

Developing and Measuring Psychometric Properties of “Quality of Life Questionnaire in Infertile Couples”

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ABSTRACT

Background

Infertility can affect the quality of life of infertile couples. The aim of this study was to develop and measure psychometric properties of “Quality of Life in Infertile Couple Questionnaire” (QOLICQ).

Methods

This study was conducted in two qualitative and quantitative phases. Qualitative method involved semi-structured interviews of a purposive sample of 34 infertile couples. A content analysis of the data produced the dimensions of quality of life in infertile couples. By reviewing the literature and interviewing infertile couples, QOLICQ with 95 Likert-type items was developed. Content validity index (CVI) was measured by a panel of 10 experts and 10 infertile couples based on the “relevance”, “clarity”, and “simplicity” on a four point scale. Then, construct validity was measured by 150 infertile men and women. Internal consistency and test retest was measured.

Results

In analyzing the content validity index, items with more than 79% validity were kept and the items in the questionnaire were reduced to 79. Factor analysis showed seven factors in the questionnaire. An internal consistency of 0.71-0.95 and a test-retest reliability of 0.81-0.94 were calculated.

Conclusion

QOLICQ, which includes 72 Likert-type items in 7 dimensions, is a valid and reliable questionnaire for measuring the quality of life of infertile couples. Due to the lack of a valid and reliable instrument for measuring quality of life in infertile couples in Iran, using this questionnaire is suggested. Measuring other types of validity, such as discriminate and concurrent validity, are recommended.

KEYWORDS: Infertility; Quality of Life; Validity; Reliability

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INTRODUCTION

Health researchers have conducted many studies regarding the patients' quality of life (QOL) and developed some instruments for measuring it.^{1,2} Measuring QOL can help researchers identify the patients' needs, leading to quality care.

Many factors affect QOL, including infertility which is burdensome and disabling with significant social and health-related problems.³ Monga et al. revealed that issues related to infertility have negative effects on QOL.⁴ Infertility seems to cause such mental problems as anxiety and depression which in turn can lengthen its duration.⁵

In addition, infertility has been regarded as a detrimental factor in health reproduction. Results of a study showed that 10%-15% of couples suffer from this disorder.⁶ Male, female, mixed and idiopathic factors account for 25%-40%, 49%-55%, 10% and 10% of the disorder, respectively.⁷

According to Karimzadeh Meibodi, many couples want to have children but they cannot, leading not only to disappointment but also devastation with the resultant infliction on development of their masculinity as well as femininity and their identity.⁸ Infertility causes harmful physical, financial, psychological effects^{9,10} and also frustration, conflict, lack of self-esteem, isolation, disturbed identity, and lack of attraction.¹¹ In addition, it is considered as a significant stressful life event in some functional aspects of the couples.¹²

For many couples, infertility is a major crisis and emotionally stressful,¹³ causing significant problems in their relationships. Couples with infertility confront with several problems such as decreased relations with each other as well as with other people, difficulty in sexual activity or decision-making in life and altered emotions and excitements.¹⁴ Therefore, infertility is a critical condition affecting QOL.¹⁵

Infertility especially in Iranian culture, with mostly extensive families, is even a more critical issue.¹⁶ With respect to its importance, the need for further investigations regarding the issues related to QOL of the couples and specifying

the subjective thinking in QOL, there is a need for developing a questionnaire.¹⁷ This leads to easier identification and measurement of QOL to be applied in health policies, research, evaluation and clinical decision-making.¹⁸

To the best of our knowledge, there was no study on the importance of measuring QOL of infertile couples in appraising healthcare systems, the development of a questionnaire in Iran or other countries.³ Another study in Iran was performed to validate WHO's general instrument for QOL by distributing it among 1167 randomly selected individuals in Tehran. The study showed that the instrument was valid and reliable with acceptable domains for Iranian healthy and ill population.¹⁹

Another study was conducted in Royan Research Institute regarding the QOL of infertile couples in Tehran. Results showed a better QOL in men than women with a significant difference. In addition, no significant relationship was found between duration of infertility and QOL.²⁰ Drosdzol and Skrzypulec also studied on the effects of infertility on QOL of couple and found that older women with lower education and lack of job had lower QOL than younger and employed ones with higher education.²¹

The above studies suggest that researchers in Iran and other countries have mostly used generic or health-status instruments to measure QOL, through which no specific findings can be achieved.^{22,23} In addition, the instruments of Iranian studies have not been adapted culturally for the couples. Therefore, the results are incomparable.²⁴⁻²⁶

The aim of this study was to develop and measure psychometric properties of "Quality of Life in Infertile Couple Questionnaire" (QOLICQ).

MATERIALS AND METHODS

This exploratory study was conducted in two parts of qualitative and quantitative to develop a questionnaire and measure its psychometrical analysis for measuring the QOL of infertile couples. According to Schneider et al, several

steps should be taken to develop a questionnaire.¹⁰ The first step included determination of the definition of QOL and infertility by reviewing the related literature. In this article, to access articles and books in Iran and the other countries, databases such as CINHALL and MEDLINE were searched. Then, the obtained data were assessed and mixed. With respect to different definitions, the QOL of infertile couples is defined as “the subjective feeling regarding all aspects of life.”²⁷ The second step consisted of semi-structured interviews with purposive sample of 34 infertile subjects (14 men and 20 women) referring to reproduction centers at Imam Khomeini and Taleghani hospitals affiliated to Medical Universities in Tehran to identify the domains of QOL and the effects of infertility on it.

The interviews were performed by a nursing instructor with related experience, after permission of Ethics Committee of Shahid Beheshti University of Medical Sciences, the subjects and authorities in the centers as well as universities. A tape recorder was used and the samples were informed about it. The interviews had no time limit. Sample size was determined according to information requirements. The subjects were referred to the centers from different parts of the country; therefore, the collected information could possibly reflect nationwide views.

In the third step, the items of the questionnaire were determined. By content analysis of the interviews and literature review from textbooks, articles as well as other questionnaires, 95 items regarding QOL of infertile couple were identified. The fourth step included determination of validity of the questionnaire, using content validity index, face and construct types. Waltz and Bausell's content validity index was used,²⁸ in which “relevance” of each statement was evaluated by a 4-point scale. Scores over 79% showed the appropriateness of the items; otherwise, they were omitted. “Clarity” and “Simplicity” of each statement were also evaluated in the index.

Content validity of the 95 items was confirmed by asking 10 infertility experts as well as QOL researchers and 10 infertile men

and women. Necessary corrections were then made according to their views. For face validity, the format and structure of the statements were checked in terms of accuracy as well as fluency. This validity was also determined by experts' and infertile couples' views. In this stage, 16 items were deleted because they had relevancy less than 79%. For construct validity, factor analysis method was used for 79 items. Accordingly, the questionnaire was given to 150 infertile men and women referring to the hospitals selected through convenience method. The number of samples was based on Grouch's recommendation.²⁹

There was not any missing data in this study because data were collected individually. A turning point of 40% was considered as the least load to keep each statement in factors derived from the method. After extraction of the factors and their related statements, their compatibilities with the concept and domains of QOL were examined.

The fifth step included determination of reliability of the questionnaire by internal consistency and test-retest methods. Cronbach's α was calculated for each factor as well as the total questionnaire. In this step, the questionnaire was distributed among 20 subjects (apart from previous ones). In test-retest method, the questionnaire was completed twice by the same couple at 2 different times. Since QOL is a dynamic concept with a changing quality, the interval between test and retest was set 10 days and the coefficients of correlation between the scores of the tests for each factor and the whole questionnaire were calculated.

The subjects consisted of infertile couples referring to the reproductive centers with at least 1 year experience of the disorder. They were between 20 and 40 with no history of chronic, progressive as well as mental conditions and any defect or disability in the organs and limbs. Required permissions were obtained from the authorities of the centers for carrying out the research and written consent was obtained from the subjects before interviews and completion of the questionnaire.

RESULTS

In the first stage and after literature review, the concept of QOL in infertile couples was described. In the next stage, data from semi-structured interviews and statements of clients were analyzed and categorized to induce meaningful codes. The codes were then used to develop items in the questionnaire for QOL of infertile couples. At this stage, 95 items in physical, psychological, religious, economic, social and sexual domains were identified, reflecting the QOL of infertile couples (their perceptions on their life conditions, aims, expectations, relations as well as needs in cultural context and value system in which they live). A 5-point Likert scale was used for the answers including “completely agreed,” “agreed,” “no comment,” “disagreed” and “completely disagreed.”

In the third stage, 5 items according to Waltz and Bausell's index and the specialists' as well as subjects' views did not gain the necessary score (79%) and were excluded. Thus, 90 items were selected. Internal consistency (Cronbach's alpha) of the statements was then calculated. At this stage, 11 items had figures less than 0.65 and were omitted.

In the next stage, factor analysis was performed for the 79 items, leading to derivation of 12 factors. The first factor included 14 items in physical domain. The second to seventh factors had 31 items in psychological domain including life expectancy, depression, isolation, panic, aggression and jealousy. The eighth factor consisted of 7 items in spiritual and religious domain. The ninth factor had 5 items in emotional domain. The tenth and eleventh factors each included 5 items in economic and sexual domains. Finally, the twelfth factor was composed of 12 items in social domain. At this stage, items 31, 70 and 72, due to lack of the least accepted load factor (0.40), were omitted and 4 items from psychological domain were transferred to social domain (table 1). At last, 72 items were verified to assess the QOL of infertile couples.

For internal consistency, Cronbach's α was calculated for each factor (0.71-0.95) and the whole questionnaire (0.81). Test-retest reliability was also computed for the factors (0.81-0.94) and the whole questionnaire (0.89) (table 2).

DISCUSSION

Since a new questionnaire for the QOL of infertile couple was developed and psychometrically analyzed in this study, it can be considered an original and first research in Iran. Different studies in Iran and other countries have used short form questionnaires for health status (SF-36) to evaluate the QOL of these couples^{20,21,30-34} with no specific instrument developed until 2009. Many studies used this instrument and their data have not been published yet.

In 2011, Boivin et al.³⁵ developed the Fertility Quality of Life (FertiQoL) tool. The samples of the instrument were from USA, Australia/New Zealand, Canada and UK. The Fertility Quality of Life (FertiQoL) tool is different from the developed instrument in this study in many aspects, such as culture, age, region, income and so on. Therefore, it is not specific to Iranian society.

For interview section, 34 subjects in psychometric analysis, 180 subjects (150 for construct validity, 20 for content and face validities and 10 for internal consistency and test-retest reliability [2 times]) were selected from reproduction centers of Imam Khomeini and Taleghani hospitals.

Content and face validities of the questionnaire reflected satisfactory results by reviewing literature and interviewing with specialists and the subjects. In factor analysis, 7 sections (12 factors) were identified as key components of QOL of infertile couples, including physical (factor 1, 14 items), psychological (factor 2-7, 26 items), spiritual - religious (factor 8, 7 items), economic (factor 9, 5 items), affective (factor 10, 5 items), sexual (factor 11, 5 items), and social (factor 12, 26 items). Accordingly, construct validity of the questionnaire was confirmed. However, Boivin et al.³⁵ showed in their study that the

Table 1: Factor loading for items of “Quality of Life in Infertile Couple Questionnaire”

Items	Factor 1	Factor 2						Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
		1	2	3	4	5	6					
1	0.517											
2	0.502											
3	0.466											
4	0.472											
5	0.461											
6	0.501											
7	0.511											
8	0.501											
9	0.525											
10	0.479											
11	0.488											
12	0.493											
13	0.472											
14	0.502											
15		0.744										
16		0.711										
17		0.698										
18		0.610										
19			0.602									
20			0.702									
21				0.650								
22			0.623									
23			0.612									
24				0.512								
25				0.494								
26				0.596								
27				0.527								
28					0.531							
29					0.545							
30					0.496							
31					0.388							
32					0.491							
33					0.462							
34					0.498							
35					0.531							
36												0.523
37												0.631
38												0.611
39												0.591
40								0.491				
41								0.512				
42								0.521				
43								0.532				
44									0.489			
45									0.497			
46									0.621			
47									0.632			
48									0.533			
49									0.492			
50									0.646			
51									0.596			
52									0.613			
53										0.713		
54										0.692		
55										0.652		
56										0.634		
57										0.542		
58											0.493	
59												0.531

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
60					0.753		
61					0.742		
62					0.635		
63						0.581	
64						0.648	
65						0.721	
66						0.655	
67						0.635	
68							0.471
69							0.523
70							0.254
71							0.634
72							0.331
73							0.452
74							0.647
75							0.635
76							0.465
77							0.531
78							0.782
79							0.736

Table 2: Cronbach's alpha and test-retest scores of factors and the whole questionnaire

Factors	Cronbach's α	Test-retest Reliability
1 st factor: Physical Dimension	0.71	0.91
2 nd factor: Psychological Dimension:		
Life expectancy	0.92	0.89
Depression	0.95	0.93
Isolation	0.89	0.94
Panic	0.90	0.90
Aggression	0.95	0.91
Jealousy	0.91	0.90
3 rd factor: Spiritual and Religious Dimension	0.95	0.86
4 th factor: Economic Dimension	0.87	0.93
5 th factor: Emotional Dimension	0.82	0.81
6 th factor: Sexual Dimension	0.80	0.89
7 th factor: Social Dimension	0.84	0.91
Whole Questionnaire	0.81	0.89

developed tool contains 3 factors including core (24 items), treatment-related quality of life (QoL) (10 items), and overall life and physical health (2 items). However, overall life and physical health contains only 2 items. Two items cannot measure the physical status.

In addition, Cronbach's alpha and test-retest reliability were measured for each factor and the whole questionnaire (internal consistency of 0.71-0.95 and a test-retest reliability of 0.81-0.94). Internal consistency of these results is similar to that of Boivin et al.³⁵ However, they³³ did not measure test-retest. As a result, internal consistency and reliability of the questionnaire were established. However, the great number of

items in the questionnaire (72 items) can be considered as one of its limitations.

CONCLUSION

The Quality of Life in Infertile Couple Questionnaire (QOLICQ), which includes 72 Likert-type items, in 7 dimensions (Physical, Psychological, Spiritual and Religious, Economic, Emotional, Sexual and Social) is a valid and reliable instrument for measuring quality of life of infertile couples in Iran. This study is unique because other studies measured quality of infertile couples with Health Related Short Form. With respect to the lack of valid and reliable instruments for measuring QOL

of infertile men as well as women in Iran and increasing emphasis of medical science on investigating the effects of medical and nursing interventions on QOL of clients, the present study can be considered a step in this way. Application of Quality of Life in Infertile Couple Questionnaire” (QOLICQ) in different studies and measurement of other validities such as predictive validity are recommended.

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