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Evaluation the relationship between social health and stress of assisted reproductive techniques in infertile women

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Abstract:

BACKGROUND: Fertility is highly valued in most cultures. In contrast, infertility as a crisis has the potential to threaten the stability of individuals, relationships, and communities. Many infertile people are at risk in the early stages of infertility treatment for health and mental health problems and severe stress. The present study was conducted to assess the relationship between the social health of infertile women and the stress of infertility treatment.

MATERIALS AND METHODS: This study was performed descriptively longitudinal correlation on 2020 women in infertility canter in Isfahan. Data collection tool in this study was three parts questionnaire. The first contained demographic information, the second was stress, and the third was the social health dimension questionnaire. Analyze the data was performed using the descriptive statistical methods for the quantitative variables Pearson correlation coefficient. $P < 0.05$ was considered significant.

RESULTS: The results showed that the mean standard deviation (SD) of social health was 155.1 (16.46), and the mean (SD) score of treatment stress was 22.91 (7.93). Pearson correlation coefficient showed that treatment stress score was not significantly related to overall social health score and its dimensions ($P > 0.05$).

CONCLUSIONS: In this study, no statistically significant relationship was identified between these two variables. Probably, due to the living conditions of the people of our country in these years and the existence of stress and their great concern about economic issues, etc. The results were not observed contrary to the researcher's expectations.

Keywords:

Infertility, social health, stress

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Introduction

Fertility is highly valued in most cultures and the desire to have a child is one of the most basic human motivations in the continuation of life. In contrast, infertility is considered a crisis with the potential to threaten the stability of individuals, relationships, and communities.^[1] Infertility is defined as the absence of pregnancy following a year of regular and unprotected sexual intercourse (without the use of

contraception).^[2] Approximately 10%–15% of couples in the world suffer from infertility.^[3] The overall prevalence of infertility in Iran based on the research of Kazemijaliseh *et al.* has reported 17.3%.^[4] Furthermore, infertility is the third leading cause of divorce in the country, which raises the need for infertility treatment.^[5]

Many infertile people are at risk for mental health problems and severe stress in the early stages of infertility treatment.^[6] The infertility treatment process is stressful

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because of the high financial cost and low chance of success. The infertile patient is forced to accept the risk while not expecting much success. This is why infertile women are often depressed and anxious.^[7]

Currently, stress is the most common psychological problem in infertile women. Infertility stress and its treatment include the interaction between the physical condition predisposing to infertility and medical interventions, reactions of others, and psychoindividual characteristics and may persist for years and recur with any diagnostic or therapeutic intervention.^[8]

According to Gdanska review study in 2017, stress and its associated negative behaviors can be a threat to the outcome of infertility treatment. Stress can increase infertility by affecting the hypothalamic-pituitary-adrenal axis and increasing cortisol and norepinephrine levels. In this study, women who became pregnant using assisted reproductive therapies had lower levels of cortisol and epinephrine.^[9]

Most infertile couples have a negative attitude toward their social acceptance, and the source of their stress and anxiety is mostly due to their attitude toward social acceptance and social security.^[10] Although men and women are almost equally affected by infertility, socially and traditionally, infertility is a female problem.^[11,12] Given that women define their identity as a place of motherhood, women who face infertility face a number of problems, such as social withdrawal, social stigma, and have problems in education and job duties^[13,14,15]

In the study of Bayani *et al.*, the findings indicate that the level of social health of infertile women is lower than fertile women (3.14 vs. 3.36). There is also a statistically significant difference between the social health of fertile and infertile women in the form of five dimensions (Sig = 0.04). The comparison of the dimensions of social health between the two groups shows that the dimensions of "social prosperity" and "social cohesion" are not significantly different between the two groups. However, the dimensions of "social solidarity," "social acceptance," and "social participation" show a significant difference. It can be inferred from these results that society considers the part of the process of women's personality and identity development to be dependent on playing the role of mother.^[16]

Due to the high prevalence of infertility and the destructive effect on the lives of infertile couples in various individual and social dimensions and also, the importance of having a child, especially among the culture of Iranian families and psychological issues following infertility, the researcher decided

to conduct research on social health and stress of infertility treatment. It is important to note that infertility treatments are usually long and time consuming and costly and painful, especially when they lead to treatment failure. Therefore, conducting a study to evaluate the relationship between social health of infertile women and the stress of infertility treatment seems necessary.

Materials and Methods

Study design and setting

This research is a descriptive-correlational study. The research was conducted at Hazrat-e Maryam Infertility Clinic (Shahid Beheshti Hospital) and Mushtaq Infertility Center in Isfahan.

The study population was infertile women who referred to the above centers for assisted reproductive techniques. The inclusion criteria are having primary infertility, without children and adopted children, resident of the city, Muslim, Iranian citizen, no mental illnesses that need treatment, first marriage for the couple to be treated with assisted reproductive techniques, and having a minimum literacy. If oocyte retrieval was not possible, the person would be excluded from the study.

Study participants and sampling

In this study, sampling was performed by available methods. The researcher has invited all applicants for assisted reproductive techniques to participate in the study and then asked those who met the inclusion criteria to cooperate with completing the questionnaires to conduct this study after signing the consent form. The number of samples according to the opposite relationship $n = \frac{(Z_1 + Z_2)^2(1-r)^2}{r^2} + 2$, was at least 190 people, which was selected from the beginning 211 people with 10% drop.

Data collection, tools, and techniques

Data collection tools in this study included a three-part questionnaire. Questionnaire contained demographic information of individuals which included 16 questions about the age of infertile women, female education, female employment status, duration of marriage, etc. The second part, the treatment stress questionnaire, consisted of 13 questions that were measured based on a four-point Likert scale from 0 to high 3. Not all questions were scored directly and there was no reverse scoring. The minimum score of the questionnaire was 0 and the maximum was 39 points. This questionnaire has been used in many studies in our country, Iran and its validity and reliability in evaluating the treatment stress score in infertile women in the study of Mohsenzadeh was also confirmed in 2018 and its Cronbach's alpha is 0.78.^[17]

The questionnaire determines the score of social health dimensions, which includes 48 items to measure the social health variable. Bayani *et al.* determined the validity and reliability of this questionnaire in their study in assessing the dimensions of social health in infertile women. Cronbach's alpha for the dimensions of social health is as follows: A total of 48 items for social health with a Cronbach's alpha of 90%.^[16]

In this study, the dimensions of social health were measured using a standard questionnaire on the Likert scale. A score of 1–5 was assigned to each question from very low to very high. The minimum score was 48 and the maximum was 240. The higher the score, the more socially healthy people were.

While explaining the objectives of the study and attracting their oral participation, the researcher said that women who came to these centers for oocyte retrieval and waited to enter the operating room on the same day, asked to complete the informed consent form if they wished to participate in the study, and then to complete a questionnaire containing demographic information, a treatment stress questionnaire, and a social health questionnaire. The data collection method was self-reported.

To achieve the objectives of the study, the researcher used descriptive statistics (mean and standard deviation [SD]) and analytical statistics (independent *t*-test and Pearson correlation coefficient) using the SPSS software version 20 (SPSS V.20 Inc., Chicago, IL, USA)

Ethical consideration

In this study, all samples were asked to complete the consent form if they wished to participate in the study. They were assured that all their information would remain confidential.

Results

The mean age of women was 33.13 with a SD of 5.28, and the mean age of their husbands was 36.64 with a SD of 5.93 years. The duration of marriage (year) was $\pm 10.2019-7.2020$, and the duration of infertility of the couple was $\pm 6.2009-7.2018$ based on the year. The duration of infertility treatment of the participants (year) was 3.54 ± 3.27 years.

Table 1 shows the frequency distribution of the cause of infertility and current treatment.

Statistical indicators of the number of previous treatments are shown in Table 2. As shown in the table, the highest type of treatment belonged to intrauterine insemination and the lowest percentage belonged to direct intraperitoneal insemination.

The mean total score of social health was 155.11 with a SD of 16.46, and the mean score of treatment stress was 22.91 with a SD of 7.93. The statistical indicators of social health dimensions are as follows:

The next score of participation was 38.74 (5.06), and the score of prosperity (4.23) was 19.70. Furthermore, the scores of correlation, coherence, and acceptance dimensions were 29.84 (4.38), 27.44 (3.98), and 37.39 (4.85), respectively.

Pearson correlation coefficient as shown in Table 3, expressed that the stress score of treatment was not significantly related to the total score of social health and its dimensions ($P > 0.05$).

Table 1: Frequency distribution of infertility cause and current treatment

Variable	n (%)
Cause of infertility	
Feminine	68 (33.6)
Masculine	29 (14.4)
Both	41 (20.3)
Unknown	64 (31.7)
Current treatment	
IUI	47 (23.3)
IVF	105 (52)
ICSI	35 (17.2)
Other treatments	15 (7.5)

IUI=Intrauterine insemination, ICSI=Intracytoplasmic sperm injection, IVF=*In vitro* fertilization

Table 2: Statistical indicators of the number of previous treatments

Treatment	Mean±SD	Minimum	Maximum
IUI	0.70±1.11	0	5
IVF	0.39±0.84	0	7
ICSI	0.09±0.39	0	3
DIPI	0.005±0.07	0	1
Other treatments	0.12±0.39	0	2

SD=Standard deviation, IUI=Intrauterine insemination, ICSI=Intracytoplasmic sperm injection, IVF=*In vitro* fertilization, DIPI=Direct intraperitoneal insemination

Table 3: Pearson correlation coefficients between total social health score and its dimensions with treatment stress score

Dimensions of social health	Mean±SD	Minimum	Maximum	Treatment stress score	
				r	P
Participation	38.74±5.06	20	53	0.096	0.17
Prosperity	19.70±4.23	8	33	-0.067	0.35
Correlation	29.84±4.38	17	42	-0.037	0.60
Cohesion	27.44±3.98	14	38	-0.002	0.98
Acceptance	37.39±4.85	23	50	-0.025	0.72
Total score	155.11±16.46	96	189	-0.005	0.94

Pearson correlation coefficient showed that the stress score of treatment was not statistically significantly related to the total score of social health and its dimensions ($P>0.05$). SD=Standard deviation

Discussion

According to the results of the study, the total score of social health had no significant relationship with the stress score of treatment ($P < 0.04$). Furthermore, none of the dimensions of social health, including social participation, social prosperity, social solidarity, social cohesion, and social acceptance, had a significant relationship with treatment stress score.

In the study of Bayani *et al.*, the findings indicate lower social health of infertile women compared to fertile women (3.14 vs. 3.36). There is also a significant difference between the social health of fertile and infertile women in the form of five dimensions.^[16]

In their study, "The Relationship between Stress and Infertility," Rooney and Domar examined the psychological disorders associated with infertility treatments and their impact on the outcome of assisted reproductive therapies. According to the results of this study, infertility causes stress. On the other hand, reducing stress can increase the chances of pregnancy and the success of fertility treatment methods.^[18]

In their 2019 study, Malina *et al.* examined the impact of supportive social interactions on the stress of infertile individuals-seeking *in vitro* fertilization. According to this study, infertile people suffer from stress and low self-esteem, which affects their psychosocial performance. Infertile people do not receive adequate social support due to social withdrawal. According to the results of this study, social support has positive physiological and psychological effects on infertile people and can reduce stress and increase their sense of security and trust.^[19]

In a 2016 study by Zivaridelavar *et al.*, the results showed that the mean scores of depression and anxiety in women before ovulation induction and after ovulation were not significantly different. However, the rate of mental health disorders in the dimension of after ovulation depression was significantly reduced. Furthermore, there was a significant relationship between anxiety and depression levels before ovulation induction and after ovulation.^[20] This study showed that the process of assisted reproductive therapy does not affect mental health in fertile women independently. However, these women begin the process of assisted reproduction with high levels of depression and anxiety. Therefore, mental health counseling was needed before fertility treatment.

According to the results, it seems that contrary to the researcher's perception of the relationship between social health and stress of infertility treatment, in this study no statistically significant relationship was identified

between these two variables. Probably due to the conditions prevailing in the lives of the people of our country in these years and the existence of stress and their great concern about economic issues, etc., the desired relationship by the researcher has not been significant. In other words, probably because of the conditions in people's lives that have reduced social health, the infertility factor may not have changed much in social health. However, it is better to do research with this content again in better conditions of people's lives and compare the results to determine the real relationship between social living conditions and treatment stress.

Limitation and recommendation

The most important limitation of our study was the unwillingness of infertile couples to participate in the study, which the researcher convinced them by explaining the objectives of the study. It is suggested that further studies be performed using standard methods to reduce stress in infertile individuals with similar objectives to this study.

Conclusions

The findings of this study showed that due to the importance of fertility in most Iranian families, infertility has become a social problem for couples that expose them to psychological and social problems. Since different dimensions of health are closely related to each other and affect each other, it is important to pay attention to the social dimension of health along with other dimensions. Furthermore, paying attention to reducing stress in infertile women can improve the results of assisted reproductive therapies.

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Conflicts of interest

There are no conflicts of interest.

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