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Explaining the mental health model based on integrative self-knowledge and social support mediated by perceived stress in infertile women

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Abstract

Background: Infertility is one of the painful experiences in women's lives, exerting dramatic effects on their mental health.

Objective: The present study aimed to explain the mental health model based on integrative self-knowledge and social support mediated by perceived stress in infertile women.

Methods: This study was conducted based on a descriptive-correlational design. Among the infertile women who were referred to Royan Infertility Center and Sarem Hospital in 2018, 250 subjects were selected via the convenience sampling method. The data collection instruments included the Self-Knowledge Scale by Ghorbani et al. (2003); Measure of Perceived Stress by Cohen et al. (2003), Multidimensional Scale of Perceived Social Support by Zimet et al. (1988), and Mental Health Inventory by Veit and Ware (1983). To analyze the obtained data, Spearman correlation coefficient (using SPSS software) and path analysis (using LISREL statistical software) were used.

Results: As evidenced by the obtained results, the structural model has an acceptable fit with the collected data. Moreover, integrative self-knowledge and social support were, directly and indirectly, related to mental health in infertile women with the mediating role of perceived stress. Integrative self-knowledge, social support, and perceived stress accounted for a total of 42% of the mental health variance in infertile women.

Conclusions: Considering the effects of psychological factors on infertility, as well as the adverse effects of infertility on couples' lives, it can be concluded that the assessment of psychological factors and their improvement can be of great help to infertile women.

Keywords: Mental health, Infertility, Social support, Self-concept, Female

Introduction

Fertility and having a healthy child assume considerable importance in the lives of many couples and infertility is of great concern to them (1). Infertility is a chronic disease with a long-term treatment period, causing intense suffering and stress for the affected person. According to the World Health Organization, infertility is the inability to conceive after one year of regular intercourse or artificial insemination without contraceptive methods or the inability to have a successful pregnancy (2). Infertility can be considered a bio-psychosocial crisis that threatens the mental health of individuals.

Although men and women are equally involved and affected by infertility as a source of stress, due to social prejudices, infertility is considered a feminine issue; therefore, women usually face more psychological, familial, and social problems. Moreover, they experience higher levels of stress which endanger their mental health (3). Considering the turbulent environment that surrounds infertile women, the following question arises: what variables can affect the health of these women in their personal lives?

In response to this question, it can be stated that various psychological factors can affect the mental health of infertile women, such as coherent self-knowledge. Self-knowledge is a self-regulating process, adaptive dynamic, and coherence that acts time-intensively and has two aspects of experience self-knowledge and reflective self-knowledge. Experience self-knowledge indicates instantaneous attention and sensitivity to the experience of the present time, while reflective self-knowledge is suggestive of an ability to analyze past experiences and integrate them into action and self-reaction designs. Integrative self-knowledge is the combination of empirical and reflective self-knowledge, and the processing system is an intermediary that unites intellectual and emotional-experimental processes that can be conscious or unconscious (4).

Studies in this field have pointed out that self-knowledge is significantly correlated with mental health and psychological well-being (5). When people have coherently identified themselves, as well as their

standards and objectives, they find the motivation and strength of movement on the path to achieving them. Therefore, they can constructively inhibit internal and external barriers after identification (6), improve their mental health level, and deal with the stresses associated with infertility.

Infertility, as a crisis in cohabitation and interference in the role and identity of individuals, not only creates psychological problems but also can act as a powerful blow against couple relationships. This becomes more important when we know that psychological factors, such as social support, can be one of the most important sources of support during infertility, affecting the mental health of the infertile person (7). Social support is the perception that one is cared for and belongs to a social network (8). It is described as networks of communications that provide camaraderie, cooperation, and reinforcement of feelings, as well as a form of awareness that people are believed to be cared for and loved, valued and respected, and belong to a network of bilateral communications and commitments (9). Studies in this field have pointed to a relationship between social support and mental health (11-10).

In addition to the aforementioned factors, stress is one of the most important psychological concepts that affect one's function in social, psychological, and physical domains. The term initially had a physiological meaning, found an environmental and social conceptual dimension, and was eventually considered a psychological subject (12). Perceived stress as a multidimensional concept with a range of cause and effect factors refers to a person's thoughts or feelings about the amount of stress they have at one point in time or within a certain period (13). Current studies in this field have shown that perceived stress is significantly comparable to self-knowledge and mental health (14), and therefore, it is one of the variables that can be mentioned in the field of infertility.

In general, it can be stated that infertility is one of the problems in human reproductive health and one of the crises of married life, affecting the lives of many couples economically, socially, and mentally. Moreover, it can lead to serious stressful experiences for these people, which in turn can reduce the possibility of fertility. In addition, it can lead to mental imbalances of couples, divorce, and break-up (15-16). The necessity of research lies in the fact that infertile women suffer from sexual problems more than fertile women do. Since one of the factors contributing to intimacy between couples is sexual gratification, it is likely that sexual problems of infertile women can reduce their intimacy. With the onset of infertility, sexual activities are separated from the goals of reproduction and fertility; moreover, acquisition of pleasure is accompanied by various problems, such as inadequacy, avoidance, and incongruity.

Despite the importance of the research subject, increasing statistics of infertile women, as well as the relationship between psychological factors and mental health in these people, there has not been comprehensive research on the relationship between these psychological variables and mental health in infertile women by path analysis method. Therefore, it seems necessary to bridge this research gap properly.

Objective

The present study aimed to explain the mental health model based on integrative self-knowledge and social support mediated by perceived stress in infertile women.

Methods

The research method was a descriptive-correlational type of structural equation model. The statistical population of this study included all women referred to Royan Infertility Center and Sarem Hospital in 2018. Considering the probability of sample attrition, 250 infertile women were selected via the convenience sampling method. This study consisted of 4 latent variables that 50 persons per variable were selected as the sample group based on a previous similar study (11), yielding 200 subjects. A total of 300 questionnaires were distributed to achieve this minimum amount, out of which 250 questionnaires were returned. Kline (12) recommended that the N:q ratio should be 20 to 1, or 20 observations (participants) for each estimated parameter in the model. The "P" used for calculating the sample size was 0.05. The inclusion criteria were as follows: diagnosis of infertility by a specialist, lack of special events, such as the death of relatives, incurable disease, changing living place, and job loss in the past six months, lack of disability, acute and chronic mental and physical diseases, abuse and consumption of drugs, cigarettes and alcohol, lack of psychotherapy, and drug use. On the other hand, the exclusion criterion was the failure to answer all the items of questionnaires.

After selecting the subjects based on inclusion and exclusion criteria, the participants were provided with some explanation about the research objectives and how to complete the questionnaires; thereafter, they declared their satisfaction and completed the questionnaires. In this study, ethical considerations, including obtaining informed consent, as well as ensuring privacy and confidentiality, were observed. The ethical considerations of this study were as follows: all participants received written information about the research and participated in the research if they wished. Participants were assured that all information was confidential and would be used for research. To respect privacy, the participants' names and surnames were not registered.

Integrative Self-Knowledge Scale:

This questionnaire which was developed by Scale, Watson, Bing, Davison, and Liberton (2003) consists of two subscales (reflective and experiential self-

knowledge) and 38 items that are rated on a 5-point Likert scale. Except for items 3, 6, and 9, the other items are inversely scored. Ghorbani and others (17) reported Cronbach's alpha coefficients of 0.84 to 0.90, and the accuracy of this tool was obtained at 0.84 using correlation of the scales. Ghorbani, Watson, and Hargis (17) reported Cronbach's alpha coefficient for the short version of this questionnaire, including 12 items in an Iranian sample of 0.82, and the correlation of this instrument with Rosenberg's esteem scale was calculated at 0.56 as an indicator of simultaneous accuracy of this instrument. In the present study, Cronbach's alpha coefficient for this instrument was 0.85.

Perceived Stress Scale

The Perceived Stress Questionnaire of Kohan, Kamarck, and Mermelstein (1983) consists of 14 items that are rated on a 5-point Likert scale (0 =never to 4 =very often). In this study, Cohen and others (18) obtained internal consistency coefficients of 0.84 and 0.86 for the perceived stress questionnaire. To calculate the accuracy of the criterion of this scale, Cohen and others (18) reported its correlation coefficient with cognitive symptoms between 0.52 and 0.76. Safari and Shokri (19) reported two factors of perceived self-efficacy and perceived helplessness, as well as Cronbach's alpha coefficient of 0.76.

Multifaceted Perceived Social Support Scale

The Multifaceted Scale of Perceived Social Support of Zimet, Dahlem, Zimet, and Farley (1988) was designed to assess the subject's perception of adequacy of social support resources, including family, friends, and an important person in one's life. It consists of 12 items that are rated on an 8-point Likert Scale ranging from "1= completely disagree" to "7= completely agree". Zimet, Powell, Farley, Werkman, and Berkow (20) reported a Cronbach's alpha coefficient of 0.81 to 0.98 in nonclinical samples and good accuracy. In Iran, the results of factor analysis in the study by Nasiri and Abdolmaleki (21) supported three factors: family support, support of important people, and support of friends. Nasiri and Abdolmaleki (21) reported Cronbach's alpha coefficients ranging from 0.74 to 0.76.

Mental Health Questionnaire

This 34-item questionnaire assesses two subscales of psychological psychotics and psychological distress on a 5-point Likert scale. Cronbach's alpha coefficients of 0.86-0.91 have been reported for this instrument (22). Mental health scale-28 is a short form of this questionnaire that evaluates two subscales of psychological psychosis and psychological distress on a 5-point Likert scale ranging from 1 to 5. The minimum and maximum scores of the subjects in psychological psychotic and psychological distress scales are 14 and 70, respectively. The retest coefficients of this questionnaire for psychological psychosis and psychological distress were 0.90 and 0.89, respectively (22).

Spearman correlation coefficient tests (using SPSS software) and path analysis (using LISREL statistical software) were used in the inferential section.

Results

The present study was conducted on 247 infertile women with a mean age score of 34.12±5.86 years. Moreover, 16.6%, 54.3%, and 29.1% of couples had been married for less than 3, 3-6, and more than 6 years, respectively. In terms of education, (34.4%), (25.5%), (7.33%), (23.1%), and (9.7%) of the participants had under diploma, diploma, associate's, bachelor's, and master's degrees, respectively. Table 1 displays the mean, standard deviation, and correlation coefficients between the research variables, including components of perceived social support (family support, friends support, and others' support), integrative self-knowledge (reflective self-awareness, experiential self-awareness, and experience integrity), perceived stress, and mental health (lack of psychological distress and psychological psychology).

Table 1. Mean, Standard Deviation and Correlation Coefficients between Research Variables

Variables	1	2	3	4	5	6	7	8	9
1. Social-Family Support	-								
2. Social Support - Friends	0.39	-							
3. Social Support - Others	0.63	0.34	-						
4. Coherent self-knowledge - reflective self-awareness	0.26**	0.16*	0.23**	-					
5. Coherent self-knowledge - Experimental self-awareness	0.32	0.28	0.27	0.35	-				
6. Integrative self-knowledge - integration of experience	0.30	0.23	0.41	0.57	0.26	-			
7. Perceived stress	0.53	0.35	0.47	0.32	-0.35	0.40	-		
8. Mental Health- Lack of Helplessness	0.30	0.24	0.34	0.25	0.23	0.38	-0.53	-	
9. Mental Health - Psychological Mental Well-Being	*0.13	0.18	0.20	0.27	0.17	0.35	0.42	0.65	-
M	12.92	14.45	14.19	9.52	11.89	16.25	40.36	72.89	40.68
SD	4.02	4.21	4.47	3.76	4.78	5.52	7.27	11.98	7.49

0.01<P ،**0.05<P

As depicted in the above table, the components of friends' support and others' support were positively correlated with perceived social support and mental health components (lack of psychological distress

and psychological distress) at a significant level of 0.01. In addition, the component of family support was positively correlated with the component of lack of helplessness at a significant level of 0.01 and the psychological psychotic component at a significant level of 0.05. All three components of integrative self-knowledge (reflective self-awareness, experiential self-awareness, and experience integrity) were positively and perceived stress was negatively correlated with both components of mental health at a significant level of 0.01.

Furthermore, the elongation and skewness values of variables were in the range of 2±, and therefore, it can be argued that the distribution of single-variable data is normal. This table also shows that the tolerance coefficient values of all predictive variables are greater than 0.1, and the variance inflation factor values for each of them are smaller than 10. These values point to the assumption of linearity among predictive variables. It is worth noting that the analysis of the information related to the "Mahalanobis distance" and its distribution curved drawing also demonstrated that the assumption of normality of multivariate information distribution was established in this study. It should be noted that the skewness and elongation scores of Mahalanobis distance were 0.69 and 0.40, respectively.

As mentioned earlier, the structural equation modeling method was used to test the hypotheses. Variables, such as perceived social support, cohesive self-knowledge, and mental health, constituted the research measurement model. It was assumed that the perceived social support variable is measured by the indicators of family support, friends' support, and others' support, coherent self-knowledge variable by reflective self-awareness, empirical self-awareness and experience integrity, and mental health variable is measured by the indicators of lack of psychological distress and psychological psychology. The fit of the research measurement model was evaluated by confirmatory factor analysis using AMOS 24.0 software and probability estimation (ML). The results pointed out that the fitness indicators obtained from confirmatory factor analysis supported the acceptable fit of the measurement model with the collected data (df=2,99.88 (χ^2/df=22), CFI=0.939, AGFI=0.897, GFI=0.951, and RMSEA=0.090). Table 2 displays the factor load, standard error, and crisis ratio for each of the markers of latent variables.

Table 2. Parameters of research measurement model in confirmatory factor analysis

Endogenous variables	b	β	SE	t
Social-Family Support	1	0.793		
Social Support – Friends	0.567	0.476	0.086	6.60**
Social Support - Others	0.895	0.789	0.098	9.22**
Coherent self-knowledge - reflective self-awareness	1	0.800		
Coherent self-knowledge - Experimental self-awareness	0.462	0.426	0.082	5.65**
Integrative self-knowledge - integration of experience	0.581	0.683	0.072	7.98**
Mental Health- Lack of Helplessness	1	927		
Mental Health - Psychological Mental Well-Being	0.437	0.700	0.062	7.01**

Based on Table 2, the highest factor load belonged to helplessness (β=0.927) of mental health, while the lowest factor load pertained to empirical self-awareness (β=0.426) of coherent self-knowledge. In other words, all factor loads were greater than 0.32, and therefore, all markers had the necessary power to measure the latent variables of the present study. In the structural model of this study, it was assumed that perceived social support and coherent self-knowledge, both directly and through the mediation of perceived stress, predicted fluent conduct in infertile women. The structural model of the research was tested using the structural equation modeling method, and the fitness indicators obtained from the model analysis indicated that the structural model is also acceptable with the collected data (df=55.31 (χ^2/df=22), CFI=0.953, GFI=0.952, AGFI=0.902, and RMSEA=0.078). Table 3 displays the coefficients of the total, direct, and indirect paths between research variables in the structural model.

Table 3. Coefficients of the total, direct and indirect path between research variables in the structural model

Predicting variable	b	S.E	β	sig
Direct path between coherent self-knowledge mental health	0.380	0.130	0.334	**0.005**
Direct path between social support mental health	-0.087	0.240	-0.060	**0.674**
The path between coherent self-knowledge perceived stress	-0.577	0.307	-0.204	**0.049**
The path between social support perceived stress	-1.944	0.335	-0.544	**0.001**
Perceived stress pathway mental health	-0.184	0.045	-0.456	**0.001**
Indirect path between coherent self-knowledge mental health	0.106	0.058	0.093	**0.049**
Indirect path between social support mental health	0.357	0.122	0.248	**0.001**
The total path between coherent self-knowledge mental health	0.4486	0.147	0.427	**0.001**
The whole path between social support mental health	0.270	0.199	0.188	0.158

Table 3 demonstrates that the path coefficient between perceived stress and negative mental health was significant at the level of 0.01 (P<0.01; β=-0.456). As presented in this table, the coefficient of the path between integrative self-knowledge and mental health was positive and significant at the level of 0.01 (P<0.01; β=0.334). The indirect path coefficient between integrative self-knowledge and mental health was positive and significant at the level of 0.05 (P<0.01; β=0.093).

Finally, contrary to the coefficient of the path between perceived social support and mental health, the indirect pathway coefficient of the two was positive and significant at the level of 0.01 (P<0.01; β=0.248). Accordingly, it can be stated that perceived social support and coherent self-knowledge are related to mental health in infertile women with the mediating role of perceived stress. Figure 1 illustrates the research model in explaining the relationships of coherence self-knowledge, perceived social support, perceived stress with mental health in infertile women.

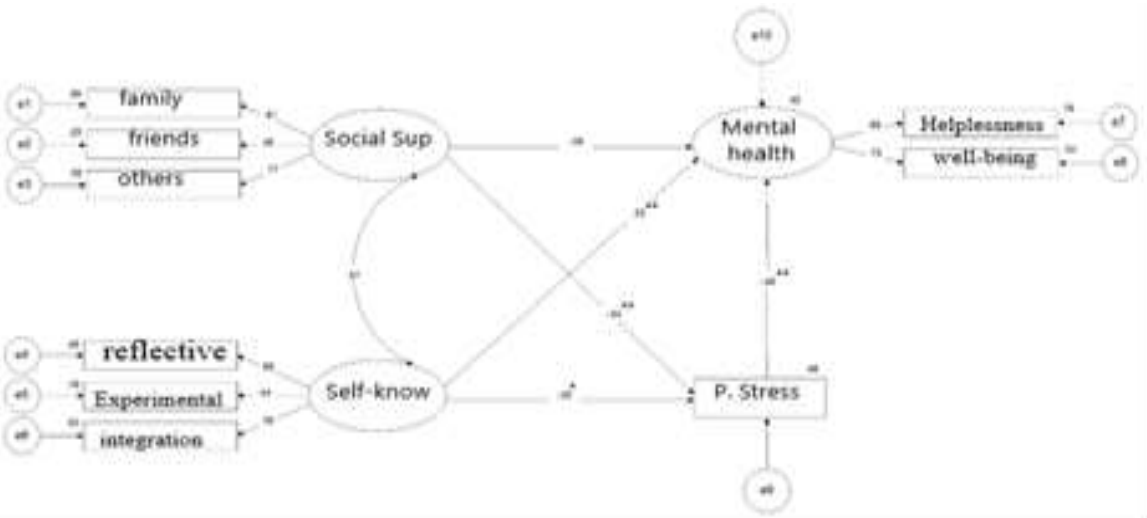

Figure 1. Structural model of research and coefficients of the path of variables based on standard scores

As displayed in Figure 1, the total square of multiple correlations for the mental health variable is 0.42. This finding indicates that coherent self-knowledge, perceived social support, and perceived stress explain 42% of mental health variance in infertile women.

Discussion

The present study aimed to assess the fitness of the structural model for the prediction of mental health in infertile women based on coherent self-knowledge and social support with the mediating role of perceived stress. In this regard, the findings of this study indicated that the structural model was acceptable with the collected data. It was also disclosed that coherence self-knowledge has an indirect relationship with mental health through perceived stress. The findings of this research are in line with those obtained by Hadi et al. (23), Imani et al. (24), Salajegheh et al. (25), Qasempour et al. (26), and Behjati et al. (27) who concluded that self-knowledge was significantly correlated with mental health and psychological well-being.

In explaining this finding, it can be stated that self-knowledge is an adaptive and coherent process since it combines and unifies its experience and related traits in a meaningful format and can contribute to mental health through self-regulation. Coherent self-knowledge allows people to organize their thoughts and feelings through understanding their abilities and identifying the most appropriate activities to achieve the desired results (28). Self-knowledge is a dynamic, compromising, and coherent process that is active in all moments of life and combines its own experiences and documents meaningfully, responds to various situational changes at any given moment, and connects them with awareness of current and past experiences, facilitating self-regulation process, and promoting feelings of psychopathy and health (29).

A person with coherent self-knowledge can recognize learned and uncompromising reactions by recognizing their emotional and intellectual commands, as well as their coherence, and measure them with their intellectual power. These characteristics and self-knowledge processes can also review and inhibit the learned patterns of thought and behavior developed in a person due to the disease. Therefore, it can help people to create more conciliatory interactions with themselves and the surrounding environment, which in turn affect their mental health (30).

In addition, self-fulfillment with an effect on perceived stress can indirectly influence mental

health. In this context, it can be stated that coherent self-knowledge also recognizes original emotions; therefore, shortcomings in self-knowledge can lead to defects in constructive regulation of unpleasant emotions that are experienced with the perception of stress (31). The sense of self-coherence is a general orientation that expresses the extent to which a person has a sense of inclusive, stable, and dynamic confidence that considers the internal and external stimuli throughout life to be structured, predictable and transparent. People with a strong sense of cohesion are more flexible in stressful events. In other words, they are more aware of their feelings and consider stress a less serious threat, and this can affect their mental health indirectly (25).

A person who has developed a good sense of coherence has health-enhancing personality traits that lead to optimism and compromise in some areas of behavior. A person who has a strong sense of cohesion looks at life with meaningfulness, has a strong sense of purpose in life, and believes that stressful experiences in life are understandable and understood. Individuals with a strong sense of cohesion can understand, predict, and organize internal and external stresses and use available resources to deal with stress (32). Stress makes a system get out of the standard path and balance; consequently, the organism strives to restore this balance. In this regard, the process of self-regulation and self-knowledge can play an essential role in this path and prevent the destructive physical and psychological effects of stress and mental health.

Efficient self-regulation requires awareness of standards, careful monitoring of actions and emotions, and the ability to make changes. Self-awareness resulting from self-knowledge improves adaptability in its system by comparing the current function with internalized standards. During the stress period, this process allows the person to restore himself/herself to equilibrium with the correct activity of the system (24). In general, it can be stated that the process of self-knowledge is a kind of pressure reduction in psychological experiences, integrating its different aspects and causing insight, which is one of the important components of mental health (27).

Based on the findings, social support has an indirect relationship with mental health through the mediating role of perceived stress. This finding is implicitly in agreement with those indicated by Kay et.al (33), Ringdahl et.al (34), Yang and Jang (35), Monaz-Bremjo et al. (36), and Hessie and Tsai (37) who concluded that social support is related to mental health.

In explaining this finding, it can be asserted that social support is a factor that causes a sense of security and self-reward in the individual, providing the possibility of transformation and dynamism for the individual. Social support makes a person feel better about him/herself and his/her activities, promotes self-confidence, promising thoughts, mental health, and quality of life (33). Social support increases the assessment and coping with the situation to some extent and protects people against the side effects of stress, thereby enhancing people's health (37).

Belonging to the friend's network and being in touch with different friendship groups lead to the transfer of values and criteria. These values can increase the initial energy for the individual to act and form a behavior; moreover, being in friendship groups and different high-quality relationships causes the formation of behavioral patterns in people. The attainment of respect, value, love, and friendship from others raises the hope that these variables, which are the primary foundation of mental health in the individual, strengthen positive and constructive thinking in the individual (38).

It can also be stated that social support provides emotional requirements for psychosis and the facilities to deal with stress and inhibit them; therefore, social support has a strong relationship with mental health dimensions (35). Family members' perspectives, social interactions with others, and community expectations are the most important factors that can affect perceived stress in an infertile person (30). Social support can act as a supportive umbrella against traumatic stress since social support enables people to gain a deep insight into their abilities and creativity, and therefore, they can change their assessment of traumatic stress (39).

Family members and friends who demonstrate empathy towards an individual can reduce his/her anxiety and stress; therefore, those people who have a good social support system are optimistic about their lives and more successful in overcoming stressful factors. When people realize their worth in the face of difficulties or psychological pressures, they can overcome the difficulties by applying their special abilities. Social support creates mutual commitments and creates a feeling in which a person feels loved, cared for, respected, and valued, and these factors contribute to one's perception of stressful factors. The higher perceived social support leads to more relaxation; moreover, one expresses less negative emotions by strengthening positive emotions (37). In general, it can be stated that based on the theory of psychological pressure, cognitive-behavioral and supportive resources for individuals play an essential role in their adaptation, affecting the emotional reactions and health of individuals (32).

One of the limitations of this study was that it was only performed on infertile women. Moreover, self-report tools were used to measure the mental health of infertile women; consequently, participants may have consciously and unconsciously tried to portray themselves as desirable and deny their psychological problems. Since the participants were under

treatment in the present study and were not in a good physical condition, the researcher faced a drop in collecting questionnaires. Furthermore, demographic characteristics of participants, such as socioeconomic class, which the researcher had no control over and if controlled requires more time and cost, may have affected the mental health of infertile women and the results of the present study. It is suggested that future researchers conduct qualitative research using in-depth interviews to investigate mental health desires and identify other factors affecting mental health. It is also recommended that researchers think about the decline and physical condition of the participants in future studies. Moreover, it is suggested that the present study be conducted on people with different socio-economic classes.

Conclusion

Considering the effects of psychological factors on infertility, as well as the adverse effects of infertility on couples' lives, it can be stated that the assessment of psychological factors and their improvement can be of great help to infertile women.

Conflicts of Interest

The authors declare that they have no conflict of interest regarding the publication of this paper.

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