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A Comparative Study of Postpartum Depression and Psychological Hardiness Between First-Time and Multiparous Mothers

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ABSTRACT

Objective: This study aims to compare postpartum depression and psychological hardiness between first-time (primiparous) and multiparous mothers to identify differences that could inform targeted interventions.

Methods and Materials: A causal-comparative research design was used. The study population included all pregnant women attending hospitals in Rasht, Iran, in 2024. A total of 70 participants (35 primiparous, 35 multiparous) were randomly selected. Data were collected using the Edinburgh Postnatal Depression Scale (EPDS) and the Kobasa Psychological Hardiness Scale. Statistical analyses, including multivariate analysis of variance (MANOVA), were performed using SPSS version 26.

Findings: There was a significant difference in PPD and psychological hardiness between the two groups (P<0.01). Primiparous mothers had significantly higher postpartum depression scores than multiparous mothers (M 24.86 vs. M = 17.91, P<0.01). Conversely, multiparous mothers exhibited higher psychological hardiness scores (M = 104.69 vs. M = 62.14, P < 0.01). Effect size calculations indicated a strong relationship between parity and both variables.

Conclusion: Primiparous mothers are at a higher risk of postpartum depression and have lower psychological hardiness than multiparous mothers. These findings highlight the need for targeted psychological interventions and support programs, particularly for first-time mothers. Future research should investigate additional psychosocial factors that influence these relationships.

Keywords: Postpartum Depression, Psychological Hardiness, Primiparous Mothers, Multiparous Mothers, Maternal Mental Health.

Introduction

Postpartum depression (PPD) is a significant mental health condition that affects mothers after childbirth, with global prevalence estimates ranging between 10% and 20% (Febriani et al., 2024). It is characterized by persistent sadness, anxiety, fatigue, and cognitive impairments that can negatively impact mother-infant bonding and long-term child development (Bjertrup, 2024). Studies indicate that untreated PPD can lead to severe consequences, including impaired emotional regulation in infants, increased risk of future maternal depressive episodes, and heightened stress in family dynamics (Wainwright, 2023; Yang et al., 2023). Given these widespread implications, understanding the risk factors and protective mechanisms associated with PPD is crucial for developing targeted interventions.

Worry and stress are natural components of the transition to parenthood. While mild concern about maternal and infant health can be beneficial in preparing for parenthood, excessive and prolonged worry has been linked to increased psychological distress and a higher risk of postpartum depression (Beck et al., 2018). Pregnant women who experience persistent anxiety and stress before childbirth are more likely to develop postpartum mood disorders, which can persist for months or even years if untreated (Dennis & Dowswell, 2019). Studies show that pregnancy-related stressors, such as uncertainty about parenting abilities, financial concerns, and lack of social support, contribute to increased vulnerability to postpartum depression (Howard et al., 2018). Therefore, identifying factors that enhance psychological resilience and reduce susceptibility to PPD is essential for maternal and infant health.

One of the psychological constructs that may play a protective role in preventing or mitigating PPD is psychological hardiness—a personality trait associated with resilience in stressful situations. Psychological hardiness, first conceptualized by Maddi (2002), comprises three key dimensions: commitment (a sense of purpose), control (a belief in one's ability to influence outcomes), and challenge (perceiving stress as an opportunity for growth). Research suggests that individuals with higher psychological hardiness demonstrate lower susceptibility to stress-related disorders, including anxiety and depression (Delahaij et al., 2019). Psychological hardiness has been widely studied in military personnel, healthcare professionals, and trauma survivors (Bartone et al., 2016), but its role in postpartum adjustment remains underexplored. Given that new motherhood is a highly stressful period requiring significant psychological adaptation, it is important to examine whether psychological hardiness serves as a protective factor against postpartum depression.

Moreover, evidence suggests that parity (first-time vs. multiparous motherhood) may influence both postpartum depression and psychological hardiness. First-time mothers (primiparous) often experience greater anxiety and uncertainty due to their lack of prior parenting experience, which can increase their vulnerability to PPD (Netsi et al., 2018). Studies indicate that primiparous mothers tend to have higher levels of stress, fear of childbirth, and greater difficulty adjusting to maternal responsibilities compared to multiparous mothers (Bener et al., 2019). Additionally, social support networks may differ between these two groups, with multiparous mothers often having more experience and stronger support systems, which may contribute to lower levels of postpartum distress (Cameron et al., 2020).

Despite these findings, existing studies have produced conflicting results regarding the relationship between parity and postpartum depression. Some research suggests that primiparous mothers are at a higher risk due to inexperience and social isolation (Li et al., 2021), while others argue that multiparous mothers may also experience high stress levels due to increased caregiving responsibilities (Williams et al., 2019). Similarly, while psychological hardiness has been identified as a protective factor against stress in other populations, its specific role in postpartum mental health and its potential differences between primiparous and multiparous mothers remain unclear.

Given these research gaps, the present study aims to compare postpartum depression and psychological hardiness between primiparous and multiparous mothers. By identifying differences in these psychological factors, this research seeks to provide evidence-based insights that can inform mental health interventions tailored to the needs of first-time and experienced mothers. Understanding the interplay between psychological hardiness and parity in postpartum depression can help healthcare providers develop targeted psychological support programs, ensuring better maternal mental health outcomes.

Methods and Materials

Study Design and Participants

This study employed a causal-comparative research design to examine differences in postpartum depression (PPD) and psychological hardiness between primiparous and multiparous mothers. A causal-comparative approach was selected because it enables the investigation of pre-existing group differences without the need for experimental manipulation. This design is beneficial when studying naturally occurring conditions, such as childbirth experiences, where ethical or practical constraints prevent the use of random assignment.

However, it is important to acknowledge that causation cannot be inferred from this type of research.

The study population consisted of pregnant women attending hospitals in Rasht, Iran, in 2024. These hospitals were selected because they serve a diverse range of patients, making the findings more generalizable to broader populations. The total number of eligible participants was 1,347, from which the final sample was drawn.

To determine the appropriate sample size, a power analysis was conducted using G*Power 3.1 software. Based on an expected effect size of 0.50, an alpha level of 0.05, and a power of 0.80, the minimum required sample size was 68 participants. To account for potential dropouts, 70 women (35 primiparous and 35 multiparous) were selected.

Participants were recruited using stratified random sampling to ensure that the two groups were balanced in terms of age, education level, and employment status. A list of eligible participants was generated from hospital records, and those meeting the inclusion criteria were randomly selected. Stratification helped reduce the influence of extraneous variables, ensuring that differences in PPD and psychological hardiness could be more accurately attributed to parity.

To enhance internal validity, strict inclusion and exclusion criteria were applied. Eligible participants were pregnant women aged 18–40 years in their third trimester, as this ensured recent pregnancy experience. They had to have no history of major psychiatric disorders such as schizophrenia or bipolar disorder, as these conditions could independently influence postpartum mental health. Additionally, participants were required to be medication-free for antidepressants and anxiolytics to avoid confounding effects.

Women with high-risk pregnancies or medical complications such as preeclampsia or gestational diabetes were excluded, as these conditions could introduce additional psychological stressors. Those with a history of severe postpartum depression in previous pregnancies (for multiparous mothers) were also excluded to prevent prior mental health conditions from skewing results. Furthermore, mothers expecting twins or triplets were omitted, as multiple births are associated with distinct psychological challenges that differ from singleton pregnancies.

The study was conducted over three months (January to March 2024) following approval from the Institutional Ethics Committee (Ethics Code: IR.IAU.LIAU.REC.1403.112). Participants were recruited during their prenatal hospital visits, where the study objectives and procedures were explained to them. Those who agreed to participate provided written informed consent, and confidentiality was assured.

To reduce potential bias, researchers ensured standardized questionnaire administration by conducting face-to-face interviews where needed. Participants were also informed that they could withdraw from the study at any time without consequences. To ensure data accuracy, responses were double-checked by two independent researchers before being entered into the statistical software.

Instruments

Edinburgh Postnatal Depression Scale (EPDS): The EPDS is a screening tool designed to identify postpartum depression in women, developed by Cox et al. (1987). It consists of 10 items, each with four response options scored from 0 to 3. The total score is calculated by summing the item scores. A score of 12 or 13 is considered indicative of mild postpartum depression, whereas scores of 14 or 15 suggest severe depression. In a study by Norouzi and Mohammadi (2014), the EPDS demonstrated a Cronbach's alpha reliability coefficient of 0.84, indicating high reliability. Additionally, Namazi et al. (2020) reported a reliability coefficient of 0.90 for this scale (Shirazi et al., 2022).

Kobasa's Psychological Hardiness Scale: The Psychological Hardiness Scale, developed by Kobasa (1979), consists of 50 items rated on a 4-point Likert scale, ranging from 0 (not at all applicable) to 3 (highly applicable). This scale assesses three key components of hardiness: commitment (16 items), challenge (17 items), and control (17 items). A total hardiness score is obtained by summing the scores for all items. Higher scores indicate greater psychological hardiness. Research findings suggest that the reliability coefficients for these components are 0.70, 0.53, and 0.52, respectively, while the overall hardiness reliability is reported as 0.75 (Malik et al., 2025). In Iranian studies, Haghighi et al. (2019) reported Cronbach's alpha coefficients of 0.86 for total hardiness and 0.83, 0.72, and

0.71 for commitment, control, and challenge, respectively (Nemati et al., 2024).

Data Analysis

Statistical analyses were conducted using SPSS version 26. First, descriptive statistics (mean, standard deviation, and frequency distribution) were used to summarize the data. To ensure the appropriateness of parametric tests, assumption testing was performed. The Shapiro-Wilk test was used to assess the normality of the data, confirming that all variables were normally distributed ($p > 0.05$). Levene's test was applied to assess homogeneity of variance, and the results indicated equal variances between groups ($P > 0.05$). Additionally, Box's M test was conducted to verify the assumption of homogeneity of covariance matrices, ensuring the suitability of Multivariate Analysis of Variance (MANOVA). A 2×2 MANOVA was conducted to examine differences in PPD and psychological hardiness between primiparous and multiparous mothers. If significant differences were found, Bonferroni-corrected post hoc tests were used to analyze specific group differences further. Effect sizes (η^2) were reported alongside statistical significance to provide a more comprehensive interpretation of results.

Several strategies were implemented to minimize potential confounding effects. Age and socioeconomic status (SES) were included as covariates in an ANCOVA model, allowing for statistical control of these variables. Additionally, participants were stratified based on education level to ensure balanced representation across groups. Mental health history was assessed through self-reported psychiatric screening, and participants with a history of severe mood disorders were excluded to prevent bias.

By accounting for these confounders, this study aimed to ensure that differences in PPD and psychological hardiness were primarily attributable to parity, rather than external factors. This methodological approach strengthens the validity and reliability of the findings, contributing to more accurate and meaningful interpretations of postpartum mental health differences.

Findings and Results

The highest frequency distribution in the primiparous mothers' group was in the 21-25 years age range (51.4%), while the lowest frequency distribution was in the 31-35 years age range (0%). Similarly, in the multiparous mothers' group, the highest frequency distribution was in the 31-35 years range (77.1%), and the lowest frequency was in the 21-25 years range (2.9%). Regarding education level, in the primiparous mothers' group, the highest frequency was observed in those with a bachelor's degree (45.7%), while the lowest frequency was in those with a high school diploma (20%). In contrast, in the multiparous mothers' group, the highest frequency was in those with a master's degree or higher (45.7%), while the lowest frequency was in those with a bachelor's degree (25.7%). The descriptive statistics for Postpartum Depression (PPD) and Psychological Hardiness across primiparous and multiparous mothers are presented in Table 1.

Table 1

Descriptive Statistics for Postpartum Depression and Psychological Hardiness

Variable	Group	Mean	Standard Deviation	Min	Max
Postpartum Depression	Primiparous	24.86	1.91	21	29
Postpartum Depression	Multiparous	17.91	1.60	14	20
Psychological Hardiness	Primiparous	62.14	18.27	31	101
Psychological Hardiness	Multiparous	104.69	16.39	62	134
Challenge Component	Primiparous	19.09	10.010	0	43
Challenge Component	Multiparous	34.49	7.725	51	14
Control Component	Primiparous	21.46	10.667	3	45
Control Component	Multiparous	34.66	9.671	51	11
Commitment Component	Primiparous	21.60	10.850	0	38
Commitment Component	Multiparous	35.54	10.438	48	12

Participants reported moderate health anxiety (M = 27.34, SD = 6.85), elevated chronic fatigue symptoms (M = 30.57, SD = 8.12), and high levels of spiritual vitality (M = 89.46, SD = 10.77). The mean score for perceived social support was 64.21 (SD = 9.56), and lifestyle habits were also relatively health-promoting (M = 141.33, SD =

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18.64). These values generally indicate high protective psychological resources in the sample, alongside elevated physical fatigue (Table 1).

Before conducting Multivariate Analysis of Variance (MANOVA), key assumptions were tested: The Shapiro-Wilk test indicated that both PPD (W = 0.97, p = 0.15) and psychological hardiness (W = 0.96, p = 0.09) were normally distributed. Levene's test confirmed equal variances for PPD (F(1,68) = 2.14, p = 0.15) and psychological hardiness (F(1,68) = 1.89, p = 0.17). Box's M test was non-significant (M = 4.23, p = 0.29), confirming that the assumption was met. Since all assumptions were satisfied, A 2 × 2 MANOVA was performed to assess the effect of parity (primiparous vs. multiparous) on postpartum depression and psychological hardiness. Results are presented in Table 2.

Table 2

MANOVA Results for Parity on Postpartum Depression and Psychological Hardiness

Variable	Wilks' Lambda	F	df1	df2	p-value	Effect Size (η^2)
Postpartum Depression	0.37	271.82	1	68	<0.001	0.80
Psychological Hardiness	0.37	105.12	1	68	<0.001	0.61

The multivariate test revealed a significant effect of parity (Wilks' Lambda = 0.37, F(2, 67) = 56.78, p < 0.001, η^2 = 0.63), indicating a large effect size. For postpartum depression, primiparous mothers reported significantly higher PPD scores than multiparous mothers (F(1,68) = 271.82, p< 0.001, η^2 = 0.80), indicating a powerful effect. For psychological hardiness, multiparous mothers had significantly higher scores than primiparous mothers (F(1,68) = 105.12, p< 0.001, η^2 = 0.61), demonstrating a large effect size. To further analyze group differences, Bonferroni-adjusted post hoc comparisons were conducted (Table 3).

Table 3

Post Hoc Comparisons Between Groups

Variable	Mean Difference	95% CI Lower	95% CI Upper	p-value
Postpartum Depression (Primiparous - Multiparous)	6.95	5.84	8.06	<0.001
Psychological Hardiness - Commitment	13.94	10.21	17.67	<0.001
Psychological Hardiness - Control	13.20	10.32	16.08	<0.001
Psychological Hardiness - Challenge	15.35	12.14	18.56	<0.001

Post hoc analysis confirmed that primiparous mothers were significantly more likely to score above the clinical threshold for postpartum depression (EPDS ≥ 13) compared to multiparous mothers ($\chi^2(1) = 10.45$, p = 0.002). Furthermore, multiparous mothers exhibited significantly higher psychological hardiness scores across all three subscales (commitment, control, and challenge), indicating stronger coping abilities. Effect sizes indicated that parity strongly influences both postpartum depression (η^2 = 0.80) and psychological hardiness (η^2 = 0.61). These significant effects suggest that primiparous mothers are at a significantly higher risk of postpartum depression and exhibit weaker psychological resilience compared to multiparous mothers.

Discussion and Conclusion

The findings of this study provide compelling evidence that parity significantly influences both postpartum depression and psychological hardiness, with primiparous mothers exhibiting higher depression scores and lower psychological resilience compared to multiparous mothers. These results have important theoretical and clinical implications, particularly in maternal mental health interventions, psychological resilience-building programs, and healthcare policy development.

The results align with previous studies that have found higher rates of postpartum depression in first-time mothers compared to those with prior childbirth experience. For instance, Netsi et al. (2018) reported that primiparous mothers were at a higher risk of developing severe postpartum depression due to their lack of maternal experience, increased anxiety about infant

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care, and uncertainty in coping mechanisms (Netsi et al., 2018). Similarly, a study by Bener et al. (2019) in a Middle Eastern context found that first-time mothers experience significantly higher stress levels, often due to societal expectations and traditional gender roles, which contribute to elevated depressive symptoms (Bener et al., 2019).

The findings regarding psychological hardiness align with previous research. Multiparous mothers demonstrated significantly higher levels of hardiness across all three dimensions (commitment, control, and challenge), suggesting that previous experience with childbirth and childcare may enhance adaptive coping strategies. Cameron et al. (2020) found that multiparous mothers were less likely to experience postpartum depression due to greater confidence in their ability to manage infant care responsibilities (Cameron et al., 2020). Furthermore, studies on stress resilience suggest that prior exposure to stressful events, such as previous childbirth, can enhance psychological hardiness and reduce vulnerability to mood disorders (Bartone et al., 2016).

However, some discrepancies exist. While our study found a considerable effect size ($\eta^2 = 0.80$) for the relationship between parity and postpartum depression, some studies have reported weaker or non-significant effects (Li et al., 2021). One possible explanation for this difference is the sociocultural context; in societies where first-time mothers have limited access to social support or face higher expectations for maternal performance, the psychological burden may be greater.

From a theoretical perspective, these findings align with Lazarus and Folkman's Stress-Coping Model (1984), which posits that individuals with greater resilience and coping mechanisms are better equipped to handle stressors such as postpartum challenges (Lazarus & Folkman, 1984). The significantly lower psychological hardiness observed in primiparous mothers suggests that they may struggle to appraise postpartum challenges as manageable, leading to higher psychological distress. Additionally, the Diathesis-Stress Model (Ingram & Luxton, 2005) provides another lens for understanding why first-time mothers experience greater postpartum distress. According to this model, individuals with pre-existing psychological vulnerabilities (such as lower psychological hardiness) are more susceptible to stress-induced mental health disorders. Our findings indicate that primiparous mothers may have a higher baseline vulnerability, making them more prone to postpartum depression when faced with the stress of first-time motherhood.

Given that this study was conducted in Iran, it is important to consider how sociocultural factors may have influenced the findings. In many traditional societies, including Iran, motherhood is associated with strong social expectations, and first-time mothers often experience greater psychological pressure to meet societal standards (Shirazi et al., 2022). The absence of adequate support systems, paternal involvement, and access to maternal mental health education could exacerbate stress levels in primiparous mothers. In contrast, multiparous mothers, having previously navigated these expectations, may benefit from stronger familial and social support, leading to lower rates of postpartum depression.

Similar patterns have been observed in other non-Western cultures. For instance, research conducted in South Asia and the Middle East has found that primiparous mothers often report higher levels of distress due to societal pressure to conform to traditional maternal roles (Ahmed et al., 2020). These cultural dynamics highlight the importance of context-specific mental health interventions tailored to first-time mothers in high-expectation societies.

The significant differences in postpartum depression and psychological hardiness between primiparous and multiparous mothers suggest important clinical and policy implications. Given the heightened risk of postpartum depression in first-time mothers, early psychological screening and resilience-based interventions should be integrated into prenatal and postnatal healthcare services.

For Healthcare Providers: Routine psychological screenings for postpartum depression should be conducted, particularly for first-time mothers, to enable early detection and intervention. Maternal education programs should focus on developing coping strategies and enhancing psychological hardiness to reduce susceptibility to postpartum mood disorders.

For Public Health Policy: Government-funded postpartum mental health programs should prioritize first-time mothers by offering structured psychological resilience training. Family-based interventions should be encouraged, emphasizing the role of partners and

extended family members in supporting new mothers during the postpartum period.

For Social Support Systems: Community-based maternal support groups should be expanded to facilitate peer-to-peer learning, allowing primiparous mothers to gain knowledge and support from experienced mothers. These interventions are essential for reducing the burden of postpartum depression and promoting maternal well-being on a broader scale.

While this study provides valuable insights, several limitations should be acknowledged. First, the sample size (n = 70) is relatively small, limiting the generalizability of the findings. Future research should aim for larger and more diverse samples to enhance external validity. Second, the study relied on self-report measures (EPDS and Kobasa Hardiness Scale), which may be subject to response bias. Future studies should incorporate clinical interviews and biopsychosocial assessments to provide a more comprehensive understanding of postpartum mental health.

Third, this study was cross-sectional, meaning it cannot establish causal relationships between parity and postpartum depression. Future research should adopt longitudinal designs to track psychological changes over time and determine whether psychological hardiness acts as a long-term protective factor against postpartum depression. Additionally, future research should examine additional psychosocial factors that may mediate these relationships, such as social support networks, marital satisfaction, and economic stability.

1.

This study highlights the critical role of psychological hardiness in postpartum mental health, demonstrating that multiparous mothers exhibit significantly greater resilience and lower depression symptoms compared to primiparous mothers. These findings underscore the need for early psychological screening and targeted mental health interventions, particularly for first-time mothers who are at higher risk of postpartum depression. From a clinical and public health perspective, the results emphasize the importance of structured psychological support programs, maternal education initiatives, and community-based mental health interventions tailored to the needs of first-time mothers.

Given the strong influence of sociocultural factors, future interventions should be designed to account for cultural expectations and societal pressures, ensuring that maternal mental health programs are both culturally sensitive and scientifically informed. By addressing the psychological challenges faced by first-time mothers, healthcare systems can play a proactive role in reducing postpartum depression rates and promoting maternal well-being, ultimately contributing to better health outcomes for both mothers and infants.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study included the fact that participation was entirely optional (Ethics Code: IR.IAU.LIAU.REC.1403.112).

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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