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Frequency of Antenatal Depression in Obstetric Patients Attending Antenatal Clinic

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ABSTRACT

Antenatal depression is a prevalent but poorly understood mental health disorder with adverse maternal and fetal outcomes. It is common in different populations, with its risk factors being different, especially among the low- and mid-income countries. Timely intervention requires early diagnosis. **Objectives:** To identify the prevalence of antenatal depression and the related sociodemographic and obstetric variables in women visiting the antenatal clinic. **Methods:** The study was cross-sectional and conducted between January 1, 2025, and July 30, 2025, among 278 pregnant women through consecutive sampling. The Edinburgh Postnatal Depression Scale (EPDS) was used to measure antenatal depression, and a cutoff score of ≥13 was considered to be depressed. The analysis was performed with SPSS version 25.0, and descriptive statistics, a bivariate analysis, and binary logistic regression were applied to determine independent predictors ($p \leq 0.05$ was taken to be significant). **Results:** Antenatal depression was found to be prevalent (27.3, 95% CI: 21.9-32.7%). Major independent predictors were low socioeconomic status (AOR = 2.41; p=0.002), unplanned pregnancy (AOR = 1.94; p = 0.023) and past adverse obstetric outcomes (AOR=1.72; p=0.048). **Conclusions:** Depression occurred in more than a quarter of antenatal women in this tertiary care facility. The key risk factors are socioeconomic disadvantage, unintended pregnancy, and poor obstetric history. It is advised to conduct regular mental health screening and targeted interventions throughout the antenatal care to enhance maternal and fetal outcomes.

INTRODUCTION

Pregnancy is conventionally seen as a time of happiness and emotional satisfaction, but in a significant number of women, it is filled with significant psychological distress [1]. Depressive symptoms arising in the course of pregnancy, which are now known as antenatal depression, have become a significant public health issue with significant effects on both maternal and fetal well-being [2]. It is marked by chronic depression, loss of interest, tiredness, sleep problems, anxiety, poor functioning, and lack of coping with life responsibilities [3]. Antenatal depression is not given due clinical attention compared to postpartum depression and is often under-identified and undertreated despite comparable or even higher levels in a range of populations [4]. Antenatal depression is a global problem that has unequal distribution among regions and socioeconomic backgrounds [5]. It is reported that studies in high-income countries have a prevalence of 7%-15%, but much higher prevalence rates between 19-25% have been recorded in low- and middle-income countries [6]. Poverty, unintended pregnancy, lack of social support, partner abuse, stressful life events, and preexisting mental health conditions are some of the factors that contribute to these variations [7]. It is said that the incidence is very high, especially in the setting of South Asia, which is dominated

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by cultural pressures, gender-based inequalities, financial strain, and inadequate access to mental health services [6]. Antenatal depression is closely linked with poor obstetric and neonatal outcomes such as preterm birth, low birth weight, intrauterine growth retardation, maternal poor nutrition, poor bonding, and risk of postpartum depression [8, 9].

The increasing awareness that enhancing maternal mental health is essential towards the realization of optimal pregnancy outcomes is being supported, but limited evidence exists to date on the impact of antenatal depression on our local obstetric population. It will help to establish the level of the issue at this setting and demonstrate the necessity of routine psychological screening in addition to traditional obstetric evaluation. The research is thus carried out to produce context-specific indications that can guide clinicians, policymakers, and program planners towards mental health assessment inclusion in the antenatal care pathways. This study aimed to establish the prevalence of antenatal depression among obstetric patients visiting the antenatal clinic.

METHODS

This cross-sectional study was conducted at the Antenatal Clinic of Hayatabad Medical Complex (HMC), Medical Teaching Institution (MTI), Peshawar, over six months from January 1, 2025, to July 30, 2025. Data collection commenced following approval from the Institutional Review and Ethics Board (IREB) of HMC-MTI (Approval No. 826/HEC/B&PSC/2022). The sample size required was computed using the OpenEpi (version 3.01) program, with expected prevalence (P) of antenatal depression taken as 20.7% based on the pooled prevalence estimates from systematic reviews of the global prevalence of antenatal depression (20.7%; 95% CI 19.4–21.9%) from various studies across the globe [10]. Using the formula for minimum sample size estimation for a given confidence level and margin of error: $n = [Z^2 \times P \times (1 - P)] / d^2$ where d is the margin of error, Z is the confidence level, and P is the target proportion, the sample size at 95% confidence level (Z=1.96) and a margin of error (d) of 5% was calculated and obtained a minimum sample size of 253 participants. For response and item non-response, a 10% adjustment was made, bringing the final sample size to 278 participants. Non-probability consecutive sampling was used to recruit the participants. Women were included in the study if they were mentally alert and able to comprehend the information about the study, and if they agreed to participate voluntarily and signed the informed consent. Eligible participants included both primigravida and multigravida women across all the different socioeconomic strata and educational levels. Women were excluded if they had a prior psychiatric diagnosis of any form of major depression, bipolar disorder, psychosis, or anxiety disorder, or if they were on any form of treatment, like antidepressants or any other psychotropic medication. Also excluded from the study were women who had severe obstetric or medical problems that would need them to be provided emergency services (like antepartum hemorrhage, pre-eclampsia/eclampsia or preterm labor), women who had chronic systemic conditions that would affect their mood or psychological status, women who had cognitive or language barriers that would limit them from understanding the questionnaire, women who opted out of the study, and women who withdrew their consent. To avoid duplicate enrollment, each eligible participant was included only once, and repeat clinic visits by the same individual were excluded through verification of clinic records. The data was collected by trained female assistants who were briefed about the research objectives, the administration of the questionnaires, and participant confidentiality. All antenatal patients visiting the clinic were screened for eligibility, and those meeting the criteria were spoken to courteously. The researchers provided the participants with the study's objectives in basic terms and assured them that their answers would be kept confidential and would not impact their medical treatment. Before participants were enrolled, they provided their written informed consent. In order to provide privacy, comfort, and the freedom to express themselves, interviews were held in one of the quiet and private counseling rooms in the antenatal clinic. Information regarding sociodemographic and obstetric factors was collected using a pre-designed structured proforma capturing the individual's age, level of education, job/status, marital status, socioeconomic status, adequate parity and gravidity, gestational age, prior pregnancy experiences, and any obstetric complications. Following the collection of baseline data, the level of antenatal depression was determined by the Edinburgh Postnatal Depression Scale (EPDS) [11]. The EPDS is composed of 10 questions, and the participants were instructed to reply based on their emotions during the past week. The scores on the EPDS were measured on a Likert scale (4 points) (0-3), and the overall score was 0-30 [12]. The scoring and review of the responses took place right after completing the questionnaire. Like in the published literature and validation studies of antenatal populations, a cutoff score of ≥13 was regarded as a positive screening in women, and a cutoff score of less than <13 was regarded as a negative screening. The data collected were checked for completeness and accuracy, and were entered, and the data were analyzed using the Statistical Package of the Social Sciences version 25.0 (IBM Corp., Armonk, NY, USA). The data was manually input into the software, and cross-checking of transcription was done twice to reduce

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transcription errors. Normality of continuous variables like age and gestational age was evaluated through the visual examination of histograms and the Shapiro-Wilk test. These variables were summarized with mean ± standard deviation (SD) when the data are normally distributed and median (interquartile range) when the data are skewed. Frequencies and percentages were used to present categorical variables. The main outcome variable was the antenatal depression, which was defined as a dichotomous variable according to the EPDS cutoff score (≥13=depressed, <13=not depressed). The antenatal depression prevalence (prevalence) was computed as the percentage of women who screened positive out of the total sample size of the study and reported with a 95% confidence interval (CI).

A bivariate analysis was conducted to evaluate the relationship between the independent variables and antenatal depression. Chi-square test was used in the case of categorical variables. The p-value ≤0.05 was taken to be significant. To do the exploratory analysis, the variables whose significance was identified at $p < 0.20$ during the bivariate test were included in a binary logistic regression model to examine independent significant variables of antenatal depression, controlling for the possible confounding variables. Adjusted odds ratios (AOR) with 95% confidence intervals were provided. The Hosmer-Lemeshow goodness-of-fit test was used to test model fitness. The maternal age was analyzed both as a continuous variable and a categorical variable (≤25 vs >25years) so as to be clinically interpretable and comparable to earlier regional research where similar age cutoffs are used.

RESULTS

The average age of the participants was 27.9 ± 5.4 years, with the median gestational age of 26 weeks (IQR: 20-32 weeks). The majority of the women were multigravida (58.6%), 41.4% primigravida. Almost 45.7% of the respondents had a low socioeconomic status, and 32.4% and 21.9% had middle and high socioeconomic status, respectively. Regarding education, 39.2% were not educated, 34.5% had secondary education, and 26.3% had college or greater education (Table 1).

Table 1: Sociodemographic and Obstetric Characteristics of Participants (n = 278)

Variables	Mean ± SD / n (%)
Age (Years), Mean ± SD	27.9 ± 5.4
Gestational Age (Weeks), Median (IQR)	26 (20–32)
Gravidity	
Primigravida	115 (41.4%)
Multigravida	163 (58.6%)
Parity	
Nulliparous	102 (36.7%)
Multiparous	176 (63.3%)
Socioeconomic status	
Low	127 (45.7%)
Middle	90 (32.4%)
High	61 (21.9%)
Education status	
No Formal Education	109 (39.2%)
Secondary	96 (34.5%)
College or Higher	73 (26.3%)
Pregnancy Status	
Planned	181 (65.1%)
Unplanned	97 (34.9%)
History of Adverse Obstetric Outcome	
Yes	82 (29.5%)
No	196 (70.5%)

The average EPDS score of the study population was 9.8 ± 4.7. Based on the predefined cutoff score of ≥13, 27.3% of women were found to be positive in the screening of antenatal depression. The means of the EPDS of women who screened positive (16.4 ± 2.1) were greater than those of women who screened negative (7.1 ± 3.2) (Table 2).

Table 2: EPDS Scores and Frequency of Antenatal Depression

Variables	Mean ± SD / n (%)
Mean EPDS Score	9.8 ± 4.7
Women Screening Positive for Depression (EPDS ≥ 13)	76 (27.3%)
Prevalence of Antenatal Depression (95% CI)	27.3% (21.9–32.7)
Mean EPDS score	
Depressed	16.4 ± 2.1
Non-depressed	7.1 ± 3.2

Antenatal depression was significantly linked on bivariate analysis to maternal age at conception (younger age of maternal age: p=0.032), socioeconomic status (lower socioeconomic status: p=0.004), unplanned pregnancy (p=0.008), and previous adverse obstetric outcome (p=0.014). It was noted that there was no statistically significant correlation between depression and parity (p=0.218), the category of gestational age (p=0.147), and the employment-no category (p=0.276). Depressed women also had much lower mean age than non-depressed women (p=0.031). The median EPDS-adjusted emotional distress score of women with antenatal depression was slightly higher than that of non-depressed women (p=0.015) (Table 3).

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Table 3: Bivariate Association between Maternal Factors and Antenatal Depression (n = 278)

Variables	Depressed, n (%)	Not Depressed, n (%)	p-value
Age group			
≤ 25 years	34 (36.2%)	60 (22.8%)	0.032*
> 25 years	42 (63.8%)	142 (77.2%)	
Socioeconomic status			
Low	43 (56.6%)	84 (31.4%)	0.004*
Middle/High	33 (43.4%)	118 (68.6%)	
Education status			
No formal education	35 (46.1%)	74 (27.7%)	0.091
Secondary or higher	41 (53.9%)	128 (72.3%)	
Pregnancy status			
Unplanned	36 (47.4%)	61 (23.2%)	0.008*
Planned	40 (52.6%)	141 (76.8%)	
Previous adverse obstetric outcome			
Yes	28 (36.8%)	54 (20.8%)	0.014*
No	48 (63.2%)	148 (79.2%)	
Parity			
Nulliparous	25 (32.9%)	77 (30.4%)	0.218
Multiparous	51 (67.1%)	125 (69.6%)	

*Statistically significant at p≤0.05

Lower socioeconomic status was a significant independent predictor of antenatal depression after adjustment of confounders (p=0.002). Women who gave birth to unplanned pregnancies had nearly twice the odds of screening positive (p=0.023), and women with a history of adverse obstetric outcome also had much higher chances of experiencing depression (p=0.048). The maternal age and level of education were not statistically significant in the final model. The logistic regression model showed satisfactory goodness of fit, based on the Hosmer-Lemeshow test (p=0.389), which shows that the model was sufficient to explain the observed data (Table 4).

Table 4: Multivariable Logistic Regression for Predictors of Antenatal Depression

Predictor Variables	Adjusted OR (AOR)	95% CI	p-value
Low Socioeconomic Status	2.41	1.36–4.28	0.002*
Unplanned Pregnancy	1.94	1.09–3.46	0.023*
Previous Adverse Obstetric Outcome	1.72	1.01–2.95	0.048*
Younger Maternal Age (≤ 25 Years)	1.29	0.77–2.17	0.241
Lower Education	1.21	0.68–2.14	0.314

Model Fit: Hosmer–Lemeshow χ^2 = 7.42, p=0.389 *Statistically significant at p≤0.05

DISCUSSION

The incidence of antenatal depression in this cross-sectional study of 278 antenatal women was 27.3%, but it was determined using the Edinburgh Postnatal Depression Scale with a cutoff point of ≥13. The estimate is in line with the past evidence that antenatal depression is a serious mental health issue in low and middle-income environments. A detailed meta-analysis published a combined prevalence of perinatal depression of about 24.7%, with a greater prevalence in the lower middle-income nations, specifically in South Asia (27.6%), and such regional settings as our study area [13]. Our prevalence estimate compares with some of the more recent studies. Indicatively, a community-based survey carried out in rural Bangladesh indicated prevalences of antenatal depression between 18%-33% and, in certain situations, even 56%, which indicated high rates of intimate partner violence and gender inequalities [14]. Another more recent study in rural Bangladesh reported a prevalence of 39% and found the same predictors of unintended pregnancy and social stressors [15]. Conversely, a Malaysian-based, hospital-based study has noted lower prevalence rates of antenatal depression at 8.4%, with possible variations in the cultural attitude to mental health and methods of measurement, such as differences in cutoff scores on EPDS [16]. Some other research done in other international settings has also indicated a differing rate; a cross-sectional survey of China indicated that around 25.2% of women had antenatal depressive symptoms in the post-COVID-19 period, very similar to the present study [17]. In our research, the independent variables (low socioeconomic status, unplanned pregnancy, and history of adverse obstetric outcomes) were connected with increased odds of antenatal depression. These findings coincide with observations in Bangladesh, whereby psychosocial factors like intimate partner violence and perceived gender preference had a significant effect on increasing depressive symptoms [14]. Likewise, a study by Chala *et al.* has attributed increased antenatal depressive symptoms to unplanned pregnancy and socioeconomic stressors [18]. In contrast, a study by Kasujja *et al.* established that psychosocial adversity and instability were important factors in contributing to high antenatal depression rates, highlighting a cross-contextual trend [19]. An overview of Pakistani perinatal literature gave a high prevalence of prepartum depression (37%) under strong associations with low levels of income, marital tension, and inadequate social support [20]. A recent survey of adolescent women in Ghana indicated a rate of antenatal depression of more than 38%, with low education and social stress having a significant relationship with symptoms of depression [21].

Although the study is rigorous, it has several limitations. First, the cross-sectional design limited causal inference, as associations were established, but no temporal relationships between risk factors and antenatal depression were identified. Second, the study was conducted at a single tertiary care hospital, which may not be representative of rural or community-based populations, thereby limiting generalizability. Third, the use of self-reported scales, including the EPDS, could have resulted in social desirability bias, as some women may have underreported depressive symptoms due to cultural stigma or fear of judgment. Additionally, certain

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psychosocial variables, such as family support, intimate partner violence, and a history of mental illness in first-degree relatives, were not fully represented, which may have under-addressed the role played by these factors. Lastly, although the EPDS is a validated screening instrument, it does not substitute for a formal psychiatric diagnosis, and cases of mild depression or subthreshold symptoms may have been misclassified. Although a formally revalidated local-language version of the EPDS was not used, the scale was administered in a language familiar to participants, and prior studies from Pakistan and South Asia support its reliability and validity.

CONCLUSIONS

This research has shown that depression is present in more than one out of four antenatal women in a tertiary care clinic, which highlights the importance and lack of acknowledgment of antenatal depression as a social health issue. The prediction of maternal mental health as per the complex interaction of social, economic, and obstetric determinants was shown to be practical with the introduction of socioeconomic disadvantage, unplanned pregnancy, and the production of adverse obstetric outcomes. These results highlight the necessity to incorporate regular mental health assessment and counseling into antenatal care, especially among the high-risk groups.

Authors' Contribution

Conceptualization: AS
Methodology: AS, KN, LB
Formal analysis: AS, KB, SS
Writing and Drafting: KN, LB
Review and Editing: AS, KN, LB, KB, SS, SA

All authors approved the final manuscript and take responsibility for the integrity of the work.

Conflicts of Interest

All the authors declare no conflict of interest.

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