Predictive factors of anxiety level in postpartum period

Niroomand S[1] , Razavinia F[2] , Bayat Z[3] , Jafari M[3] , Rostami F[2] , Youseflu S[1]*

*[1]MSc, Department of Midwifery, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran
[2]Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
[3]Department of Midwifery Expert, Zanjan University of Medical Sciences, Zanjan, Iran

*Corresponding Author: MSc, Department of Midwifery, School of Nursing and Midwifery, Zanjan University of Medical Sciences, Zanjan, Iran

Email: s.yoseflu@yahoo.com

Received: 8 Jan 2020   Accepted: 18 March 2020

Abstract

Background: Pregnancy and delivery are considered as pleasant physiological phenomena. This period, however, sometimes leads to variable mood states in women and makes them more sensitive to psychological stimuli and problems.

Objectives: The present study aimed to investigate the role of breastfeeding, type of delivery, contraceptive method, planned pregnancy, and history of infertility on the anxiety level of Iranian women who referred to health centers in Zanjan in the postpartum period.

Methods: This cross-sectional study was conducted on 420 women who attended the health care centers in Zanjan city, Iran, during 2018-2019. A checklist including questions about demographic and reproductive information and Beck anxiety inventory were used as the data collection instruments. The data were analyzed using SPSS 21 software through regression analysis.

Results: This study found that the history of infertility ($\beta=0.26$, $t=9.38$, $p<0.001$), unplanned pregnancies ($\beta=0.23$, $t=-7.00$, $p<0.001$), exclusive breastfeeding ($\beta=-0.47$, $t=-17.40$, $p<0.001$), mothers' education ($\beta=-0.08$, $t=-2.89$, $p<0.001$), DMPA ($\beta=0.23$, $t=6.62$, $p<0.001$), and withdrawal ($\beta=0.17$, $t=4.59$, $p<0.001$) contraception method were associated with anxiety level.

Conclusion: The results of the present study indicate that factors such as breastfeeding, contraceptive methods, infertility history, unplanned pregnancy, and educational level influence women's anxiety level in postpartum period. Identifying and screening women with high levels of anxiety and providing proper counseling to these mothers can help improve their health, infants, families, and community.

Keywords: Anxiety, breastfeeding, contraception, type of delivery, postpartum

Introduction

Although pregnancy and delivery appear to be important and pleasant phenomena, they can cause mode changes and psychological challenges in women's life. Anxiety is an unreasonable fear, panic, tension, or worry with common symptoms of uncertainty, inability, and physiological excitement, which may cause various physical, emotional, cognitive, or psychological problems [1]. Anxiety comprises panic attacks, social anxiety disorder, specific phobia, separation anxiety disorder, and generalized anxiety disorder. It is also divided into covert and obvious types in some anxiety tests [2,3]. An awful experience of childbirth following unexpected medical interventions, severe pain, and fear of death can cause severe anxiety [2]. Based on recent studies, the worldwide prevalence of postpartum anxiety has changed from 13 to 40% [3], while it has risen from 5 to 20% in Iran [2]. A study in Germany showed that 11.1% of women experience anxiety disorders within 3 months after delivery [4]. However, in a study on 181 couples, there was a decrease in maternal and paternal anxiety from 3 to 6 months after childbirth [5]. Postpartum anxiety is diagnosed

less commonly and may occur alone or with symptoms of depression. In fact, anxiety can be a cause of depression, which is a multifactorial disorder that originates from genetic and environmental factors [2]. Various risk factors in postpartum anxiety include demographic characteristics, pregnancy, and childbirth and breast-feeding, infertility, hormonal changes, inadequate social skills and lack of social support, a history of psychological problems and tensions, a negative perception of the birth experience, pain severity, and even fear of death [3].

For most women, pregnancy and childbirth are enjoyable events although many important physiological and psychological changes stemming from this period may lead to pathological and anxiety disorders, which can negatively affect bonding and mother-infant interactions [6]. Studies have reported that mothers who are experiencing stress and anxiety disorders pay less attention to their babies or other family members [3]. In contrast, Murray et al. showed that the mothers suffering from anxiety disorders such as phobia have too much control over the baby, which can affect the baby's personality in the future life and threaten the health of the mother, the baby, other children, and family and society in general [7]. Based on the recent literature, fear of childbirth as a result of the pain surrounding the birth process, anesthesia, complications in cesarean section, infant injury, breastfeeding, and fear of changes in appearance and marital dysfunction impose women in a stressful situation, which in turn causes various psychological complications such as anxiety [8,9]. Women may repel the breastfeeding due to stressful thoughts such as the inability to feed baby, diseases, the use of various medications, and physical changes. Stopping breastfeeding for any reason in the first 6 months after delivery has various psychological and physical effects on the mother and the baby, which increases stress and anxiety [10]. Lonfal et al. showed that the women with postpartum anxiety tend to use formula instead of exclusive breastfeeding more than others do. In fact, if their babies have difficulty with breastfeeding, they stop breastfeeding earlier [11]. Fear of pregnancy during the breastfeeding period, as an intrinsic factor, increases stress and anxiety and highlights the importance of choosing an appropriate family planning method during this time. Choosing an adequate method during this period that has no adverse consequences for the mother and newborn is very difficult for individuals with insufficient knowledge, which may result in anxiety due to selection inability or mental rumination [12,13]. Constant anxiety in the postpartum period has negative impacts on the health of women, babies, and families, reduces the quality of life on a social scale, and consequently increases financial and emotional burdens to families and society. As a result, it is vital for midwives as health service providers to deal with women in the postpartum period and raise awareness of mothers and their families in terms of proper knowledge of anxiety and associated situations. The present study aimed to investigate the role of breastfeeding, type of delivery, contraceptive method, planned pregnancy, and history of infertility on the anxiety level of the Iranian women referred to health centers in Zanjan in the postpartum period.

Methods

The present study adhered to a cross-sectional design. We selected 420 women who attended the health care centers in Zanjan, Iran, during 2018-2019. This study was approved by the ethics committee of Zanjan University of Medical Sciences (IR ZUMS.REC.1398.112). Consent and verbal assent were collected from all women. Furthermore, the anonymity and confidentiality of their information was ensured. The women were selected using a systematic sampling method. The inclusion criteria for participant selection included: 1) Iranian race; 2) informed consent; 3) delivery in 6 months ago; 4) absence of mental retardation; 5) no stressful and bad events during the past 3 months ago. All participants filled up a checklist consisting of questions (single word answer) about demographic and reproductive factors such as age, breast-feeding status, employment status, level of education, smoking, number of pregnancies and delivery, history of infertility, and planned pregnancy (appropriate time and number). The level of anxiety was measured based on the Becks anxiety questionnaire. This questionnaire contained 21 questions based on a Likert type scale ranging from 1 to 3. A higher score indicates a higher level of anxiety. A score between 0-9 indicates a normal level of anxiety, 10-18 shows mild

anxiety, 19-29 represents moderate anxiety, and 30-63 stands for severe anxiety. After examining and confirming the precondition of regression analysis, we analyzed the data using SPSS, version 21.

Results

Out of 420 participants in this study, 56.70 and 33.30 percent of women aged between 20-30 years and 30-40 years, respectively. In addition, 90 percent of women were housewives and 28.81% had a university degree. The mean number of the parity was 1.72, and 64.76 % had exclusive breastfeeding. Among participants, the common contraception method was withdrawal (58.09%). Moreover, 38.1 % of participants were without anxiety, 43.8% with low anxiety level, 15.95% with moderate anxiety level, and 2.4% with severe anxiety level. Unplanned pregnancy was seen among 23.62 % of the participants, and 9.5 % were undergoing infertility treatment in their current pregnancy (Table 1).

Table 1: Socio-demographic and reproductive characteristics of participants

	Variables	Number	Percent
Age	14-20	39	9.3
	20-30	237	56.7
	30-40	140	33.3
	40>	4	0.1
Education	Academic	121	28.81
	Non academic	299	71.19
Job	Housewife	378	90
	Employer	42	10
Exclusive breastfeeding	Yes	272	64.76
	No	148	35.24
Gravidity*		2.14	1.33
Parity*		1.77	1.01
History of infertility		40	9.5
Unplanned pregnancy		137	32.62
Contraception Method	Condom	48	11.44
	Withdrawal	244	58.09
	OCP	24	5.71
	IUD	45	10.71
	DMPA	37	8.81
	TL	22	5.24
Anxiety level	Normal	160	3.10
	Mild	184	43.81
	Moderate	67	15.95
	Sever	9	2.14

***Data was reported in terms of mean and SD**

The results of the regression analysis for the effects of different variables on the anxiety level of women after childbirth are reported in Table 2. In the stress column, the mean score of each level was determined for the categorical variables. Besides, the correlation between the quantitative variable (age) and the level of anxiety was obtained. The history of infertility with a standard coefficient of 0.26 was statistically significant (β=0.26, t=9.38, p<0.001). A higher level of anxiety was observed in women who had a history of infertility in current pregnancy (37.25) in comparison with others (17.42). Women with unplanned pregnancies reported anxiety more frequently (β=0.23, t=-7.00, p<0.001). Exclusive breastfeeding with a standard coefficient of -0.47 decreased the level of anxiety of mothers (β=-0.47, t=-17.40, p<0.001). The mothers' education with a standard coefficient of -0.08 was found to be significantly related to anxiety level (β=-0.08, t=-2.89, p<0.001). The women with university education had a lower level of anxiety (14.9 vs 24.97). To examine the influence of the contraception methods, as a categorical variable,

on anxiety level, the users of condoms were considered to be the reference group. We observed that DMPA (β=0.23, t=6.62, p<0.001 and withdrawal (β=0.17, t=4.59, p<0.001)

contraception methods produced a higher level of anxiety in comparison with the one in condom users.

Table 2: Regression analysis of anxiety level based on type of delivery, history of infertility, planned pregnancy, breastfeeding, contraception methods, and educational level

		Anxiety	t	Standard Beta	Un-standard Beta	P value
Constant	Mean	20.30	9.63	-	25.42	0.001<
Age	Coefficient	0.06	-1.61	-0.05	-0.07	0.11
History of infertility	yes	37.25	9.38	0.26	8.94	0.001<
	no	17.42				
Planed pregnancy	yes	16.70	-7.00	-0.19	-4.74	0.001<
	No	27.98				
Type of delivery	NVD	18.27	-1.66	-0.04	-0.99	0.10
	CS	21.76				
Exclusive breastfeeding	Yes	9.34	17.40	-0.47	-11.96	0.001<
	No	26.64				
Education	Academic	14.91	-2.89	-0.08	-1.84	0.001<
	Non academic	24.97				
Contraception method	LD	14.67	-0.17	0.00	-0.25	0.86
	IUD	17.35	1.17	0.05	1.17	0.24
	TL	13.74	-0.57	-0.02	-0.73	0.57
	With drawal	35.22	4.59	0.17	6.41	0.001<
	DMPA	32.15	6.62	0.23	8.78	0.001<
$R^2=0.87$	Adjusted $R^2=0.87$	F124.66				

Discussion

In the present study, the factors affecting women's anxiety in the postpartum period were investigated. Our findings showed that 61.9% of women suffered from an anxiety disorder. Moreover, various factors such as exclusive breastfeeding, type of contraception, history of infertility in the current pregnancy, unplanned pregnancy, and maternal education were important factors affecting maternal anxiety level. Most studies examining maternal anxiety levels with breastfeeding have shown that postpartum anxiety is associated with late-onset of breastfeeding, shorter duration of breastfeeding, and reduced exclusive breastfeeding [11,10]. Kehler et al. found that severe maternal anxiety is associated with discontinuation of lactation before 6 months of age compared to that of mild anxiety [15]. In contrast, in some studies, there was no relationship between maternal anxiety and lactation duration in 3-6 months follow-ups [16,17]. Another study reported that breastfeeding

stopping before 4-8 weeks was associated with increased maternal anxiety [18].

Anxiety can decrease maternal self-efficacy and have a negative effect on mother-infant relationship. There is a direct relationship between anxiety and maternal stress. For instance, it may interfere with the release of oxytocin, which affects milk withdrawal reflex and has a physiological negative effect on lactation [19]. The results of the animal model also show that the production of lactating hormones can respond to stress. Disruption of oxytocin and the release of prolactin and hormones are involved in milk excretion, and repeated suppression of this reflex decreases a physiological process in milk production. In addition, stress raises cortisol and glucose levels, delaying breast filling and reducing milk volume in the postpartum [20]. In this vein, the findings of a prospective cohort study show that breastfeeding less than 6 weeks increases by 157% and cessation of breastfeeding before 8 months of postpartum is associated with a 124% increase in perinatal anxiety [21].

In the present study, a significant relationship was found between higher maternal anxiety and abstinence compared to the case in condom users. Hall et al. reported that those condom users had higher rates of depression, depression, and stress symptoms compared to those taking combination pills [22]. The popularity of the discontinuation method is due to ease of access and use, no need for doctors' prescription, and low side effects on health [23]. However, people who use discontinuation as a preventive method are uncertain due to the lack of control and fear of pre-pregnancy during lactation. In addition, the unwillingness of the sexual partner to use the other method increases and aggravates anxiety in these people compared to other people using contraceptives such as condoms [24]. Rahnama et al. observed that a large number of people who used discontinuation procedures were concerned about unwanted pregnancy and reported their worries about timely menstruation every month, which increased anxiety among these women [24].

In this study, we further found that the women who used DMPA as a contraceptive method had a higher level of anxiety compared with the one in condom users. On the other hand, there were no significant differences between the postpartum anxiety level and other contraceptives, and the anxiety level in the other contraceptive methods was similar to that of condom users. For many women, DMPA is an acceptable contraceptive method because it does not need to be consumed daily and has no effects on breastfeeding. Additionally, in women with anemia, especially after childbirth, DMPA can be very helpful to increase the level of hemoglobin; however, this method increases bleeding and spotting. Based on the findings of the previous studies, delayed ovulation occurs if it is discontinued, and impaired fertility can increase women's anxiety and discomfort. Furthermore, decreased bone density following DMPA use is a concern for women, especially during lactation [25,26]. Also, DMPA may aggravate decreased libido following breastfeeding or maternal fatigue in child care. These issues led to couples' breakups and therefore increased anxiety and stress in the women after childbirth [27].

Based on the findings of the present study, there was no statistically significant association between the type of delivery and level of anxiety. Similar studies confirm our results [28,29]. Lobel et al. showed that women with cesarean delivery had a negative perception of childbirth. A higher level of anxiety and negative self-image about motherhood was seen in these women [30].

In the present study, women with higher education were less likely to develop an anxiety disorder. In this respect, Akbarzadeh et al. found a significant relationship between anxiety and educational level of pregnant women. Low levels of education can increase maternal stress and anxiety in the postpartum period. The special conditions of women with low education or high-risk pregnancies may increase stress and anxiety in these women. On the other hand, women with lower levels of education were more likely to engage in rumors, which may cause increase anxiety level in these women compared to those with higher educational levels [12].

We also observed that women whose current pregnancy was not planned had higher levels of anxiety. A previous meta-analysis confirms our results [31]. Minglu et al. reported that unplanned pregnancy, low education, and unsatisfactory life conditions are risk factors for anxiety and depression in pregnant women [32].

Besides, a higher level of anxiety was seen among women who had infertility in the current pregnancy. Previous research shows that a sense of enduring identity as an infertile person and gratitude for the gift of motherhood makes women to form an unrealistic expectation of being a perfect mother. When they are unable to live up to their expectations, they would experience negative emotions such as feelings of inadequacy, guilt, shame, and anxiety [33]. In contrast, the findings of another study showed that the use of assisted reproductive technology (ART) had no role in postpartum depression [34]. The reasons for this inconsistency depended on the number of infertility times, the frequency of assisted reproductive technology (ART), personality traits including the value and importance of having children, and the behavior and emotional burden of the family and society [34].

Various factors such as sexual function changes, sleep disturbances, body image changes, economic status, religious moods, illness of the family members, and mental health of the participants during pregnancy may affect the level

of anxiety in mothers, which are not considered in this study. Therefore, further studies are recommended to take these factors into account. On the other hand, this study was conducted in the local cultural context of Zanjan province, and our findings may not be generalizable to other areas.

The present study indicated that factors such as breastfeeding, contraceptive methods, infertility history, unplanned pregnancy, and educational level influence women's anxiety level in the postpartum period. Identifying and screening women with high levels of anxiety and providing proper counseling sessions can help in improving the health of mothers, infants, families, and the community.

Conflict of interest
In this study no conflict of interest is at work.

References
1. Ross LE, McLean LM. Anxiety disorders during pregnancy and the postpartum period: A systematic review. J Clin Invest. 2006; 6: 1285-1298.
2. Azizi M, Lamyian M, Faghihzadeh S, Nematollahzadeh M. Effectiveness of counseling on anxiety after traumatic childbirth in nulliparous women: A randomized Single blind randomized clinical. J Med Sci Kermanshah. 2010; 13: 219-27. [In Persian]
3. Field T. Postpartum anxiety prevalence, predictors and effects on child development: a review. J Psychiatr Psychiatr Disord. 2017: 86-102.
4. Reck C, Struben K, Backenstrass M, et al. Prevalence, onset and comorbidity of postpartum anxiety and depressive disorders. Acta Psychiatr Scand. 2008; 118(6): 459-68.
5. Vismara L, Rollè L, Agostini F, et al. Perinatal parenting stress, anxiety, and depression

outcomes in first-time mothers and fathers: a 3-to 6-months postpartum follow-up study. Front psychol. 2016; 7: 938.
6. Marques R, Monteiro F, Canavarro MC, Fonseca A. The role of emotion regulation difficulties in the relationship between attachment representations and depressive and anxiety symptoms in the postpartum period. J Affect Disord. 2018; 238: 39-46.
7. Murray L, Cooper P, Creswell C, Schofield E, Sack C. The effects of maternal social phobia on mother–infant interactions and infant social responsiveness. J Child Psychol Psychiatry. 2007; 48(1):45-52.
8. Biaggi A, Conroy S, Pawlby S, Pariante CM. Identifying the women at risk of antenatal anxiety and depression: a systematic review. J Affect Disord. 2016; 191: 62-77.
9. Goodman JH, Watson GR, Stubbs B. Anxiety disorders in postpartum women: A systematic review and meta-analysis. J Affect Disord. 2016; 203: 292-331.
10. Diez-Sampedro A, Flowers M, Olenick M, Maltseva T, Valdes G. Women's Choice Regarding Breastfeeding and Its Effect on Well-Being. Nursing for women's health. 2019.
11. Fallon V, Groves R, Halford JCG, Bennett KM, Harrold JA. Postpartum anxiety and infant-feeding outcomes: a systematic review. J Hum Lact. 2016; 32(4): 740-58.
12. Akbarzadeh M, Yazdanpanahi Z, Zarshenas L, Sharif F. The women's perceptions about unwanted pregnancy: A qualitative study in Iran. Glob J Health Sci. 2015; 8(5): 189-96.
13. Iranfar S, Shakeri J, Ranjbar M, Nazhad Jafar P, Razaie M. Is unintended pregnancy a risk factor for depression in Iranian women? East Mediterr Health J. 2005; 11(4): 618-24.
14. Kaviani H, Mousavi A S. Psychometric properties of the Persian version of Beck Anxiety Inventory (BAI). Tehran Univ Med J. 2008; 66(2): 136-40. [In Persian]
15. Kehler HL, Chaput KH, Tough SC. Risk factors for cessation of breastfeeding prior to six months postpartum among a community sample of women in Calgary, Alberta. Can J Public Health. 2009; 100(5): 376-80.
16. Adedinsewo DA, Fleming AS, Steiner M, Meaney MJ, Girard AW. Maternal anxiety and breastfeeding: findings from the MAVAN (Maternal Adversity, Vulnerability and

Neurodevelopment) Study. J Hum Lact. 2014; 30(1): 102-9.

17. Cooke M, Schmied V, Sheehan A. An exploration of the relationship between postnatal distress and maternal role attainment, breast feeding problems and breast feeding cessation in Australia. Midwifery. 2007; 23(1): 66-76.

18. Lara-Cinisomo S, McKenney K, Di Florio A, Meltzer-Brody S. Associations between postpartum depression, breastfeeding, and oxytocin levels in Latina mothers. Breastfeed Med. 2017; 12(7): 436-42.

19. Hoff CE, Movva N, Rosen Vollmar AK, Pérez-Escamilla R. Impact of Maternal Anxiety on Breastfeeding Outcomes: A Systematic Review. Adv Nutr. 2019; 10(5): 816-26.

20. Chen DC, Nommsen-Rivers L, Dewey KG, Lönnerdal B. Stress during labor and delivery and early lactation performance. Am J Clin Nutr. 1998; 68(2): 335-44.

21. Hammarberg K, Fisher J, Wynter K, Rowe H. Breastfeeding after assisted conception: a prospective cohort study. Acta Paediat. 2011; 100(4): 529-33.

22. Hall KS, Moreau C, Trussell J, Barber J. Role of young women's depression and stress symptoms in their weekly use and nonuse of contraceptive methods. J Adolesc Health. 2013; 53(2):241-48.

23. Asadi Sarvestani K, Khoo S. Determinants of Withdrawal Use as a Contraception Method and its Impact on Sexual Satisfaction: Case Study of Shiraz County-Iran. J Midwifery Reprod Health. 2019; 7(2): 1621-29.

24. Rahnama P, Hidarnia A, Shokravi FA, Kazemnejad A, Oakley D, Montazeri A. Why Iranian married women use withdrawal instead of oral contraceptives? A qualitative study from Iran. BMC Public Health. 2010; 10(1): 289.

25. Dianat S, Fox E, Ahrens KA, et al. Side effects and health benefits of depot medroxyprogesterone acetate: a systematic review. Obstet Gynecol. 2019; 133(2): 332-41.

26. Mansour D, Gemzell-Danielsson K, Inki P, Jensen JT. Fertility after discontinuation of contraception: a comprehensive review of the literature. Contraception. 2011; 84(5): 465-77.

27. Casado-Espada NM, de Alarcón R, de la Iglesia-Larrad JI, Bote-Bonaechea B, Montejo ÁL. Hormonal Contraceptives, Female Sexual Dysfunction, and Managing Strategies: A Review. J Clin Med. 2019; 8(6): 908.

28. Bell A, Carter C, Davis J, et al. Childbirth and symptoms of postpartum depression and anxiety: a prospective birth cohort study. Arch Women's Ment Health. 2016; 19(2): 219-27.

29. Bell AF, Carter CS, Davis JM, et al. Childbirth and symptoms of postpartum depression and anxiety: a prospective birth cohort study. Arch Women's Ment Health. 2016; 19(2): 219-27.

30. Lobel M, DeLuca RS. Psychosocial sequelae of cesarean delivery: review and analysis of their causes and implications. Soc sci Med. 2007; 64(11): 2272-84.

31. Abajobir AA, Maravilla JC, Alati R, Najman JM. A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. J Affect Disord. 2016; 192: 56-63.

32. Minglu L, Fang F, Guanxi L, Yuxiang Z, Chaoqiong D, Xueqin Z. Influencing factors and correlation of anxiety, psychological stress sources, and psychological capital among women pregnant with a second child in Guangdong and Shandong Province. J Affect Disord. 2020; 264: 115-122.

33. Ladores S, Aroian K. The Early Postpartum Experience of Previously Infertile Mothers. J Obstet Gynecol Neonatal Nurs. 2015; 44(3): 370-79.

34. Amirchaghmaghi E, Malekzadeh F, Chehrazi M, Ezabadi Z, Sabeti S. A Comparison of Postpartum Depression in Mothers Conceived by Assisted Reproductive Technology and Those Naturally Conceived. Int J Fertil Steril 2020. 13(4): 277-281.