

The Role of Spiritual Health in Predicting Stress in Infertile Women Mediated by Resilience

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ARTICLE INFO	ABSTRACT
Article type: Original article	Background & aim: Infertility is a culturally dependent, challenging experience for individuals and families. Understanding characteristics of Iranian infertile couples and effective coping factors can help counselors in selecting appropriate models. This study assesses the role of spiritual health in predicting stress in infertile women through resilience mediating role.
Article History: Received: 11-Oct-2022 Accepted: 02-May-2023	Methods: This predictive correlational study was conducted on 105 women at gynecology clinics of Mashhad, Iran in 2021. They were selected through Convenience sampling method. Tools included Spiritual Well Being Scale, Connor & Davidson Resilience Questionnaire and, Newton, Schrad, and Glavas Perceived Infertility Stress. The instrument used were paper and pen, and they were completed by the participants. Pearson correlation coefficient and structural equation modeling were employed to analyze the data using SPSS (version 22) and Smart PLS software (version 3).
Key words: Spiritual health Resilience Stress Infertile Women	Results: Findings revealed significant negative and relationships between spiritual health and perceived stress, positive relationships between spiritual health and resilience, and a negative relationship between resilience and perceived stress. Resilience mediated the negative and significant relationship between spiritual health and stress in infertile women. The value of the VAF index was equal to 0.368 and the total effect of spiritual health on perceived stress was equal to -0.732. Conclusion: Spiritual health and resilience effectively reduce stress in infertile women. Recommending psychological counseling based on spiritual health and interventions is suggested.

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Introduction

Infertility is a chronic disease with mostly long treatments and a lot of suffering, which affects different dimensions (1). Infertility occurs when a couple cannot have a child after one year of having sexual activity (without using contraceptive methods) (2). About 80 to 168 million people suffer from infertility worldwide and 100,000 infertile couples are added to the population of infertile couples every year (3). According to the statistics, 3 to 4 million infertile couples live in Iran and this rate increases by 15% every year (4). Infertility is recognized in all cultures as a stressful and threatening experience for individual, marital, family and social stability (5).

Infertility stress involves the interaction between physical conditions that predispose to

infertility and medical interventions, reactions of others and individual psychological characteristics, and it may remain for years and recur with any diagnostic or therapeutic intervention (6) and can cause the discontinuation of treatment or affect the results of treatment (7). Most researches about the interaction between emotional stress and infertility have shown that infertility and its treatments cause stress in infertile couples, and stress may be the primary or secondary cause of infertility (8-9).

On the other hand, according to studies, spiritual health can play an important role in coping and adapting patients to stressful situations (10). Spiritual health in psychological texts is determined as a person's desire and effort

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to find meaning and purpose in life, providing a person's awareness of the meaning of existence and experiences which give meaning and purpose to life and establish a transcendent relationship between man and himself, God and others (11-12). Researches indicate the relationship between spiritual health and anxiety, depression and cognitive regulation of emotions in infertile women (13), the relationship between spiritual health and the quality of life in infertile women (14), and the role of spiritual experiences in the feeling of failure and infertility stress in infertile women (15).

The effects of stress on the health of infertile women depend on their ability to cope. One of the coping strategies to face stressful situations is resilience (16). Resilience has been defined as the ability to adapt and create personal, social, academic and professional competencies despite the occurrence of adverse events; in addition, resilience is the ability to resist when faced with life's problems (17). A resilient person is an active participant and creator of his surrounding environment (18).

Studies show that infertility reduces people's resistance to life's problems, and in general, infertile people are less resilient to problems than normal people (19-20). Today, mental health professionals have concluded that psychological services should be an important part of the infertility treatment process (21). Despite the problem of infertility in Iran and the advances in medical treatment in this field, there is still no news of providing psychological services in addition to medical treatment. Infertility is a culture-dependent phenomenon, and social and religious contexts affect its psychologically harmful effects (22-23). Therefore, before applying infertility counseling approaches, it is necessary to identify the characteristics of Iranian infertile couples carefully. Knowing how to adapt, the role of effective factors and how Iranian couples cope with infertility is one of the fields that can help counselors in choosing the right counseling model.

Considering the importance of the psychological well-being of infertile women and the potential effect of spiritual health on treatment outcome, and considering the lack of a regular infertility counseling program or model

and the insufficient psychological support of the infertile person by the medical staff, a search was made in the available databases. Due to the limited studies in the field of the role of spiritual health and resilience on the infertility stress, the researchers decided to perform a research in this field. Therefore, the present study was performed to assess the role of spiritual health in predicting the stress of infertile women with the mediation of resilience, and seeks to answer the question whether resilience has a mediating role in the relationship between spiritual health and stress of infertile women.

Materials and Methods

The current research was aligned with its purpose and employed a predictive correlational utilizing correlational methods and structural equation modeling (SEM). The statistical population included all infertile women who referred to the gynecology clinic of a private Hospital in Mashhad from April to June 2021. According to the Stevens' opinion (24), who recommended that in social science research, in order to have a valid equation, about 15 to 20 subjects are needed for each predictor variable, and considering two predictor variables (spiritual health: two components and resilience mediating variable: five components), 105 eligible people were selected by convenience sampling method who were willing to participate in the research.

The inclusion criteria were: infertility diagnosed according to medical records, age range of 20-45 years, minimum literacy of reading and writing, infertility duration of one year or more, individual's desire to enter the study, and exclusion criteria included non-cooperation and incomplete questionnaires.

The tools used in this research included the Spiritual Well Being Scale (SWBS) (Paloutzian & Ellison, 1982), comprising 20 items that assess an individual's well-being and overall life satisfaction across two dimensions: religious well-being, and existential well-being. Respondents rated their agreement on a six-point Likert scale from "completely agree" (score six) to "completely disagree" (score one). The range of spiritual health scores for each dimension of religious and existential well-being separately is 10-60, and the total score of spiritual health (sum of two dimensions) is 20-

120, and the higher score indicates the higher spiritual health. Palotzin and Ellison, in a research, reported Cronbach's alpha coefficient of religious and existential well-being and the total scale as 0.91, 0.91 and 0.93, respectively (25). The reliability of this scale was reported by Deshiri, Sohrabi, Jafari and Najafi on female and male students through Cronbach's alpha for the total scale and subscale of religious well-being and existential well-being as 0.90, 0.82 and 0.87, with the retest method as 0.85, 0.78 and 0.81, respectively (26).

The Connor-Davidson Resilience Scale (CD-RISC) (2003) has 24 questions which measures five components of personal competence/strength (12-11-25-10-23-17-16), trust in personal instincts (20-18-15-6-7-19-14), tolerance of negative emotions (1-4-5-2-8), restraint/control (21-13-22) and spirituality in people (3-9) on a Likert scale (completely false= 0 to completely true= 4). The range of scores is 0 to 100 and the cut-off point of this questionnaire is 50, in other words, a score higher than 50 indicate people with resilience, and if this score be higher, the intensity of resilience will be higher. The psychometric properties of this scale were investigated in six groups of the general population, patients referring to primary care, psychiatric outpatients, patients with generalized anxiety disorder and two groups of patients with post-traumatic stress disorder, and the results indicated the desirable psychometric properties of this scale.

Factor analysis was used to check the validity of the scale, that and five factors were obtained with special values of 7.47, 1.56, 1.38, 1.13 and 1.07 respectively. The reliability of this scale was obtained using Cronbach's alpha of 0.89. This scale is well able to separate resistant people from non-resistant people in clinical and non-clinical groups and can be used in research and clinical situations (27). This resilience questionnaire was standardized in Iran by Keihani, Taqvai, Rajabi and Amirpour. The results of the concurrent validity correlation coefficients indicated a negative and significant correlation of resilience and aggression and a positive and significant correlation with self-efficacy and life satisfaction. Also, to calculate the reliability, the Cronbach's alpha value and

Spearman-Brown's two-half split were obtained as 0.669 and 0.665, respectively (28).

The Infertility Perceived Stress Questionnaire developed by Newton, Sherrard and Glavas in 1999, is a multidimensional tool consisting of 46-questions. It aims to assess the perceived stress experienced by individuals facing infertility across five dimensions: social (questions 1-10), sexual (questions 11-18), communicational (questions 19-28), and non-acceptance of a childless lifestyle (questions 29-36) and need to become a parent questions 37-46. This tool is scored based on the Likert scale from completely disagree (1) to completely agree (6), and the questions (1-2-5-6-10-12-13-21-28-29-30-31-33-34-35-36-43) are scored in reverse. The range of scores is between 46 and 276. The cut-off score is 184, so scores higher than 184 indicate high infertility stress and vice versa.

In Newton et al.'s study, the internal correlation of perceived stress in the social dimension was 0.87, sexual 0.77, communicational 0.82, non-acceptance of childless lifestyle 0.80, need to be a parent 0.84, and in the general stress dimension was 0.93 (29). Infertility stress questionnaire in Iran was standardized by Alizadeh, Farahani, Shahrarai and Alizadegan, and its validity was confirmed by the professors of Allameh Tabatabai University, Kharazmi University and Tehran Institute of Psychiatry. Its reliability on a sample of 30 infertile people using the internal consistency method (Cronbach's alpha coefficient) was obtained for stress in social dimensions 0.78, sexual 0.77, communicational 0.78, childless lifestyle 0.75, need to be a parent 0.84 and overall stress 0.91 (30).

After obtaining the necessary permissions and coordination and determining the time of visiting the selected sample, the researcher referred to the center and after obtaining their consent, distributed and collected the questionnaires and answer sheets at the same time and place. In this research, all relevant ethical principles, including the confidentiality of questionnaires, the informed consent of the research participants, and the right to withdraw from the research, were observed. The study was approved by the ethics committee of the university with the code number IR.BIRJAND.REC.1400.009.

Data analysis was done by SPSS software (version 22). Also, Smart PLS software (version 3) was used for modeling structural equations.

Results

According to the results, out of 105 participants in the research, 21 participants

(20%) aged 20 to 30 years, 51 (49%) were 31 to 40 years, and 33 (31%) were over 40 years. Descriptive findings of the research variables are presented in Table 1.

Table 1. Interpretation of Spiritual Health Scores: Statistical Analysis

Variable	crookedness	Elongation	Mean	SD
Religious well-being	-0.555	0.617	44.95	5.001
Existential well-being	-0.857	1.865	41.41	6.972
Spiritual health	-0.904	1.713	86.36	11.396
Competence	-0.941	1.477	27.75	2.910
Trust your personal instincts	-0.821	0.934	23.44	2.504
Tolerance of negative emotions	-0.942	1.182	16.75	2.317
restraint/control	-0.490	0.079	11.37	1.547
Spirituality	-0.071	0.066	6.97	1.187
resilience	-1.204	0.921	86.29	8.293
Social	0.374	-0.563	32.69	6.309
Sexual	0.590	0.834	25.41	6.230
Communicational	1.099	1.052	28.89	5.950
Not acceptance	0.963	0.989	23.63	4.875
Need to be a parent	0.928	1.655	27.99	5.834
Perceived stress	0.694	0.394	138.61	22.082

Based on the results obtained from Table 2, the correlation between spiritual health and perceived stress is -0.734 and the correlation between resilience and perceived stress is -0.667, which are significant at the alpha level of

0.01 (p<0.01). The negative obtained coefficients show that there is an inverse relationship between spiritual health and resilience with the perceived stress of infertile women.

Table 2. Matrix of correlation coefficients between research variables

Variable	1	2	3
Spiritual health	1		
Resilience	0.594**	1	
Perceived stress	-0.734**	-0.667**	1

* Significant level 0.05 **significant level 0.01

Structural equation modeling by partial least squares method and Smart PLS software were employed to examine the model of spiritual health in predicting the stress of infertile women with mediation of resilience. The first index for examining the fitting of the structural the model of R² coefficients is related to the endogenous (dependent) variables of the model.

R² is a standard that indicates the effect of an independent variable on a dependent variable, and three values of 0.19, 0.33 and 0.67 are considered as poor, moderate and strong values, respectively.

According to the results of Table 3, the obtained values of R² show the appropriateness of the fitting of the structural model of the research. Based on the obtained values, 44.9% of the variance of resilience is explained by spiritual health and 62.6% of the variance of perceived stress is explained by spiritual health and resilience. The second index for assessing the fitting of the structural model of the research is the values of Q² of the endogenous variables of the model. This index examines the predictive power of the model. Each of the three values of 0.02, 0.15 and 0.35 for this index indicate poor, moderate and strong predictive power for the

respective structure, respectively. According to the results of Table 3, the value Q^2 of the

endogenous variables confirms the appropriate fitting of the structural model of the research.

Table 3. Results of R^2 and Q^2 coefficients

Variable	R^2	Q^2
resilience	0.449	0.253
Perceived stress	0.626	0.310

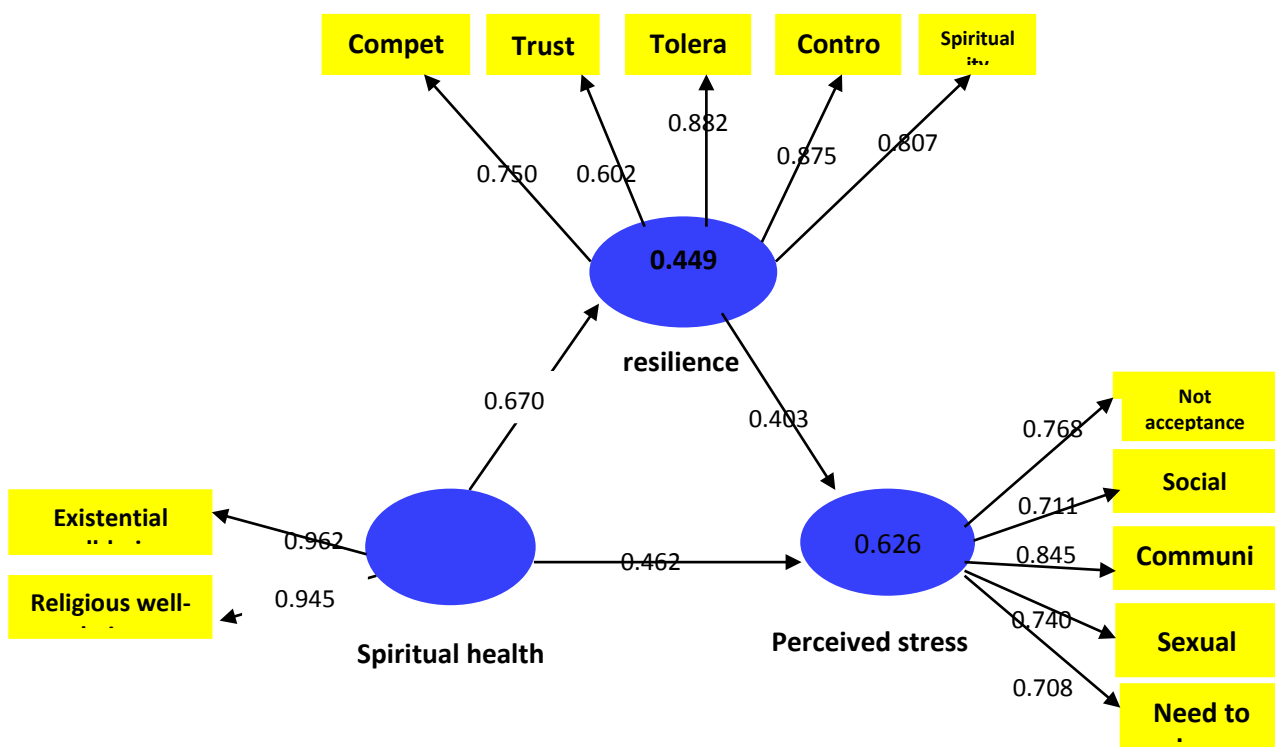


Figure 1. The original model in the mode of standard coefficients

The numbers on the paths reveal the t-value for each path. It is required that the t value of each path to be higher than 1.96 in order to check the significance of path coefficients. In this analysis, t-value for all paths is higher than 1.96, and as a result, they are significant at the 95% confidence level.

$$GOF = \sqrt{\text{communalities} \times R^2}$$

Table 4 revealed that the path coefficients related to the relationship between spiritual health and perceived stress are negative and significant

($p < 0.01$), the relationship between spiritual health and resilience is positive and significant ($p < 0.01$), and the relationship between resilience and perceived stress is negative and significant ($p < 0.01$). Also, the bootstrap results showed that the path coefficient related to the mediating role of resilience was negative and significant ($p < 0.01$). The total effect of spiritual health on perceived stress is equal to -0.732. The value of the variance accounted for (VAF) is equal to 0.368, since it is in the range of 20% to 80%, confirms the mediating role of resilience in the relationship between spiritual health and perceived stress.

Table 4. Path coefficients of the effect of spiritual health on the perceived stress of infertile women

	Path	Beta	T-value	P-value
spiritual health	← perceived stress	-0.462	5.358	0.001
spiritual health	← resilience	0.670	11.710	0.001
resilience	← perceived stress	-0.403	4.071	0.001
spiritual health	resilience perceived stress	-0.270	4/027	0.01

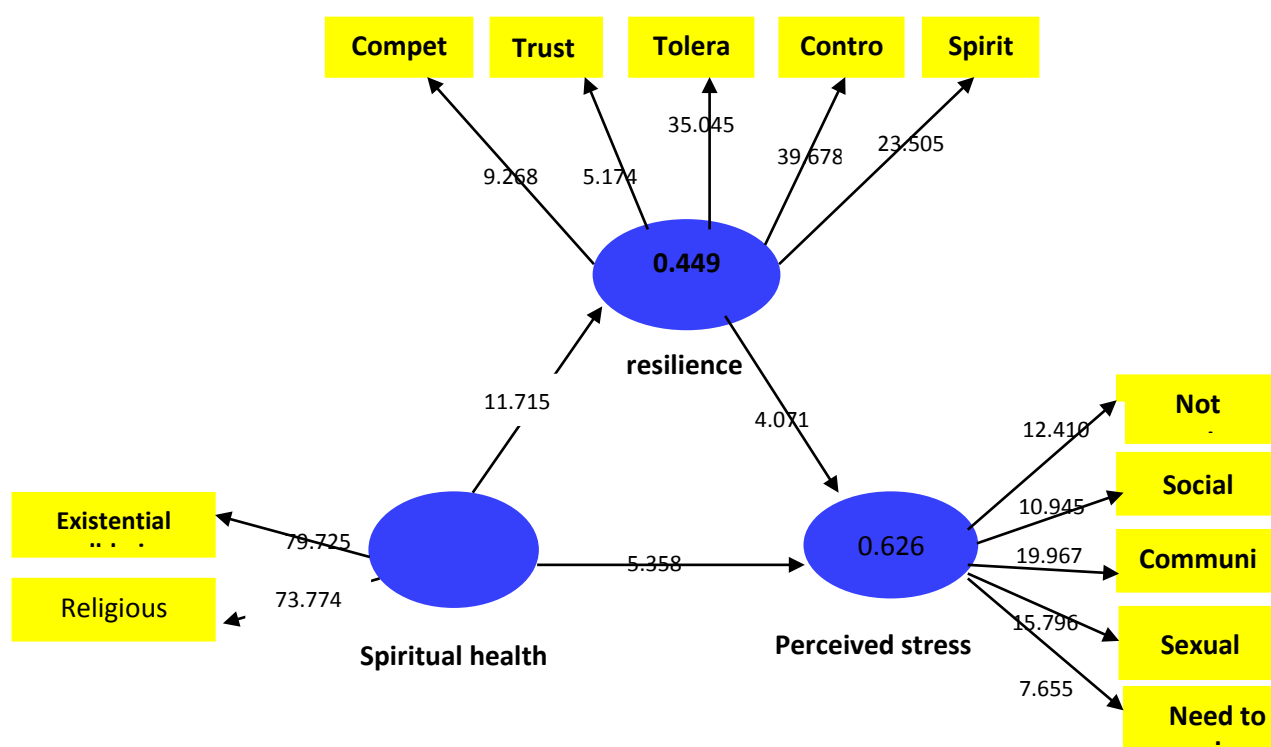


Figure 2. The main model in the mode of significant numbers (t-value)

Discussion

The aim of the present study was to investigate the role of spiritual health in predicting the stress of infertile women with the mediation of resilience. The main finding of the current research showed that the path coefficient related to the relationship between spiritual health and perceived stress was negative and significant. Accordingly, the research hypothesis about the role of spiritual health in the perceived stress of infertile women is confirmed. It can be concluded that the stress of infertile women decreases with the increase in spiritual health. This result is not in accordance with the findings of the research by

Rahimnejad et al. (2020) they found no significant relationship between spiritual health and anxiety in pregnant women (31). But it is closely aligned with the results of previous researches in this field. The findings of study by Ghanbari Afra and Zahari (2017) in acute coronary syndrome patients show that anxiety and stress have a significant correlation with the dimension of existential well-being and depression with both dimensions of existential and religious well-being (32).

The results of study by Sodagar and Rambod (2017) in diabetic adults indicated a relationship between spiritual health and anxiety and depression (33). In addition, the research by

Khadem Vatani (2015) showed a significant relationship between the level of spirituality and the level of depression and anxiety, gender, education level and job type in patients with myocardial infarction admitted to a Hospital of Urmia University of Medical Sciences (10). To explain the above finding, it can be said that spirituality is a strong force at the center of human life, which by giving meaning to people's lives and encouraging them to endure problems and failures in everyday life, leads to a positive attitude towards life, and certainly such an attitude also increases social and environment interaction and reduces stress in the individual, and in this way, the individual realizes more possibility of coping and controlling himself in the face of failures and stresses. Spiritual health, by creating meaning and purpose in life, gives motivation and strength to the infertile persons and helps to evaluate and perceive their ability and energy to carry out their activities despite the emotional and behavioral instability during the period of infertility, and because of the peace caused by the connection with God, they less understand the stress caused by various and conflicting events during the infertility period and are less disturbed (34). In another explanation, it can be said that spiritual health by giving hope and meaning to people's lives and encouraging them to endure problems creates a positive attitude towards life, spiritual health by creating meaning and purpose in the lives of infertile women gives them motivation and strength and helps them. It helps them to evaluate and perceive their ability and energy to perform their activities properly despite infertility.

The findings of the current research revealed that the path coefficient related to the relationship between spiritual health and resilience was positive and significant. Accordingly, the research hypothesis about the role of spiritual health in the resilience of infertile women is confirmed. In other words, it can be said that the resilience of infertile women increases. With the increase of spiritual health. This result is in line with the results of previous studies in this field. Ebrahimi et al.'s research (2021) on hemodialysis patients showed significant and positive relationship of spiritual health with the resilience of patients undergoing

hemodialysis treatment (35). Balouchi et al. (2017) in the study of the mediating role of resilience in the relationship between spiritual health and the meaning of life with mental health in colon cancer patients found that a significant relationship was observed between spiritual health and resilience of patients (36). In the explanation of the above findings, it can be said that religious beliefs and practices from an intra-individual point of view enable a person to control his anger physiologically, cognitively and emotionally and help him to accept responsibility for his actions in conflicts. In fact, spirituality is an organized system of beliefs including moral values, customs, participation in a religious community for a firmer belief in God, a higher power. Religious beliefs are an effective way to deal with suffering and painful experiences. Also, in times of problems and discomforts, it affects the human relationships.

In other words, spiritual health, through the formation of a purposeful spiritual and value system based on trust in God's decisions and wisdom (as the omniscient), initiates a kind of spiritual confrontation and therefore leads to an increase in coping power and resilience. Accordingly, it can be said that spirituality reflects feelings, behaviors and positive cognitions of one's relationship with others, nature and the supreme being. Spiritual health makes a person have a unified identity, satisfaction, happiness, love, respect, positive attitudes, inner peace and purpose and direction in life (37). In another explanation, it can be said that spiritual health improves people's attitude towards the world and reduces negative feelings and tensions, and creates a sense of independence and power. In general, spiritual health can cause a feeling of hope, purposefulness, peace, create a positive attitude towards the world and a high adaptability in people, and increase the ability of a person to do things and have meaning and purpose in life, ultimately, improve resilience and health (38).

The findings obtained in the current research revealed that the path coefficients related to the relationship between resilience and perceived stress were negative and significant. Accordingly, the research hypothesis about the role of resilience in the perceived stress of infertile women is confirmed. In other words, the stress of

infertile women decreases with increase of resilience. This result is in line with the results of previous studies in this field. In the study of Ebrahimi et al. (2021) direct and significant relationship was found between spiritual health and resilience of hemodialysis patients (35). Kakanejadifard et al.'s research (2021) on infertile women showed that there is a direct and significant relationship between family resilience and infertility stress (39). In explaining the obtained result, it can be said that resilience is defined as a person's successful resistance to threatening and challenging situations, and resilient people are those who, despite facing chronic stress and tensions, reduce their adverse effects and maintain their health. People who have resilience are solution makers and flexible, adapt themselves according to environmental changes, and quickly return to the state of recovery after the removal of stressful factors.

People who are at the end of low level of resilience (on the continuum of high resilience and low resilience) adapt themselves to new situations to a small extent, they slowly recover from stressful situations to a normal state (40). Many researchers state that by improving resilience, a person can resist and overcome stressful and anxiety-inducing factors as well as factors that cause many psychological problems. The people affected by stress, anxiety and depression are at risk of health, so resilience guarantees the health of people by adjusting and reducing these factors (41).

The results of the current research revealed that the path coefficient related to the mediating role of resilience is negative and significant. Therefore, the research hypothesis based on the mediating role of resilience in the relationship between spiritual health and perceived stress of infertile women is confirmed. In other words, it can be said that spiritual health reduces the stress of infertile women through the indirect path of resilience. No research has been done directly regarding this result, but it is in line with similar findings in this field. For example, McGee and Holtge's research findings showed that resilience has a mediating role in the relationship between chronic stress and mental health (42).

The findings of the current research help the members of the care-treatment team to have a realistic view to the stress of infertile women and

their husbands. It helps them to benefit from internal sources of individuals for transition from these stages with a holistic perspective in caring for these people and introducing advanced methods to solve infertility. Care-treatment team members should pay more attention to the stress of these people and their families and use appropriate methods to reduce their stress.

Conclusion

Spiritual health, by giving hope and meaning to people's lives and encouraging them to endure problems, creates a positive attitude towards life, and certainly such an attitude also increases resilience in people. On the other hand, resilience improves the physical and mental conditions of a person in stressful situations. Indeed, through help to successfully adapt to a life-threatening situation, resilience can reduce depression and increase the ability to cope with pain, and as a fundamental sense of control, it also allows the individual to draw and access an inventory of coping strategies that play an important role in facing stressful life events and acts as a source of resistance and a protective shield. According to the findings of the current research and the role of spiritual health in reducing stress in infertile women, health planners and policymakers should consider the need for psychological counseling based on spiritual health and spiritual interventions.

One of the strengths of this study is that since infertility can have different effects and consequences in different cultural contexts, it is very important to know the patterns of infertility counseling. Considering the cultural-religious background in Iran and the findings of the current research regarding the role of spiritual health in predicting the stress of infertile women, goal-based programs can be designed using spiritual interventions to increase resilience and reduce stress of infertile women. These patterns can be in the interventions and counseling programs of couples.

This research had also some limitations, for example, the emergence of the critical conditions of the Covid-19 (Corona) virus and the mental-psychological conditions of infertile women delayed the implementation of

the research. Due to the corona situation, the distribution of the questionnaire in person was associated with many problems. It is suggested that in the future studies, demographic factors such as age and gender be investigated and evaluated as moderating variables. It is suggested that the role of cognitive factors such as rumination, dysfunctional beliefs or emotional factors such as alexiabe investigated as mediating variables with a structural equation approach. Based on the findings, there is a recommendation to prioritize the assessment of patients' spiritual health alongside physical care protocols in medical settings. It is also suggested that counselors and therapists provide the conditions to increase the adaptability of infertile women by holding spiritual skill training courses and improving the resilience of infertile women.

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Conflicts of interest

Authors declared no conflicts of interest.

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