

# Mother-Father Differences in Postnatal Psychological Distress and Its Determinants in Iran

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## Abstract

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**AIM:** The aim of this study was to investigate the mother-father differences in Postnatal Psychological Distress (PPD) and its determinants among the parents with 8-weeks old children.

**MATERIALS AND METHODS:** In this cross-sectional study, applying simple random sampling, 306 postnatal parents with an 8-weeks old infant in Saqqez County, Iran, were invited to answer the General Health Questionnaire-28 (GHQ-28) items through the telephone interview. Fifty-eight subjects declined to participate in the study (Response Rate = 81.04%). The data were analysed using the SPSS Statistics v. 21.

**RESULTS:** About 16.9% of all the parents had PPD. The difference in the prevalence of PPD in three dimensions between the two groups were statistically significant ( $p < 0.01$ ): social dysfunction (25.8% for fathers vs. 5.6% for mothers), somatic disorders (21% for fathers vs. 7.3% for mothers), and anxiety (21% for fathers vs. 6.5% for mothers). The mode of delivery of the mothers and the level of education, the number of children, monthly income, and being consent with pregnancy among the fathers were significant predictors for PPD.

**CONCLUSION:** The level of PPD was more prevalent among the new fathers compared to the new mothers. Among the fathers, but not the mothers, socioeconomic characteristics were contributed to PPD. Considering the differences in risk factors for maternal and paternal PPD, our findings may help family health care providers and policymakers in designing gender-specific intervention programs and diagnosis tools aimed at PPD prevention among new parents.

## Introduction

Based on the Fourth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), maternal PPD is the onset of a major depressive episode occurring within the first month of delivery [1]. The depressive episodes may include marked loss of interest in virtually all activities, fatigue or loss of energy, depressed or sad mood, diminished ability to think or concentrate, psychomotor agitation or retardation, significant weight loss or gain, feelings of worthlessness or guilt, insomnia or hypersomnia, and recurrent thoughts of death. The diagnosis of a

mother with a major depressive episode requires presenting five of these symptoms for two weeks, and at least one of the symptoms is either depressed mood or sadness or a remarkable decreased pleasure or interest in all or almost all activities [1].

Kim and Swain [2] in a review study categorized the risk factors of PPD in three domains including biological risk factors (such as low level of testosterone, estrogen, cortisol and prolactin), ecological risk factors (such as change in lifestyle, difficulties in developing attachment with infant and changing in marital relationship) and lack of prevention and intervention programs to support the parents in transition to parenthood during the

postpartum period. Therefore, the post-partum period can be a high-risk time for the onset of severe mental illness among mothers [3]. Post-partum depression is one of the most common complications of childbirth among new mothers [4], with the prevalence rate of 12 to 35% [5-8]. On the other hand, among new fathers, postnatal negative somatic and psychological symptoms have also been reported in previous studies [9, 10].

Paternal postnatal depression among new fathers may be considered as a familial health issue. Edoaka et al., in a study on the healthcare costs of postnatal depression, found the paternal post-partum depression to be associated with increased community care costs such as primary care, psychologist contacts, and more outpatient hospital services utilisation [11]. Paternal postnatal depression has negative impacts on family health including the care of children [12]. It may, also, increase the level of stress and tension in the family and result in behavioural and emotional disorders including hyperactivity, depression, anxiety and delayed language development among children [13, 14]. Previous studies have shown that fathers with a good level of psychological well-being can have a protective effect against the maternal depression and its side effects on the child [15, 16]. Moreover, children with two depressed parents are at an elevated risk for social, psychological and cognitive deficits [17, 18].

Previous studies have shown that the postnatal depression among new fathers is prevalent [19]. The rate of diagnosed anxiety or depressive disorders during postnatal period among new fathers has been estimated to be around 2–5% [20, 21]. Goodman reported a variant incidence rate (1.2% to 25.5%) for paternal postnatal depression among different communities [10]. Recently, public awareness about the psychological well-being of the new fathers during the postnatal period has been increased. However, this issue has not well been examined, to date [12]. Despite the reports in the literature on the associations between paternal psychological well-being and the increasing rate of post-partum depression among new mothers [10, 12, 22], the studies investigating the mother-father differences in Postnatal Psychological Distress (PPD) and its determinants are few.

The aim of this study was to investigate the mother-father differences in PPD and its determinants among the parents with 8-weeks old children in Saqqez County, Iran. The following questions guided the study: (1) what is the prevalence of PPD among the new parents? (2) What are the father-mother differences in the domains of PPD among the new parents? (3) Are the determinants of PPD and its domains are different between the new mothers and fathers?

## Material and Methods

### *Study Design and Participants*

A cross-sectional study was conducted on 248 postnatal parents with an 8-weeks old infant in Saqqez County, Iran, from July to September 2015. The couples were recruited from the maternity ward of the Saqqez Imam Khomeini Hospital.

The sample size was determined considering the proportion of postpartum depression among the new mothers (20%-40%) [23] and fathers (1.2- 25.5%) [10]. Given a 95% of confidence level and the power of 80%, in two-tailed tests using G-Power 3.1.2 software, the sample size was calculated to be, at least, 306 subjects. From the total number of 306 parents selected through simple random sampling, 58 subjects declined to participate in the study (Response Rate = 81.04%). Thus, 248 parents (124 mothers and 124 fathers) included in the study and constituted the sample for the data analyses.

Those parents with a healthy 8-weeks old infant, no severe cognitive impairment (according to the participant's health records in the maternity centres) and living in urban areas (to have home phone number) were included in the study. Additional eligibility criteria included being able to be interviewed through telephone (with no hearing impairment), being consent to participate in the study, and not too busy to join the telephone interview.

The phone number of the home of respondents was retrieved from the records in the maternity ward-where the delivery took place. Eight weeks after the birth of their child, the parents were called by the head of maternity ward and invited to participate in the study and all signed a consent form. After the invitation, all the parents were called by telephone at two different times (morning for mothers and evening for fathers), and during the telephone contacts, they were interviewed about 28 items of the General Health Questionnaire-28 (GHQ-28). Therefore, all data including socio-demographic and psychological wellbeing status were gathered by telephone interview. This study was approved by the Ethical Committee of Tabriz University of Medical Sciences.

### *Measures*

A two-section questionnaire was used to collect data. The first section was related to the demographic characteristics of the respondents including age, occupation (employed/unemployed), level of education (illiterate, elementary, high school, diploma, university), number of children (1, 2, 3, more than 3), level of monthly income (low, moderate, high), type of delivery (Cesarean Section/ Natural Vaginal Delivery) and being consent with pregnancy (Yes/No).

The second part was the Iranian version of General Health Questionnaire (GHQ-28) [24] used to assess the psychological well-being among the parents. This instrument, as one of the most widely used questionnaires to measure psychological distress in medical settings, was developed as a screening tool to detect psychiatric disorders and emotional distress among different populations. As several previous studies have applied the different versions of GHQ-28 in studies related to perinatal psychological distress [25-27], we also chose to use it for measuring postnatal psychological distress among the parents in the present study. The GHQ-28 encompasses four mental health dimensions: somatic symptoms, anxiety, social dysfunction, and depression [28]. Each dimension consists of 7 items. In the current study, the questionnaire was scored according to the Likert-type scaling (0, 1, 2, and 3) and the cut-off point = 23 was considered during data analysis. Based on this scoring, the total score ranges from 0 to 84, in which the higher score indicates, the more symptoms of psychological distress. In a previous study, the Persian version of GHQ-28 with the cut-off score of 23 showed sensitivity, specificity and overall misclassification rate of 70.5%, 92.3% and 12.3%, respectively [29]. The participants with the GHQ-28 score less than 23 were classified as the group with low psychological distress and the participants with the GHQ-28 score more than 23 were classified as the group with high psychological distress.

### Data analysis

The data were expressed as number and percentage for qualitative variables. The differences between the two sets of data were evaluated using Chi-square test. After splitting the data by gender, simple linear regression analysis was conducted to examine the demographic characteristics as independent variables and the psychological distress and its domains as dependent variables. The data were analysed using the statistical software package IBM SPSS Statistics v. 21. P-values less than 0.05 were considered as statistically significant.

## Results

Table 1 shows the distribution of PPD among the respondents based on the demographic variables. In total, 26 (21%) fathers and 16 (12.9%) mothers had GHQ > 23, but there was no statistically significant difference between the two groups. More than two-thirds of the participants were less than 39 years old (89.5%). The most of the parents with psychological distress were older than 39 years (GHQ>23). Forty-eight percent of the parents had a primary level of

education, who, mostly, had PPD ( $p = 0.038$ ). More than two-thirds (87.5%) of the parents had a maximum of two children. Significant differences were found in PPD of the parents by their level of education ( $p = 0.036$ ) and their number of children ( $p = 0.036$ ).

**Table 1: Psychological distress among the parents by their demographic characteristics**

Variable	Low Psychological Distress	High Psychological Distress	Total	P-value
	No. (%)	No. (%)		
Parent				
Father	98 (79%)	26 (21%)	124 (50%)	0.127
Mother	108 (87.1%)	16 (12.9%)	124 (50%)	
Age				
18-28	88 (83%)	18 (17%)	106 (42.7%)	0.649
29-39	98 (84.5%)	18 (15.5%)	116 (46.8%)	
Older than 39	20 (76.9%)	6 (23.1%)	26 (10.5%)	
Job				
Employed	98 (47.6%)	25 (59.5%)	123 (49.6%)	0.178
Unemployed	108 (52.4%)	17 (40.5%)	125 (50.4%)	
Education level				
Illiterate	18 (8.7%)	5 (11.9%)	23 (9.3%)	0.038*
Elementary	94 (45.6%)	25 (59.5%)	119 (48%)	
High school	26 (12.6%)	8 (19%)	34 (13.7%)	
Diploma	48 (32.3%)	4 (9.5%)	52 (21%)	
University	20 (9.7%)	---	20 (8.1%)	
Number of Children				
1	93 (45.1%)	17 (40.5%)	110 (44.4%)	0.036*
2	91 (44.2%)	16 (38.1%)	107 (43.1%)	
3	19 (9.2%)	5 (11.9%)	24 (9.7%)	
More than 3	3 (1.5%)	4 (9.5%)	7 (2.8%)	
Monthly Income				
Low	63 (30.6%)	17 (40.5%)	80 (32.3%)	0.277
Moderate	143 (69.4%)	25 (59.5%)	168 (67.7%)	
High	-	-	-	
Delivery type				
CS	96 (46.6%)	14 (33.3%)	110 (44.4%)	0.128
NVD*	110 (53.4%)	28 (66.8%)	138 (56.6%)	
Being Consent with Pregnancy				
Yes	175 (85%)	35 (83.3%)	210 (84.7%)	0.817
NO	31 (15%)	7 (16.7%)	38 (15.3%)	

\* GHQ<23; \*\* GHQ>23; †CS: Cesarean Section; ‡NVD: Normal Vaginal Delivery.

Table 2 shows the father-mother differences in PPD and its four dimensions between the two groups of parents. About 16.9% of all the parents had PPD. The difference in the prevalence of PPD in three dimensions between the two groups were, statistically, significant ( $p < 0.01$ ): social dysfunction (25.8% for fathers vs. 6.5% for mothers), somatic disorders (21% for fathers vs. 7.3% for mothers), and anxiety (21% for fathers vs. 6.5% for mothers).

**Table 2: Father-mother differences in psychological distress and its dimensions among the parents**

Variables	Fathers	Mothers	Total	P-value
	No. (%)	No. (%)		
Somatic Disorder				
Yes	26 (21%)	9 (7.3%)	35 (14.1%)	0.003
No	98 (79%)	115 (92.7%)	213 (85.9%)	
Anxiety				
Yes	26 (21%)	8 (6.5%)	34 (13.7%)	0.001
No	98 (79%)	116 (93.5%)	214 (86.3%)	
Social dysfunction				
Yes	32 (25.8%)	8 (6.5%)	40 (16.1%)	0.000
No	92 (74.2%)	116 (93.5%)	208 (83.9%)	
Depression				
Yes	14 (11.3%)	16 (12.9%)	30 (12.1%)	0.846
No	110 (88.7%)	108 (87.1%)	218 (87.9%)	
Psychological distress				
Yes	26 (21%)	16 (12.9%)	42 (16.9%)	0.127
No	98 (79%)	108 (87.1%)	206 (83.1%)	

Table 3 shows demographic variables as predictors for PPD and its dimensions among the parents. Adjusted linear regression showed that the mode of delivery among the new mothers predicted

8% of somatic disorders, 5% of anxiety/insomnia, 2% of severe depression and 12% of the total PPD. On the other hand, the level education, the number children and monthly income predicted 37% of anxiety/insomnia among the new fathers. Moreover, the level of education and monthly income predicted 6% of social dysfunction. Again, among the fathers, the level of education and being consent with pregnancy predicted 7% of severe depression, and, also, the level of education and the number of children predicted 18% of total PPD.

**Table 3: Differences in predictors of psychological distress and its dimensions among the parents**

Dependent variables	Parents	Independent variables	B	P-value	95% CI	Adjusted R <sup>2</sup>	
Somatic symptoms	Fathers		----	----	----	----	
	Mothers	Mode of Delivery	-1.27	0.002	-2.05 to -0.49	0.08	
Anxiety/insomnia	Fathers	Education level	-0.96	0.001	-1.26 to -0.66	0.37	
		Children number	0.79	0.01	0.18 to 1.4		
		Income status	-1.11	0.003	-1.83 to -0.39		
Social dysfunction	Mothers	Mode of Delivery	-1.09	0.01	-1.92 to -0.27	0.05	
		Education level	0.40	0.047	0.53 to 0.80		
		Income status	0.97	0.049	0.41 to 1.93		
Severe depression	Fathers	Education level	-0.20	0.046	-3.99 to -0.003	0.07	
		Being Consent with Pregnancy	-0.80	0.015	-0.16 to -1.44		
		Mode of Delivery	-0.91	0.004	-1.53 to -0.300		
Psychological distress	Mothers	Mode of Delivery	-0.91	0.004	-1.53 to -0.300	0.02	
		Fathers	Education level	-0.787	0.001		-1.22 to -0.34
			Number of children	1.46	0.002		0.55 to 2.36
	Mothers	Mode of Delivery	-3.69	0.001	-5.31 to -2.07	0.12	

## Discussion

The purpose of this study was to investigate the father-mother differences in PPD and its determinants among Iranian parents with 8-weeks old children. Somatic disorders, anxiety and social dysfunction, were more prevalent among the new fathers, compared to the new mothers. Among the mothers, the mode of delivery was contributed to psychological distress and all its dimensions, except for social dysfunction. In contrast, among the fathers, the level of education was associated with PPD and all its dimensions, except for somatic symptoms. Moreover, among the fathers, but not mothers, the number of children and monthly income predicted some domains of psychological distress. Being consent with pregnancy was, also, contributed to severe depression among the new fathers.

The findings of the present study showed that PPD (GHQ-28 score  $\geq 23$ ) was more prevalent among the new fathers (21%), compared to the new mothers, which was higher than those reported (2.1% to 12.4%) in the previous studies [14, 21, 30, 31]. In contrast, a frequency of 12.9% was found for PPD among the new mothers who were similar to those reported in previous studies (3.2% to 27.5%) [27, 32]. These different frequencies found in literature may be due to

the different times of conducting the studies after delivery, the different instruments (or different cut-off points) utilised, and different cultural and ethnic groups explored in the different studies. In Japan, the prevalence of PPD among mothers four months after delivery was 7.7% [27]. In Italy, 6 to 8 weeks after delivery, the prevalence was 13% [26], and in England, this amount, 3–6 months after that delivery, was 23.46% [32]. Also, postpartum depression among the new fathers in a US community-based sample was 4 to 25% [33] and in a population-based longitudinal study in Bristol was 1.2 to 11.9% [14]. In agreement with those reported in a previous study [34], the new fathers may be faced with PPD as a result of their unpreparedness for the speed changes taking place in their family life and, also, their unawareness from the range and depth of the demands they will face. Another reason may be due to difficulties in playing the paternal role, as a new role is being added to the other routine roles a father may have in his daily life. For instance, fathers in Iran have the least contact with the health system during the pregnancy period of their wives, when the mothers are provided with prenatal health care. This may prepare the mothers, but not the fathers, for gradually adopting the parental role. Consequently, after childbirth, fathers are come across with an unknown new role resulting in a level of psychological distress.

In the present study, social dysfunction, somatic disorders and anxiety were more prevalent among the new fathers in comparison with the new mothers. In other words, eight weeks after delivery, fathers were more nervous, worried, helpless, anxious, and less energetic and self-confident in proportion to the mothers. These findings are in line with those reported by Matthey et al. [20]. Similarly, Morse et al., in a study on first-time parenthood found that the predictors of distress among the new fathers was low emotional support from partner, high negative affect, low dyadic adjustment, as well as high gender role stress, resulted from fears of performance failure [31].

The findings of the present study along with those reported, previously, showed remarkable differences in PPD between the new fathers and the new mothers. This difference manifests the different needs of fathers from those of mothers which urge the need for different studies with, probably, different methodologies to detect and measure the differences [35]. Separate studies with different approaches will help in designing different interventional programs with different strategies for them. For example, qualitative studies on how different the new fathers experience postnatal parenthood from the new mothers and why such differences may exist may be helpful in providing a more diverse findings for better evidence-based practice.

In the present study, having a lower level of education and having three children and more were

associated with PPD among the new fathers. Similarly, Deater-Deckard et al., also, found that lower level of educational qualifications and older age were associated with higher levels of depressive symptoms among the fathers after child birth [36]. Similar associations have been reported in several previous studies [6, 25, 37]. As it can be expected, with an increase in the number of children for a less-educated father, he may be confronted with more complex issues which may be difficult to manage due to a low level of education. Such situations may result in a higher risk for PPD.

The findings showed that the mode of cesarian section (CS) delivery among the mothers was associated with the higher rates of somatic symptoms, anxiety/insomnia, and severe depression, as well. This result is in line with those reported by Borders, who noted that mothers with CS after seven weeks had significantly worse levels of physical functioning, mental health, pain, social functioning, and daily activities [38, 39]. The mothers with CS experience more depression and PPD by 3.58 times compared to the mothers with Normal Vaginal Delivery (NVD) [34]. As a result, women with CS may have more long-term morbidity compared to the mothers with NVD [38, 40].

In the present study, the level of education, the number of children and monthly income predicted about 37% of anxiety/insomnia among the fathers. Moreover, among the fathers, but not the mothers, the level of education and monthly income, as well as the level of education and being consent with pregnancy, were significantly associated with social dysfunction and severe depression, respectively. In consistent with these findings, up to one-third of the new fathers may experience depressive symptoms or have PPD after their baby's birth [41, 42]. The lack of job opportunities in marginal areas like Saqqez County, forces fathers to migrate to other prosperous cities to look for work which results in worries about disruptions in the family structure [43]. Moreover, in such underprivileged marginal communities with the low level of employment, giving birth to a child may cause anxiety to the new fathers who may, in turn, results in somatic disorders, insomnia and social dysfunction, as well.

The number of studies investigating the mother-father differences in PPD and its determinants is scarce. However, there were limitations to the present study. Data collection was via phone call, and it was not possible for the researchers to invite the parents for face to face interview. Moreover, as the PPD of the new parents may be associated with the health status of their new infant [44], the authors had to investigate the health status of their new born infant.

The findings of the present study may be considered as evidence for differences in PPD and its determinants between the new parents. It was

concluded that the level of PPD is more prevalent among the new fathers compared to the new mothers. Among the new fathers, but not the new mothers, socioeconomic characteristics were contributed to PPD. Family health care providers, midwives and family physicians should better understand the differences in PPD among the new parents. Considering the differences in risk factors for maternal and paternal PPD, our findings may help family health care providers and policymakers in designing gender-specific intervention programs and diagnosis tools aimed at PPD prevention among new parents. A routine screening program for PPD among the new fathers is, also, recommended.

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