

*Predicting Fertility quality of life based on coping strategies,
duration and infertility factors*

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Abstract

Background: Infertility is a serious medical problem with effects on quality of life. Various factors such as social-demographic factors, cognitive perceptions and coping strategies can affect emotional reactions to infertility and its treatment.

Objectives: This study aims to identify Fertility quality of life (Fertiql) of infertile couples and the role of coping strategies, duration and cause of infertility.

Methods: In this predictive correlational study 180 infertile Iranian patients (90 couples) referred to the Vali-e-Asr Reproductive health Research Center in 2015 were selected according to convenience sampling method and completed the following questionnaires: demographic questionnaire, Fertility quality of life (Fertiql) and coping styles for infertility. Data were analyzed using Pearson's correlation coefficient, multiple regression analysis with SPSS software version 18.

Results: The results showed that Fertiql with meaning-based coping strategies have a significant positive relationship ($r=0.42$) and have a significant negative relationship ($r=-0.41$) with active avoidance coping strategies. These strategies together accounted for 30.6 percent of the variance of fertility quality of life.

Conclusion: As more use of Meaning-based coping strategies and less active avoidant coping strategy and less duration of infertility are associated with improving the quality of life of infertile couples. Hence, offering psychological services and conducting educational interventions for effective coping strategies along with biologic treatments for infertile couples is emphasized.

Key words: *infertility, fertility quality of life (Fertiql), coping strategies*

Introduction

World health organization (WHO) has proposed infertility as a problem of reproductive health all over the world [1]. Infertility is viewed as a major loss and one of the bitterest experiences of life such as the death of a first-degree relatives which is accompanied by a reaction of grief. Infertility is considered to be a serious tension in life which leads to an acute trauma for the couple [2]. In a

study conducted by international health institute in Belgium, France, and Netherlands, women reported that among stressful experiences of life, infertility was in the fourth rank among a list of 12 critical and stressful events, after mother's death, father's death and spouse infidelity [3]. WHO defines infertility as: inability in pregnancy after one year of natural, frequent and without prevention sexual relationship [4,5].

Research shows that infertility and its treatment have considerable effect on an individual's quality of life [3,6,7]. For instance, infertility leads to helplessness, frustration, reduced self-esteem and self-confidence, isolation, identity problems, feeling of lack of beauty, and meaninglessness of life, and infertile patients experience more tension and stress in their relationship with spouse [6-8]. Therefore, infertility is a serious medical problem with effects on quality of life [6], and the best approach for reproductive care includes an inclusive approach with integrated consideration of quality of life in clinical function of the individual [7].

Quality of life is a hard construct to define and measure because culture and other personal values judge the quality of life among individuals [9]. However, world health organization (WHO) defines quality of life as individuals' perception of their status in life, value systems of the society, expectations, standards, and their priorities [5,10]. This definition suggests that quality of life relates to mental or personal evaluations and derives from cultural, social and environmental grounds. The primary concepts considered for quality of life include happiness and good life, the level of satisfaction or dissatisfaction, the level of sadness or gladness, well-being, being mentally fine, and general quality of life [11].

Negative reaction to infertility and its treatment is affective on overall life satisfaction, successful treatment and tendency to continue the treatment [10]. In other words, infertility and its treatment, due to rigid therapeutic instructions (such as having sexual relationship in order to reproduce and not for gaining sexual pleasure), long, expensive and painful treatments, leads couples to experience significant emotion stress [12,13]. Various factors such as social-demographic factors, cognitive perceptions and coping strategies (such as avoidance coping style) can affect emotional reactions to infertility and its treatment [13].

Lazarus and Folkman's psychological stress and coping theory supposes that adjustment with stressful experiences (like infertility) is determined by a transaction between situational, cognitive and effective coping strategies variables [13]. When facing stressful events, first,

individuals evaluate their impact power (initial evaluation: for example, threat or challenge) and, then, they use a number of coping strategies. Coping strategies are cognitive and behavioral efforts used for eliminating or reappraising the stressful event, or for regulation the emotional state which leads to the stressful event. The type of coping strategies being used significantly affects the stress management, for example, in infertile couples, adaptive coping strategies (such as problem-focused) leads to better adjustment with stress, and emotionally-focused coping strategies lead to higher tension. The existing data show that, overall, in infertile couples, women use more coping strategies and they report higher stress compared to their men [14]. On the other hand, psychological problems of infertile patients are complex and affected by various factors such as gender differences, the cause, and duration of infertility. Although the research conducted by Ramezanzadeh and colleagues [15] indicate that there is no relationship between duration of infertility and psychological factors, the study of Abedinya and colleagues [16] showed that the longer the duration of infertility is and the more unsuccessful treatment experiences are, the greater stress and psychological problems would be and, in addition, the relationship between stress and infertility often leads to a vicious circle and they intensify one another. In those infertile couples who blame themselves for infertility, the psychological pressure would raise and, therefore, their problem would become more acute [6,12]. Hence, regarding the fact that quality of life is effective on treatment success and tendency to continue treatment, the investigation of quality of life in infertile couples and its predictive variables is important. It is noteworthy that past studies mentioned above have used quality of life measures in general population. Since the specific tool for quality of life is considered as a valid and appropriate tool for investigating infertility-related quality of life, therefore, the present research was conducted by the aim of determining infertility-related quality of life among infertile couples by using the FertiQol instrument; this tool is able to predict infertility-related quality of life based on coping strategies, duration and cause of infertility.

Methods

This is a predictive and correlational study. 180 infertile men and women (based on Cochran sampling table) who referred to Vali-Asr research and treatment of reproductive health center in Tehran in fall 2015 were selected by convenience sampling method. For gathering data, after obtaining the approval of ethics committee (IR.USWR.REC.1394,138) and getting an introduction letter from university of social welfare and rehabilitation sciences and coordinating with Vali-Asr research and treatment of reproductive center, the researchers referred to this center and, after explaining aims and methods of the study and assuring the patients regarding the confidentiality of thi information, and obtaining their informed consent for participating in the study, the qualified individuals were selected based on research criteria such as reading and writing literacy (the minimum literacy required for reading and answering the questions), having a definitive diagnosis of infertility (individuals who were definitely infertile after frequent tests and examinations), and consent to participate In the research. A self-report questionnaire including three parts was used as study tool. Part one included demographic questionnaire, part two Fertility Quality of Life Questionnaire (FertiQol), and part three Schmidt's Coping Strategy Scales. The demografic questionnaire included 6 questions about individual information of the subjects (age, gender, education, infertility causes, and infertility duration). FertiQol is an international questionnaire which has been developed in the University of Cardiff in England, and was officially introduced to the world in 2011. Infertility quality of life questionnaire is a reliable and sensitive measure for quality of life in individuals affected by infertility problems [18]. Over 2000 individuals participated in the development of fertiQol. This questionnaire includes 34 items (2 extra items include measurement and overall satisfaction of physical health and quality of life) and consists of two parts: FertiQol core and FertiQol treatment. FertiQol core includes emotional (6 items), mental-physical (6 items), relational (6 items), and social (6 items) domains. FertiQol treatment

includes environment (6 items) and acceptability (4 items) domains. Completing Fertility quality of life questionnaire takes 10-15 minutes and items are scores according to 5 groups. Answers are rated based on a scale of 0 to 4, maximum achievable score of the scale is 100 which shows desirable quality of life, and lower scores show less quality of life. If necessary, items are reversely scored for scaling and all the item scores are summed and, finally, they are multiplied by $25/K$; K is the number of items in the target scale or in the total scale (Boivin et al., 2011). The alpha Cronbach's coefficient of this questionnaire in the present study was 0.855 [10].

Schmidt's Coping Strategy Scales specified for stressful causes of infertility has been developed in 2005 and includes 29 items and 4 subscales. The creators of this scale have developed their scale based on Lazarus and Folkman's ways of coping questionnaire. These 29 items cover a wide range of responses which are likely to be shown by participants in face of infertility. Subscales include active avoidance strategy (e.g. avoidance from staying with fertile women and children), active exposure strategy (e.g. expressing feelings, asking questions from others for getting advice), passive avoidance strategy (e.g. waiting for a miracle), and meaning-based strategies (e.g. reflecting on the infertility problem in a positive manner, finding other goals in life). These scales are completed based on a 4-point Likert scale (0-4) [19]. The alpha Cronbach's coefficient obtained for this questionnaire in the present study was 0.672 for active avoidance strategies scale, 0.71 for active coping, 0.607 for passive avoidance strategies, and 0.715 for meaning-based strategy.

In the present research, for descriptive information, descriptive statistics indices including frequency, percentage, mean and standard deviation were used. The data were analyzed through SPSS version 18 software.

Results

In the present study, 18 individuals (90 males and 90 females) were investigated and the education level of most subjects (37.2%) were diploma. Also, in 31.1 percent of the cases, women were the infertile subject (table 1).

In addition, most participants were 33 years old with a mean age of 31.5 years, and the highest

frequency regarding infertility duration was 3 years with a mean of 4.7 years.

Table 1: Distribution of infertile couples characteristics based on demographic variables of gender, education and infertile subject in couples

Variables	Variables' levels	Frequency	Percent
Gender	Men	90	50
	Women	90	50
Education	Elementary	27	15
	Middle school	42	23.3
	Diploma	67	37.2
	Associate degree	10	5.6
	Bachelor's degree	31	17.2
	Master's degree	3	1.7
	Unknown	46	25.6
Infertile subject	Male	45	25
	Female	56	31.1
	Both	66	18.3
	Unknown	46	25.6

For investigating the relationship of coping strategies and infertility duration with quality of life, Pearson correlation matrix was used. Results suggested that there is a significant relationship between fertility quality of life with two variables of coping strategies and infertility duration, so

that there is a correlation between fertility quality of life and meaning-based coping strategy ($P < 0.01$, $r = 0.42$), between fertility quality of life and active avoidance strategy ($P < 0.01$, $r = -0.41$), and between fertility quality of life and infertility duration ($P < 0.05$, $r = -0.16$) (table 2).

Table 2: Results of Pearson correlation matrix between coping strategies and infertility duration with fertility quality of life

Variables	1	2	3	4	5	6
1. fertility quality of life	1					
2. active avoidance strategy	-.414**	1				
3. active exposure strategy	-.099	.082	1			
4. passive avoidance strategy	.016	.055	.212**	1		
5. meaning-based strategy	.421**	-.155*	.113	.392**	1	
6. infertility duration	-.167*	.118	.181*	.019	-.178*	1

* $P < 0.05$, ** $P < 0.01$

To examine the contribution of coping strategies and infertility duration in predicting fertility quality of life, multivariate regression analysis was used (table 3). According to table 3, among the coping strategies, the active avoidance strategy and meaning-based strategy were significantly related with fertility quality of life and there was no relationship between infertility duration and quality of life. The modified

correlation coefficient for active avoidance strategy, passive avoidance strategy, meaning-based strategy and infertility duration with fertility quality of life was 0.306 which is significant with and F-value of 16.8 in $p < 0.001$. Accordingly, it can be said that coping strategies can predict 30.6 percent of the variance in fertility quality of life.

Table 3. Results of multiple regression analysis between predictive variables of quality of life among infertile couples in 2015

Criterion variable	Predictive variable	B	T	p	R ²	R ² .adj	F	p
Fertility quality of life	Active avoidance strategy	-1.927	-5.192	0.00	0.326	0.306	16.805	0.001
	Active exposure strategy	-0.331	-1.364	0.17				
	Passive avoidance strategy	-0.726	-1.579	0.12				
	Meaning-based strategy	1.904	5.915	0.00				
	Infertility duration	-0.012	-0.546	0.59				
Intercept		63.136	8.314	0.00				

Discussion

The present research was conducted by the aim of predicting fertility quality of life based on coping strategies, duration and cause of infertility. A significant relationship was found between the hypotheses. It means greater infertility duration is associated with the less quality of life. Findings of the present research is consistent with the study of Karabulut and colleagues entitled "indices of fertility quality in infertile women" [5].

Other research conducted on the relationship between infertility duration and factors such as sexual problems of infertile women [20], anxiety and depression [15,16] indicated a positive association between infertility duration and the mentioned variables.

It seems that the longer the infertility duration is and the greater unsuccessful treatment experiences are, the higher stress and psychological problems would be experiences [16]. In addition, the relationship between stress and infertility leads to a vicious cycle and they would intensify one another. Therefore, increase in infertility duration is accompanied by reduced quality of life.

Also, findings indicated that there is a negative and significant association between active avoidance strategy and fertility quality of life among individuals. That is, it is expected that increased use of active avoidance strategy by individuals is accompanied by lower quality of life among infertile individuals. Findings are consistent with results of Gourounti and colleagues [13], Peterson and colleagues [22], Rashidi and colleagues [12] and Schmidt and colleagues [19]. Results of Gourounti and

colleagues' study on under-treatment infertile women by IVF indicate a negative relationship between all scales of psychological stress (fertility stress, state anxiety, depression symptoms) and positive appraisal coping strategies, and there is a positive relationship between scales of psychological stress and avoidance coping strategy. Peterson and colleagues [22] who investigated the effect of spouse's coping strategy in infertile couples, showed that using active avoidance coping by one spouse is related to increased personal, marital and social distress for men and women, and using meaning-based strategy by one spouse is associated with reduced marital distress among men. Results of the study conducted by Rashidi and colleagues [12] suggested that individuals who used more emotionally-focused coping strategy experienced higher fertility stress, and those who used more problem-focused coping strategy reported lower fertility stress. Results of Schmidt and colleagues showed that using too much active avoidance coping can be predictive of high stress caused by infertility problems among infertile men and women.

It seems that in avoidance copings, the individual tries to get involved with new activities and consider these activities as alternative for the losses caused by the crisis, find new gratification sources and replace prior sources with them. Hence, the individual is attracted to alternative dysfunctional behavioral and in this way s/he tries to engage in new activities. This method includes a number of instances such as expressing feelings of frustration or anger, showing a behavior which temporarily decreases tension, including use of

sedative or other drugs, use of alcohol or substance, as well [23]. These avoidance behaviors lead to a vicious cycle which increases anxiety and worry and negatively affects individuals' quality of life. In addition, the less the individuals' perception of infertility controllability and its treatment is, the more avoidance coping strategies they would use [13]. In fact, those individuals use avoidance coping strategy who think that they have no control over their situation, therefore, they think they can't control some aspects of their life; this belief can lead to emotional, motivational and cognitive reactions such as motivational defect, cognitive defect, and change in mood, and affects quality of life in individuals.

Also, findings indicated that meaning-based coping strategies and active avoidance strategy can explain 30.6 percent of quality of life in infertile couples. Based on the obtained results, it can be stated that the more meaning-based coping strategy and the less active avoidance coping strategy are used, the higher fertility quality of life would be perceived.

Findings of the present research is consistent with results of Eflaksir and zarei [8] who investigated the relationship between infertility stress and coping strategies among infertile women. Their results showed that women who use passive-avoidance strategies have higher infertility stress, and meaning-based coping strategy is a strong predictive factor for low infertility stress.

Results of Rashidi and colleagues [12] indicated a positive association between emotionally-focused coping strategy and fertility stress and a negative association between problem-focused coping strategy and fertility stress. Emotional coping strategies can explain 16 percent of the variation of fertility stress.

Schmidt and colleagues [19] also investigated the relationships and coping strategies as predictive factors for fertility problems; 816 infertile individuals were investigated. Findings suggested that high use of active avoidance coping strategy is significant predictive for high fertility problem stress among infertile men and women. However, moderate or high use of meaning-based coping strategy was predictive of low fertility problem stress among women.

Findings of the research are consistent with Lazarus and Flkman's stress and coping theory. Infertility and its long, expensive and painful treatments (especially when they are not successful) are acutely stressful which lead the infertile couples to experience considerable emotional stress. Due to these infertility problems, emotional, cognitive, physical, and social domains of individuals are affected, and in return, quality of life in infertile individuals would be affected, as well. According to Lazarus and Folkman's stress and coping theory, adjustment with stressful experiences (such as infertility) is determined by the interaction of situational variables, cognition, and choosing effective strategies such as meaning-related coping strategies [13].

According to the obtained results, it can be concluded that coping strategies considerably affect stress management, they are effective on emotional reactions to infertility and its treatment, and they can explain a portion of quality of life. Infertile couples experience reduced quality of life due to hard and long treatments and using dysfunctional coping strategies, and lower quality of life can lead to continued use of dysfunctional coping strategies and, finally, this vicious cycle can increase psychological distress, hopelessness and leaving infertility treatment incomplete; hence, offering psychological services and conducting educational interventions for effective coping strategies along with biologic treatments for infertile couples is emphasized. In this way, by improving coping strategies and reducing infertility duration, fertility quality of life can be increased in infertile couples.

Among the limitations of the current study are as follows: findings of the present research have been investigated in a predictive correlational and it is not possible to have causal inference based on them; in addition, the research subjects were those referring to hospital for medical treatments and this sample can't be a representative sample for Iranian infertile couples, therefore, generalization of the results to all infertile individuals in Iran should be done with caution.

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