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Relationship between Fathers' Depression and Perceived Social Support and Stress in Postpartum Period

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ABSTRACT

Introduction: The evidence suggests that some men experience depression after the childbirth of their wife, and this real and unknown phenomenon will adversely affect them as well as their families. Regarding the lack of understanding about the paternal depression and its complex and multifaceted etiology, the present study was done to assess the paternal postpartum depression and its relationship with perceived stress and social support components.

Methods: In this descriptive study, 205 new fathers were assessed from 6th to 12th week postpartum in seven health centers, affiliated to Shahid Beheshti University. Collected data with the Edinburgh Postnatal Depression Scale, Perceived Stress Scale, and the Perceived Social Support Scale were analyzed by descriptive statistics, correlation tests and linear regression analysis.

Results: 11.7% of the fathers scored 12 or above in the Edinburgh scale, which indicated depression symptom. The postnatal depression scores had a significant positive correlation with the perceived stress scores and a significant negative correlation with the perceived social support components scores. Perceived stress was key predictor of paternal postpartum depression. Perceived social support components cannot significantly predict the paternal postpartum depression.

Conclusion: Assessment of paternal postpartum depression and its risk factors is recommended. Healthcare providers should pay more attention to the increasing public awareness, stress management and communication skills training, and support of fathers during the postnatal period.

Introduction

In most studies, the mental health of the father in the period after the child birth (Postpartum) is ignored.[1,2] However, evidence suggests that some fathers as well as mothers in this period are at the risk of postpartum depression (PPD). It is a real clinical phenomenon, important but unknown that generally it is not recognized.[2-6] Father's depression in postpartum period is a unipolar major depressive disorder, which does not differ much from depression at other periods of his life, and its exact time and place has not been definitively determined.[2,3] Depression symptoms in men are not as significant as women and may be followed by the following behaviors and signs instead of sorrow and sadness:[1] isolation, agitation, paranoia, aggression, irritability, uncertainty, violence, anxiety, alcohol and illegal substance use, and illicit relations.[7,8] Father's PPD has a mysterious start and it is often followed by the wife's PPD,[9,10] it has a gradual progression and it is not transient or temporary.[2]

PPD in fathers is relatively common[11] and its occurrence during the first year in the

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United States, Australia and several other countries was estimated between 1.2% to 25.5%.[2] In a review study, its prevalence was 5% to 10%, in China 10.8%, and in Brazil it was reported 11.9%.[3,5,12] PPD should be seriously considered due to adverse effects on fathers, mental health of the wife, the supporting of mother and child, psychosocial development and children's behavior.[12-14] Anxiety and father's PPD in some studies was associated with an increased risk of affective and mental disorders of the father and family, marital discord and negative feelings, too much complaints, higher levels of distress and mood disorders in infants, antisocial behavior in children, convulsions, hyperactivity and behavioral problems in children, especially boys, major problems in society and increased costs.[11,12,15]

Mental health in the postpartum period is a multifaceted phenomenon.[6] Today, researchers give more attention to the role of psychosocial factors in postpartum depression of the mothers instead of hormonal factors. Similarly, these factors along with factors unique to the genus, can affect men's mental health.[2,16]

Studies investigating the risk factors for father's PPD are contradictory. Some possible causes are reported as: mother's PPD, unwanted pregnancy, improper relationship with the spouse, unemployment,[13] birth of a daughter,[3] older age of the couples, fathers history of depression, marital dissatisfaction,[12] having other children, maternal anxiety, low education, wife's depression during pregnancy and postpartum,[11,17] lack of male role models,[18] and low self-esteem.[3,19]

Perceived stress in some studies is considered to be related to the postpartum depression of the father.[3,19] Stress is pressures originated from the relationship between the individual and the environment which is beyond the biological, psychological, and physical capabilities of the individual, and causes adverse health effects.[20] Lazarus believes that an individual is under stress when he/she him/herself feels the event or incident is important.[21] Arrival of a new baby to the family, though a desirable event, may cause stress.[22] It make the parents vulnerable to depression by causing parental dysfunction and induce adverse effects on their mental health.[23] In Mao et al., study perceived stress and lack of social support were predictors of depression in couples who were in the 6 to 8 weeks after the delivery.[24]

The concept of perceived social support views the support from the individual's cognitive assessment of the environment and its relation with others.[25] Lack of social support during stressful life events, especially for those in need of protection, can be profoundly depressing. It was observed that social support effectively decreased psychological distress such as depression during stressful periods, and was associated with several advantages for physical health.[26] Although most studies have determined social support as an etiological factor for postpartum depression in fathers,[3,23,24,27] Escriba-Aguir and Artazcoz in a study showed that there was no significant relationship between the postpartum depression of the father and social support.[28]

The information about father's PPD, incidences, risk factors and effects are inadequate. More research among families with different ethnic, cultural, social, and economic backgrounds to raise awareness in this area and develop diagnostic tools and treatment programs are mandated by researchers.[2,18,29,30] Given the importance of the role and the father's mental health, multifactorial and the reported prevalence of PPD in some foreign studies, the lack of research on the role of psychosocial factors in the incidence of Iranian fathers' PPD, the present study aimed to examine father's depression, explain its relationship with social support and perceived stress, in 6 to 12 weeks of postpartum, of fathers in urban health centers of Shahid Beheshti University of Medical Sciences in Tehran, Iran.

Materials and methods

This was a descriptive study in which the target population consisted of all the eligible fathers with 6 to 12 weeks after the birth of their child, with their spouse, referred to health centers affiliated to Shahid Beheshti University of Medical Sciences (Tehran, Iran), from December 2012 to April 2013. Inclusive criteria were as the follows: Iranian, living in Tehran, 6 to 12 weeks past from child birth, at least primary level of education, living with spouse, having a healthy child without abnormality or hospital admission, no history of mental illness, depression or chronic medical conditions that cause symptoms of depression, no history of drug use or psychotropic drugs, non-occurrence of an event affecting mood disorders during the previous 6 months.

Cluster sampling was used in this study. Out of the 72 health centers located in the regions of West, North West, East and North of Tehran, about 10% of the centers which made a total of 7 centers were randomly selected. Then the subjects from each center among the qualified individuals were continuously chosen. To calculate sample size, a pilot study on 30 eligible fathers at two health centers in Tehran was initially performed. Then, using the ratio formula and p = 0.07 obtained from the study, and considering q = 0.93, d = 0.05, Z = 1.96, design effect = 2, the sample size was calculated 200 members. The proposed design effect for cluster studies in Iran is approximately 1.5-2.[31] Finally, to increase the reliability of the study and the possibility of sample loss, sampling was continued with 230 subjects. However, after collecting the questionnaires and eliminating incomplete questionnaires, a total of 205 fathers were analyzed. The researcher met the fathers and gave a complete description of the study, its objectives, and cited the confidentiality of information. If they were eligible and willing to participate in the study, a written consent has been taken from them, and questionnaires have been provided for them. They were asked to answer and submit the questions with no effect of their wives. Sampling was performed on non-holiday week days, during office hours, and for 4.5 months.

To assess postpartum depression, stress and perceived social support, the self-report questionnaires of Edinburgh Postnatal Depression Scale (EPDS), Cohen's Perceived Stress Scale (PSS) and the Multidimensional Scale of Perceived Social Support (MSPSS) with demographic questionnaire were used. Edinburgh Postnatal Depression Scale has 10 items with 4 options, and scores from 0 to 3. Respondent should select the answers that felt more during the last seven days. The total sum of scores varies from 0 to 30. In different studies cut-off points for PPD screening varied from 9 to 13.[18] This validated scale that was originally developed by Cox et al. was designed to assess the English-speaking mothers with postpartum depression, and is widely used in studies related to fathers' PPD.[15] The validity of this instrument has been used in some countries for men[32-34] and its sensitivity and specificity were reported as 100% and 94.9%, respectively.[27] Australian researchers have suggested that for depression screening, it is better that the cutting scores for fathers is considered as 2 scores lower than the mothers, this is because in comparing them with the mothers, 7 out of 10 items are developed briefer which could be the reason for the lower prevalence of PPD in men.[33] Internal consistency (Cronbach's alpha coefficient) was 0.81, and the reliability was determined by the split-half method as 0.78 which are accepted.[3,33] In the present study, the validity of its content was approved by 8 respected members of Tabriz University of Medical Sciences, and its reliability was assessed by internal consistency assessment and the obtained Cronbach's alpha was 0.79. According to Massoudi's study in which Edinburgh scale with cut-off point 12 had high sensitivity and specificity for screening father's depression,[27]

in this study, obtaining score 12 or higher by the father was considered as PPD, But it does not necessarily mean a definite clinical diagnosis of postpartum depression.

Cohen Perceived Stress Scale is a standardized and validated tool for measuring stress during the past month and designed to measure the degree to which they are assessed in stressful life situations, and is applicable to various populations in the shortest time.[35] First edition of this tool had 4 questions and the second and third editions had 10 and 14 questions, respectively. The answers have a general nature, which are clear from any specific content that are features of a specific subtype, and have 5 options graded from "never" to "often".[36] In this study, the edition with 10 questions was used. The 10 item PSS had a good reliability and validity and its consistency coefficient was reported as α=0.75.[3] Questions are scored from 0 to 4. Questions 4, 5, 7 and 8 were reverse. Total scores can be from 0 to 40, and the sum of higher score indicates greater perceived stress. PSS tool is not a diagnostic tool and it does not have a cut-off point.[37] In the present study, Cronbach's alpha for the 10 items questionnaire was 0.83, which was acceptable.

Multidimensional Scale of Perceived Social Support consisted of 12 items to measure the three sources of perceived support from family, friends and other special persons. Each item in 5-item Likert scale is placed in score from 1 "completely disagree" to 5 "strongly agree".[38] The score range of this standardized questionnaire was from 12 to 60. And higher scores indicated greater received social support. Questions 3, 4, 8, and 11 were related to the 'family' source, questions 6, 7, 9, and 12 were related to the 'friends' source, and questions 1, 2, 5, and 10 were related to the 'special person'. Salimi et al. by determining the validity of this instrument, reported the Cronbach's alpha for the three dimensions of perceived social support from family, friends and other special persons as 0.86, 0.86, and 0.82, respectively.[39] In the present study, to determine the reliability of the overall scale and perceived social support from family, friends and special person; Cronbach's alpha was calculated 0.85, 0.80, 0.92, and 0.82 ,respectively, which were in a good range. In this study, the Persian versions of the above self-report scales were used.

At the end, the data obtained from the study were analyzed using descriptive statistics (mean, standard deviation or SD, frequency) and inferential statistics (correlation matrix, chi-square test and multiple linear regression), and SPSS for Windows 13.0 (SPSS, Inc., Chicago, IL, USA). In this study, the father's postpartum depression was considered as the dependent variable and the relation of other variables with it was tested.

Results

After collecting the questionnaires and eliminating incomplete questionnaires, a total of 205 questionnaires were selected and analyzed. In this study, the majority of fathers (58.8%) were in the age group of 31-40 years. Their mean age was 32.63 (5.00) with minimum and maximum of 20 and 50 years. The majority of them had university education (39.5%) and had private jobs (43.4%). Other demographic data of the participants are presented in table 1.

The mean and standard deviation of postpartum depression in fathers was 5.77 (4.50) and the frequency with considering score of 12 or higher was 11.7%. Mean and standard deviation (SD) total score of perceived social support was 45.36 (8.06). The majority of fathers (69.8%) had moderate social support, 18% had high social support, and 12.2% had low social support. In total the amount of perceived social support from their families (mean 4.04) was higher than other special persons (3.93) and friends (3.38). The mean and SD of the total score of perceived stress was calculated as 12.21

(6.55). Most fathers (68.8%) had moderate stress, 17.6% had low stress, and 13.7% had experienced high levels of stress. In order to investigate the relationship between father's postpartum depression and perceived stress variables and different aspects of perceived social support, correlation matrix was formed (Table 2).

Results from the correlation matrix table showed the existence of a significant correlation between the scores of postpartum depression and perceived stress in the father ($P < 0.001$). Therefore, with the increase in the score of perceived stress, the father's depression score also increased. Furthermore, a significant negative correlation between scores of the father's postpartum depression and the various dimensions of social support, meaning perceived social support from family (P=0.001), perceived social support from friends (P=0.011) and perceived social support by a special person (P=0.004) existed. It is worth noting that between father's perceived stress scores and perceived social support components, significant negative correlation was observed ($P < 0.01$).

Further analysis of the data in order to examine the relationship more closely and to determine the proportion of each of the variables of perceived stress and the components of perceived social support, in explaining the variance in father's postpartum depression, multiple linear regression analysis was performed and the results are presented in tables 3 and 4. The contents in table 3 showed that the independent variables entered into the regression equation, based on the coefficient of determination R^2, can significantly explain and predict a total of 44% of the change in the father's depression ($P<0.001$). This means that 44% of the changes in the dependent variable (depression) were interpreted simultaneously by the independent variables. Table 4 is designed to explore the magnitude and direction of each independent variable in explaining and predicting depression. It indicates that the perceived stress variable with the standard impact factor beta (0.646) has a strong statistical power, is direct and significant to predict the father's postpartum depression ($P<0.001$). It means that the father's depression is merely predicted by his perceived stress. And none of the aspects of perceived social support are able to significantly predict depression in fathers. So the standard regression equation can be written as below:

Levels of father's postpartum depression = (rate of perceived stress) × (standardized beta coefficient of perceived stress).

Among the demographic variables of the father, the chi-square test showed a statistical significant relationship between the family subsistence status, and paternal postpartum depression ($P<0.001$). Among other characteristics of the father and postpartum depression, there was no significant relationship found.

Discussion

The present study despite investigating the relationship between perceived stress and perceived social support with father's PPD also described the rate of postpartum depression. Accordingly, the frequency of depression in fathers was 11.7%, which is within the range estimated by Goodman.[2] And was higher than some countries such as Sweden (6.3%) and Spain (3.4%), and lower than Japan (14.3%). The present study took place in winter to early spring, but cited studies in Sweden and Spain lasted over a year and the study conducted in Japan was during spring and summer.[27,28,40]

Overall, the variation in incidences reported in different studies can be due to the use of different methods, tools, cutting scores, measurements times, volume of different samples, and different cultural, social and economic attributes.[18]

In the present study, similar to Mao et al.,[24] there was a direct and significant relationship between postpartum depression and father's perceived stress scores.

Table 1. Frequency distribution of demographic characteristics of fathers participated in the study

Demographic characteristics	N (%)
Age (years) *	
20-30	71(34.8)
31-40	120 (58.8)
41-50	13(6.4)
Education	
Primary	6(2.9)
Secondary	31(15.1)
High school	14 (6.8)
Diploma	73(35.6)
University	81(39.5)
Ethnicity	
Turkish	50(24.4)
Fars	92(44.9)
Kurd	16(7.8)
Lur	26(12.7)
Gilak	13(6.3)
Others	8(3.9)
Occupation	
Unemployed	2(1)
Private	89 (43.4)
Worker	22(10.7)
Employee	72(35.1)
Other	20(9.8)
Family subsistence status*	
Easily	24(11.8)
Relatively easily	108(52.9)
Sometimes difficult	62(30.4)
Difficult	10(4.9)
Accommodation	
Private	77(37.6)
Rental	86(42)
Institutional	20(9.8)
Living in a relative's house	22(10.7)
First source of social support**	
Spouse	114(58.2)
Parents	48(24.5)
Friends	17(8.7)
Others	17(8.7)

*1 Missing data, ** 9Missing data

Table 2. Matrix of correlation coefficients between the father's postpartum depression, perceived stress and perceived social support scores

	Postpartum depression	Perceived stress	Perceived social support from family	Perceived social support from friends	Perceived social support from special person
Postpartum depression	1				
Perceived stress	0.659^{**}	1			
Perceived social support from family	-0.256^{**}	-0.317^{**}	1		
Perceived social support from friends	-0.183^{*}	-0.194^{**}	0.389^{**}	1	
Perceived social support from special Person	-0.207^{**}	-0.264^{**}	0.413^{**}	0.199^{**}	1

*P < 0.05, **P < 0.01

Table 3. Summary of multiple regression model of father's postpartum depression

Model	Sum of squares	df	Mean of squares	F	Significant level
1 Regression	1589.955	4	397.489	33.059	$P < 0.001^a$
Residual	2032.005	169	12.024		
Total	3621.960	173			

Adj.R^2 = 0.426, R = 0.663, R^2 = 0.439, a. Predictor variables: perceived stress, perceived social support from family, friends and other special persons

Table 4. Factors explaining the effect of father's postpartum depression

Predictor variables	Unstandardized coefficient B	Standard error	Standardized coefficient Beta	t	P
Perceived stress	0.443	0.042	0.646	10.443	0.001
Perceived social support from family	-0.050	0.101	-0.034	-0.491	0.624
Perceived social support from friends	-0.016	0.067	-0.015	-0.233	0.816
Perceived social support from special person	-0.004	0.083	-0.003	-0.045	0.964

It showed that the increase in the father's stress score was associated with increased rates of depression in them.

The regression analysis suggested that perceived stress as a factor effecting depression is of high importance in predicting father's PPD which was also consistent with Mao et al., study in this regard. Facing with new responsibilities at home and at work, the new infant's needs and other children, concerns about the health of wife and children, fear of worsening relations with spouse, financial concerns and work commitment, can increase father's stress with high probability.[22,41] Since the father's depression is related to stressors, thus the birth of a baby and the changes caused by it imposes stress on the father, in which may be involved in causing depression.[42]

Pearson correlation test results also indicated negative and significant relationship between various dimensions of perceived social support and postpartum depression variable. So that with decrease in scores for perceived social support from family, friends or a special someone, the father's depression score was increased. This finding was consistent with previous researches.[24,31,42] However, the results of the regression analysis showed that none of the dimensions of perceived social support are able to significantly predict postpartum depression in father. This was not consistent with Gao et al., and Mao et al., studies.[3,24] In Bielawska-Batorowicz and Kassakowska-Petrycka study, although the levels of perceived social support was lower in depressed fathers than the others, this variable was not a significant predictor of depression.[42] Although social support may reduce the risk of diseases, this relationship is not always so strong, perhaps because support is only one of the factors involved in health.[22] Unlike most studies,[19,24,27] in the study by Escriba-Aguir and Artazcoz, no statisitcal significant relationship was found between the father's postpartum depression and social support. And inadequate social support did not increase the risk of depression during the first year.[28] In general, men are less likely than women to rely on the support from others and in stressful situations they are less likely to refer to sources of social support.[4] In some cases there might be support but its type may not be in consistent with the demands created by stressful situations.[22]

It is worth mentioning that the results of this study have confirmed the negative relationship between father's stress and

perceived social support. This means that fathers with lower levels of social support, perceived higher stress. In Gao et al., study higher scores of social support were associated with lower stress levels. It is thought that social support acts as a buffer shield against stress.[3]

Another subsidiary result from this study was the relationship between the status of family subsistence with the father's PPD. In some studies,[3,42] fathers with lower income had higher scores of Edinburgh Scale. Providing financial security is one of the duties of men. After the birth of a child due to the increased financial burden on the father there is more emphasis on his role and he has fewer opportunities to perform parental duties. Due to feeling of weak performance in his professional and gender state, the risk of psychological distress will increase in him.[43] Low-income fathers, inability to pay the full costs of children, limited access to appropriate transportation, and other problems are at risk of depression.[44] Other demographic characteristics of the father were not related to father's postpartum depression. In any case, a complex combination of varied factors is involved in the onset of depression that is probably under the effect of cultural and social differences of people in different communities.

The present study also had some limitations; for example, the study was cross-sectional and was unable to determine a definitive cause and effect relationships between the variables. However, due to time constraints, much of the research was conducted in the winter and could not control the possible effect of season on the onset of mood disorders. Although this study covered West, East, North, and North-West areas of Tehran, the generalizability of the results for other parts and cities of Iran was not possible. Therefore, more extensive longitudinal studies on father's PPD with reviewing other relevant factors are recommended in order to find credible evidence of the causes of PPD in specific cultural and social environments, and then appropriate interventions can be developed and included in future planning for the prevention of this phenomenon and improving the mental health of men in the critical period after birth.

Conclusion

The relatively high prevalence of depression in fathers in this study and the role of perceived stress in predicting PPD suggest that mental health policies related to fathers should be focused on the study of PPD and reducing their stress. However, because of the relationship between father's PPD, social support, and subsistence, the role of these variables should not be ignored in their development. It is recommended that special attention should be made in addition to increasing public awareness, communication skills, father's stress management and control around the time of child birth, reviewing postpartum mood disorders, and their predisposing factors in fathers.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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