

# Postpartum Depression and Newborn Gender: Investigating Birth Outcomes and Maternal Wellbeing in a Cross-Sectional Study

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## Abstract

**Objective:** To determine the prevalence of postpartum depression (PPD), investigate the underlying factors contributing to it and its relationship with the gender of newborns.

**Methodology:** A comparative cross-sectional study was conducted on 90 post-natal mothers presenting at RMU Allied Hospitals, Rawalpindi from March to September 2022. The data collection tool was a Performa-based questionnaire, including questions to determine the possible causative factors and EPDS question to evaluate maternal mental health. One to one interview was conducted for data collection. Association of PPD with various socio-demographic and gender factors was then sought through statistical analysis using SPSS version 25.

**Results:** The prevalence of PPD was 69%, with moderate depression being most common. Mothers who gave birth to female children had significantly higher rates of PPD, highlighting the impact of gender bias. Additionally, cesarean sections, middle-class socioeconomic status and being in young adult age group were found as additional risk factors for PPD.

**Conclusion:** The findings highlight the significant impact of gender bias on the occurrence of postpartum depression, especially among mothers with female children, who are at heightened risk. To enhance maternal mental health and improve mothers' overall quality of life, it is crucial to address gender bias along with other contributing factors through focused interventions. Continued research is necessary to confirm these results and to design effective strategies for prevention and management.

**Keywords:** Edinburgh Postnatal Depression Scale (EPDS), illiteracy, gender, post-natal, post-partum depression.

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## Introduction

Depression is a common mental illness that is linked with feeling of sadness, loss of interest or pleasure, decrease in energy level. Those facing depression have feelings of fault, low self-respect, uneasy sleep or appetite and poor attention. <sup>1</sup> Postpartum Depression (PPD), also known as postnatal depression, is a type of depression that usually happens within the first year after having a baby. It often starts in the first few weeks. It can begin slowly or suddenly, having symptoms from mild and short-term to severe and long-lasting. About 1 in 7 women experience PPD, which is influenced by hormonal changes, genetics, physical

health, past mental health issues, and environmental factors.<sup>2</sup> In Pakistan, postpartum depression (PPD) is very common among women. The rates are estimated to be between 28% and 63%, which is one of the highest in Asia.<sup>3,4</sup> Females having Postpartum depression mostly don't get treatment because of the stigma associated with it. Many mothers are fearful of being judged or called "bad mothers" if they admit they are facing difficult time with depression. <sup>5</sup> The lack of awareness and cultural myths regarding the mental health has led to a silent epidemic of PPD.

The World Health Organization (WHO) says maternal

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mental health is when a mother feels well, can reach her full potential, manage daily stresses, and contribute to her community.<sup>6</sup> PPD deprives the mother and the newborn from the golden bonding period which has long term psychological, psychosocial and behavioral influence on the child. This situation restricts both the personal growth of mothers and the healthy development of their children. Mothers experiencing depression often face greater challenges in their social relationships, including their relationships with partners.<sup>7</sup>

History of PPD dates to 400 B.C when it was recognized by Hippocrates. The psychiatric community officially recognized postpartum depression in 1994, when it was included in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).<sup>8</sup>

A large study in 2021 estimated that 17.22% of women worldwide experience postpartum depression (PPD), with a confidence interval of 16.00% to 18.05%. Women in developing countries have higher rates of postpartum depression (PPD) than those in developed countries.<sup>9</sup> Gender bias is a pervasive issue worldwide, impacting many countries, including Pakistan, where it is recognized as a significant human rights concern affecting a large proportion of women.<sup>10</sup> The presence of two or more daughters in a family has been linked to increased rates of depression, suggesting that male children are often more desired and prioritized by married couples over female children.<sup>11</sup>

Several factors increase the risk of postpartum depression (PPD), such as having a low income, limited education, and being a first-time mother. In several Asian countries, Other factors which are critical in the development of PPD include low birth weight or premature birth, decreased social support, and a priority for a specific baby gender.<sup>12</sup> If the baby is a girl, it can influence how the mother feels about the baby's gender.

The review of studies found that postpartum depression (PPD) can be linked to several things, such as domestic violence, mental health issues, a family history of psychiatry, tense events, low self-confidence, minimal social support, low income, unplanned pregnancies, feeling alone during labor, and less breastfeeding. Although many studies have talked a lot about these factors<sup>13–16</sup>, they haven't focused enough on gender bias.

This study aims to find out how common postpartum depression (PPD) is in mothers of girls compared to mothers of boys and to explore any possible link between them. This research aims to show how gender bias greatly affects mothers' mental health and stresses the urgent need for more awareness and action.

## Methodology

A study was done from March to September 2022 on new mothers at Rawalpindi Medical University Allied Hospitals using the EPDS (Edinburgh Postnatal Depression Scale).<sup>17</sup> It included mothers seven days after giving birth.

Ethical approval was obtained from institutional ethical committee. Women with a recent delivery of female child and previous history of birth to female child only (if any) and women with a recent delivery of male child were included. Women who had miscarriages, still births, abortions whether induced or spontaneous or a previous history of depression and or diagnosed mental illness e.g., anxiety disorder, OCD, depression, bipolar disorder, schizophrenia, PTSD, personality disorder, psychosis, phobias, substance abuse disorder, major depressive disorder, eating disorder, panic disorder and mood disorder were excluded. We used a consecutive sampling method. We included 90 participants and collected the data through interviews.

Females who gave live births to female and male babies were approached in the public hospitals i.e., Holy Family Hospital, DHQ and Benazir Bhutto Hospital Rawalpindi. The questionnaire included socio-demographic data, history of mood disturbances, behavioral changes during postnatal period using EPD Scale. The Edinburgh Postnatal Depression Scale (EPDS) is a short, proven tool for screening. It has ten structured questions, and the answers are based on a four-point scale. Scores range from 0 to 3, with higher scores for more severe symptoms on questions 1, 2, and 4, while questions 3 and 5 through 10 are scored in reverse. To make sure the answers were clear and accurate, the questions were given in Urdu, the respondents' native language. EPDS scores were interpreted as follows: 0–6 meant no or less depression, 7–13 indicated mild depression, 14–19 showed moderate depression, and scores above 20 indicated severe depression.

For data analysis, we used IBM SPSS version 25. Data was summarized using descriptive statistics like frequencies, percentages, means, and standard

deviations. t-test was used for numerical data and the Chi-square test for categorical data. A p-value of less than 0.05 was considered statistically significant.

## Results

In this study, 90 participants were interviewed. The average age of the women was 30.5 years ( $\pm 5.02$ ), with ages ranging from 18 to 42 years. Additional details, including husbands' ages and the educational status of both partners, are provided in Table I.

	Min	Max	Mean $\pm$ SD	
Mother's Age	18	42	30.53 $\pm$ 5.024	
Husband's Age	21	50	35.20 $\pm$ 5.903	
Education	Mother		Husband	
	N	%	N	%
Illiterate/primary	23	25.6	21	23.3
Secondary/higher secondary	55	61.1	59	65.6
University level	12	13.3	10	11.1

Socioeconomic status of the participants fall under three categories namely lower, lower middle and upper lower. Most of the participants belong to lower middle class (41%), while 34% in lower and 24% in upper lower class according to the occupation of the husbands.

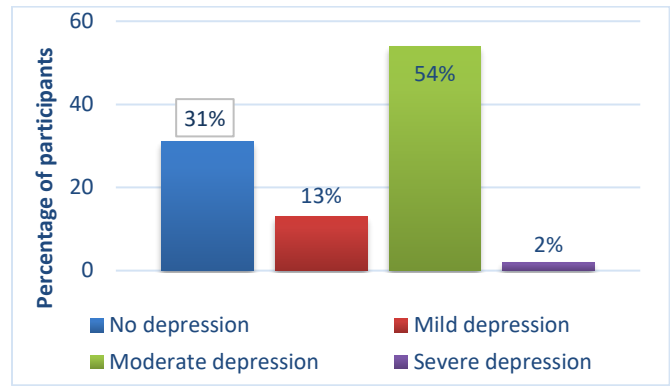
According to mode of delivery of the respondent mothers, approximately 61% had undergone caesarean section while 39% were delivered by normal vaginal delivery. Of the newborn babies, 43.3 % were boys while the rest 56.7% were baby girls (Table II).

Previous Boys only	21 (23%)
Previous Girls only	32 (36%)
Previous Both Boys, Girls	37 (41%)
New born baby boys	39 (43.3%)
Newborn baby girls	51 (56.7%)

Postpartum depression (PPD) was observed in 69% of mothers (62/90), with 13% exhibiting mild, 54% moderate, and 2% severe depression. The remaining 31% showed no signs of PPD. Depression rates were higher among mothers of female children (Figure 1).

The details of PPD in relationship with baby gender, age of the mother, socioeconomic status and mode of delivery are given in table III.

On Uni-variable analysis, age of mother, socioeconomic status, mode of delivery, female gender of baby were observed to be significant factors associated with PPD (Table IV).



**Figure 1. Distribution of participants as per PPD.**

**Table III: PPD in relationship with baby gender, age of the mother, socioeconomic status and mode of delivery.**

Parameters	Edinburgh Postnatal Depression scale				
	No depression	Mild depression	Moderate depression	Severe depression	
Age	18-25	2	0	15	0
	26-33	18	8	20	1
	34-42	8	4	13	1
Newborn gender	Girl	0	1	48	2
	Boy	28	11	0	0
Mode of delivery	Normal	28	12	15	0
	CS	0	0	33	2
Socioeconomic status	Lower	0	0	35	2
	Middle	6	12	13	0
	Upper	22	0	0	0

**Table IV: Uni-variable Analysis for predictors of PPD.**

Variables	t / Chi square value	P value
Mother's Age	2.85	0.006
Husband's Age	1.65	0.107
Socioeconomic status	13.53	0.029
Mother's education	103.5	0.258
Husband's education	104.93	0.228
Mode of delivery	56.7	<0.01
Sex of baby	116.22	.014

## Discussion

This study shows that postpartum depression (PPD) is a common and serious problem for new mothers around the world. It emphasizes how socio-cultural factors like gender bias, economic status, age of the mother, and how the baby is delivered can greatly affect a mother's mental health.

In this study, the prevalence of postpartum depression was found to be 69%. Of the affected mothers, 13% experienced mild depression, 54% had moderate depression, and 2% suffered from severe depression. The young adult age group of mothers (26-33 years of age) was observed to be a more vulnerable group to moderate depression. Cesarean sections caused more

depression compared to spontaneous vaginal deliveries. Lower socio-economic status also proved to be a significant contributing factor. Analysis of gender bias revealed that 94% of mothers who gave birth to female infants experienced moderate depression, whereas 72% of mothers with male newborns showed no signs of depression.

Studies in developed countries have found lower rates of postpartum depression (PPD).<sup>18,19</sup> The higher rates in our study can be linked to cultural factors and societal taboos. Women here face social and financial pressures related to the gender of their child. They also worry about delivery arrangements due to a lack of health facilities and health insurance.

Our study found that the mother's age significantly affects the risk of postpartum depression ( $p = 0.006$ ), but the husband's age does not. This is not inline with Randhawa et al.'s study<sup>20</sup>, which found no significant link between the ages of either parent and postpartum depression. We also discovered that socioeconomic status and the type of delivery are important factors, with 61% of cesarean deliveries linked to higher rates of postpartum depression. This aligns with research by Barbadoro et al. and Gail Card, which also suggested that surgical procedures and complications from cesarean sections can increase depression rates.<sup>21, 22</sup>

In male-dominated society, worries about raising a girl lead to higher depression rates among mothers of daughters. Similar results were found in an Indian study and research by Zaidi et al.<sup>23</sup>, both showing more postpartum depression in mothers of girls. A 2019 analysis by Ziwei Ye, which included 23 studies and 119,736 women, found that mothers of girls had a higher risk of postpartum depression compared to others (OR = 1.15, 95% CI: 1.01–1.31;  $p = .03$ ). Gender inequality is a critical social factor in PPD, and resolving such issues could improve women's mental health on a larger scale. The preference for sons in our country is primarily driven by male dominance in society, which is rooted in their economic contributions and the importance placed on continuing the family lineage. In rural areas, sons are particularly valued for their role in labor-intensive agriculture, providing essential support and social security. Conversely, daughters are often viewed as an economic burden, as they are expected to marry and thus not contribute financially to their natal families. Additionally, the practice of dowry payments further exacerbates the perceived financial strain associated with raising a

female child.<sup>25</sup> Mothers who give birth to female children may experience feelings of disappointment, guilt, or inadequacy, exacerbated by pressure from family, spouses, and societal norms. This raises the chances of getting postpartum depression (PPD). It's important to understand that the baby's gender can sometimes be the only reason for PPD. Therefore, preferring one gender over another is closely linked to higher rates of postpartum depression.<sup>26</sup>

Postpartum depression (PPD) can make it hard for a mother to connect with her baby, causing her to feel guilty and ashamed. In severe cases, it may result in chronic depression, substance abuse, or suicidal thoughts. In environments where gender bias is prevalent, mothers may lack emotional support from family members who express disappointment over the baby's gender. This social rejection can leave the mother feeling isolated and unsupported, exacerbating PPD and delaying recovery.<sup>27</sup>

A mother's postpartum depression (PPD) can directly affect her baby's development. Babies might have weaker emotional attachment, which can impact their thinking, social skills, and emotions. They are more likely to have behavior issues, growth limitations, and emotional issues as they grow. Not getting enough care and support as infants can also cause physical health problems, like poor weight gain and trouble sleeping.<sup>28</sup>

A child raised in an environment where gender bias influences parental behaviour and their acceptance within the household may face long-term emotional and psychological consequences. They may feel less valued due to their gender, leading to issues with self-esteem, identity formation, and relationships later in life.<sup>29</sup>

These findings highlight the urgent need for thorough support and interventions programs to address these issues. By understanding and reducing these risks, healthcare providers and policymakers can improve mental health for mothers and promote well-being for their families.<sup>30</sup>

## Conclusion

In conclusion, this study shows the urgent need for actions to address changeable risk factors linked to postpartum depression (PPD), especially those related to gender bias. Implementing community health programs, strengthening social support networks, and launching targeted educational campaigns are essential steps to shift societal attitudes towards



gender and provide comprehensive support to new mothers. Prioritizing these measures can significantly improve maternal mental health outcomes and promote gender equality within society.

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