Relationship between paternal postnatal depression and its predictors factors among Iranian fathers

Zahra Yazdanpanahi
https://orcid.org/0000-0001-9050-9924

Seyedeh Tahereh, Mirmolaei
https://orcid.org/0000-0002-9630-1566

Ziba Taghizadeh*
https://orcid.org/0000-0002-3390-1601

Department Of Midwifery and Reproductive Health, School of Nursing and Midwifery affiliated to Tehran University of Medical Sciences

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ABSTRACT

Background: Paternal postnatal depression (PPND) is widely overlooked despite being the most common mental health disorder among fathers in the postpartum period, and it affects all aspects of family life, particularly the relationship with the spouse and children. **Objective:** To determine the predictor factors of PPND. **Methods:** A descriptive-analytical study was performed on 400 fathers of children aged six weeks to one-year referring to the healthcare centers. Data were collected using a demographic characteristics form and the Edinburgh Postnatal Depression Scale (EPDS). Data analysis was performed using SPSS software version 22. **Results:** The mean EPDS score was 6/54± 4.3, the mean age of the studied fathers was 35 ± 5.4, and 57.7% had experienced more than one pregnancy with their spouses. There was a significant relationship (P>0.05) between the education level and the EPDS score. According to linear regression, the most influential factors on EPDS score included satisfaction with life and general health, as well as an unwanted pregnancy amongst maternal fertility characteristics. **Conclusion:** Determining the predictor/related factors with paternal postnatal depression helped us to identify at-risk fathers promptly, to manage earlier, and to prevent the adverse effects of PPND on family health and relationship.

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Introduction

An individual cannot be considered healthy unless her or his mental health condition is acceptable, with mental health disorders being risk factors for a range of diseases. As a parameter that affects one's quality of life, mental health has a strong relationship with various variables [1,2]. A key indicator of a population's wellbeing and social progress is self-reported life satisfaction [3].

The transition to parenthood is profound, as many parents experience new responsibilities in their lifespans. Researchers have considered it to be one of the greatest reorganizations in the lifetime, changing the brains, endocrine systems, behaviors, identities, and relationships. Thus, the transition to this role may lead to anxiety and climbed the risk of postnatal depression [4,5].

Depression is the most common mental health disorder, with one of the main gaps in the health intervention programs being prenatal and postnatal depression among both women and men [5,6]. Evidence indicates that paternal postnatal depression is on the rise, with the stigma associated with the symptoms of depression among men being responsible for underreporting and the lack of seeking the necessary health services. Depressed fathers experience emotions such as fear, anger, anxiety, solitude, and despair [2,4].

According to various studies, the prevalence of PPND varies in different societies. In western countries, its prevalence is approximately 4-25% [7]. In review studies, the prevalence of PPND based on the EPDS has been documented at 9-28% [5,8].

In Iran, the rate of new fathers PND reported higher than new mothers(21 vs. 12.9%) in 8 weeks postpartum in Iran [9]. The depression of 36-60% of fathers with PPND within 8 weeks postpartum remains at six months postpartum. Among children of fathers with PPND, the risk for developing behavioral and emotional problems is twofold or more, and also adversely impacts children's growth and development during early childhood [6,10].

It is believed that PPND is multifactorial, with about 10% of fathers experiencing mental disorders including depression and anxiety that adversely affect both the individual and family. Regrettably, few psychologists have worked on the conceptualization, evaluation, and treatment of men's problems during the critical childbirth period [6,7]. Independent factors that significantly affect the incidence of PPND include having a premature newborn, having a baby with sleeping difficulties, living in a rented house, having poor economic conditions, not being supported by a partner, having marital conflict, and experiencing life dissatisfaction and sexual life dissatisfaction [8,11-13]. This disorder is also associated with the child's gender and a number of variables related to the wife's fertility history, such as the number of pregnancies, abortions, and unwanted pregnancies [2,5,14]. Numerous studies have cited the marital status relationship and life satisfaction as factors influencing marriage stability as well as the mental health of both the spouses and children [5,15,16]. In the postpartum period, some men find changes in the husband-wife relationship to be problematic; these changes include a decreased amount of time for the spouses to be together and reduced intimacy

Address for correspondence: Ziba, Taghizadeh, PhD, Toheed Street, Toheed square, Nursing and Midwifery School, Tehran, Iran, Tel: +982161054568; Fax: +982166427255; E-mail: zibataghizadeh@yahoo.com; yazdanz@sums.ac.ir

and sexual activity [5]. Furthermore, EPDS scores were significantly higher in mothers who reported their sexual relationship with their husbands to be mediocre or bad [17]. The role of the father and the health of both spouses are negatively affected by PPND; this condition also leaves destructive effects on the child from infancy through adolescence with adverse effects on the broader family and society [2,18].

Given the importance of PPND in the family and community health, it is vital that researchers around the world direct sufficient attention to this matter. In Iran, PPND has sparsely been examined, with the current study being the first to study its relationship with life satisfaction, sexual life satisfaction, general health of fathers in a year following childbirth, method of delivery satisfaction, demographic characteristics, and reproductive characteristics.

Methods

Study design

This analytical, cross-sectional study included 400 fathers. The inclusion criteria included having the Iranian nationality, having a child aged six weeks to one year [19], being literate, living with the spouse, and the recently born child being healthy without complications. The exclusion criteria included having a multiple pregnancy, a history of mental illness, depression, or chronic medical conditions that could cause depressive symptoms, a history of drug use, or experiencing a stressful event in the past six months that could lead to mental disorders (e.g., depression). These criteria were applied based on the self-reported history, with eligible individuals being asked to complete the consent form to participate in this research.

Research environment

A multi-stage sampling method was used. The 12 sampling centres were defined by randomly selecting clusters from the main health centres affiliated to the Shiraz University of Medical Sciences, Iran. The quota sampling method was used to determine the number of samples per cluster in proportion to the number of clients at the centres.

During the research, the researcher attended the selected centers, described the objectives of the study to the eligible fathers, and explained how the questionnaire was to be completed for those willing to participate. The participants under the supervision of the researcher then completed the questionnaire in order to avert response bias.

Data collection tools

The data collection tools included a demographic characteristics form that asked for fertility history and self-reported satisfaction questions. The relationship between these variables and the responses to the EPDS was examined.

The EPDS offers good validity and can be used to rapidly detect PPND. In this study, we used the EPDS questionnaire, 10 items scale to screen postnatal depression, which that first time developed by Cox in1987 [20]. After that, this scale received considerable attention and was validated in many contexts [2,21-24] and Iran [25]. The sensitivity and specificity of EPDS were reported 0.77-0.946 and 0.63-1 respectively [2,22-25]. Regarding the questionnaire's reliability, a Cronbach's alpha value of 0.80 was obtained [14,21]. Each item of EPDS is four-multiple choice, scored from zero to three, with a total score ranging between 0 and 30. The closer average Score gets to 30, the more it is associated with risk of PND. For each item, the respondents will choose the option that they had felt the mostly over the last two weeks [22].

Three questions were used to assess self-reported satisfaction including life satisfaction, sexual life satisfaction, and general health. The questions asked how the participant evaluates each of these three variables on a 5-point Likert scale from poor to very good [1,26,27]. These short items were used as they facilitated the rapid collection of subjective opinions. Satisfaction with the [27] Self-reported health (SRH) is the subjective perception of general health, comprising an important aspect of quality of life as well as physical and mental health [1]. Furthermore, SRH is accepted as a strong indicator of general health, happiness, and satisfaction [27].

The variables related to maternal fertility history included the number of pregnancies, abortions, and unwanted pregnancies, as well as the method of delivery and the history of preterm deliveries.

Data collection and analysis

Data collection was carried out from the beginning of August until the end of December 2019 in the selected healthcare clinics.; the data were entered into SPSS version 22 for data analysis. Pearson correlation, one-way variance analysis test (ANOVA), and the independent t-test were used to assess the relationship between the EPDS scores and the research variables. Linear regression was used to determine the predictive factors. A p-value of smaller than or equal to 0.05 was considered as statistically significant, with a 95% confidence interval being implemented.

Results

Data from 400 participants analysed. The Pearson correlation test did not reveal a significant relationship between EPDS score and the paternal age, age of marriage, and marriage duration. The mean and standard deviation of EPDS score was 6.54 ± 4.3, with a range of 0-22. Table 1 shows that except for the education level, other demographic characteristics had no significant relationship with the total EPDS score. Most samples had sought higher education (57.3%), with the EPDS score having a significant relationship with education level equal to or below the high school diploma. In terms of employment, 57.5% had freelance occupations; unemployed fathers had a higher mean EPDS score (9.071 ± 4.65) than those with governmental employment (6.06 ± 4.6). Most subjects (65.8%) had a moderate socioeconomic status (SES). The minimum EPDS scores (6.10 ± 4.7) were seen in fathers who had good SES, while the maximum scores (8.03 ± 5.0) were related to those with poor SES. The mean EPDS score among the 55% of fathers who had rented their place of residence was 6.79 ± 4.87, whereas those who were homeowners had a lower average score of 6.24 ± 4.57. Notably, 18% of men lived with their own family and had an EPDS of 6.45 ± 5.3, while 8.2% lived with their wife's family and had a higher score of 7.7 ± 4.93. The EPDS score was lower among those who lived independent of either family (6.4 ± 4.6).

Results from the satisfaction variable are shown in Table 2. According to the p-values obtained, there were significant relationships between the average EPDS score and satisfaction with life and sexual life, as well as general health ($p<0.001$). In addition, the mean EPDS score (8.0 ± 6.02) was higher among fathers who were dissatisfied with the sex of their child in comparison to their satisfied counterparts.

Although the questionnaire was designed in the format of five-point Likert items, very few participants answered badly and very badly or poorly and very poorly. Therefore, these two answers merged with the third answer (neither very good, nor satisfied and nor good, nor dissatisfied).

The paternal EPDS score was significantly related to the number of unwanted pregnancies, abortion, and total pregnancies ($P<0.05$). However, the number of children, type of delivery, and history of preterm delivery had no significant relationship with the paternal EPDS score. Considering that, the EPDS score of men who had more than two abortions was approximately two points higher than men who had not history of abortion (Table 3).

Table 1. Socio- demographic information Frequency and association between them and EPDS (n=400).

Variables		N (%)*	EPDS Mean ±SD	P-value
Education	≤Diploma	169	7.17± 4.99	.025**
	>Diploma	231	6.08± 4.49	
job	Self-employed	230(57.5)	6.7± 4.6	.053***
	Civil servant	156(39)	6/06± 4.6	
	Unemployed	14(4.30)	9.071± 4.65	
House	Owner	180(45.2)	6.23± 4.6	.550**
	Rented	220(55)	6.78± 4.9	
Life-with parents	No	295(73.8)	6.4 ±4.6	.260***
	Yes (Father's parent)	72(18)	6.45± 5.3	
	Yes(wife's' parent)	33(8.2)	7.7± 4.93	
Economic State	Poor	39(9.8)	8.03± 5.9	.091***
	Moderate	263(65.8)	6.5± 4.5	
	Good	98(24.6)	6.1± 4.7	

*Descriptive Statics, **: T-test,***: ANOVA

Table 2. Self-rated satisfactions Frequency and association between them and EPDS (n=400).

Characteristics		N (%)*	EPDS Mean± SD	P-value
Life satisfaction	Very satisfied	132(33)	5.17± 4.46	.<001***
	satisfied	169(42.3)	8.12± 5.2	
	Neither satisfied nor dissatisfied	99(24.7)	10.0± 6.2	
Sex life satisfaction	Very satisfied	121(30.21)	5.12± 4.31	.<001***
	satisfied	161(40.20)	6.58± 4.23	
	Neither satisfied nor dissatisfied	118(29.5)	8.07± 6.02	
General Health	Very good	119(29.8)	4.81± 4.22	.<001***
	good	200(50.00)	6.58± 4.23	
	Neither very good nor good	81(19.20)	8.98± 5.93	
Type of Delivery satisfaction	Yes	309(77.2)	6.48± 4.77	.631**
	No	91(22.8)	6.75± 4.66	

*: Descriptive Statics, **: T-test, ***: ANOVA

Table 3. Reproductive characteristics Frequency and association between them and EPDS (n=400).

Variables		N (%)*	Mean ±SD	P-value
Gravid	1	169(42.3)	6.39± 4.62	.031**
	≥1	231(57.7)	8.12± 5.91	
Number of abortion	0	296(74.00)	6.30 ±4.46	.030***
	1	84(21.00)	7.21± 5.02	
	≥2	20(5.00)	8.60± 6.66	
Type of Delivery	vaginal	86(21.50)	6.33± 5.16	.820***
	Vaginal + Episiotomy	59(14.80)	6.84± 4.37	
	caesarian	255(63.00)	6.53± 4.67	
Unwanted pregnancy	yes	62(15.50)	8.27±4.89	.002**
	No	338(84.50)	6.22±4.66	
preterm in Previous pregnancy	yes	41(10.3)	6.55±4.18	.990**
	No	359(89.7)	6.535±4.80	

*: Descriptive Statics, **: T-test,* **: ANOVA

Table 4 shows the predictive variable of PPND using stepwise linear regression test. Result shows that life satisfaction, general health, and unwanted pregnancy have inverse negative and strong relationship with total EPDS. In consideration of the beta weights, the variable of general health had the most important role in the occurrence of PPND. Considering the result, if life and general health satisfaction are constant, the rate of PPND decreases by 1.798 times if the pregnancy is desired. If the general health satisfaction and unwanted pregnancy variables are kept constant, PPND increases 1.723 times with a drop in life satisfaction. Finally, if the life satisfaction and unwanted pregnancy variables remain constant, PPND occurrence decreases 0.733 times with a reduction in general health satisfaction.

Table 4: Significant predictors' variables for PPND using Linear stepwise regression (n=400).

Model	B	SE	Beta	t	sig	95.0% CI for B	
Life satisfaction	-.733	.297	-.130	-2.465	.014	-1.317	-.148
General-Health	-1.723	.345	-.263	-4.996	.000	-2.402	-1.045
Unwanted pregnancy	-1.798	.624	-.136	-2.883	.004	-3.024	-.572

All variables entered in model. Dependent Variable was Total Edinburg postnatal Depression.

Discussion

This research is the first to study some predictor factors such as satisfaction with life, sexual life, and general health as well as demographic characteristics and maternal fertility history related to PPND in Iranian fathers. The increasing prevalence of paternal depression and the negative effects of this disorder on the whole family elucidate the importance of continuous research in this field. The determination of the factors that are associated with PPND can assist in the efficient prevention, detection, and management of this disorder, thereby averting its complications.

In terms of the demographic characteristics, only the level of education possessed a significant relationship with PPND. The mean EPDS score was higher among fathers who had lower education levels, weaker SES, or were unemployed; these findings are in line with those of two similar studies [11,28]. Conversely, those who lived in private or governmentally sponsored residencies had lower EPDS scores. Our study also indicated that EPDS scores were higher among those who were unable to live independently and were forced to live with the family of one of the spouses. These differences may be explained by economic pressures, which may hinder a positive paternal role and increase stress, anxiety, and depression[13]. Several studies have illustrated that low education level [5], poor SES [5,29] and unemployment [2,30] significantly affect the occurrence of PPND, but the results were not exactly in line. Discrepancies between the mentioned studies may be due to the different research settings, locations, sample sizes, and demographic characteristics. Given the related problems, men with weaker SES appear to accompany their wives and children less often during healthcare visits. Furthermore, some individuals may not wish to disclose their economic status. Hence, selection bias may influence the significance of the results in such surveys.

The secondary goal of this survey was to determine the relationship between PPND and the self-reported satisfaction of fathers in terms of overall life, sexual life, and general health. These parameters had strong inverse relationships with the occurrence of EPDS, with regression analysis proving them to be among the strongest predictors of PPND.

Subjective general health is an indicator of an individual's physical and mental health, facilitating the general evaluation of health status through one short question. In the literature, the positive relationship of general health with life satisfaction and sexual life satisfaction has been reported [26,27]. Satisfaction with one's general health has a positive effect on decreasing the level of stress, anxiety, and postnatal depression (PND) [19]. An extensive study in Canada featuring 400,000 participants assessed mental health and life satisfaction and demonstrated that these two variables have a strong and two-way relationship with one another [1]. As the most common postpartum mental disorder among fathers, PPND [2,5] had an inverse effect on life satisfaction in this study. Therefore, interventional programs targeted at enhancing mental health can help decrease paternal depression, consequently boosting life satisfaction.

Satisfaction with sex life can also affect general life satisfaction and health; its strong inverse relationship with PPND was demonstrated in the present study. Alterations in sexual life during and after pregnancy contribute to the development of PPND, and various factors such as fear of harm to the fetus, paternal anxiety, and mental illnesses can cause changes in the sex drive and satisfaction. Life, marriage, and sexual life satisfaction are all inversely related to both paternal and maternal EPDS scores [5,17]. The likelihood of PPND is three times higher among fathers who feel unsatisfied with their sexual relationship, and decreased quality of life has also being seen in this group [31].

It should be noted that while depression can be a predictive factor for sexual problems, decreased sexual satisfaction, and reduced general health, it can also be a result of these factors [2,5,17]. The reason for the similarities across multiple studies regarding changes in sex life and their effect on mental health and life satisfaction may be that these alterations are experienced by most if not all fathers. The prevalence of PPND will rise if parents are not made aware of these changes and taught the appropriate coping strategies. Thus, the importance of these variables should not be overlooked, with training programs regarding changes during and after pregnancy being highly necessary for reducing the occurrence of PPND and promoting mental health.

Satisfaction with the child's sex has also been expressed as a factor that can affect the incidence of PPND [2,5,8,18,32]. In the present study, the EPDS scores of fathers who were not pleased with the sex of their child were higher than their satisfied counterparts, though this difference was of no statistical significance. This is in line with the findings of two related studies [33,14].

The third objective of the present study was to determine the relationship between PPND and variables related to maternal fertility history. The results elucidated that the number of pregnancies had negative effects on the EPDS score, while a history of abortion or unwanted pregnancy had a direct and significant effect on the EPDS score. In the literature, the number of births, children, abortions [2,14], unsuccessful pregnancies, and unwanted pregnancies have been cited as the causes of PPND [2,5]. Furthermore, some studies noted lower EPDS scores among fathers who planned the pregnancy in comparison to those who did not wish their spouse to become pregnant. Assuming that these variables are stressors, anxiety, and worry about the outcome of pregnancy, which can be effective in causing depression both before and after childbirth [16,18]. Therefore, it can be said that by examining the spouse's fertility history, PPND can be predicted. Hence, screening should be performed for fathers that are at risk of developing this mental disorder.

Contrary to investigations that indicate that PPND is more prevalent among first-time fathers [21,28], the present study found higher EPDS scores among fathers with two or more children, as seen in the study of Philpott and colleagues [11,34]. It seems that having more children imposes a greater burden on parents both in terms of responsibility and costs, which can cause PPND, especially in countries experiencing economic crises and high inflation rates.

This may explain why in our study, first-time fathers experienced less PPND despite facing novel roles, responsibilities, and emotional changes. In some cultures, like the Iranian culture, a greater amount of support is typically provided to the spouses during and after the first pregnancy, especially in the first six weeks postpartum, with the mother's family usually being a great help for the new parents. In the Chinese culture, first-time mothers also receive more support and care from their parents in the first month postpartum, and it is believed that this can reduce the rate of depression in the society [35]. Therefore, it seems that parental support can be effective in reducing the occurrence of PPND. Also in some countries father who had paternal leave had low prevalence rate.

The above mentioned studies have reported that PPND is found in fathers regardless of the social, economic, racial, or cultural class. Given the rising prevalence of this disorder, research can facilitate a deeper understanding and identify the associated risk factors and predictors. Early detection of the influential variables and paternal needs during this critical period can reduce the occurrence of PPND. Providing educational strategies and counseling on the prevention and appropriate management of this disorder should be prioritized by health systems.

Conclusion

The results of this study demonstrated life satisfaction, sexual life, and general health; all of which were found to have strong and inverse relationships with the occurrence of PPND. Therefore, healthcare providers should pay attention to the socio-demographic status, fertility history, and SRH parameters, and appropriate measurement tools such as EPDS should be used to identify the PPND. Ultimately, efficient screening, early diagnosis, and prompt referral to a psychologist can reduce the complications of PPND, with counseling and training interventions being absolutely essential for minimizing the occurrence of this mental disorder.

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Conflict interest

The authors declare that they have no conflicts of interest.

Ethical consideration

This article is extracted from the PhD dissertation of first author. This study was approved with the code of (IR.TUMS.VCR.REC1398.387).by the committee of ethics in Tehran University of Medical Sciences, Tehran, Iran.

Before the beginning of the study, informed written consent was taken from the participants and they were assured of the confidentiality of all their personal information.

Finally, the researcher explained the consequence of paternal depression and referred them to experts for better evaluation if they were prone to depression or depressed.

Strength

This study is the first research In Shiraz-Iran that has determined some predictor factors related to PPND in fathers. The strength of this study was the sample size and participant's response (98%). The questionnaire was filled under the direct supervision of the researcher was the second strength.

At the end of each sampling, the EPDS was calculated, and we informed the results to the fathers. If the EPDS was high, we referred them to a psychologist for the clinical interview and appropriate intervention.

Limitations and problem

In this study, we could not gather data regarding fathers' experience and their perception towards depression. Future cohort and qualitative studies on fathers is needed to find precedency, comorbidity, consequence, and explant of postnatal depression.

Because some fathers would not intend to talk about their feelings, we had to spend more time to explain the aim of this study and to persuade them to participate in this study, so this extended the length of time of the sampling.

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