esteem was observed only among normal-weight primigravida women ($P = 0.03$). Body image satisfaction was also significantly associated with a family history of premorbidities among normal-weight primigravida women ($P = 0.04$).

Conclusion

Normal-weight and overweight primigravida women had comparable body image satisfaction, whereas overweight women had significantly lower self-esteem. A significant correlation between body image satisfaction and self-esteem was observed only among normal-weight primigravida women. These findings highlight the importance of incorporating psychological assessment into routine antenatal care.

Background

Pregnancy is a complex and transformative period characterized by significant physical, emotional, and psychological changes that influence women's perceptions of their bodies. Women with a normal

prepregnancy weight generally report greater body image satisfaction and acceptance of pregnancy-related changes. In contrast, overweight women may experience lower satisfaction due to increased concerns about appearance and perceived weight. [1] Unhealthy eating habits, low self-esteem, depression, and body dissatisfaction have all been connected to obesity. [2] Nevertheless, it also happens to those with normal body weight, underscoring the nuanced connection between weight status and body image. [3] Pregnancy weight has a significant impact on pregnant women's perception of their physical appearance, with overweight women, and these perceptions are also influenced by personal coping mechanisms, past body image, and physical activity, which can lower stress, elevate mood, and encourage greater acceptance of the physical changes associated with pregnancy. [4]

A positive assessment indicates contentment and acceptance of physical changes. Physical self-perception is a multifaceted construct that includes perceptual, emotional, cognitive, and behavioral components. [5] On the other hand, a negative assessment or dissatisfaction indicates negative opinions about looks, weight, or physical appearance. A woman's psychological adjustment might be significantly affected by these perceptions. [6] Weight, facial characteristics, mobility, and general look are all evaluated as part of the perceptual aspect of physical self-perception. [7] The attitudinal component, on the other hand, concerns attitudes and sentiments toward these traits and how they guide actions, shaping a woman's reaction to her changing body throughout pregnancy. [8] Women undergo physical changes during pregnancy, including edema, skin stretching, breast alterations, gestational weight gain, and altered body proportions. These changes can either increase or decrease body pleasure. [9] Biological, psychological, and societal factors, such as past body image, social expectations, cultural standards, and family support, further influence these impressions. [10]

Additionally, women's perceptions of their bodies during pregnancy may be influenced by psychological aspects like self-efficacy, coping skills, and social support. In addition to adopting healthier habits and maintaining a more positive body image, women who are more confident in their ability to handle pregnancy-related obstacles also tend to improve the health of both the mother and the fetus. [11] Prepregnancy body weight, cultural expectations, family support, and interventions like counseling and education can all have an impact on this relationship. Higher self-confidence is associated with greater body satisfaction and psychological well-being, while lower self-confidence is associated with body dissatisfaction, stress, and negative emotions. [12]

Cultural and social influences greatly influence body image during pregnancy. Pregnancy is seen as a sign of health and prosperity in some cultures, encouraging a positive body image and acceptance of the physical changes it brings. [13] On the other hand, cultures influenced by Western beauty standards that prioritize thinness may contribute to body dissatisfaction. [14] In addition to individual influences, including prepregnancy BMI, prior body image, and self-confidence, media representations, family expectations, religious beliefs, and social conventions also influence women's views of their evolving bodies. [15] Culturally sensitive counseling and supportive interventions are crucial for improving body image, boosting self-confidence, and promoting maternal well-being during pregnancy because women with higher self-esteem typically adapt better to bodily changes. In comparison, those with lower self-

esteem are linked to body dissatisfaction, anxiety, depression, and unhealthy weight-control behaviors. [16]

Social and economic variables have a significant impact on women's body image and self-esteem throughout pregnancy, as women's perceptions and acceptance of their changing bodies are influenced by support from peers, family, partners, and the community. [17] While insufficient support or critical remarks may exacerbate body dissatisfaction and stress, positive social support—including emotional encouragement and appreciation—improves self-esteem and body satisfaction. [18] Women with higher socioeconomic status typically have better access to nutrition, healthcare, and education, which makes it easier for them to adjust to the changes brought on by pregnancy and enhances their overall well-being. Strong social support and high self-esteem encourage positive psychological adjustment and acceptance of physical changes during pregnancy. In contrast, low social or financial resources are linked to a higher risk of depressive symptoms, lower self-esteem, and a more negative body image.[19] Consequently, improving body image, self-esteem, and general maternal health may be facilitated by integrating social and financial support into normal maternity care. [20]

Methodology

Research design and participants

This analytical cross-sectional design assesses and compares body image satisfaction and self-esteem among normal-weight and overweight primigravida women. Primigravida women in the third trimester of pregnancy (28–40 weeks of gestation) who attended the selected OPDs during the data collection period and met the inclusion criteria were screened by the principal investigator. Eligible women were informed about the study objectives, and those who voluntarily consented to participate were recruited through convenience sampling. The flow of participant recruitment and selection is presented in Fig. 1. A total of 392 women were screened based on their prepregnancy body mass index (BMI), of whom 11 were underweight, 227 were normal weight, 130 were overweight, and 24 were obese. Underweight women (n = 11), obese women (n = 24), women with communication impairments preventing questionnaire completion, or those with a diagnosed mental illness were excluded from the study; consequently, the final sample comprised 357 primigravida women, including 227 normal-weight and 130 overweight participants. The sample size was calculated using the estimation of proportions formula, with a population proportion of 63.3%. (Sample size = $Z(1 - \alpha/2)^2 \times p(1 - p) / d^2$ where $Z(1 - \alpha/2)$ is 1.96 at 5% error, p is the expected proportion of body image satisfaction among pregnant women (0.633), and d is the allowable error (0.05).) Considering a 10% attrition rate, the estimated sample size was 392 participants.[21]

Tool

Data were collected using an obstetric pro forma, the Body Understanding Measure for Pregnancy Scale (BUMPS) [22], and the Rosenberg Self-Esteem Scale (RSES).[23] The obstetric proforma was used to collect obstetric information. Body image satisfaction was assessed using the BUMPS, and self-esteem was assessed using the RSES.

Data collection procedure

Data were collected for this analytical cross-sectional study from the antenatal outpatient departments (OPDs) of AIIMS Bhubaneswar and Headquarters District Hospital, Khordha, after obtaining necessary administrative permission and ethical approval (IEC) from AIIMS Bhubaneswar and formal permission from the CDMO Khordha, Odisha, to conduct the study. Data collection was carried out from Nov 10 2025, to Dec 20 2025. Data collection was conducted between 8:00 am and 1:00 pm. Convenience sampling was applied to select participants, with all primigravida women attending the antenatal OPD during the study period being approached one after another. Only those meeting the inclusion criteria were enrolled until the target sample size was reached.

Primigravida women in their third trimester (28–40 weeks) of pregnancy were included in the study. Each participant provided written informed consent after being informed of the study's purpose, and confidentiality and privacy were guaranteed. Participants were administered the Rosenberg Self-Esteem Scale, the Body Understanding Measure for Pregnancy Scale (BUMPS), and a sociodemographic instrument to answer those questions. Participants' prepregnancy weight was determined using prenatal data, and BMI was calculated using the standard BMI (WHO Asian population BMI classification and the Institute of Medicine IOM recommended weight gain categorization guideline). Based on their calculated BMI, the participants were classified as either normal weight or overweight. At the time of data collection, the current weight of each participant was measured using a calibrated weighing machine, and gestational weight gain was assessed by comparing current weight with prepregnancy weight and height, both measured using a calibrated stadiometer. Subsequently, the participants' body image satisfaction and self-esteem levels were assessed using standardized, validated tools. The entire data collection process for each participant required approximately 20–25 minutes.

After data collection, each participant received personalized health education about the significance of the ideal gestational weight gain and how to maintain a healthy weight during pregnancy. To ensure the accuracy and reliability of the results, the data collection process was conducted in a methodical, ethical, and participant-friendly manner. The researcher praised the volunteers for their participation. This study had an average of six to eight individuals per day. Participants in the study received no compensation for taking part.

Data analysis

The collected data were coded and entered into SPSS 21 trial version. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarize the data. Inferential

statistics included the independent t-test to compare body image satisfaction and self-esteem between normal-weight and overweight primigravida women, Pearson's correlation coefficient to assess the relationship between body image satisfaction and self-esteem, and Fisher's exact test and one-way ANOVA to determine associations between sociodemographic and obstetric variables with body image satisfaction and self-esteem. A *P*-value of < 0.05 was considered statistically significant.

Results

Most participants in both groups were 18–25 years, resided in rural areas, belonged to joint families, had completed higher secondary education or higher, and were self-employed (Table 1).

Table 1
Sociodemographic variables

Variable	Category	Normal weight (n = 227) f (%)	Overweight (n = 130) f (%)
Age (years)		Mean ± SD 25.09 ± 3.11	Mean ± SD 24.06 ± 2.95
Residence	Rural	135 (59.5%)	120 (92.3%)
	Urban	92 (40.5%)	10 (7.7%)
Family type	Nuclear	6 (2.6%)	5 (3.8%)
	Joint	221 (97.4%)	125 (96.2%)
	Hindu	222 (97.8%)	113 (86.9%)
Religion	Muslim	3 (1.3%)	17 (13.1%)
	Christian	2 (0.9%)	-
Educational qualification	No formal education	-	13 (10.0%)
	Primary	3 (1.3%)	-
	High school	52 (22.9%)	25 (19.2%)
	Higher secondary	66 (29.1%)	47 (36.2%)
	Graduate	28 (12.3%)	45 (34.6%)
	Postgraduate and above	78 (34.4%)	-
Occupational status	Self-employed	138 (60.7%)	85 (65.4%)
	Not employed	89 (39.3%)	45 (34.6%)
Family monthly income (RS.)	≥ 78063	-	5 (3.8%)
	29200–39032	3 (1.3%)	10 (7.7%)
	19516–29199	23 (10.1%)	20 (15.4%)
	11708–19515	3 (1.3%)	15 (11.5%)
	10000–11708	52 (22.9%)	20 (15.5%)
	≤ 10000	146 (64.3%)	60 (46.2%)
Prepregnancy weight (kgs)	< 45	6 (2.6%)	-
	45–54	124 (54.6)	130 (100%)
	55–64	97 (42.7%)	-

Variable	Category	Normal weight (n = 227) f (%)	Overweight (n = 130) f (%)
Body mass index (kg/m ²)	18.5–22.9	227 (100%)	-
	23.0–24.9	-	130 (100%)
Current weight (kgs)	55–64	147 (64.8%)	80 (61.5%)
	≥ 65	74 (32.6%)	50 (38.5%)
Weeks of gestation	28–32	46 (20.3%)	40 (30.8%)
	33–36	46 (20.3%)	45 (34.6%)
	37–40	135 (59.4%)	45 (34.6%)
Previous illness	Yes	3 (1.3%)	-
	No	224 (98.7%)	130 (100%)
Complication during pregnancy	Yes	20 (8.8%)	5 (3.6%)
	No	207 (91.2%)	125 (96.2%)
Family history of premorbidities	Yes	23 (10.1%)	20 (15.6%)
	No	224 (89.9%)	110 (84.3%)

No statistically significant differences were observed between the two groups in the body image satisfaction domains of satisfaction with appearing pregnant ($P = 0.466$), weight gain concerns ($P = 0.251$), or physical burdens of pregnancy ($P = 0.368$). Similarly, the overall body image satisfaction scores were comparable between the two groups, with no statistically significant difference (normal-weight: 64.20 ± 10.70 ; overweight: 64.93 ± 10.94 ; $t = -0.621$, $P = 0.535$). However, overweight primigravida women had significantly lower self-esteem than normal-weight primigravida women (28.90 ± 5.76 vs. 30.70 ± 4.95 ; $t = 3.10$, $P = 0.02$) (Table 2).

Table 2
Overall Comparison of body image satisfaction and self-esteem between normal-weight and overweight primigravida women

Variables	Normal weight (n = 227)	Overweight (n = 130)	t-test	df	P value
	Mean ± SD	Mean ± SD			
Body image satisfaction	64.20 ± 10.7	64.93 ± 10.94	-0.621	355	0.535
Domain wise					
1. Satisfaction with appearing pregnant	31.96 ± 4.95	32.33 ± 5.044	-0.730	355	0.466
2. Weight gain concerns	22.51 ± 4.28	23.06 ± 4.451	-1.150	355	0.251
3. Physical Burdens of Pregnancy	9.59 ± 2.42	9.81 ± 2.46	-0.901	355	0.368
Self esteem	30.70 ± 4.95	28.90 ± 5.76	3.10	355	0.02*

t =Independent t -test, $P < 0.05$ is statistically significant.

The correlation between body image satisfaction and self-esteem is presented in Table 3. Among normal-weight primigravida women, body image satisfaction was significantly correlated with self-esteem ($P = 0.03$). In contrast, no significant correlation was observed between body image satisfaction and self-esteem among overweight primigravida women ($P = 0.82$).

Table 3
Correlation between body image satisfaction and self-esteem of normal weight and overweight primigravida women n = 357

Variables	Self- esteem		P value
Body image satisfaction	Normal weight	Overweight	
Normal weight	$r = -0.143$	-	0.03*
Overweight	-	$r = -0.19$	0.82

r = Pearson's correlation coefficient; $P < 0.05$ was considered statistically significant.

Among normal-weight primigravida women, body image satisfaction was found to be significantly associated only with a family history of premorbidities. place of residence, religion, family type, educational background, occupation, monthly income, weeks of gestation, mode of conception, height, current weight, previous illness, and pregnancy problems were not significantly associated with any of these factors. Among overweight primigravida women, there was no significant association found

between body image satisfaction and any of the selected sociodemographic variables. In terms of self-esteem, among normal-weight primigravida women, occupational status was significantly correlated with self-esteem; however, no significant correlations were found with age, place of residence, religion, family type, educational background, monthly income, weeks of gestation, mode of conception, height, current weight, prior illness, pregnancy complications, or family history of premorbidities. Self-esteem among overweight primigravida women was significantly correlated with residence, monthly family income, and current weight, but not with age, religion, family type, educational background, occupational status, weeks of gestation, height, pregnancy complications, or family history of premorbidities.

Discussion

Sociodemographic and obstetric variables

The majority of participants were Hindu and came from joint households, which reflected the sociocultural features of the study area. A significant percentage of women worked for themselves and came from lower socioeconomic backgrounds, which may affect lifestyle choices, health-seeking behaviors, and access to prenatal care. The majority of individuals fell within the 37–40 weeks of gestation, suggesting that most of the data were collected in the later stages of pregnancy. Furthermore, the majority did not report any pre-existing conditions or pregnancy-related issues, indicating that the study population was primarily composed of primigravida women in good health receiving antenatal outpatient care. In line with a study done in Southern India, where 61% of pregnant women were from rural regions, the majority of participants (59%) were from rural areas. (1)

Comparison of body image satisfaction between normal-weight and overweight primigravida women

Normal-weight and overweight primigravida women had similar levels of body image satisfaction (mean scores of 64.20 ± 10.70 and 64.93 ± 10.94 , respectively). There was no statistically significant difference between the two groups ($t = -0.621$, $P = 0.535$), suggesting that body image satisfaction during pregnancy was unrelated to BMI. A cross-sectional study conducted in Iran, which is consistent with the present study, found no statistically significant difference in body image scores between normal-weight and overweight pregnant women in the second and third trimesters. This similarity may be due to the acceptance of pregnancy-related body changes, including weight gain and changes in body shape, as normal physiological processes. Additionally, psychological adaptation, social support, and individual perception of pregnancy-related changes may influence body image perception more than BMI alone, which could explain the absence of a significant difference between normal-weight and overweight women in both studies. [24]

In contrast, a German study found that overweight women had much higher levels of body dissatisfaction, primarily because of worries about excessive weight gain, body form, and societal norms

that favor thinness.[16]

Comparison of self-esteem between normal-weight and overweight primigravida women

Overweight and normal-weight primigravida women had significantly different levels of self-esteem ($P = 0.02$), with overweight women expressing lower levels of self-esteem. According to this research, gaining weight during pregnancy may have a detrimental effect on one's sense of self, confidence, and body image. Significant physical, hormonal, and mental changes occur during pregnancy, and women with higher BMIs may worry more about weight gain, physical appearance, and body shape, which can lower self-esteem and worsen emotional distress. Similar results were reported in a study conducted in Turkey, where obese pregnant women had significantly lower self-esteem than normal-weight women. Higher body weight during pregnancy is associated with negative self-perception, reduced confidence, and dissatisfaction with body weight and appearance, all of which can adversely affect self-esteem. The similarity in findings may also be due to the influence of comparable psychosocial factors during pregnancy, where concerns related to body weight, perceived attractiveness, and social evaluation persist despite the natural acceptance of pregnancy-related changes, thereby contributing to lower self-esteem among overweight women. [25]

Correlation between body image and self-esteem

Self-esteem and body image satisfaction among primigravida women during pregnancy showed a very slight positive association ($r = -0.09$), although it was not statistically significant ($P = 0.06$). According to this research, self-esteem may be impacted during this period by several psychosocial factors, such as emotional adjustment to pregnancy, support from family and partners, cultural acceptance of pregnancy-related bodily changes, and the formation of maternal identity. Pregnancy-related physical changes are seen as natural and acceptable in many communities, which may mitigate the detrimental psychological impacts on women's self-esteem. A similar finding has been reported in studies conducted in Turkey [26] and Saudi Arabia [27], which found a strong positive association between self-esteem and body image satisfaction. Culture and weight factors interact to affect psychological well-being during pregnancy, as normal-weight women regularly report higher levels of contentment and self-esteem.

Association between sociodemographic variables and body image satisfaction of normal-weight and overweight primigravida women

Among normal-weight and overweight primigravida women, this study demonstrated no significant correlation between body image satisfaction and most sociodemographic or obstetric factors ($P > 0.05$). In the normal-weight group, the only factor substantially correlated with body image satisfaction was family history ($P = 0.04$). However, no significant correlation was seen in the overweight group, indicating that personal psychological factors may have a greater impact on body image satisfaction than

demographic traits. The current findings are corroborated by a similar study conducted in China, which found that psychological factors and perceived weight gain were better predictors of body image dissatisfaction than demographic variables.[6] However, a study from Thailand found significant associations with maternal age, body mass index, and gestational weight gain, indicating that cultural differences, measurement tools, and sample characteristics may explain the variation in findings.[28]

Association between sociodemographic variables and self-esteem of normal-weight and overweight primigravida women

This study found that sociodemographic variables had different associations with self-esteem among primigravida women who were both overweight and of normal weight. Only in the normal-weight group did self-esteem and employment status have a significant association ($P = 0.009$). However, in the overweight group, residence ($P = 0.03$), monthly income ($P = 0.04$), and current weight ($P = 0.01$) were significantly associated, whereas the other variables did not show significant associations ($P > 0.05$). Similar findings were observed in Brazil, where younger age, unpaid labor, unmarried status, living alone, and unplanned pregnancy were associated with lower self-esteem.[29] A study from Saudi Arabia also identified education and income as important determinants of self-esteem.[26] However, other studies suggest that psychological factors, such as body image, depression, and stress, may have a greater influence on maternal self-esteem than sociodemographic characteristics, with differences likely reflecting variations in culture, study methods, and social support systems.[30]

Strengths and Limitations

This study focused on primigravida women and employed validated tools to provide reliable evidence on self-esteem and body image satisfaction in an understudied Indian population. However, the results' generalizability is limited by the exclusion of underweight, obese, and multigravida women, and the cross-sectional design and self-reported data may have introduced reporting and social desirability bias.

Conclusion

While self-esteem was significantly greater among normal-weight women, this study demonstrated no significant difference in body image satisfaction between overweight and normal-weight primigravida women. Self-esteem and body image satisfaction did not significantly correlate. To promote positive maternal mental wellness and healthy adaptation to pregnancy-related physical changes, these findings emphasize the significance of incorporating psychological screening, prenatal counseling, health education, and family support into routine prenatal treatment.

Abbreviations

AIIMS All India Institute of Medical Sciences

BMI Body Mass Index

BUMPS Body Understanding Measure for Pregnancy Scale

IEC Institutional Ethics Committee

IOM Institute of Medicine

RSES Rosenberg Self-Esteem Scale

Declarations

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Authors' contributions

Both authors, J.S and M.V.S., have contributed equally to the manuscript. J.S and M.V.S. conceptualized the study. J.S collected, analyzed, and interpreted the data. J.S and M.V.S. wrote the main manuscript text. J.S prepared Figure 1. M.V.S. prepared Tables 1-3. All authors reviewed the manuscript.

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Declaration of conflicting interests

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Ethical considerations

The Institutional Ethics Committee, AIIMS Bhubaneswar, approved the research protocol (Ref. No. IEC/AIIMS BBSR/Nursing/2024-25/15), dated June 6 2025. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and its later amendments. Written informed consent was obtained from all eligible mothers before participation. Participants were informed about the purpose of the study, their right to refuse participation or withdraw at any time without penalty, and the voluntary nature of participation. Confidentiality and anonymity were assured throughout the study, and all collected data were used solely for research purposes.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Figures

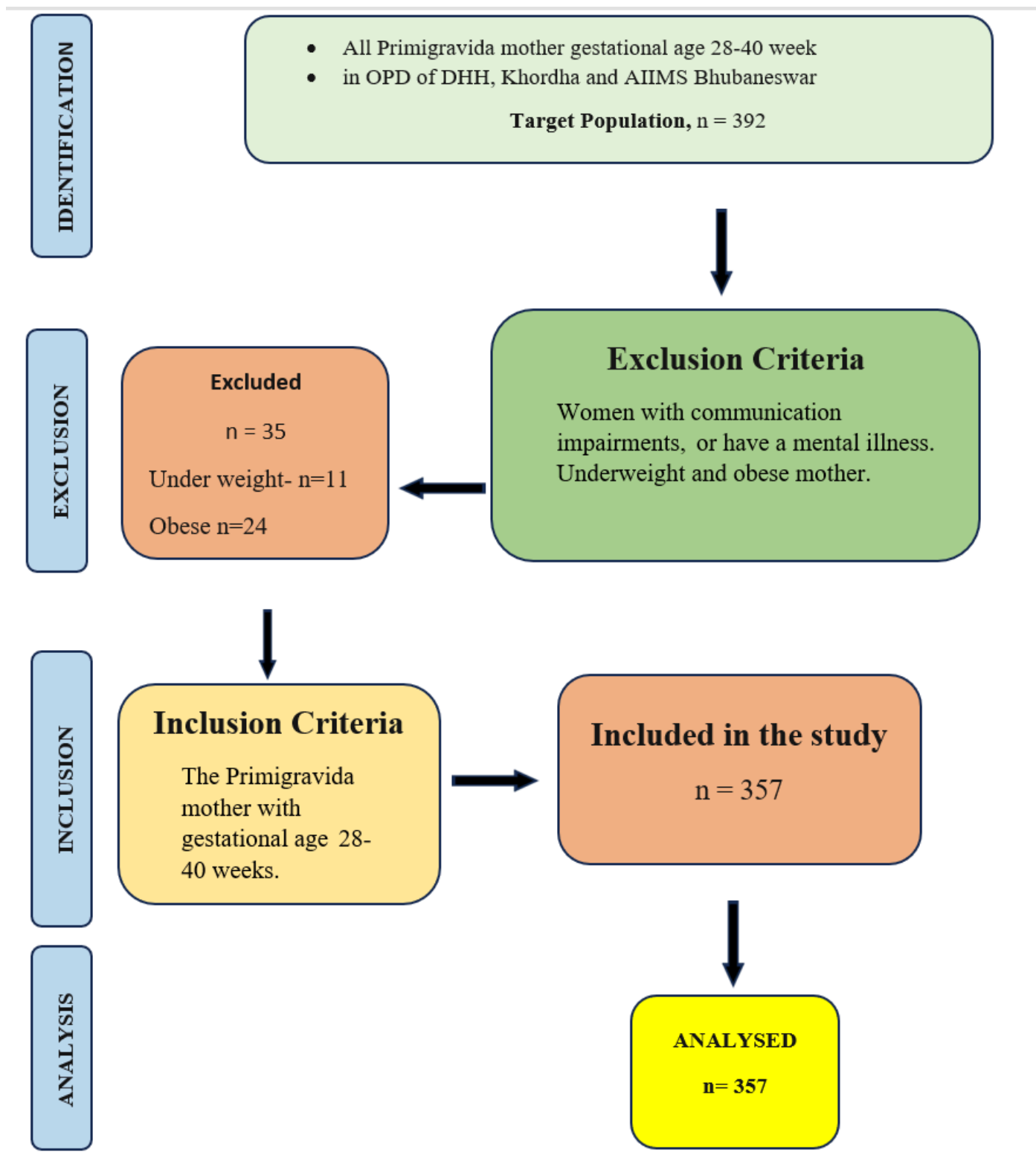


Figure 1

Flow diagram of participant selection as per STROBE guideline