

## Comparing the Severity of Obsessive-Compulsive Symptoms in Pre-pregnancy, Pregnancy, and Postpartum Period among Women of reproductive age

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### ABSTRACT

**Background & aim:** Obsessive-Compulsive disorder is considered as one of the most common disorders in pregnancy and postpartum period. There are few studies in this regard in Iran. Therefore, the purpose of the current study was to compare the severity of obsessive-compulsive symptoms in pre-pregnancy, pregnancy, and postpartum period among women of reproductive age.

**Methods:** This descriptive-comparative study was carried out on 900 eligible women (500 non-pregnant women, 200 pregnant women, and 200 in postpartum period) referred to health centers in Mashhad in 2011, who were selected using multi-stage sampling method. The data were collected by Madezly and Yale Brown Obsessive-Compulsive scale and analyzed using descriptive statistics, Kruskal-Wallis one-way analysis of variance, and Mann-Whitney U test in SPSS software (version 11) with the confidence level of 95%.

**Results:** The obtained results of Kruskal-Wallis test showed that there was significant statistical difference between the groups of pre-marriage (15.9±7.1), pregnancy (20.6±4.5), and postpartum period (20.9±5.1) in terms of mean score of obsessive-compulsive symptoms (P=0.007).

**Conclusion:** Women in their pregnancy and postpartum period are at risk of obsessive-compulsive disorder that mostly are not recognized. As a consequence, it is necessary for healthcare centers to take required measures in this regard.

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## Introduction

Pregnancy is the most beautiful and memorable period of a women's life and in addition to midwifery and medical issues, it comprises of emotional, social, and psychological aspects (1). Therefore, hormonal, biological, psychological, and social changes of this period lead to women's vulnerability toward different medical and psychiatric disorders especially anxiety and depression (2).

It is considered as the biggest period of compatibility in parent's life especially the

mother, and it is associated with psychological and physical stress as the result of neonate's birth, responsibility after delivery, some issues related to caring, and mother and newborn attachment (3). However, most of pregnant women do not attempt for any treatment or may have delay in their decision for treatment because they consider that the psychological issues of this period are merely hormonal changes (1).

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In fact, psychopathology in pregnancy and postpartum period is a common event (4). Therefore, psychiatric disorders related to this period, such as psychoses and postpartum depression are known phenomena (5). Furthermore, obsessive-compulsive disorder in mothers often occurs after delivery and as the result of facing with health needs of newborn (6, 7). It is a common disorder among women than men and mostly starts in childbearing age due to pregnancy and childbearing, and most of the time it is simultaneously observed, along with depression disorder (1).

According to the diagnostic criteria of fifth version of Diagnostic and Statistical Manual of Mental Disorders, obsessive-compulsive disorder is recognized by repetitive and permanent thoughts and imaginations, as well as repetitive behaviors in order to respond to these thoughts (7). This disorder is often observed in mothers by the fear of intentional or accidental harming and constantly checking neonate in terms of infection, and frequent washing of hands and preventive behaviors (6). The reason for this disorder is not completely obvious; however, there are some evidences that show some factors, such as genetic and environmental effects, as well as functional abnormalities in neurotransmitters of the brain, which may lead to this kind of disorder (8).

On the other hand, some researchers believe that generally serotonin system disorders are involved in having obsessive thoughts and behaviors. In this regard, it seems that fast fluctuation of estrogen and progesterone levels during pregnancy and postpartum period change the serotonin transmission, reabsorption, as well as connection, and it is associated with intensification of obsessive-compulsive symptoms (9). Consequently, the lifetime prevalence of this disorder in general population is stable and is estimated about two to three percentage, as well as the fact that some environmental stressful factors especially stress of pregnancy, childbearing, or caring of children can accelerate and intensify Obsessive-Compulsive disorder in parents (10).

Therefore, the results of a meta-analysis study showed that prevalence rates of obsessive-compulsive disorder in pregnancy

(2.07%) and postpartum period (2.43%) are higher than that in general population (1.08%) (11). Furthermore, the findings revealed the high risk of Obsessive-Compulsive disorder in pregnancy (12). Meanwhile, postpartum period is also the time of high risk for the intensification of obsessive-compulsive symptoms and at least lasts for six months (5); moreover, in chronic conditions, it can affect maternal life and viewpoint toward life (13) and may lead to aggressive behaviors toward neonate (14).

After active brain patterns in response to social and psychological stresses, women with Obsessive-Compulsive disorder may have more stressful and automatic responses toward postpartum issues than their peers (6). On the other side, the results of studies showed that the frequency of abortion in mothers with obsessive-compulsive symptoms is less than that in women without the symptoms of such disorder, and there is no relationship between the severity of obsessive-compulsive symptoms and special complications of midwifery in pregnancy and postpartum period (4).

Consequently, obsessive-compulsive symptoms are accompanied with chronic complications and disabilities, as well as the reduction of life quality in pregnancy and postpartum periods. Given the differentiation of obsessive-compulsive disorder prevalence across different cultures, psychologists believe that the findings of one country regarding this disorder cannot be utilized as scientific, fundamental, and functional principles in other cultures (10, 15). Regarding this, it seems that the early diagnosis of obsessive-compulsive disorder in pregnancy and postpartum period can help the clinicians to outline a general treatment plan to solve maternal problems regarding stressful conditions faced during pregnancy and childbearing and the associated complications by the adoption of early measures and treatments (10).

Meanwhile, due to obsessive-compulsive symptoms the prevalence of women in childbearing ages screened in terms of having such symptoms by psychological counseling before marriage can prevent from the recurrence of these symptoms and cause that disorder and complications with no medical

required treatment. Therefore, in order to perform screening, along with associated required costs in three periods of pre-marriage, pregnancy, and postpartum, the efficiency and effectiveness of health centers can be promoted in this regard (1). Consequently, the present study aimed to compare the severity of obsessive-compulsive symptoms in pre-marriage, pregnancy, and postpartum period among women referred to health centers of Mashhad in 2011.

## Materials and Methods

It is a descriptive cross-sectional study carried out comparatively on 900 women (500 women before marriage, 200 pregnant women, and 200 women in postpartum period) referred to health centers of Mashhad, Iran, from May 2011 to February 2012. The subjects were selected by cluster and quota sampling methods. Firstly, three health centers of Mashhad were chosen by convenience sampling method among all health centers of Mashhad and called health center number 1, 2, and 3.

Then, a list of health centers of Mashhad covered by health centers number 1, 2, and 3 was separately provided. The health centers with pre-marriage counseling were selected through the list and the other centers were eliminated. Afterwards, two health centers were chosen from each of the health centers number 1, 2, and 3 through the list using quota sampling and based on the number of their clients for pre-marriage counseling (totally six health centers).

In order to perform sampling from the groups of pre-marriage, pregnancy, and postpartum period, the researcher referred to each of the above-mentioned centers. In pre-marriage group, the selection was from people referred to the centers weekly on even days to receive pre-marriage counseling; in pregnancy group, the selection was conducted from women referred to the centers weekly in a certain day and participated in pregnancy classes, at the end of classes with the permission of trainer and participants.

In order to perform sampling for postpartum group, a list of people covered by each center and passed two to six weeks after delivery was supplied and their phone numbers were randomly taken; then, they were invited to that

health center to participate in the study. The sample size consisted of 153 individuals for each group and was calculated based on Abramowitz et al. study (2010) (16), Cochran's formula (unknown sample size) ( $n = \frac{z^2 pq}{d^2} \cdot (1 + \frac{1}{N})$ ), with a 95% confidence level ( $\alpha=0.05$ ) and 80% test power ( $\beta=0.2$ ). Due to the sample drop and global prevalence of intellectual-practical obsession that is about 2 to 3 percentage, 500, 200, and 200 cases were placed in pre-marriage, pregnancy, and postpartum groups, respectively.

The inclusion criteria of the present study were the tendency of participants based on their consent form, reading and writing literacy, first-time marriage, Iranian nationality, the lack of any kind of psychiatric disorder or drugs consumption associated with psychology, and lack of major stress during the last six months (that was mentioned in the case of that client). The data were obtained using participants' profiles, Madezly obsessive-compulsive questionnaire, and Yale Brown obsessive-compulsive severity scale.

Madezly obsessive-compulsive questionnaire is a standard tool to examine the type and area of obsessive disorders, including 30 items with correct answer=1 and wrong answer=0. The test score is within the range of 0-30 and the higher scores show more obsessive-compulsive symptoms. The cut-off point of the questionnaire is 15 years. The reliability of the questionnaire was confirmed through internal consistency rendering a Cronach's alpha coefficient of 0.86.

Yale Brown obsessive-compulsive severity scale is a standardized tool to evaluate the severity of obsessive symptoms (17). This scale includes 10 components that five of them evaluate obsessive thoughts and the other five items assess obsessive actions. Each component is graded from zero (with no symptom) to four (very intensive symptoms). The subscale score and the total score ranges of obsessive-compulsive severity are from 0-20 and 0-40, respectively.

New studies determine the cut-off point of 17 as the least severity of disorder that requires treatment. The reported scores between 8 to 16 displays mild obsession, between 17 to 23 presents average obsession,

between 24 to 31 shows intensive obsession, and between 32 to 40 suggests very intensive obsession. The reliability was confirmed by internal consistency rendering a Cronbach's alpha coefficient of 0.79.

After the study was approved by the Ethics Committee of Mashhad University of Medical Sciences, the researcher referred to the selected health centers to obtain data and to verify eligible individuals. The participants should have written consent and then complete demographic characteristic questionnaire and Madezly obsessive-compulsive questionnaire.

Then, the subjects who obtained Madezly obsessive-compulsive questionnaire score of 15 and higher than that were entered to the study to examine their severity of obsessive-compulsive intensity; as well as those that completed Yale Brown obsessive-compulsive scale. The data were analyzed using descriptive statistics, Fisher's exact test, Kruskal-Wallis one-way analysis of variance, and Mann-Whitney U test in SPSS software (version 11).

## Results

A total of 900 individuals entered the study, including 500, 200 and 200 individuals in pre-marriage, pregnancy, and postpartum groups, respectively. According to table 1, the most frequent demographic information in pre-marriage group was: 208 students (41.6%), 216 individuals with diploma degree (43.2%), 361 cases with non-family marriage (72.2%), 496 subjects with no physical illnesses background (99.2%), 500 participants with no psychological disorders background (100%), and 497 individuals with no obsessive-compulsive background (99.4%) with the mean age of  $20.9 \pm 4.3$  years.

The most frequent demographic information of pregnancy group was: 181 housewives (90.5%), 100 cases with diploma degree (50%), 141 individuals with non-family marriage (70.5%), 197 subjects with no physical illnesses background (98.5%), 199 participants with no psychological disorders background (99.5%), 194 individuals with no obsessive-compulsive background (97%), 197 cases with no multiple-birth background (98.5%), 180 subjects with no abortion background (90%), 194 participants with no stillbirth background (97%), 181 cases

with no infertility background (90.5%), 193 individuals with no bleeding background (96.5%), 192 subjects with preterm delivery (96%), 191 cases with low-weight neonate (95.5%), 194 participants with no high blood pressure during pregnancy (97%), and 198 individuals with diabetic during pregnancy (99%) with the mean age of  $24.8 \pm 4.2$  years.

The most frequent demographic information for postpartum group was: 185 housewives (92.5%), 101 individuals with diploma degree (50.5%), 135 cases with non-family marriage (67.5%), 197 subjects with no physical illness background (98.5%), 200 participants with no psychological disorder background (100%), 195 individuals with no obsessive-compulsive background (97.5%), 191 cases with no multiple-birth background (95.5%), 174 subjects with no abortion background (87%), 196 participants with no stillbirth background (98%), 181 individuals with no infertility background (90.5%), 199 cases with no bleeding background (99.5%), 179 subjects with no preterm delivery background (89.5%), 180 participants with no low-weight newborn (90%), 180 individuals with no high blood pressure during pregnancy (90%), and 190 cases with no diabetic background during pregnancy with the mean age of  $26.1 \pm 4.5$  years.

According to Table 2, due to the abnormal distribution of obsessive-compulsive severity data, the Kruskal-Wallis test was used to compare pre-marriage, pregnancy, and postpartum groups and the obtained results showed that there was a statistically significant difference between the mentioned groups regarding the mean score of obsessive-compulsive severity ( $P=0.007$ ). The obtained results of Mann-Whitney U test in two by two comparison of obsessive-compulsive severity showed that there was a statistically significant difference between pre-marriage and postpartum groups ( $P=0.003$ ) and between pre-marriage and pregnancy groups ( $P=0.007$ ) in terms of the mean score of obsessive-compulsive intensity. However, there was no statistically significant difference between pregnancy and postpartum groups considering the mean value of obsessive-compulsive severity ( $P=0.674$ ).

**Table 1.** Frequency distribution of research participants based on demographic data in pre-marriage, pregnancy, and postpartum groups

Variable	Group							
	Pre-marriage		Pregnancy		Postpartum			
	n	%	n	%	n	%		
Job								
Housewife	192	38.4	181	90.5	185	92.5	■X <sup>2</sup> =272.6 P=0.001	
Student	208	41.6	7	3.5	4	2.0		
Unemployed	48	9.6	4	2	5	2.5		
Employee	52	10.4	8	4	6	3.0		
Educational level								
Elementary and lower	23	4.6	18	9.0	30	15.0	■X <sup>2</sup> =60.30 P=0.001	
Secondary school	74	14.8	48	24.0	33	16.5		
High school	216	43.2	100	50.0	101	50.5		
Academic	187	37.4	34	17.0	36	18.0		
Type of marriage								
Family	139	27.8	59	29.5	65	32.5	■X <sup>2</sup> =1.535 P=0.46	
Non-family	361	72.2	141	70.5	135	67.5		
Disease history								
Physical	Yes	4	0.8	3	1.5	3	1.5	■X <sup>2</sup> =0.991 P=0.61
	No	496	99.2	197	98.5	197	98.5	
Psychological	Yes	0	0.0	1	0.5	0	0.0	■X <sup>2</sup> =3.504 P 0.173
	No	500	100.0	199	99.5	200	100.0	
Obsessive-Compulsive	Yes	3	0.6	6	3.0	5	2.5	■X <sup>2</sup> =7.28 P=0.022
	No	497	99.4	194	97.0	195	97.5	
Multiply pregnancy	Yes	-	-	197	98.5	191	95.5	■X <sup>2</sup> =3.1 P=0.140
	No	-	-	3	1.5	9	4.5	
Abortion	Yes	-	-	180	90.0	174	87.0	■X <sup>2</sup> =0.884 P=0.347
	No	-	-	20	10.0	26	13.0	
Stillbirth	Yes	-	-	194	97.0	196	98.0	■X <sup>2</sup> =0.41 P=0.520
	No	-	-	6	3.0	4	2.0	
Infertility	Yes	-	-	181	90.5	181	90.5	■X <sup>2</sup> =0.00 P=1.000
	No	-	-	19	9.5	19	9.5	
Bleeding	Yes	-	-	193	96.5	199	99.5	■X <sup>2</sup> =4.5 P=0.070
	No	-	-	7	3.5	1	0.5	
Preterm labor	Yes	-	-	192	96.0	179	89.5	■X <sup>2</sup> = 6.3 P=0.010
	No	-	-	8	4.0	21	10.5	
Low-weight neonate	Yes	-	-	191	95.5	180	90.0	■X <sup>2</sup> =4.5 P=0.030
	No	-	-	9	4.5	20	10.0	
Blood pressure in pregnancy	Yes	-	-	194	97.0	180	90.0	■X <sup>2</sup> =8.06 P=0.008
	No	-	-	6	3.0	20	10.0	
Diabetes in pregnancy	Yes	-	-	198	99.0	190	95.0	■X <sup>2</sup> =5.5 P=0.040
	No	-	-	2	1.0	10	5.0	
Age		Mean±SD		Mean±SD		Mean±SD	■X <sup>2</sup> =0.208 P=0.001	
		26.1±4.5		24.8±4.2		26.1±4.5		

According to Table 2, in order to compare pre-marriage, pregnancy, and post-partum groups, one-way analysis of variance was used due to the abnormal data distribution of thought obsessive severity and the findings revealed that there was a statistically significant difference between the three mentioned groups (P=0.019).

However, there was no statistically

The results of Tukey test indicated that there was a statistically significant difference between pre-marriage and pregnancy groups (P=0.013), as well as between pre-marriage and postpartum groups (P=0.017) in terms of the mean score of thought obsessive severity.

significant difference between the pregnancy

and postpartum groups ( $P=0.18$ ). On the other hand, the findings of Kruskal-Wallis statistical test revealed that there was a statistically significant difference in comparison between

the average severity of practical obsessive severity among the three mentioned groups ( $P=0.001$ ).

**Table 2.** Comparison of mean scores of obsessive-compulsive disorder in pre-marriage, pregnancy, and postpartum groups

	Pre-marriage		Pregnancy		Postpartum		
	n	Mean±SD	n	Mean±SD	n	Mean±SD	
Severity of obsessive-compulsive disorder - based on Yale-Brown obsessive compulsive scale score	20	15.9±7.1	37	20.6±4.5	48	20.9±5.1	■X <sup>2</sup> =845.9 P= 0.007
Thought of obsessive severity	20	8.7±4.1	37	10.5±2.7	48	10.9±2.9	■X <sup>2</sup> =845.9 P=0.019
Practical obsessive severity	20	7.4±3.9	37	10.2±2.9	48	10.1±2.8	■X <sup>2</sup> =487.13 P=0.001

**Table 3.** Frequency of obsessive-compulsive disorder in pre-marriage, pregnancy, and postpartum groups

Severity of obsessive-compulsive symptoms	Group						Result
	Pre-marriage		Pregnancy		Postpartum		
	n	%	n	%	n	%	
Mild obsession	11	55	3	8.1	0	0	■X <sup>2</sup> =623.42 P=0.001
Medium obsession	6	30	24	64.9	36	75.0	
Intense obsession	3	15	9	24.3	8	16.7	
Much obsession	0	0	1	2.7	4	8.3	

- Chi-square test
- Fisher's exact test
- Kruskal-Wallis test
- Analysis of variance test

In two by two comparison of practical obsessive severity, the results of Man-Whitney U test indicated that there was a statistically significant difference between the pre-marriage and post-partum groups ( $P=0.023$ ) and between pre-marriage and pregnancy groups ( $P=0.017$ ) in terms of the average score of practical obsessive severity.

However, there was no statistically significant difference between the pregnancy and postpartum groups regarding the average score of practical obsessive severity ( $P=0.71$ ). According to Table 3, the results of Chi-square test showed that there was a statistically significant difference between the pre-marriage, pregnancy, and postpartum groups considering the frequency of obsessive-compulsive severity ( $P=0.001$ ).

## Discussion

The purpose of the present study was to compare the frequency of obsessive-compulsive

symptoms in pre-marriage, pregnancy, and postpartum period among women who referred to health centers of Mashhad in 2011. The obtained results of this study showed that there was a statistically significant difference between the pre-marriage, pregnancy, and postpartum groups in terms of the severity of obsessive-compulsive symptoms. On the other hands, there was a significant difference in the severity of obsessive-compulsive symptoms between the pre-marriage and pregnancy groups and between the pre-marriage and postpartum groups.

On the other hand, the findings revealed that the severity of obsessive-compulsive symptoms in pregnancy and postpartum groups was higher than that in pre-marriage group. Moreover, the findings showed that there was a statistically significant difference in the frequency of obsessive-compulsive symptoms between the pre-marriage, pregnancy, and post-partum groups. The most frequent severity of

obsessive-compulsive symptoms in pre-marriage group was mild, while the most frequent severity of compulsive-obsession in pregnancy and postpartum group was average.

The highest frequency of severe obsessive-compulsive was related to pregnant group and the highest frequency of very severe obsessive-compulsive symptoms was associated with postpartum group. Consequently, according to the fact that the average or high levels of obsessive-compulsive symptoms may be considered as a danger notation for this disorder, among women with Madezly scores of more than 15, it would be perceived that follow-up and treatment was required for 45%, 91.9%, and 100% of the cases in pre-marriage, pregnancy, and postpartum groups, respectively.

The results of Forray et al. study (2010) showed that among 75 pregnant women who entered the study, the onset of obsessive-compulsive symptoms was suggested as 32.1% before their delivery, 15.4% during pregnancy, and 1.3% at the end of pregnancy period. Among 132 pregnant women with obsessive-compulsive disorder, 34.1% of the subjects showed more severe symptoms during pregnancy, 22% of the participants demonstrated improved symptoms during pregnancy, and the severity of 34.9% of the cases had no changes during pregnancy (18). In the aforementioned study, only the obsessive-compulsive symptoms were investigated in postpartum period. In this regard, according to the findings, the higher severity of obsessive-compulsive symptoms is in line with the results of the present study.

However, there were some evidences based on the onset and worsening of obsessive-compulsive symptoms that is consistent with the results of the present study as higher severity of obsessive-compulsive symptoms are reported during pregnancy. The results of a study conducted by Namouz-Haddad et al. (2014) also revealed that the pregnancy and postpartum period might be considered as a high-risk time for obsessive-compulsive disorder and the worsening of associated symptoms. Although some of these symptoms overlap with pre-pregnancy concerns, most of them need follow-up and treatment (7).

In this study, the pre-marriage period was not investigated; however, the high possibility of this disorder during pregnancy makes it consistent with the present study. According to the results of a study carried out by Miller et al. (2013), the screening tests showed that 11% of pregnant women had obsessive-compulsive symptoms for 12 weeks after delivery and almost half of them showed sustained obsessive-compulsive symptoms in their first 6 months after delivery; in addition, the compulsive-obsession symptoms were developed in 5.4% of them.

On the other hand, some factors, such as anxiety and depression, are considered as predictive factors for obsessive-compulsive symptoms in postpartum period (5). This study was merely carried out regarding obsessive-compulsive symptoms in postpartum period and confirmed the results of the present study for many of obsessive-compulsive symptoms in postpartum period.

In fact, although clinical studies and practitioners are aware of psychological disorders of pregnancy and postpartum periods for years, most of them would not be identified and treated. One of the reasons for the lack of identifying this kind of disorder is the pressure in which the mother is bearing to suppress her feelings because she expects that it is associated with happiness for her (10). The pathology of obsessive-compulsive disorder in pregnancy and postpartum period is not identified. Some researchers believe that there are some fluctuations in the levels of estrogen and progesterone during pregnancy, and it can make changes in the transmission of serotonin that may lead to obsessive behaviors (9).

Other studies attribute the severity of these symptoms to the level of oxytocin in cerebrospinal fluid. Increasing the level of oxytocin at the time of approaching to delivery plays a key role in uterine contractions and milk production; therefore, it seems that the neuropeptide may affect obsessive-compulsive symptoms (18). On the other hand, according to cognitive-behavioral theory, it can be said that obsessive-compulsive disorder is mainly caused by intellectual process of prejudice in a way that even women with no psychological disorder

background may have thoughts of harming neonate.

However, when these thoughts are very important for a person, the clinical problem of obsessive-compulsive may occur, and the person may feel responsible in dealing with these thoughts (19). Therefore, the individual may be afraid of performing or thinking about unacceptable behaviors and the avoidance of its realization make her feel anxious and withdraw as a defensive mechanism that leads to problems in caring newborn that is considered a harmful behavior (20).

Consequently, according to the obtained results of the present study, due to severe obsessive-compulsive symptoms in pregnancy and postpartum period, in addition to essential caring of these periods it is necessary to take some measures in health centers for early identification, follow-up, and treatment of these cases. The results of a retrospective study carried out by Ugus et al. (2011) showed that the symptoms in 32.7% of women with obsessive-compulsive disorder background progressed during pregnancy; however, the symptoms in 13.5% of the cases reduced (21).

Although the aforementioned study was a retrospective one and obsessive-compulsive symptoms were merely investigated in pregnancy, the reduction of obsessive-compulsive symptoms in this period is not consistent with the results of the present study. Lack of professional psychiatric interview for a definitive diagnosis of this disorder was considered as one of the limitations of this study that should be investigated in future studies.

## Conclusion

The obtained results of the present study revealed that the severity of obsessive-compulsive symptoms in pregnancy and postpartum periods was higher than that in pre-marriage period. Therefore, follow-up, as well as pregnancy and postpartum care, regarding these symptoms is considered necessary in health centers.

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## Conflicts of interest

The authors declare no conflicts of interest.

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