Original Article

Frequency of postpartum depression and its related factors in women referred to health centers in Rafsanjan, Iran, in 2015

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Abstract

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Background: Pregnancy and labor is a natural process in human life which may be accompanied with challenges. Postpartum depression (PPD) is a common type of depression. Thus, the present study was conducted to determine the frequency of PPD and its possible risk factors in mothers referred to health centers in Rafsanjan, Iran, in 2015.

Materials and Methods: The present descriptive study was performed on 250 women who had given birth in the previous 2-6 months and had referred to health centers in Rafsanjan for various care services in 2015. The subjects were randomly selected and entered into the study. The data collection tools consisted of the Edinburgh Postnatal Depression Scale (EPDS) and a demographic characteristics checklist. The collected data were analyzed using chi-square test, t-test, and logistic regression.

Results: Among the participants, 129 (68.5%) mothers had PPD. Of the studied factors, unplanned pregnancy could predicted the incidence of PPD (P = 0.004). No difference was observed between mothers with and without PPD in terms of pregnancy order, delivery method, education level, occupation, history of substance abuse, and previous history of depression.

Conclusions: The prevalence of PPD in Rafsanjan is high. Unplanned pregnancy had a significant relationship with PPD; thus, the related specialists and authorities must plan and take measures in this regard.

Keywords: Postpartum Depression, Unplanned Pregnancy, Risk Factors, Pregnancy

Introduction

Pregnancy is one of the main life stressors that can accelerate and intensify some psychological disorders such as depression and mania. The prevalence of postpartum depression (PPD) varies in different societies and has been reported as 10-15 percent. Lanes and Dennis estimated the prevalence of PPD as about 8% in Canada (1, 2). In addition, Ghanei reported a prevalence of about 49% in mothers in Saqqez, Iran (3), and Mosalanejad reported a prevalence of about 51.3% in Shiraz, Iran (4). There is evidence to show that Asian women are at greater risk than others in this respect (5).

Evidently, hormonal changes during pregnancy play a role in this regard; estrogen causes an increase in synthesis, a decrease in serotonin breakdown, and serotonin receptors modification. The prepartum serum levels of estrogen and progesterone are often higher in women who experience PPD and a greater reduction is observed in their postpartum levels (6). Researchers have determined a 3-month postpartum period for PPD (7). PPD is a major health problem that leads to a reduction in the healthy mother-child relationship (8), a decrease in the health level of the mother, and impaired fetal growth (9). PPD is accompanied with the sense of sadness, disappointment, incompetence, guilt, fear,

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worthlessness (10), irritability, anxiety, and loss of self-confidence, physical disorders and symptoms such as vertigo and sleeping disorders (11), and decreased infant care (9). Depressed mothers feel less responsible for, and thus, are less responsive to their infants (12). They have complex difficulties in their interaction with their infant which severely threatens the emotional-cognitive development of the infant and may lead to neglect and abuse in infant care (11, 13, 14). Compared to many common hygienic problems, depression is a serious problem which results in a high percentage of fatality; a 15% probability of suicide has been reported in depressed individuals (14). Many physiological changes during pregnancy such as hormonal changes or psychological problems can be the underlying factors in postpartum problems. The postpartum period is a very important period for women in terms of appearance of mood disorders. These disorders range from sadness and PPD to mania (15).

No previous studies were found in this regard in Rafsanjan, Iran. Therefore, because of the importance of depression and its prevalence during pregnancy and postpartum period, its undesirable effects on the mother and infant, the quality of their interaction, and ultimately, the family system, the prevalence of PPD and its risk factors in women referring to health centers in Rafsanjan were evaluated in the present study.

Material and Methods

The study population of this descriptive study consisted of all mothers who referred to 7 health centers of the Department of Health of Rafsanjan, to receive mother and child care in the summer of 2015. It must be noted that the subjects had given birth in the previous 4 weeks to 6 mounts. The sample volume was calculated as 250 individuals based on equation 1, and based on the number of health centers, 36 individuals were selected through convenience sampling from each center.

$$n=\frac{Z^2 1-\frac{\alpha}{2}P(1-P)}{d^2} \qquad \text{equation 1}$$

Mothers with an education level of lower than fifth grade of elementary school, lack of proficiency in the Persian language, history of miscarriage and stillbirth, an infant with birth defects, and previous history of drug use due to mood and mental disorders, and those who were unwilling to participate in the study were excluded. Instructions on how to complete the questionnaire were provided for all participants. The data collection tools consisted of the Edinburgh Postnatal Depression Scale (EPDS) and a demographic characteristics checklist including age, occupational status, education level, and number of childbirths or pregnancies. The questionnaires were distributed among subjects in health centers by the researcher or a trained colleague. They were asked to complete the questionnaire in half an hour in the health center and return them to the researcher or her/his colleague.

The EPDS was developed by Cox in 1987, consists of 10 items that evaluate the individual's mental status during the previous 7 days (e.g., I expected to enjoy everything). Through the use of this questionnaire, the diagnosis of depression is possible during 6 weeks after birth. The EPDS is scored based on a 4-point Likert scale ranging from 0 to 3; therefore, the minimum and maximum scores of the questionnaire are, respectively, 0 and 30. A score of lower than 13 signifies the lack of depression and 13 and higher illustrates the presences of depression. Ahmadi conducted a study to determine the validity of the Persian version of the EPDS in terms of PPD screening. He obtained a Cronbach's alpha of 0.7 for this scale (16). The validity, reliability, and predictive value of this scale were approved in other studies conducted in Iran (17, 18). In the study by Rahmani, the correlation coefficient of this scale was calculated at 0.81 through test-retest (19). According to the World Health Organization (WHO) and the Diagnostic and Statistical

Manual of Mental Disorders, Fifth Edition (DSM-V), the initial symptoms of PPD are observed during the first weeks or months after childbirth (4 weeks to 6 months after childbirth) and may persist for one year (20, 21).

Data analysis was conducted in SPSS software (version 17, SPSS Inc., Chicago, IL, USA). Quantitative data are present as mean and standard deviation and qualitative data are presented as absolute and relative frequency. Data were analyzed through inferential statistics and using chi-square test, t-test, and logistic regression.

Results

Among the 250 checklists and questionnaires returned by the subjects, 196 (78.4%) could be assessed. The mothers' age ranged between 14 and 40 years with a mean age of 26.25 ± 4.75. In addition, the age of the infants ranged between 1 and 6 months.

Table 1: Frequency distribution of pregnancy order, delivery method, monthly income, education level, and occupational status of mothers

Variable	Group	Number (%)
Pregnancy order	First	86 (43.9)
	Second	66 (33.7)
	Third	30 (15.3)
	More than three pregnancies	14 (7.1)
Monthly income (toman)	Less than 500,000 per month	96 (49)
	More than 500,000 per month	100 (51)
Education level	Illiterate	4 (2)
	Secondary school education	35 (17.9)
	Diploma	86 (43.9)
	University degree	71 (36.2)
Occupational status	Self-employed	24 (12.3)
	Governmental job	53 (27)
	Homemaker	119 (6.07)
Delivery method	Cesarean	107 (54.6)
	Natural birth	89 (45.4)

The highest frequency of pregnancy order was related to first pregnancy. In the present study, 107 (54.6%) participants had undergone a cesarean section, and 100 (51%) families had a monthly income of over 500,000 toman. Regarding education level, 4 (2%) subjects were illiterate, 35 (17.9%) had secondary school education, 86 (43.9%) had a diploma, and 71 (36.2%) had a university degree. Moreover, 24 (12.3%) mothers were self-employed, 53 (27%) had governmental jobs, and 119 (60.7%) were homemakers (Table 1).

Table 2: Frequency distribution of pregnancy status, infant's gender, history of substance abuse and depression, and postpartum depression

Variable	Group	Number (%)
Pregnancy status	Planned	130 (66.3)
	Unplanned	66 (33.7)
Infant's gender	Girl	81 (41.3)
	Boy	115 (58.7)
History of substance abuse	Yes	2 (1)
	No	194 (99)
History of depression	Yes	11 (5.6)
	No	185 (94.4)
Postpartum depression	Yes	129 (65.8)
	No	67 (34.2)

Among the subjects, 130 (33.7%) had an unplanned pregnancy. Moreover, 115 (58.7%) infants were boys. Substance abuse was studied in the participants and it was found that 2 (1%) mothers had a history of substance abuse. Furthermore, 11 (5.6%) subjects had a previous history of depression, and postpartum depression was observed in 129 (65.8%) subjects (Table 2).

The mother with and without PPD were compared in terms of the studied variables. The comparison of frequencies using chi-square test showed no difference in the frequency of PPD based on pregnancy order (P = 0.95). Moreover, no difference was observed between mothers who had undergone a cesarean section and natural childbirth in terms of incidence of PPD (P = 0.16). The mother's education level (P = 0.42), occupational status (P = 0.22), monthly income (P = 0.58), history of substance abuse (P = 0.3), and history of depression (P = 0.071) did not cause a difference in the rate of PPD (Table 3). However, 75 mothers who had had an unplanned pregnancy had PPD and this difference was statistically significant (P = 0.001).

Table 3: Difference in frequency of studied variables between mothers with and without PPD based on chi-square test

	Pregnancy order	**Delivery method**	**Education level**	**Occupational status**	**Pregnancy status**	**Monthly income**	**History of substance abuse**	**History of depression**
Postpartum depression	x=0.35, df=3, p=0.95	x=1.92, df=3, p=0.16	x=2.79, df=3, p=0.42	x=3.01, df=2, p=0.22	x=11.32, df=1, p=0.001	x=0.3, df=1, p=0.58	x=1.05, df=1, p=0.3	x=3.26, df=1, p=0.071

*P < 0.05

In order to predict PPD, variables related to mothers (age, education level, occupational status, pregnancy order, delivery method, unplanned pregnancy, history of substance abuse, history of depression, and economic status) and infants (age and gender) were entered into the logistic regression equation. The equation was significant (P = 0.001). The variable of unplanned pregnancy significantly predicted the incidence of PPD (P = 0.004) (Table 4).

Table 4: Summary of logistic regression in the prediction of postpartum depression

Variable	**Exp B**	**Wald**	**Df**	**P-value**
Pregnancy order	0.9	0.227	1	0.63
Delivery method	0.74	0.73	1	0.39
Infant's gender	0.55	2.97	1	0.085
Education level	0.98	0.004	1	0.95
Occupation	0.94	0.07	1	0.79
Unplanned pregnancy	0.29	8.42	1	0.004
Income	1.29	0.57	1	0.45
History of substance abuse	0.00	0.00	1	0.99
History of depression	0.15	2.89	1	0.089
Mother's age	0.96	0.8	1	0.37

*P < 0.05

Discussion

In the present study, the prevalence of PPD was 65.8%. Previous studies have reported different results in this regard; Abdellahi (22), Khoramirad (23), Azimi (24), Ghanei (4), Hosseini (25), Ascaso (26), Augos (27), Ballard (28), Morrell (29), and Zelkowits (30), respectively, reported a prevalence of 9.9%, 23.7%, 22%, 49.3%, 24.8%, 10.15%, 22%, 27.5%, 11.8%, and 37.7%. It seems that the prevalence of PPD was higher in the present study compared to previous studies. This difference may be due to the data collection tool used; the EPDS was used in the present study, but the Beck Depression Inventory was used in some previous studies. Cultural, racial, and geographical differences must also be taken into consideration. Delivery method is also an effective factor in the prevalence of PPD.

In the present study, the only significant difference between subjects with and without PPD was in terms of unplanned pregnancies. Hosseini also reported unplanned pregnancies as an important predictor of PPD (25). The results of the study by Khoramirad also showed that unplanned pregnancy is an important factor in incidence of PPD, which was in agreement with the results of the present study (23). In the present study, delivery method, previous history of depression, economic status, education level, and history of substance abuse did not cause any difference in the prevalence of PPD.

Moreover, no relationship was observed between cesarean section and PPD in the present study. Carter also found no relationship between cesarean section and PPD (31). Ukpong showed that the incidence of psychiatric disorders did not have a significant relationship with cesarean section (32). This finding was in accordance with that of the present study. However, Xie (33) and Hadizadeh (34) found that the prevalence of PPD was higher among women who had undergone cesarean section compared to those who had undergone a vaginal delivery. This relationship was also observed in the studies by Khoramirad (23) and Hosseini (25). It seems that the stress of having a cesarean section is an effective and predisposing factor in the incidence of PPD. A solution to the reduction of PPD may be the reduction of the number of elective and nonemergency cesarean sections. However, a relationship was not observed between PPD and cesarean section in the present study.

Abdellahi found that stress in mothers, family history of depression, previous history of PPD, and low age at marriage were important in the incidence of PPD (22). Khoramirad found that neonatal abnormalities, marital dissatisfaction, undesirable economic status, lack of social support, experience of crisis during the past year, family history of depression, and previous history of PPD were important factors in the incidence of PPD (23). Azimi found that stressful life events, lack of family support, health status of the infant, sense of helplessness in caring for the infant, and history of depression were important in the incidence of PPD (24). Evan reported the importance of desirable social support in the reduction of the incidence of PPD (35). Ghanei found that the occupational status of the father was an important factor in the incidence of PPD (4). It seems that anxiety due to living conditions is an important factor in this regard.

The results of the study by Jafarpour showed that stressful life events, marital disputes, change in residential area, separation and divorce, variation in sleep time, and familial mental and economic issues are predictors of PPD (36). Hassan Zahraei, in his study, concluded that support by the midwife significantly reduced PPD (37). Richman believed lack of friendship and intimacy, and support (father, mother, spouse, and others) to be effective in the incidence of PPD (38). Campbell also reported a relationship between lack of support and assistance by the spouse and PPD (39).

Thorpe, in a study in Britain and Greece, found that social support and life events have a relationship with PPD (40). Yoshida

conducted a study in this regard on 98 mothers who had immigrated to Britain and found that stressful life events and labor complications (without the support of the grandmother) were effective in the incidence of PPD (41).

In the present study, no difference was observed between women who had had a natural birth and those who had undergone a cesarean section in terms of PPD incidence. Ballard reported that the depression score of women who had undergone an emergency cesarean section was higher compared to women who had had a natural vaginal birth during the 3 months after the delivery (28). Yoshida also believed that cesarean section is one of the factors that have a direct relationship with depression in the sixth week after delivery (41). The results of the study by Yoshida are indicative of the impact of delivery method on PPD (41). This finding is not in agreement with that of the present study. It seems that various factors have a role in the incidence of PPD and must be assessed in future studies. For example, unplanned pregnancy was a significant predictor of PPD in the present study. As cesarean section was found to have a relationship with PPD in many studies, it seems that a solution to the reduction of PPD is the reduction of the statistics of cesarean section. Although emergency cesarean section is an inevitable medical emergency, in some cases there is room for further consideration and deliberation. For instance, in cases of cesarean section due to lack of progress in labor and Contracted Pelvis, a more detailed evaluation of the course of the delivery is recommended. Another effective strategy for the reduction of the rate of emergency cesarean section is the improvement of the care services provided during labor.

The limitation of the present study was the presence of infants with the mothers in the health center which caused challenges to responding to the questionnaire. Based on the results of the present study, through the determination of factors effective on PPD, the preventive factors of this disorder can also be determined. Thus, in order to prevent the incidence of this disorder, the provision of support and education programs for mothers and their relatives during pregnancy and after childbirth is recommended. Moreover, the role of marital education in planning in this regard, managing of mothers' pregnancy health records, provision of psychological counseling for pregnant mothers, training the spouse and relatives regarding support for the mother and mental health of the family, explaining the importance of breast-feeding for the infant and mother, identification of mothers with stress and in crisis, and provision of education regarding the reduction of and coping with stress during and after pregnancy must be considered by healthcare personnel.

Conclusion

Considering the results of the present study, it can be concluded that the prevalence of PPD is high in Rafsanjan. The results of the present study showed that unplanned pregnancy had a significant relationship with PPD. Hence, healthcare personnel must provide couples with essential training to reduce the rate of depression.

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