Effect of Perceived Social Support on Life Satisfaction in Infertile Women Undergoing Treatment: Mediating Role of Positive Thoughts

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Abstract

Background: Infertility is a prevalent issue among humans, which can lead to negative psychological consequences for couples.

Objectives: This study aimed to explore how perceived social support impacts the life satisfaction of infertile women who are undergoing treatment, with positive thoughts playing a mediating role.

Methods: This study was part of a descriptive-correlational study and utilized the cross-sectional research method and structural equation modeling. The target population for this study consisted of all infertile women receiving treatment in Tehran who had sought assistance from infertility treatment centers between July and November 2023. The selected sample size included 178 medically treated infertile women chosen through purposive sampling. The assessment tools were the Multidimensional Scale of Perceived Social Support, the Satisfaction with Life Scale, and the Automatic Thoughts Questionnaire-Positive (ATQ-P). Descriptive statistics were conducted using SPSS software (version 27), and the path between variables was analyzed using SmartPLS software (version 4).

Results: According to the results, social support had a significantly positive effect on life satisfaction ($\beta=0.165$, $P=0.001$). Similarly, social support had a significantly positive impact on positive thoughts ($\beta=0.488$, $P<0.001$). The findings also indicated that positive thoughts played a crucial role as a mediating variable in life satisfaction, showing a positive and significant effect ($\beta=0.585$, $P<0.001$).

Conclusion: The findings of the current study indicate that social support positively affects both life satisfaction and positive thoughts. Additionally, positive thoughts, when acting as an intermediary variable, can enhance life satisfaction.

Keywords: Infertile women, Life satisfaction, Perceived social support, Positive-thoughts

1. Background

Infertility is a common health issue that affects approximately one in six couples of reproductive age. Despite its significant prevalence, many women remain silent about infertility, leaving them vulnerable to psychological distress (1). The inability to conceive or carry a child after at least a year of regular, unprotected intercourse creates immense challenges and stress in most societies (2). The global infertility rate ranges from 12-15%, with Iran reporting an overall prevalence of primary infertility at 20.2%, 12.8%, and 9.12%, according to the World Health Organization's definitions. Additionally, the rate of secondary infertility in Iran is estimated at 4.9%. It is thus apparent that the prevalence of infertility in Iran exceeds the global average (3). Various factors contribute to infertility in women. Research suggests that the subfatin hormone, which is closely linked with obesity, plays a significant role in infertility (4). Furthermore, studies highlight the need to address ambient air pollution to mitigate the hidden risks to female fertility, particularly in areas with high levels of O3 (5).

Infertile women may encounter significant stress related to their condition, leading to reduced life satisfaction, increased distress, and symptoms of mental disorders (6). Following an infertility diagnosis, female patients may experience feelings of guilt, shame, and self-loathing due to fear of rejection and humiliation from society and their own families. These negative emotions contribute to decreased satisfaction in life and relationships (7). Life satisfaction is a crucial indicator of overall quality of life, playing a crucial role in maintaining positive mental health (8). A study demonstrated that higher levels of stress resulting from infertility were correlated with lower life satisfaction and increased utilization of dysfunctional attitudes (9). Additionally, research findings indicate a negative linear relationship between stress and life satisfaction among women struggling with infertility (2).

Infertility brings about adverse health and social consequences, particularly for women living in societies where their worth and social identity are closely tied to their reproductive abilities (5). Perceived social support emerges as a significant factor in life satisfaction for infertile women. It refers to the perception that individuals have reliable social networks they can count on for care and assistance in times of need (10). The importance of perceived social support becomes especially apparent when it relates to health and quality of life, as it positively influences mental health status, experienced stress, and perceived self-efficacy (11). Studies reveal that psychosocial factors, such as heightened stress from

infertility treatments, emotional disorders, a lack of social support, or social exclusion, strongly contribute to decreased satisfaction in various areas of life within the realm of infertility (12). Furthermore, research findings indicate a positive and significant correlation between adaptation to infertility and perceived social support from family and friends for women who undergo unsuccessful infertility treatments (13).

Infertile women encounter numerous negative emotions concerning different aspects of their lives and their overall contentment with life (14). However, satisfaction and happiness are not solely determined by external circumstances. Individual psychological states, such as hope, self-esteem, and sense of efficacy, also play a significant role. Individuals with a positive mindset can view negative events in a positive light (15). Positive-thinking individuals tend to maintain better health and youthfulness than others. Their positive thoughts and attitudes enhance the body's defense mechanisms and the individual's overall quality of life (16). The findings of a study have indicated that positive thinking can effectively increase life satisfaction and hope in infertile women (17). Another study has also demonstrated the positive impact of the positive-thinking approach on resilience and life satisfaction (15). Moreover, the results of a study have shown that positive thoughts regarding illness mediate the relationship between negative emotions and life satisfaction (18).

2. Objectives

Infertility, which is often considered a crisis, is linked to physical, social, and financial stress and affects all aspects of an individual's life (3). Therefore, it is crucial to tackle infertility and its contributing factors. However, no previous research has investigated the influence of perceived social support on life satisfaction in infertile women undergoing treatment, with the mediating role of positive thoughts. Therefore, there is a research gap in this area, and the present study aims to fill this gap by exploring the mediating effects of positive thoughts on perceived social support and life satisfaction in infertile women undergoing treatment. Figure 1 depicts the conceptual model of the present study.

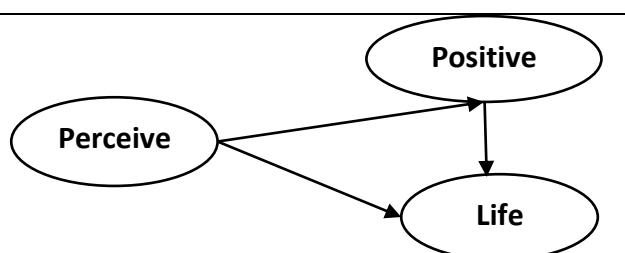**Figure 1.** Conceptual framework of the study

3. Methods

This study was part of a descriptive-correlational study and employed the cross-sectional research method and structural equation modeling (SEM). The target population for this study consisted of all infertile women undergoing treatment in Tehran who had sought help from infertility treatment centers between July and November 2023.

According to Loehlin and Beaujean (19), the sufficient sample size for testing the proposed model using SEM was 250 for this study. Therefore, 250 medically treated infertile women were selected through purposive sampling. To be eligible for the study, the participants had to have a medical record related to infertility treatment, have children, have experienced primary infertility between the ages of 20 and 49, give informed consent, and possess sufficient literacy and comprehension skills to answer the questionnaires. Primary infertility refers to the inability to conceive for one year without using contraceptive methods.

Women who already had one child (secondary infertility) or had become pregnant after one year without using contraceptive methods were excluded from the study. Additionally, women below the age of 20 (since such cases are rare in Tehran), individuals with physical or mental disorders that hindered their ability to respond, and those who failed to complete over 10 items in the questionnaires were excluded from the study.

To conduct the present study, first, the necessary permissions were obtained from the university where the researcher was studying. After that, the researcher, with the assistance of psychology professors, visited Ibn Sina and Royan infertility treatment centers in Tehran. These centers were selected due to the ease of coordination and implementation. Subsequently, the researcher contacted the management of these medical centers to make arrangements for conducting the study. Afterward, the infertility treatment centers disseminated an announcement about the study online through social networks to infertile women who had medical records at their centers. This announcement provided information about the objectives, permits, and the process of the study.

Once the patients expressed their willingness, they received further information about the study online through social networks, in addition to the questionnaires and ethical principles. Participants were assured that the forms did not contain any personal information and that they had the option to withdraw from the study at any time. Due to the inability of all participants to be present at the centers simultaneously, the questionnaires were completed online and shared on social networks. The process of conducting the study and completing the questionnaires online lasted for four months. Out of

the 250 questionnaires that were filled out, 178 were deemed usable for analysis. The remaining 77 questionnaires were excluded from the study because of incomplete responses, deliberate errors, failure to answer more than 10 questions, or refusal to continue answering the questions. To adhere to ethical principles, before administering the questionnaires, a form seeking willingness to cooperate was obtained from the participants.

Measures
Multidimensional Scale of Perceived Social Support (MSPSS)

Dahlem, Zimet, and Walker developed a scale in 1988 to assess perceived social support, which consists of 12 questions and includes three subscales of friends, family, and significant others. Each question is rated on a five-point Likert scale, ranging from completely disagree to completely agree (20). The total score ranges from 12 to 84, with higher scores indicating higher levels of perceived social support. In a study conducted in Iran, the reliability of the subscales of friends, family, and significant others was found to be 0.73, 0.78, and 0.84, respectively. The researcher also calculated a Cronbach's alpha coefficient of 0.80 for the whole scale (21).

Satisfaction with Life Scale (SWLS)

Diener, Emmons, and Griffin developed this scale in 1985 to assess life satisfaction (22). It is comprised of five questions, graded on a seven-point Likert scale, ranging from completely disagree to completely agree. The total score ranges from 7 to 35, with higher scores indicating greater life satisfaction. In an Iranian study, the SWLS demonstrated a reliability of 0.83 using Cronbach's alpha and 0.69 using the retest method. Furthermore, the SWLS exhibited a positive correlation with the Oxford Happiness Index and a negative correlation with the Beck Depression Index (23). The researcher calculated the Cronbach's alpha coefficient of the scale at 0.78 (24).

Automatic Thoughts Questionnaire-Positive (ATQ-P)

In 1988, Ingram and Wisnicki developed a questionnaire to measure the level of positive thinking. The questionnaire consists of 30 questions, and each response is rated on a five-point Likert scale, ranging from 1 (never) to 5 (always). The total score on the scale can range from 30 to 150, with a score above 90 indicating higher levels of positivity in an individual. A study conducted in Iran assessed the reliability of the scale using Cronbach's alpha, resulting in a coefficient of 0.85. The researcher also reported a Cronbach's alpha coefficient of 0.74 for the scale [25].

Statistical Analyses

Descriptive statistics were conducted using SPSS software (version 27), and SmartPLS software (version 4) was utilized to analyze the relationship between variables. Additionally, Sobel's test was employed to determine the significance of the mediator variable. To check the normality of variables' distributions, the Kolmogorov-Smirnov test was applied. The findings showed that variables did not follow a normal distribution, thereby confirming the use of SmartPLS. Furthermore, the researcher ensured the random sampling method, satisfying the necessary assumption. The level of significance for this study was determined at 0.05.

4. Results

Considering demographic variables, female participants were categorized into three different age groups, namely 20-30 years old (24.2%), 31-40 years old (69.1%), and 41-49 years old (6.7%). Similarly, the female participants were also divided into three groups based on the duration of their marriage: 1-5 years (58.4%), 6-10 years (34.8%), and the group with over 10 years of marriage. Table 1 demonstrates descriptive statistics related to demographic variables.

Table 2 provides a comprehensive overview of the means and standard deviations of the variables examined in the study.

Table 1. Description of the demographic variables

Variables	Groups	Frequency	Percentage	Sample size	Median
Age	20-30	43	24.2	178	2
	31-40	123	69.1		
	41-49	12	6.7		
Duration of marriage	1-5	104	58.4	178	1
	6-10	62	34.8		
	10+	12	6.7		

Table 2. Description of the main research variables

Variables	Mean±SD	Max	Min	N	Skewness	Kurtosis
Social support	35.13±13.48	69	20	178	1.126	0.157
Positive thoughts	23.43±6.11	30	12	178	-0.377	-1.314
Life satisfaction	83.45±17.57	109	61	178	0.146	-1.693

According to Table 3, social support has a significantly positive relationship with life

satisfaction and positive thoughts.

Based on Table 4 and Figure 2, social support has a notable and favorable effect on life satisfaction (β=0.165, P=0.001). Additionally, social support has a significantly positive effect on positive thoughts (β=0.488, P<0.001). Based on the findings, positive thoughts also serves as a mediating variable with a significantly positive impact on life satisfaction (β=0.585, P<0.001). The researcher employed Sobel's test to establish the significance of the mediating variable using the provided formula.

$$Z - value = \frac{a * b}{\sqrt{(b^2 * s_a^2) + (a^2 * s_b^2) + (s_a^2 * s_b^2)}}$$

In Sobel's test, a Z-value greater than 1.96 indicates that the mediating effect of a variable is statistically significant at a 95% confidence interval. In this study, the Z-value for positive thoughts acting as a mediator between social support and life satisfaction was 6.55269. Based on the results of Sobel's test, the effect of the mediating variable in this study was indeed significant.

Table 5 clearly confirms the model's reliability and validity. The Cronbach's alpha reliability surpasses 0.7, and the combined reliability of these variables also exceeds 0.7. In a similar manner, the model's validity was evaluated using the average variance extracted index. As the values for research variables surpass 0.5, it can be concluded that the model's validity has been established. Additionally, the researcher assessed the model's fit by confirming all fit indices. The SRMR index, which measures the difference between the observed correlation and the correlation matrix of the structural model, yields a value of 0.074. Similarly, the NFI value is 0.901, and the chi value is 137.268. To verify the model's fit in predicting the research variable, the researcher utilized blindfolding. A Q2 value above zero indicates that the observed values are well reconstructed, thus demonstrating the model's predictive ability. Notably, the Q2 values for life satisfaction and positive thoughts are 0.457 and 0.232, respectively.

Table 3. Pearson correlation coefficient between research variables

Variables	1	2	3	P-value
Social support	-			P<0.001
Life satisfaction	0.488	-		P<0.001
Positive thoughts	0.451	0.666	-	P<0.001

Table 4. Standard research coefficients in general

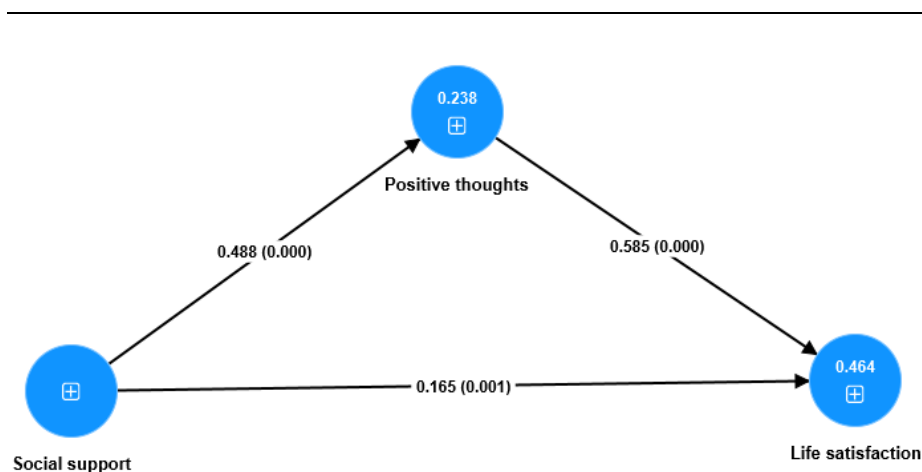| Result	T-value	P-value	Standard deviation	Path coefficient	Result of the hypothesis
confirmation	10.41	P<0.001	0.056	0.585	Positive thoughts -> Life satisfaction
confirmation	3.355	0.001	0.049	0.165	Social support -> Life satisfaction
confirmation	8.423	P<0.001	0.058	0.488	Social support -> Positive thoughts

Figure 2. Path coefficients between variables and significance level

Table 5. Reliability and validity of the model

Variables	Cronbach's Alpha	Composite Reliability	AVE
Social support	0.807	0.862	0.613
Life satisfaction	0.782	0.847	0.781
Positive thoughts	0.749	0.833	0.501

AVE: average variance extracted

5. Discussion

The present study aimed to examine how perceived social support affects the life satisfaction of infertile women undergoing treatment, with positive thoughts serving as a mediator. The results of this study indicated that social support has a positive and significant impact on life satisfaction. Additionally, social support was found to have a positive and significant effect on positive thoughts. The study also revealed that positive thoughts play a mediating role in the relationship between social support and life satisfaction.

These findings are consistent with previous studies (12-13, 27-26) that have shown the positive influence of social support on life satisfaction. The findings of the study by Novara et al. (2023) demonstrated that social support enhances both life satisfaction and resilience (26). In another study, it was stated that having a strong sense of identity and social support is associated with greater life satisfaction (27). Moreover, the current study revealed that psychosocial factors, such as increased stress related to infertility treatment, a lack of social support, or social rejection, can significantly decrease life satisfaction in infertile individuals (12). The results also showed a positive and significant correlation between adaptation to infertility and the perceived social support from family and friends of women who underwent unsuccessful infertility treatments (13).

To further explain these findings, it is important to note that social support encompasses various forms of biological, psychological, and behavioral assistance, as well as external resources that enhance an individual's resilience when faced with traumatic or challenging life events, including those that contribute to psychological issues. Having access to social support positively impacts a person's mental well-being, and a high level of perceived social support fosters positive emotions, such as respect and acceptance (28). These social and supportive relationships are particularly beneficial during times of high stress, as they can mitigate the potentially detrimental effects of stressful events. Social networks, which encompass all relationships an individual has, can provide three types of aid: instrumental aid (such as financial assistance and help with daily tasks), informational aid (such as advice and suggestions to help overcome problems), and emotional aid (such as affection, interest, care, confidence, respect, and trust) (26).

It was also determined in this study that social support has a beneficial influence on positive thoughts. It should be noted that previous research did not directly investigate the influence of social support on positive thoughts. Nevertheless, the findings of the current study align with previous studies that have explored the positive impact of social support on thoughts. Research has shown that perceived social support is closely linked to positive psychological well-being and reduced levels of negative psychological well-being (29). Furthermore, research has suggested that a rise in the perceived level of social support results in a notable reduction in anxiety levels (30). In addition, the study conducted by Kılınç et al. (2021) pointed out that the perception of social support plays a role in enhancing psychological resilience (31).

The explanation of this finding highlights the significance of social support in influencing the coping strategies employed by individuals experiencing stress, ultimately assisting them in managing the situation. For infertile women, perceiving social support can lead to the forgiveness of their shortcomings, ultimately fostering an increase in self-compassion. Furthermore, close individuals, by providing perceived social support, can contribute to care and empathy for infertile women. Consequently, these women may adopt self-care and empathy through social interactions, resulting in heightened levels of positive emotions (10). Conversely, many infertile women conceal their problems because of societal pressure, which leaves couples unable to share their health issues with family and relatives and consequently lacking support during this stressful period. However, social support can effectively mitigate the stress of infertility in women. As a valuable coping mechanism, social support engenders love, affection, self-confidence, self-expression, self-awareness, and a sense of belonging. While it may not eliminate stress-inducing circumstances, it aids in reducing anxiety levels, enabling individuals to adopt a more optimistic outlook, effectively manage challenging situations, lessen frustration, and develop new solutions (13).

A study found that positive thinking is an effective method for enhancing life satisfaction and hope in infertile women (17). Previous research also revealed that adopting a positive-thinking strategy can improve resilience and life satisfaction (15). Another study explained that positive thoughts about illness mediate the relationship between negative emotions and life satisfaction [18]. It should be noted that the long-term process of infertility treatment, especially if it is focused on women, contributes to increased mental pressure in infertile women. Repeated treatment failures lead to feelings of despair and hopelessness, causing individuals to associate the future with fear and anxiety (17). However, positive thinking amidst the negative trajectory of infertility promotes optimistic thinking and empowers individuals to confront challenges. Positive thinking is certainly one of the vital qualities seen in many successful individuals during difficult times. Maintaining a positive mindset is crucial because it not only fosters personal growth and improves one's

outlook, convictions, and ambitions for accomplishment, but it also plays a vital part in adjusting one's self mentally and attaining fulfillment in one's life (32). Moreover, positive thinking can enhance mental well-being by enabling individuals to feel more in control of their lives. It diminishes the likelihood of negative self-perceptions and amplifies positive self-perceptions by focusing on strengths, pleasant past experiences, and the identification of emotions. Overall, it provides individuals with a more comprehensive and improved self-understanding, which can promote mental health and effectively contribute to life satisfaction (33).

Like any other study, the current study had limitations as well. One limitation was that the sample only included infertile women. Therefore, there is a need for further studies that examine the life satisfaction of men undergoing infertility treatments and the impact of perceived social support on them. Additionally, since in this study, self-report tools were utilized online, participants may have provided contradictory answers to fulfill societal expectations and manage their image, leading to a social desirability bias. Similarly, due to the online nature of the questionnaires and the absence of direct researcher presence, monitoring was insufficient, resulting in a significant number of unusable questionnaires. Focusing on individuals referred to infertility treatment centers also limited the investigation of important variables, such as the duration of marriage, infertility, and treatment. It is essential to recognize that the challenges faced by individuals dealing with infertility for an extended period differ from those of individuals who have not been married for a long time and are only beginning their journey to have children.

6. Conclusion

In conclusion, the results of this study revealed that social support positively influences life satisfaction and promotes positive thoughts. Furthermore, positive thoughts were found to play a mediating role in increasing life satisfaction. Counseling professionals and therapists are encouraged to utilize positive thinking techniques to enhance satisfaction with life in infertile women, taking into consideration the severe psychological impact of infertility on individuals, which affects self-esteem, self-confidence, and marital relationships. Additionally, institutions and organizations responsible for women's affairs, such as the Health Commission of the Ministry of Health, should raise awareness and prioritize the health needs of infertile women. Lastly, it is recommended that research institutions focus on studying the health of infertile women from a social perspective.

Acknowledgments

Conflicts of interest

The authors declare no conflicts of interest.

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