

PREVALENCE OF ANTENATAL DEPRESSION AND ITS ASSOCIATION WITH MALE CHILD PREFERENCE AMONG EXPECTANT MOTHERS IN PESHAWAR, KHYBER PAKHTUNKHWA

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Abstract

Background and Objectives: Antenatal depression has been identified as a leading health risk among expectant mothers across the globe. Male child preference can double the risk of antenatal depression in expectant mothers. The study aimed to determine the prevalence of antenatal depression and its association with male-child preference among expectant mothers visiting the outpatient department of Obstetrics and Gynecology of Khyber Teaching Hospital in Peshawar, Khyber Pakhtunkhwa.

Materials and Methods: This present analytical cross-sectional study was conducted at the outpatient department of obstetrics and gynaecology at Khyber Teaching Hospital in Peshawar, Khyber Pakhtunkhwa, from September 2023 to December 2023. Pregnant women in trimesters two and three in their pregnancy, in good health, with no history of psychiatric illness, not taking any medication except iron and vitamin supplements, and willing to participate in the study were included. Subjects were approached by convenience sampling. The calculated sample consisted of 400 subjects, including expectant mothers. The Edinburgh Postnatal Depression Scale (EPDS) was utilized for data collection. The association between factors and gender preference with antenatal depression was computed by using the Chi-Square test. P-values ≤ 0.05 were considered statistically significant.

Results: Out of 400 study participants, a 53.2% prevalence of antenatal depression was reported among expectant mothers. The husband's family reported a higher male child preference at 83%, followed by the women's family, husband, and women at 73%, 69.2%, and 59.7%, respectively. Preference related to baby gender has been found statistically significant with antenatal depression. A significant association was established between antenatal depression and age, education level, and husband's education.

Conclusions: It is concluded that antenatal depression was prevalent in expectant mothers, and its significant association was established with male-child preference.

INTRODUCTION

Antenatal depression has been recognized as a common mental health-related problem among pregnant women, which has a detrimental effect on both the mother's and the newborn's health ¹. It is depicted that depression is far more common in pregnant women than in non-pregnant women, with nearly a 2-fold greater risk ². Antenatal depression is more prevalent in 20% of developing countries compared to developed countries, at 10% to 15% ^{3,4}.

Furthermore, antenatal depression has severe consequences, including postnatal depression, low birth weight, impaired fetal development, postpartum hemorrhage, and preterm birth ⁵. Physical and emotional manifestations of antenatal depression include crying, fatigue, loss of appetite, hopelessness, loss of interest, insomnia, and poor concentration ⁶.

A significant association has been established between antenatal depression and preterm birth. As a result of preterm birth, morbidity and mortality in neonates have been reported ⁷. Male child preference is prevalent globally, primarily in Asia and North America ⁸.

It is demonstrated that South Asian countries strongly desire male sons. Consequently, it affects women's nutritional and healthcare needs, making pregnant women considerably weak and vulnerable in a patriarchal society ⁹. In India, a higher preference of 60.23% for a male child has been documented in rural families, and it is significantly associated with low socioeconomic status, poor education, and caste ¹⁰.

A current research study in Pakistan disclosed a strong desire for a male child of 37.5%. There are many reasons behind a male-child preference, such as parental pressure, societal norms, and pressure from in-laws ¹¹. There is a lack of data regarding the association of antenatal depression with male-child preference in expectant mothers in Pakistan. Therefore, the study aimed to determine the prevalence of antenatal depression and its association with male-child preference among

expected mothers visiting the outpatient department of Obstetrics and Gynecology of Khyber Teaching Hospital in Peshawar, Khyber Pakhtunkhwa.

MATERIALS AND METHODS

The present analytical cross-sectional study was conducted at the outpatient department (OPD) of obstetrics and gynecology at Khyber Teaching Hospital in Peshawar, Khyber Pakhtunkhwa.

The study lasted four months, from September 2023 to December 2023. Pregnant women in the second and third trimesters of pregnancy, in good health, with no history of psychiatric illness, not taking any medication except iron and vitamin supplements, and willing to participate in the study were included. The sample was calculated using PASS software version 11, two independent sample proportions with a confidence interval of 95% and a power of the test of 80%. Using the previous article reference ¹². Female child preference depression is 19.4% (95/489); male depression is 20.9% (82/291). The calculated sample is 399, which we have rounded up to 400. The subjects were approached using the purposive nonprobability sampling method. The questionnaire was explicitly explained to all subjects before data collection. Subjects participated voluntarily. Confidentiality was assured throughout the process. The study was conducted according to the Helsinki Declaration of 2008.

The data were collected by an adopted and validated tool, "The Edinburgh Postnatal Depression Scale (EPDS). The Edinburgh Postnatal Depression Scale (EPDS) was developed as a screening device for perinatal depression ¹³⁻¹⁴. The tool comprises three parts. The first section contains questions related to sociodemographic and obstetric factors, and the second section includes questions related to gender preference. The last part of the tool has an EPDS scale. The EPDS scale has ten questions on perinatal

depression, which are about the maternal mood in the past seven days, rated on the Likert scale options, including (not at all/hardly ever/sometimes/very often. The maximum score is 30, and a score of ≥ 10 or above is used to consider antenatal depression. Data was entered and analyzed by utilizing SPSS version 26. All the categorical variables were presented in frequency and percentages. All quantitative variables were computed as mean and standard deviation. The

association between factors and gender preference with antenatal depression was calculated by using the Chi-Square test. P-values ≤ 0.05 were considered statistically significant.

Written informed consent was obtained from all participants. Furthermore, permission to collect data was obtained from the medical superintendent of Khyber Teaching Hospital in Peshawar, Khyber Pakhtunkhwa.

RESULTS

Table 1. Prevalence of antenatal depression and Sociodemographic characteristics (n =400)

Variable	n (%)	Variable	n (%)
Prevalence of depression		Husband education	
Yes	213 (53.2)	Illiterate	90 (22.5)
No	187 (46.8)	Primary	46 (11.5)
Age		Matric	69 (17.2)
<19	8 (2)	Intermediate	73 (18.2)
20-29	245(61.3)	Master's and above	122 (30.5)
>30	147(36.8)	Household income	
Women's education		Poor	222 (55.5)
Illiterate	140 (35)	Good	178 (44.5)
Primary	41(10.3)	Pregnancy is planned	
Middle	34 (8.5)	Yes	260 (65)
Matric	52 (13)	No	140 (35)
Intermediate	75(18.8)	Women's Work/Role	
Masters and above	58(14.5)	Housewife	282 (70.5)
Response rate	400 (100)	Working women	118 (29.5)

Table 1 discloses the prevalence of antenatal depression and the sociodemographic characteristics of study participants. Out of 400 study participants, nearly half of the subjects, 213 (53.2%), reported antenatal depression. Most study participants, 245(61.3%), were between 20 and 29. Regarding women's education, 140 (35%) were illiterate, while 90 (22.5%) were illiterate in

their husbands' education. Regarding household income, 222 (55.5%) of the study participants showed poor household income. The majority of the study subjects, 260 (65%), reported that they had no planned pregnancy. Regarding women's work, a maximum of the study participants, 282 (70.5%), were housewives.

Table 2. Distribution of Gender preference (n=400)

Variable	Female child preference		Male child preference	
	n	%	n	%
Women	161	40.3	239	59.7
Husband	123	30.8	277	69.2
Husband's family	68	17	332	83
Women's family	88	22	312	78

Table 2 reveals the distribution of gender preference among depressed mothers. The husband's family described a higher male child

preference 332 (83%). Furthermore, a more significant 161(40.3%) female child preference was exhibited by expected mothers.

Table 3. Association between gender preference and antenatal depression in mothers (n=400)

Characteristics		Depressed	Not Depressed	OR (CI 95%)	Significance (P≤0.05)
Your preference related to the baby's gender					
	Female	76 (35.85)	85 (45.21)	0.677 (0.453-1.012)	0.03
	Male	136 (64.15)	103 (54.79)		
Husband's gender preference for the baby					
	Female	68 (32.08)	55 (29.26)	1.142 (0.745-1.749)	0.30
	Male	144 (67.92)	133 (70.74)		
Husband's family preference for baby gender					
	Female	40 (18.87)	28 (14.89)	1.329 (0.783-2.255)	0.17
	Male	172 (81.13)	160 (85.11)		
Mother's family preference for baby gender					
	Female	51 (24.06)	37 (19.68)	1.293 (0.802-2.085)	0.17
	Male	161 (75.94)	151 (80.32)		

Table 3 displays the association between gender preference and antenatal depression in mothers. After the data assessment, the results of the chi-square analysis and the ODD Ratio have been listed. They started from the first characteristic, such as preference related to baby gender by male and female gender for both the conditions, depressed and not depressed. The total number of female members found was 76 (35.85%), and 136 (64.15%) categories as depressed. In comparison, 85 (45.21%) and 103 (54.79%) were not depressed, with an OR of 0.677, with a Confidence interval of 0.453-1.012 and a chi-square P-value of 0.03, significantly connected with depression. On the other hand, for husband gender preference for baby, the results listed as OR 1.142, CI 0.745-1.749, and P-value of 0.30, with no significant relation inferences between

depression and baby gender preference by husbands and in the list combination of females and males, depressed and not depressed stood as 68 (32.08%), 55 (29.26%), 144 (67.92%), and 133 (70.74%), respectively.

Husbands' family preference for baby gender (OR 1.329, CI 0.783-2.255 and P-value 0.17) found no association with depression and no depression and baby preference from their husband's family side. Moreover, the mother's family preference for the baby's gender provided information for the Odds Ratio as 1.293, with a confidence interval of 0.802-2.085, with a P-value of 0.17. The significance level surpassed the threshold of 0.05. Hence, no significant connection was found between the depressed and not depressed participants of the study's preferred baby gender by their mother's side of the family.

Table 3. Association between sociodemographic characteristics and antenatal depression (n=400)

Characteristics	Depressed	Not Depressed	OR (CI95%)	Significance (p≤0.05)
Age of the participant				
<19	3 (1.42%)	5 (2.66%)		0.00
20-29	149 (70.28%)	96 (51.06%)		
>29	60 (28.30%)	87 (46.28%)		
Education Level				
Illiterate	58 (27.36%)	82 (43.62%)		0.00
Primary	17 (8.02%)	24 (12.73%)		
Middle	24 (11.32%)	10 (5.32%)		
Matric	35 (16.51%)	17 (9.04%)		
Intermediate	44 (20.75%)	31 (16.49%)		
Master & above	34 (16.03%)	24 (12.77%)		
Employment Status				
Housewife	144 (67.92%)	138 (73.40%)	0.767 (0.497-1.183)	0.13
Working Women	68 (32.08%)	50 (26.60%)		
Husband Education				
Illiterate	34 (16.04%)	49 (26.06%)		0.00
Primary	18 (8.49%)	24 (12.77%)		
Middle	13 (6.13%)	18 (9.57%)		
Matric	32 (15.09%)	32 (17.02%)		
Intermediate	44 (20.75%)	23 (12.23%)		
Master & above	71 (33.49%)	42 (22.34%)		
Household Income				
Good	121 (57.07%)	101 (53.72%)	1.145 (0.771-1.700)	0.28
Poor	91 (42.93%)	87 (46.28%)		
Number of miscarriages				
0	121 (57.08%)	126 (67.02%)		0.20
1	64 (30.19%)	41 (21.81%)		

	2	17 (8.02%)	16 (8.51%)		
	3	9 (4.24%)	5 (2.66%)		
	4	1 (0.47%)	0 (0.00%)		

Table 4 exhibits the association between sociodemographic characteristics and antenatal depression. The chi-square analysis found a significant association between antenatal depression and age, education level, and husband's education, with a p-value of 0.00. On the other hand, employment status provided a non-significant connection, having a p-value of 0.13. Going further, in the remaining list of variables, including household income and the number of miscarriages, the p-value for chi-square analysis was 0.28 and 0.20, respectively. The odds ratio and Confidence interval values for employment status and household income were 0.767 (0.497-1.183) and 1.145 (0.771-1.700), respectively.

DISCUSSION

Antenatal depression represents a growing public health concern globally, with a disproportionate burden observed in low- and middle-income countries where sociocultural and structural determinants intersect to heighten women's vulnerability¹⁵⁻¹⁷. The present study investigated the prevalence of antenatal depression and its association with male child preference among expectant mothers. The findings contribute to the limited body of evidence examining gender-related sociocultural stressors and maternal mental health within South Asian settings, particularly Pakistan. In this study, the prevalence of antenatal depression was found to be 53.2%, indicating that more than half of the participating women experienced clinically relevant depressive symptoms during pregnancy. This prevalence is consistent with findings reported from Tanzania (39.5%)¹⁸. On the other hand, a much lower 16.4% antenatal depression was documented in pregnant women in China¹⁹. Conversely, the prevalence observed in the present study is substantially higher than estimates reported from Nepal (24.8%) [20] and rural Bangladesh (18%)²¹. These differences highlight important contextual

variation influenced by socioeconomic conditions, cultural norms, and differential access to mental health services. They emphasize the importance of context-specific research when interpreting prevalence estimates and designing targeted maternal mental health interventions.

The elevated prevalence identified in this study may reflect cumulative exposure to psychosocial stressors common within the Pakistani context, including financial insecurity, limited decision-making autonomy, inadequate mental health infrastructure, and deeply entrenched gender norms. Evidence from systematic reviews and population-based studies across South Asia has consistently demonstrated that antenatal depression is strongly shaped by social and cultural determinants rather than biomedical factors alone²²⁻²⁴. The present findings, therefore, align with regional literature conceptualizing antenatal depression as a multidimensional condition rooted in structural, relational, and cultural realities.

A key finding of this study was the high prevalence of male child preference, mainly reported by the husband's family (83%). This observation is consistent with findings from Iran, where husbands' families were reported as a dominant influence in shaping male child preference in approximately 75% of cases²⁵. Son preference remains a persistent phenomenon across South Asia, despite gradual shifts in population-level attitudes. Evidence from India indicates that while explicit son preference has declined in recent years, gender-biased fertility strategies and preferential treatment of boys remain widespread, particularly within socioeconomically disadvantaged and patriarchal family systems²⁶. These dynamics reinforce inequalities in education and household decision-making and carry significant implications for maternal mental health and child outcomes.

Importantly, the present study demonstrated a statistically significant association between male

child preference and antenatal depression. Notably, while the husband's family expressed the strongest male child preference, it was the woman's own preference that showed a significant association with depression ($p = 0.03$). This finding is congruent with evidence from India and Nepal, where son preference has been identified as a significant predictor of depressive symptoms during pregnancy^{27,28}. The psychological burden imposed by gendered reproductive expectations may operate through fear of family rejection, marital conflict, emotional neglect, and perceived failure to fulfil culturally prescribed maternal roles. In patriarchal societies, women's social value is often closely tied to childbearing outcomes, particularly the birth of a male child, thereby amplifying emotional distress during pregnancy.

The association observed between antenatal depression and maternal education, husband's education, and maternal age further reinforces the role of socioeconomic and relational determinants in shaping maternal mental health. Depression was most prevalent among women aged 20–29 years, and illiteracy in both women and husbands was strongly associated with higher depression rates. Similar associations have been reported in Ethiopia and Iran^{25,28}. Education may influence mental health through multiple pathways, including health literacy, coping skills, access to information, and negotiation power within household decision-making structures. Evidence from Japan further supports education as an independent protective factor against maternal depression²⁹. In contrast, household income and employment status were not significantly associated with depression in this study, suggesting that cultural and relational determinants may outweigh purely economic ones.

Taken together, these findings reinforce the argument that antenatal depression cannot be adequately addressed through clinical screening alone. Rather, it requires a broader understanding of gender norms, educational inequities, family power dynamics, and sociocultural expectations. The significant association between male child preference and antenatal depression observed in this study adds to emerging evidence that gender-based expectations constitute a critical yet

underexplored determinant of maternal mental health in South Asian societies^{30,31}.

While the findings indicate a strong relationship between male child preference and antenatal depression, cautious interpretation is warranted. The cross-sectional design limits causal inference, and the observed associations may reflect bidirectional or mediated pathways involving social support, marital relationships, and economic stress. Nonetheless, the findings provide valuable empirical support for integrating gender-sensitive approaches into maternal mental health screening and intervention programs within antenatal care services.

Overall, the present study contributes important insights into the sociocultural dimensions of antenatal depression, highlighting male child preference as a significant psychosocial stressor among pregnant women in Pakistan. These findings underscore the need for culturally informed public health strategies that address both mental health and gender equity. Strengthening antenatal care services through routine mental health screening, community-based education, and family-centred counselling may help mitigate the psychological impact of gender-based expectations and improve maternal well-being.

Conclusion

This study identified a high prevalence of antenatal depression among expectant mothers in Peshawar, Pakistan, with male child preference emerging as a significant associated factor. Depressive symptoms were more common among younger and less-educated women, whereas household income and employment status were not significantly associated. These findings suggest that antenatal depression in Pakistan is shaped largely by sociocultural pressures, particularly gender-based expectations, rather than economic factors alone. Integrating gender-sensitive mental health approaches into antenatal care, alongside broader efforts to address son preference, may help improve maternal well-being.

Funding

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and ethical approval was granted by the Ethical Review Committee of the Institute of Nursing Sciences, Khyber Medical University, Peshawar, Khyber Pakhtunkhwa, Pakistan (Ref No. KMU-INS.5108 dated 17-04-2023).

Informed Consent Statement

Informed consent was obtained from all participants involved in the study before data collection.

Data Availability Statement

The data presented in this study are available from the corresponding author upon request. The data are not publicly available due to privacy or ethical restrictions.

Conflicts of Interest

The author declares no conflicts of interest.

Abbreviation

EPDS Edinburgh Postnatal Depression Scale

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