Patient Safety & Quality Improvement Journal
http://psj.mums.ac.ir
PSQI

Association Between Maternal Age and Postpartum Depression in Ardabil, Northwest of Iran: A Cross-Sectional Study

Afrouz Mardi[1], Sara Mahdad[2], *Mehrnaz Mashoufi[3], Samira Shahbazzadegan[4], Atefeh Shadman[5]

[1]*Department of Public Health, School of Health, Ardabil University of Medical Sciences, Ardabil, Iran.*
[2]*Physician, Faculty of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran.*
[3] *Department of Health Information Management, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran.*
[4] *Department of Midwifery, School of Nursing and Midwifery, Ardabil University of Medical Sciences, Ardabil, Iran.*
[5]*Department of Community Medicine, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran.*

ARTICLEINFO

Article type:
Original Article

***Article History*:**
Received: 26 Sep 2024
Accepted: 17 Nov 204

Keywords:
Postpartum Depression; Maternal age; Ardabil

ABSTRACT

Introduction:
Postpartum depression (PPD) is a mood disorder that negatively affects mother, child and family. This study aims to examine the association between maternal age and postpartum depression.

Materials and Methods:
This cross-sectional descriptive study involved 200 women referred to the Ardabil health care centers for postpartum care six weeks after delivery from May to December 2020. Cluster sampling was done, and participants were stratified according to <19 years and ≥ 19 years. Data were collected using the Edinburgh postpartum depression scale. Associations with depression were analyzed via logistic regressions were used to compare the prevalence of depression among two groups.

Results:
Eight percent of the adult participants aged ≥ 19 years experienced PPD compared to 4% of the Adolescent participants aged < 19 years, while the overall prevalence was 6%. Adult Participants (≥ 19 years) compared to adolescents (< 19 years) had higher formal education, were more likely to be employed, had a greater number of pregnancies (gravida), were of greater maternal age, and their spouses were older (p<0.01). Significant relationships were found between PPD and gravida (p=0.011) and husband employment status (P=0.031) in participants ≥19 years. However, no significant relationships were found between PPD and independent variables for participants < 19 years.

Conclusion:
The prevalence of PPD appears to be relatively low in women from the Northwest of Iran. In women >19 years, PPD appears to be associated with gravida and spouse's employment status.

► ***Please cite this paper as:***
Mardi A, Mahdad S, Mashoufi M, Shahbazzadegan S, Shadman A. Association Between Maternal Age and Postpartum Depression in Ardabil, Northwest of Iran: A Cross-Sectional Study. Journal of Patient Safety and Quality Improvement. 2024; 12(4): 189-195. Doi: 10.22038/psj.2024.82855.1442

***Corresponding author:** Department of Health Information Management, School of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran. E-mail: mashoufimehrnaz9@gmail.com*

Introduction

Postpartum depression (PPD) is characterized by a common and debilitating disorder that adversely affects the mother, child, and family (1). A combination of emotional, environmental, biological, hormonal, and genetic factors likely leads to the development of PPD (2). Consequently, PPD mostly affects the infant in various ways, such as increased risk of poor mother-infant attachment and impaired emotional, social, and cognitive development long-term (1).

Meanwhile, maternal chronic depression has long-term negative effects on both mothers' and fathers' parenting resources (3-4). The duration of PPD can last from several months to several years. Additionally, PPD is accompanied by a wide range of serious symptoms such as severe insomnia, frequent crying, irritability, exhaustion, as well as feelings of guilt, anxiety, and a desire to harm self or baby (5-6).

It has been estimated that 10 to 15% of women globally suffer from PPD[3], with the prevalence in Asian countries prevalence ranging from 3.5 to 63.3%[6]. In Iran, Kharami et al. reported the PPD prevalence in Qom being 7.2%; in contrast, Arian et al. reported a prevalence of 30% (7-8). Childbirth during the adolescence period is speculated to be very traumatic compared to adulthood. The physical and psychological stress of giving birth and raising a child is very challenging for a teenage girl. Under these circumstances, an adolescent mother takes on motherly responsibilities and marital duties (9).

Consequently, adolescent women are deprived of personal development and their legitimate rights concerning reproductive health, hygiene, education, and social participation. Furthermore, they are entangled with numerous problems, such as social isolation, disability, poverty, limited access to family and social networks, and depression (10-11).

According to recent estimates from the World Health Organization (WHO), 30% of adolescent women experience violence and harassment from their sexual partners on a global scale (12). Embawa et al. reported a significant prevalence of postpartum depression in adolescent mothers (13%) compared to 2.7% in young mothers (13). Postpartum depression is significantly associated with divorce, failure to meet child needs, poor communication, social insecurity, prenatal depression, unwanted pregnancies, poor contraception education, misunderstanding of adolescent pregnancy, and negative family relationships in childhood (14-15). Barzkar et al. reported a higher rate of anxiety in pregnant adolescents (16). However, to date, there has been a scarcity of studies investigating PPD in adolescent women in Iran. Hence, considerable depression in adolescent girls compared to boys and the high prevalence of pregnancy in adolescents makes it necessary to pay greater attention to this high-risk group. Furthermore, adverse effects of PPD on the mother, her spouse, and her family might endanger the mother and child's lives, which, in turn, could lead to serious health problems. Therefore, this study aimed to examine the association between maternal age and postpartum depression.

Materials and Methods

Two hundred women referred to the Ardabil health care centers for postpartum care six weeks after birth participated in this cross-sectional study. Ardabil is located in northwest Iran and has a population of 1.32 million. Participants were recruited from May to December 2020.

The study sample was chosen through Cluster sampling; 10 centers were selected randomly from all health centers in Ardabil (70 centers), and, 20 women were selected randomly from each center. For each center, ten women < 19 years and ten women 19 years and older were selected, which was achieved using the SIB software (Online health system in health centers) from each center. The sample size was confirmed to be 200 (p=0.15 $\alpha = 0.05$ d=0.05), consisting of n = 100 for< 19 years and n = 100 ≥ 19 years. Study inclusion criteria consisted of vaginal delivery, healthy and alive infants, and willingness to participate in the study. All the women in the study were married. Exclusion criteria were drug abuse, history of depression, and history of marital discord.

The study tool used to determine depression was the Edinburgh Postpartum Depression Scale (EPDS), with its Persian version validated by Montazeri et al. (17). The reported validity coefficient Cronbach's alpha

was initially 0.77 and 0.86 for the second time, which indicates the accuracy of the questionnaire items for diagnosis of postpartum depression. The questionnaire is designed to diagnose depression six weeks after delivery. The score ranges between zero and 30, and a score of 12 (cut of point) or higher is considered postpartum depression. Since the depression score was measured with a cut-off point, depression is measured and analyzed on a numerical scale. Questions 1, 2, 4 were scored from 0 to 3, and 3, 5, 6, 7, 8, 9, and 10 were scored from 3 to 0. The sum of all scores is calculated together to obtain the overall score and is considered the score of postpartum depression according to the key. Central indicators (mean) and dispersion indices (standard deviation) were used to analyze the descriptive characteristics of participants.

The data was also analyzed using Chi-square, Fisher's exact test, and independent t-test. The Statistical Package for the Social Sciences (SPSS version 23.0, Chicago, IL, USA) was used for data analysis. Statistical significance was accepted at $p< 0.05$.

Results

A significant difference was found between < 19 years and ≥ 19 years for various descriptive characteristics (Table 1). In particular, women ≥ 19 years had higher formal education, were more likely to be employed, had a greater number of pregnancies (gravida), were of greater maternal age, and their spouses were older ($p<0.01$). The only variable that was not different between groups was spouse employment status.

Table 1. The demographic characteristics of participants

Demographic characteristics		Groups		p-value
		Adolescent (n=100)	Adult (n=100)	
Education level	Elementary	4(4 %)	11(11 %)	0.001**
	Junior high school	75(75 %)	25(25 %)	
	Senior high school	21(21 %)	29(29 %)	
	Post-diploma and bachelor	0	27(27 %)	
	Master and higher	0	8(8 %)	
Maternal employment status	Employed	3(3 %)	13(13 %)	0.009*
	Unemployed	97(97 %)	87(87 %)	
Gravida	1	93(93%)	30(30%)	0.001**
	2-3	7(7%)	63(63%)	
	4-5	0	7(7%)	
Spouse employment status	Employed	96(%96)	93(%93)	0.269*
	Unemployed	4(%4)	7(%7)	
Maternal age/ years		16.95±0.87	27.39±4.26	0.001***
Spouse age/ years		25.96±1.75	32.88±4.74	0.001***

Fisher's exact test, **Chi-square, *** independent sample t-test *

There were only eight adult women ≥ 19 years (8%) and four women < 19 years (4%) that exhibited PPD, while the overall prevalence was 6%. No significant difference between the two groups was found for cases of PPD (P=0.234). The stepwise logistic regression analysis revealed significant relationships between PPD with gravida and spouse employment status ($p<0.001$) (Tables 2 and 3). However, there were no significant relationships between PPD with education, employment status, mother age, and spouse age. According to Table 2, the prevalence of PPD was higher in multi-gravid women (gravida = 4-5) than in women with a lower gravida (gravida = 1) (42.9 %vs. 4.9% , respectively) In contrast, this condition in participants < 19 years was opposite (0 vs. 4.3%) (Table 2). The results of the stepwise logistic regression analysis are presented in Table 3. The employment status of the spouse affected the prevalence of PPD. In other words, the prevalence of depression in women with unemployed spouses was higher than in women with employed spouses (100% vs. 0) (Table 3).

Table 2. Relationship between the prevalence of postpartum depression and gravida

Group	postpartum depression in Adolescent (<19)		postpartum depression in Adult (≥19)		Total	
Gravida	Yes	No	Yes	No	Yes	No
1	4(4.3)	89(95.7)	2(6.7)	28(93.3)	6(4.9)	117(95.1)
2-3	0(0)	7(100)	3(4.8)	60(95.2)	3(4.3)	67(95.7)
4-5	0(0)	0(0)	3(42.6)	4(57.1)	3(42.9)	4(57.1)
total	4(4)	96(96)	8(100)	92(100)	12(6)	188(94)

Table 3. Relationship between the prevalence of postpartum depression and spouse employment

Prevalence of postpartum depression	Postpartum depression Adolescent		Postpartum Depression Adult		Total	
Spouse employment status	Yes	No	Yes	No	Yes	No
Employed	0(0)	3(3.1)	0(0)	13(14.1)	0(0)	16(8.5)
Unemployed	4(100)	93(96.9)	8(100)	79(85.9)	12(100)	172(91.5)
	4(100)	96(100)	8(100)	92(100)	12(100)	188(100)

Discussion

The present study showed that the prevalence of PPD in the sample of women from Northwest Iran was 6%. This finding was consistent with the results reported by Mahdavy and Kheirabadi, where the prevalence of PPD was 7.1% for women from Natanz (6,17). Nevertheless, a higher PPD prevalence has been reported in other parts of Iran, such as 21.5% in Gonabad, 30% in Tehran, 33.7% in Zahedan, and 40% in Qom. In addition, the prevalence of PPD in Iran was reported at 25.3%, which is higher than this study (18-23). However, a similar PPD prevalence to the present study has been reported in some developed countries, such as Denmark (5.6%) (23). Nonetheless, the prevalence of PPD varies widely, as demonstrated by 13.8% reported in Japan and 37% reported in Argentina (24-25). Social support has the potential to reduce depression during pregnancy and postnatal. Therefore, the participants in the present study may have received adequate social and emotional support, which explain the low prevalence of PPD (26).

The prevalence of PPD in Adolescent women <19 years and adults with ≥ 19 years were not statistically different. However, previous studies have reported a significantly higher prevalence of PPD in adolescent women compared to adults (13,27,28). In addition, Leshkaripor et al. showed a significant relationship between PPD and maternal age (20). They indicated that the mean score of depression was higher in the adolescent group, which is not in line with the result of the present study. These studies suggest that the higher prevalence of PPD in adolescent mothers might be the result of the mother's unwillingness to accept maternal responsibilities, followed by feelings of inadequacy and depression. Similarly, other studies did not find any significant association between maternal age and the prevalence of PPD, which is consistent with our findings (6,29-30).

These inconsistencies may be cultural differences and attitudes toward young mothers in different societies. Social support is an important protective factor against PPD (26,31), and in some communities, it is significantly higher for adolescents compared to adult mothers (31). The findings of a recent systematic review showed that the main risk factors for PPD in adolescent women include a history of previous depression, lack of social support, and economic problems (32).

The present study showed that the prevalence of PPD in participants ≥ 19 years was significantly associated with the number of gravida, and it was higher in multi-gravid women. In contrast, the prevalence of PPD was higher in low-gravid participants < 19 years. This finding is consistent with Moshki, Khorramirad, and Rahmani (8,18,33). As the number of pregnancies and children increases, a mother's rest time decreases, resulting in the opportunity to recover her strength and refresh. Furthermore, it leads to the mother's constant fatigue and being prone to PPD (33,34). Contrary to this finding, Saei et al. and Leshkaripor et al. reported no

relationship between PPD and the number of pregnancies (20,30). The findings of the present study showed that the prevalence of PPD in women ≥ 19 years was significantly associated with the spouse's employment status. Specifically, the frequency of depression was significantly higher in women whose husbands were unemployed. Similarly, Adeoye et al. revealed that unemployment status was significantly associated with PPD (35). Given that the main burden of the family economy is mainly on men`s shoulders in our society, the unemployment of the spouse could bring about worries and challenges, including depression for the whole family.

In the present study, there was no significant relationship between PPD in women < 19 years with education level, employment status, number of pregnancies, spouse employment status, and spouse age. Also, there was no significant relationship between PPD in women ≥ 19 years with education level, employment status, and age of husband. Similarly, Mahdavy stated that PPD had no significant relationship with maternal education, occupation, and number of pregnancies (6). Khooshemehry et al. also showed that PPD had no significant relationship with maternal education and employment (19). Saei et al. reported no association between PPD and female education and employment and a husband's education (30). Additionally, Moshki et al. found no association between PPD and maternal education (18). However, Leshkaripor et al. reported a significant relationship between job and maternal education with PPD, so depression was noticeable in homemakers and less educated women (20). In addition, the findings of Salehi et al. showed that higher education reduces the chances of PPD (36). In general, different studies reveal different factors; cultural, social, and genetic differences between communities and methodological differences such as types of tools and timing of depression assessment -associated with PPD, which indicates the complex etiology of PPD. The present study had limitations, which should be acknowledged when interpreting the results. Firstly, some women required assistance to complete the questionnaire due to low literacy. Secondly, the questionnaire could not precisely distinguish between mild, moderate, and severe depression. Finally, the study population recruited women from urban regions. Therefore, the prevalence of PPD for women in rural areas is not reflected in the results from the present study and would be different according to socio-cultural factors, beliefs, and customs.

Conclusion

The present study suggests that the prevalence of PPD in women from Northwest Iran is low; There was no difference between women aged < 19 years and ≥ 19 years for prevalence of PPD. PPD appears to be associated with gravida and spouse's employment status in women >19 years. Depression affects all aspects of the quality of life for a mother and her family. Thus, the problem can be dealt with through early diagnosis, social support, and educational programs during pregnancy and postpartum.

Acknowledgments

The authors would like to thank all the participants for participating in this study.

References

1. Yu, Milly. "Are risk factors for postpartum depression different between adult and adolescent mothers of infants in neonatal intensive care?" PhD diss., 2022.
2. Masih J, Masih C. Effects of Postpartum Depression (PPD) in Working Women. J Anxiety Depress. 2022;5(2):148-152.
3. Bährer-Kohler S. Introduction to the Book: Global Mental Health: Promotion and Prevention. In: *Global Mental Health.* Springer; 2017:1-8.
4. Egmose I, Tharner A, Liebenberg KB, Steenhoff T, Væver MS. Long-term effects of maternal postpartum depression on others' and fathers' parenting stress. Early Child Development and Care. 2022;192(2):220-32.
5. Asaye MM, Muche HA, Zelalem ED. Prevalence and Predictors of Postpartum Depression: Northwest Ethiopia. Psychiatry J. 2020 Jan 21;2020:9565678. doi: 10.1155/ 2020/ 9565678. Erratum in: Psychiatry J. 2020 Sep 10;2020:9084894. doi: 10.1155/2020/9084894. PMID: 32411780; PMCID: PMC7204318.
6. Mahdavy M, Kheirabadi G. The Prevalence of Postpartum Depression and Its Related Factors among Women in Natanz City in 2018 (Iran). *Qom*

University of Medical Sciences Journal. 2020; 14(2): 78-85.
7. Arian H, Ghahremani S, Rakhshanizadeh F, et al. Factorial structures of postpartum bonding questionnaire (PBQ): A systematic review. Int J Pediatr. 2019;7(4):9295-303.
8. Khorramirad A, Lotfi MM, Bidgoli ASJPJ. Prevalence of postpartum depression and related factors in Qom. Pajoohandeh Journal. 2010; 15(2):62-66.
9. Zare M, Mardi A, Gaffari-Moggadam M, Nezhad-Dadgar N, Abazari M, Shadman A, et al. Reproductive health status of adolescent mothers in an Iranian setting: a cross-sectional study. Reproductive health. 2022; 19(1): 1-7.
10. Limlomwongse N, Liabsuetrakul T. Cohort study of depressive moods in Thai women during late pregnancy and 6–8 weeks of postpartum using the Edinburgh Postnatal Depression Scale (EPDS). Arch Womens Ment Health. 2006; 9(3): 131-8.
11. Mardi A, Ebadi A, Moghadam ZB, et al. Perceptions of teenage women about marriage in adolescence in an Iranian setting: A qualitative study. J Electronic physician. 2018;10(2):6292.
12. Agnafors S, Bladh M, Svedin CG, et al. Mental health in young mothers, single mothers and their children. BMC Psychiatry. 2019; 19(1): 1-7.
13. Mbawa M, Vidmar J, Chingwaru C, et al. Understanding postpartum depression in adolescent mothers in Mashonaland Central and Bulawayo provinces of Zimbabwe. Asian J Psychiatr. 2018;32:147-150.
14. Kingston D, Heaman M, Fell D, et al. Comparison of adolescent, young adult, and adult women's maternity experiences and practices. Pediatrics. 2012;129(5):e1228-e1237.
15. Johannsen BM, Mægbæk ML, Bech BH, Laursen TM, Munk-Olsen T. Divorce or Separation Following Postpartum Psychiatric Episodes: A Population-Based Cohort Study. The Journal of Clinical Psychiatry. 2021; 82(3): 29461.
16. Barzkar M, Kohnavar S, Nagizadeh M. A Case-Control study of Depression, Anxiety and Stress in pregnant adolescent women in comparison with adult pregnant women coming to Vali Asr Gyneocology clinic, Fasa in 2015. Fasa: Fasa University of Medical Sciences. 2015.
17. Montazeri A, Torkan B, Omidvari S. The Edinburgh Postnatal Depression Scale (EPDS): translation and validation study of the Iranian version. BMC psychiatry. 2007;7(1):1-6.
18. Moshki M, BaloochiBeydikhti T, Cheravi K. The relationship of postpartum depression to health control beliefs and demographic factors. J Adv Med Biomed Res. 2014;22(92):74-85.
19. Khooshemehry G, Feizabady AS, Naserkhaki V. Prevalence of postpartum depression and the factors that decides in clinics in the North of Tehran. Avicenna Journal of Nursing and Midwifery Care. 2011;19(1):59-69.
20. Leshkaripor K, Bakhshaee N, Hokmababdi S. Evaluation of postpartum depression and its related factors: 5-month evaluation. Journal of Principles of Mental Health. 2011; 13:1-9.
21. Habibzadeh A, Habibzadeh Z. Evaluation of effective factors and its prevalence on postpartum depression among women in the city of Qom, Iran. J Int J of Women's Health Reproduc Sci. 2016; 4(1): 23-28.
22. Veisani Y, Delpisheh A, Sayehmiri K, et al. Trends of Postpartum Depression in Iran: A Systematic Review and Meta-Analysis. Depress Res Treat. 2013;2013:291029.
23. Ertmann RK, Lyngsøe BK, Nicolaisdottir DR, Kragstrup J, Siersma V. Mental vulnerability before and depressive symptoms during pregnancy and postpartum: a prospective population-based cohort study from general practice. Nordic Journal of Psychiatry. 2022; 76(4):243-9.
24. Miyake Y, Tanaka K, Sasaki S, et al. Employment, income, and education and risk of postpartum depression: the Osaka Maternal and Child Health Study. J Affect Disord. 2011;130(1-2): 133-137.
25. Mathisen SE, Glavin K, Lien L, et al. Prevalence and risk factors for postpartum depressive symptoms in Argentina: a cross-sectional study. Int J Womens Health Reproduc. 2013;5:787.
26. Taylor BL, Nath S, Sokolova AY, Lewis G, Howard LM, Johnson S, et al. The relationship between social support in pregnancy and postnatal depression. Social psychiatry and psychiatric epidemiology. 2022;22:1-5.
27. Kim TH, Connolly JA, Tamim H. The effect of social support around pregnancy on postpartum depression among Canadian teen mothers and adult mothers in the maternity experiences survey. BMC pregnancy Childbirth. 2014;14(1):1-9.
28. Nunes AP, Phipps MG. Postpartum depression in adolescent and adult mothers: Comparing prenatal risk factors and predictive models. J Maternal. 2013;17(6):1071-1079.
29. McCoy SJB, Beal JM, Shipman SBM. Risk factors for postpartum depression: a retrospective investigation at 4-weeks postnatal and a review of the literature. J Am Osteopath Assoc. 2006; 106(4): 193.
30. Saei GNM, Mohaddesi H, Edalatnemun R. The predisposing factors of postpartum depression in women referring to selected health centers in Urmia in 2015. Nurs Midwifery J. 2017; 14(11): 918-25.
31. Decastro F, Hinojosa-Ayala N, Hernandez-Prado B. Risk and protective factors associated

with postnatal depression in Mexican adolescents. J Psychosom Obstet Gynaecol. 2011; 32(4):210-17.
32. Hymas R, Girard L-C. Predicting postpartum depression among adolescent mothers: A systematic review of risk. J Affect Disord. 2019; 246:873-885.
33. Rahmani F, Seyedfatemi N, Asadollahi M, et al. Predisposing factors of postpartum depression. Iran Journal of Nursing. 2011; 24(72): 78-87.
34. Hung CH, Lin CJ, Stocker J, et al. Predictors of postpartum stress. J Clin Nurs. 2011; 20(5):666-74.
35. Adeoye IA, Sogbesan A, Esan O. Prevalence, associated factors and perinatal outcomes of antepartum depression in Ibadan Nigeria. BMC pregnancy and childbirth. 2022;22(1):1-1.
36. Salehi L, Tavafian S, Salehi F. Demographic features affecting on postpartum depression. Adv Nurs. 2009;18(64):25-33.