Original Paper

Relationship Between Perceived Social Support and Anxiety in Pregnant Women With a History of Abortion

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ABSTRACT

Introduction: Abortion is a shocking and traumatic event that can lead to psychological disorders, such as anxiety, in women. Perceived social support of these women can be an appropriate method for helping them deal with challenging life events after abortion.

Objective: This study aims to determine the relationship between perceived social support and anxiety in pregnant women with a history of abortion.

Materials and Methods: In this analytical cross-sectional study, 193 pregnant women with a history of abortion participated. They were selected using a convenience sampling method from among those referred to the prenatal clinic of a hospital in Rasht, north of Iran. The data were collected by a sociodemographic/obstetric form, Spielberger's state and trait anxiety inventory-form Y, and the multidimensional scale of perceived social support. The collected data were analyzed using the Mann-Whitney U test, Kruskal-Wallis test, Spearman's correlation test, and multiple linear regression analysis.

Results: The mean age of women was 32.1±5.6 years and their mean gestational age was 24.6±10.9 weeks. The mean total scores of perceived social support, state anxiety, and trait anxiety were 64.2±14.9, 40.8±11.9, and 38.5±12.2, respectively. A significant negative correlation was observed between perceived social support and state anxiety (r=-0.267, P=0.001) and trait anxiety (r=-0.319, P=0.001). State anxiety was significantly different based on the interval between the current pregnancy and the previous abortion, educational level, family income level, type of pregnancy, and number of prenatal care visits (P=0.001). State anxiety was significantly different based on family income level, type of pregnancy, and the interval between the current pregnancy and the previous abortion (P=0.001). Based on multiple regression analyses, higher perceived social support could significantly predict the decrease in state anxiety (B=-0.18, 95% CI; -0.30%, -0.07%, P=0.002) and trait anxiety (B=-0.24, 95% CI; -0.36%, -0.11%, P=0.001).

Conclusion: Perceived social support can affect the state and trait anxiety of pregnant women with a history of abortion. Therefore, healthcare providers should consider the high level of anxiety in these women and provide counseling to their husbands or families to strengthen their social support for them.

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Highlights

● Pregnant women with a history of abortion have state and trait anxiety.

● The interval between the current pregnancy and the previous abortion and unplanned pregnancy can affect the anxiety of pregnant women.

● Perceived social support can reduce the anxiety of pregnant women with a history of abortion.

Plain Language Summary

The care and support of pregnant women, especially women with an unpleasant pregnancy experience (history of abortion), is more important because the experience of such event can lead to physical, psychological, and social complications. These pregnant women are prone to anxiety and need social support to adapt to challenging life events. The lack of social support can negatively affect their pregnancy outcome. This study found that pregnant women with a history of abortion experience both state and trait anxiety. Factors such as the time interval between the current pregnancy and the previous abortion and having unplanned pregnancy can affect their anxiety. Higher perceived social support can significantly reduce their state and trait anxiety. Thus, the increase of social support from family and friends can help improve the mental health of pregnant women with a history of abortion.

Introduction

Abortion is one of the most common complications during pregnancy [1, 2]. Each year, about 140 million pregnancies occur worldwide, of which about 25% end in spontaneous or induced abortion [3]. In Iran, although accurate information on abortion is not available [3], it is estimated that about 80,000 abortions occur annually [2]. Approximately 15-20% of all clinically recognized pregnancies result in spontaneous abortions [4]. Abortion is a harmful experience both physically and psychologically [5], which leads to many complications such as loss of self-confidence, initiation, or increase of alcohol or drug consumption [6], and can increase the risk of developing psychological disorders, such as anxiety [7, 8]. A significant percentage of women show high anxiety up to 6 months after abortion and are at high risk of post-traumatic stress disorder and obsessive-compulsive disorder [5, 9, 10]. Côté-Arsenault et al. reported that anxiety is higher in pregnant women with a history of perinatal loss [11]. Another study showed that the pregnant women with a history of spontaneous abortion have higher anxiety levels in the first trimester than women without a history of abortion [12].

Symptoms of anxiety caused by abortion may continue until the subsequent pregnancy [13] and cause complications such as vomiting, nausea, fatigue, preeclampsia [14], increased levels of cortisol hormones and stimulation of the adrenal gland and sympathetic system [15], preeclampsia [16], spontaneous abortion [17], and weight loss of the infant [16]. Therefore, there is a need to reduce anxiety in pregnant women. Since the medication therapy used to reduce the symptoms of anxiety during pregnancy may be associated with possible side effects such as premature delivery, many women may not want to take medications. In addition, previous studies have shown the mothers' higher satisfaction with non-pharmacological methods or treatments [18-20]. Social support is one of the non-pharmacological solutions to reduce anxiety [21] and one of the most effective tools to deal with challenging life events [22]. It refers to mental access to care and support received from a social network. It is characterized by emotional, informational, and instrumental support that can be provided by different sources, such as friends or family [23]. Social support indirectly (through increasing social adaptation) reduces people's reactions to stressful factors and ultimately improves their physical and mental health [24-26].

Despite the wide range of studies on the relationship between anxiety and perceived social support in pregnant women [22, 24, 26, 27], fewer studies have addressed the relationship between abortion-related anxiety and perceived social support [6, 28, 29], and there are contradictory results. The present study aims to determine the relationship between perceived social support and anxiety in pregnant women with a history of abortion.

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Materials and Methods

In this analytical cross-sectional study, 193 pregnant women referred to a maternity hospital in Rasht, north of Iran, were selected by using a convenience sampling method. The sample size was determined by considering a correlation coefficient of 0.2 (relatively small effect size) as the appropriate value of correlation between the studied variables, an 80% test power, a two-tailed alpha level of 0.05, and a 10% sample dropout rate. The inclusion criteria were: A history of abortion, positive pregnancy test, no fetal abnormality or child disability in the current and previous pregnancies, no mental illness or psychiatric disorders, no use of sedatives, narcotics or psychotropic drugs, no history of smoking and alcohol consumptions, and willingness to participate in the study.

Data were collected from May to July 2022 in a specialized women's hospital in Rasht, north of Iran in morning shifts. Before data collection, we explained the study objectives to the participants, ensured their confidentiality, and obtained their informed consent. Data was collected by a three-part questionnaire including a demographic form, Spielberger's state-trait anxiety inventory- form Y (STAI-Y), and the multidimensional scale of perceived social support (MSPSS).

The following sociodemographic\obstetric information was first recorded: Age, educational level, spouse's education, employment status, spouse's occupation, family income, gestational age, number of pregnancies, number of children, number of previous abortions, cause and type of abortion, the interval between the current pregnancy and the previous abortion, number of prenatal care visits, history of infertility, history of receiving prenatal care, and history of participation in childbirth preparation classes.

The STAI-Y was used to determine women's anxiety. It is a self-report tool with 40 items rated on a 4-point Likert scale from 1 to 4. This questionnaire has two subscales to measure state and trait anxiety. The state anxiety subscale has 20 items that assess a person's feelings at the moment and at the time of responding. The trait anxiety scale also has 20 items that measure a person's general and normal emotions [30]. The total STAI-Y score ranges from 40 to 160, with higher scores indicating higher anxiety. In this study, the Persian version was used [31].

The MSPSS was used to measure women's perceived adequacy of social support. It is a 12-item tool rated on a 5-point Likert scale from 0 (strongly disagree) to 5 (strongly agree) measuring social support from three sources: Family, friends, & significant others. The total score ranges from 12 to 84, where a higher score indicates more social support [32]. In this study, the Persian version was used [33].

Statistical analyses were performed in SPSS software, version 16 (SPSS Inc, Chicago, IL, USA) using the Mann-Whitney U test, Kruskal-Wallis test, Spearman's correlation test, and multiple linear regression analysis. P<0.05 was considered statistically significant.

Results

The participants' mean age was 32.1±5.6, and their mean gestational age was 24.6±10.9 weeks. The interval between the current pregnancy and abortion was 46.4±47.8 months. The majority of women had a high school diploma (38.3%) and were housewives (87.6%) from urban areas (74.1%), with a sufficient family income (74.1%). Most of them (78.8%) had one abortion, most of which (82.4%) were spontaneous. Also, the majority of them were pregnant with previous planning (59.6%) but did not receive prenatal care (62.7%). Other characteristics are presented in Table 1.

The perceived social support scores are plotted in Figure 1. The mean total score was 64.2±4.9. The mean scores for the support from family and significant others were significantly higher than the score for the support from friends (P=0.001). The mean score of trait anxiety was 38.5±12.2, and the mean score of state anxiety was 40.8±11.9. A significant negative correlation was observed between the scores of state anxiety (r=-0.267, P=0.001) and trait anxiety (r=-0.319, P=0.001) and the total score of perceived social support in pregnant women based on Spearman's correlation test results (Table 2).

The perceived social support was significantly different based on the husband's job, family income, number of prenatal care visits, and gestational age (P=0.001). Women's state anxiety was significantly different based on the interval between current pregnancy and previous abortion, level of education, family income level, unplanned pregnancy, and number of prenatal care visits. Women's trait anxiety was significantly different based on family income level, type of pregnancy, and the interval between the current pregnancy and the previous abortion (P<0.05) (Table 3).

Table 1. Sociodemographic/obstetric characteristics of the participants

Variables		No. (%)
Educational level	Reading and writing literacy	26(13.5)
	High school	41(21.2)
	Diploma	74(38.3)
	University degree	52(26.9)
Spouse's educational level	Reading and writing literacy	19(9.8)
	High school	55(28.5)
	Diploma	70(36.3)
	University degree	49(25.4)
Spouse's occupation	Unemployed	6(3.1)
	Self-employed	132(68.4)
	Employee	26(13.5)
	Worker	29(15)
Family income level	Low	47(24.4)
	Sufficient	143(74.1)
	High	3(1.6)
Place of residence	Urban areas	143(74.1)
	Rural areas	50(25.9)
Number of pregnancies	2	42(21.8)
	3	87(45.1)
	≥4	64(33.2)
Number of previous abortions	1	152(78.8)
	2	32(16.6)
	≥3	9(4.7)
Type of abortion	Spontaneous	159(82.4)
	Induced	34(17.6)
History of infertility	Yes	28(14.5)
	No	165(85.5)
Number of prenatal care visits	1-4	79(40.9)
	5-8	47(24.4)
	≥9	67(34.7)
History of participation in childbirth preparation classes	Yes	14(7.3)
	No	179(92.7)

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Table 2. Relationship between perceived social support and anxiety in pregnant women

Social Support Domains	State Anxiety		Trait Anxiety	
	r	P*	r	P*
Family	-0.256	0.001	-0.311	0.001
Friends	-0.115	0.111	-0.161	0.025
Significant others	-0.355	0.001	-0.383	0.001
Total	-0.267	0.001	-0.319	0.001

*Spearman correlation test

To find the predictors of perceived social support in pregnant women, multiple linear regression analysis was used, whose results are shown in Table 4. The results showed that family income level, number of prenatal care visits, and gestational age were significantly related to perceived social support. For every one week increase in the gestational age, the perceived social support score decreased by 0.42 (B=-0.42, 95% CI; -0.77%, -0.06%, P=0.022). The likelihood of having a higher perceived social support was 7.12 units higher in women with a sufficient or high family income level than those with a poor income level (B=7.12, 95% CI; 1.68%, 12.57%, P=0.011). Compared to those with 1-4 prenatal care visits, the likelihood of having a higher perceived social support was 12.69 units higher in women with 5-8 prenatal care visits (B=12.69, 95% CI; 5%, 20.38%, P=0.001) and 14.28 units higher in women with ≥9 visits (B=14.28, 95% CI; 5.69%, 22.86%, P=0.001). The coefficient of determination (R^2) was 0.260, indicating that these variables explained 26% of the variation in perceived social support.

In finding the predictors of state and trait anxiety, various factors, such as the interval between the current pregnancy and the previous abortion, family income level, type of pregnancy, number of prenatal care visits, and perceived social support, showed a significant relationship with state and trait anxiety (Table 5).

For every one month increase in the interval between the current pregnancy and the previous abortion, the state anxiety decreased by 0.06 units (B=-0.06, 95% CI; -0.09%, -0.02%, P=0.003). Women with a sufficient or high family income level were 4.91 units more likely to have low state anxiety than those with a low income level (B=-4.91, 95% CI; -9.00%, -0.83%, P=0.019). Women with unplanned pregnancies were 5.87 units more likely to have high state anxiety compared to those with planned pregnancies (B=5.87, 95% CI; 2.22%, 9.52% P=0.002). Women with ≥9 prenatal care visits were 6.79 units more likely to have high state anxiety compared to those with 1-4 visits (B=6.79, 95% CI; 0.28%, 13.30%, P=0.040). For every one unit increase in perceived social support, the state anxiety decreased by 0.18 units (B=-0.18, 95% CI; -0.30%, -0.07%, P=0.002). The R^2 value was 0.378, indicating that these variables explained 37.8% of the variation in state anxiety.

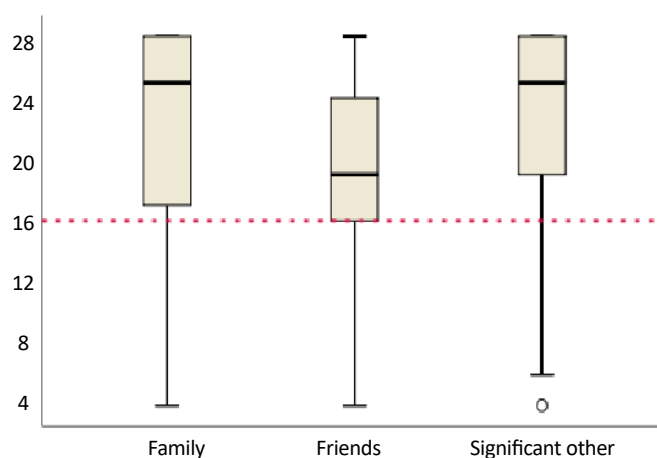

Figure 1. Box plot of the scores for the domains of perceived social support in pregnant women

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Table 3. Mean scores of perceived social support and anxiety based on sociodemographic/obstetric characteristics

Variables		Mean±SD Perceived Social Support	P	Mean±SD State Anxiety*	P	Mean±SD Trait Anxiety*	P
Educational level	Reading and writing literacy	65±13.1	0.053**	39.7±11.9	0.021**	38.4±13.8	0.121*
	High school	59.4±15		45.4±11.4		42.4±11.9	
	Diploma	64.2±15.8		40.3±10.6		37.5±11.2	
	University degree	67.7±13.7		38.4±13.4		37.1±12.5	
Occupation	Housewife	63.6±15.1	0.152*	41.4±11.9	0.057*	38.9±12.4	0.349*
	Employed	68.6±12.7		36.6±11.3		36.1±10.2	
Spouse's education level	Reading and writing literacy	60.4±15.7	0.643**	45.3±12.9	0.075**	42.9±13.2	0.137**
	High school	64±14.7		42.7±10.5		39.7±11.9	
	Diploma	64.6±15.3		38.6±11.4		36.8±11.9	
	University degree	65.4±14.6		40.0±13.1		38.0±12.2	
Spouse's occupation	Unemployed	53.5±22	0.049**	48.3±7.1	0.136**	46.3±6.3	0.064**
	Self-employed	64.6±13.9		40.9±11.9		38.1±12.5	
	Employee	69±16.5		37.3±12.2		36.1±12.3	
	Worker	60.7±15.2		42.0±11.8		41.0±10.8	
Family income level	Low	57.9±18.3	0.016**	47.1±13.6	0.001**	45.6±13.4	0.001**
	Sufficient	66.1±13.1		38.9±10.5		36.3±10.9	
	High	75±8.5		30.0±10.8		32.7±7.6	
Place of residence	Urban areas	64.9±14.4	0.376*	40.7±12.2	0.732*	38.4±12.5	0.616*
	Rural areas	62.3±16.3		40.9±11.3		38.7±11.4	
Number of pregnancies	2	65.6±13.6	0.625**	42.4±10.8	0.233**	38.8±10.7	0.684**
	3	64.7±15		39.0±10.6		37.3±11.2	
	≥4	62.7±15.7		42.1±13.9		40.0±14.2	
Number of previous abortions	1	64.6±14.7	0.835**	40.2±11.2	0.201**	38.0±11.4	0.230**
	2	62.8±15.6		44.3±13.2		41.6±13.8	
	≥3	63.1±17.1		38.6±16.7		35.9±17.8	
Type of abortion	Spontaneous	65.3±14.2	0.071*	40.3±11.5	0.253*	38.2±11.7	0.486*
	Induced	59.3±17.4		43.1±13.7		40.2±14.3	
History of infertility	Yes	64.6±17.4	0.631*	44.8±12.7	0.075*	41.7±13.7	0.150*
	No	64.2±14.5		40.1±11.7		38.0±11.8	

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Variables		Mean±SD	P	Mean±SD	P	Mean±SD	P
		Perceived Social Support		State Anxiety*		Trait Anxiety*	
Current pregnancy type	Planned	66.0±13.7	0.077*	38.5±10.8	0.002*	36.6±11.4	0.008*
	Unplanned	61.6±16.3		44.2±12.7		41.4±12.7	
Number of prenatal care visits	1-4	60.2±16.7	0.018**	41.5±12.4	0.093**	38.8±12.6	0.167**
	5-8	68.1±13.1		37.7±10.9		36.0±11.2	
	9≤	66.3±12.8		42.2±11.8		40.1±12.1	
History of receiving prenatal care	Yes	67.1±13.2	0.052*	39.3±11.1	0.374*	36.8±11.6	0.145*
	No	62.5±15.6		41.7±12.3		39.6±12.4	
History of participating in childbirth preparation classes	Yes	65.3±16.2	0.687*	42.9±13.2	0.409*	41.3±14.7	0.415*
	No	64.2±14.9		40.6±11.8		38.3±12.0	

*Mann-Whitney U test, ** Kruskal-Wallis test.

For every one month increase in the interval between the current pregnancy and the previous abortion, the trait anxiety decreased by 0.06 units (B=-0.06, 95% CI; -0.10%, -0.02%, P=0.005). Women with a sufficient or high family income level were 6.06 units more likely to have low trait anxiety (B=-6.06, 95% CI; 10.40%, -1.73%, P=0.006). Women with unplanned pregnancies were 4.13 units more likely to have high trait anxiety compared to those with planned pregnancies (B=4.13, 95% CI; 0.25%, 8.01%, P=0.037). For every one unit increase in perceived social support, trait anxiety decreased by 0.24 units (B=-0.24, 95% CI; -0.36%, -0.11%, P=0.001).

Discussion

The purpose of this study was to determine the relationship between perceived social support and anxiety in pregnant women with a history of abortion. According to the results, the perceived social support of women participating was at a favorable level, which is consistent with the previous studies [6, 34, 35]. How-ever, in Gao's study, women had a moderate level of social support [10]. The higher level of social support in the present study can be due to cultural differences. Pregnant women are important and valued in Iran and often receive good social support from family, friends, and society.

State and trait anxiety in pregnant women were at the moderate range. This is similar to Chen et al. 's results [34]. Another study reported that pregnant women with a history of abortion had moderate anxiety. The prevalence of anxiety in the first trimester of pregnancy in their study was 46.7% [35]. The findings of Kolte et al. also confirmed that women with a history of abortion are at a higher risk of suffering from anxiety in the subsequent pregnancy [36]. In the study by Gao et al., 47.6% of pregnant women with a history of abortion had severe anxiety [10]. The prevalence of trait anxiety in pregnant women in the present study may be due to traumatic memories from the previous pregnancy and fear of repeated abortion. Trait anxiety indicates a per-

Table 4. Results of multiple linear regression analysis for finding the predictors of perceived social support in pregnant women

Variables	B	Standard Error	β	t	P	95% CI (Lower, Upper)
Gestational age (weeks)	-0.42	0.18	-0.304	-2.32	0.022	-0.77, -0.06
Family income level (Low/sufficient/ high)	7.12	2.76	0.205	2.58	0.011	1.68, 12.57
Number of prenatal care visits (1-4 and 5-8)	12.69	3.90	0.366	3.26	0.001	5.00, 20.38
Number of prenatal care visits (1-4 and ≥9)	14.28	4.35	0.457	3.28	0.001	5.69, 22.86

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Table 5. Results of multiple linear regression analysis for finding the predictors of state and trait anxiety in pregnant women

Variables	State anxiety						Trait anxiety					
	B	95% CI (Lower, Upper)	SE	β	t	P	B	95% CI (Lower, Upper)	SE	β	t	P
Interval between the current pregnancy and the previous abortion (months)	-0.06	-0.09, -0.02	0.02	-0.228	-2.98	0.003	-0.06	-0.10, -0.02	0.02	-0.223	-2.82	0.005
Family income level (low/sufficient/high)	-4.91	-9.00, -0.83	2.07	-0.178	-2.38	0.019	-6.06	-10.40, -1.73	2.20	-0.215	-2.76	0.006
Current pregnancy type (planned/ unplanned)	5.87	2.22, 9.52	1.85	0.243	3.18	0.002	4.13	0.25, 8.01	1.96	0.167	2.10	0.037
Number of prenatal care visits (1-4 to ≥9)	6.79	0.28, 13.30	3.30	0.272	2.06	0.041	-	-	-	-	-	-
Perceived social support	-0.18	-0.30, -0.07	0.06	-0.232	-3.22	0.002	-0.24	-0.36, -0.11	0.06	-0.288	-3.85	0.001

son's personality anxiety [37]. We found out that women's trait anxiety was lower than their state anxiety; as a result, their anxiety may be influenced by external factors such as abortion.

The results of the present study showed a significant relationship between perceived social support and anxiety in pregnant women. With the increase in perceived social support, their state of anxiety decreased. These findings are consistent with the results of other studies [6, 29, 38]. In Gao et al.'s study, pregnant women with low and moderate levels of social support were reported to be at higher risk of developing anxiety [10]. However, Neisani Samani et al. showed no significant relationship between pregnant women's social support and anxiety [28].

Studies acknowledge that prenatal anxiety symptoms affect 1 in 4 women and are more common among women at risk of abortion [6, 39]. Social support is a positive factor in preventing psychological distress [28]. Obtaining social support from family, husband, and friends has been stated as one of the essential factors in preventing women from suffering from anxiety [6]. Perceived social support in pregnant women helped them to meet their psychological needs and led to less anxiety, because favorable social support can create a stronger emotional bond between the pregnant woman and the social support providers, bring peace to the women, and reduce the pressures caused by abortion on them. For every one week increase in women's gestational age, their perceived social support increased by 0.42 units. A study in Iran also reported that gestational age had a significant relationship with perceived social

support [40]. On the contrary, Sadeghi et al. did not find a significant relationship between gestational age and social support [41]. Due to reaching the final moments of pregnancy and problematic conditions of childbirth, higher gestational age leads to receiving more attention and support from family, friends, and significant others, ultimately leading to an increase in perceived social support in pregnant women.

In the present study, women with a lower level of education had more anxiety symptoms. Lower state anxiety was seen in women with a university degree. This is consistent with previous studies [10, 42], but is against the results of Neisani Samani et al.'s study [28]. Women with lower education have less knowledge about their condition and the possibility of repeated abortion, leading to more anxiety. The present study also showed that with the increase in family income, the state anxiety of pregnant women decreased. Glazier et al. also report that family income significantly affects pregnant women's anxiety [43]. Higher income leads to receiving better quality health care services and reduce the worries and anxiety of pregnant mothers.

Perceived social support can affect the state and trait anxiety of pregnant women with a history of abortion. Therefore, healthcare providers should consider the high level of anxiety in these pregnant women and provide counseling to their husbands or families to strengthen their social support for the women and improve their mental health. In this study, we used self-report questionnaires, which may affect the responses. Moreover, the generalizability of the findings to all pregnant women in Iran should be done with caution.

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Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Guilan University of Medical Sciences (Code: IR.GUMS. REC.1401.047). After explaining the study objectives to all participants, they were given informed written consent. They were free to leave the study at any time.

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Authors' contributions

Conceptualization: Maryam Niknami and Zahra Bostani Khalesi; Data collection: Fateme Kadkhodaei; Methodology and data analysis: Saman Maroofizade; Writing and final approval: All authors.

Conflict of interest

The authors declared no conflict of interest.

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