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Original article

Quality of life of Iranian married women: a comparative study of women who had experienced infertility with fertile ones through Health, Wellness and Quality of Life Questionnaire

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Abstract

Background: The treatment of infertility and the quality of life in women is now considered equally important. The aim of the study was to determine the quality of life (QoL) of married women aged 20-45 years and to compare QoL domain in fertile and infertile women.

Methods: In a community based study, the Wellness and Quality of Life Questionnaire (WHOQOL) was used to assess the QoL of married women. A total of 1,140 women with the age range of 20-45 were selected using standard cluster sampling technique in Babol, Iran. Among those women who attempted conception, 168 of the women experienced difficulty conceiving at some stage in their lives. Then, the QoL of the women who had experienced infertility were compared with those of other fertile women. The questionnaire containing 55 items comprised five domains: physical state, mental/emotional state, stress evaluation, life enjoyment, and overall quality of life. Lower scores in three domains: physical state, mental/emotional state, and stress evaluation mean better QoL. Higher scores in life enjoyment and overall quality of life mean better QoL.

Results: The means of the QoL of married women in physical status, mental/emotional state, stress evaluation, life enjoyment, and overall QoL were 19.0 ± 5.3, 20.0 ± 6.8, 23.4 ± 7.8, 32.6 ± 5.3, and 61.5 ± 10.1, respectively. There was no significant relationship in the mean scores in the five domains of QoL between the fertile and infertile groups. Logistic regression also indicated that infertility was associated with higher (worse) scores in the mental/emotional state domain (p= 0.018), and fertility was associated with higher scores (better) in overall score QoL (p= 0.003).

Conclusion: The results can be regarded as useful findings to make more efficient interventions for infertile women.

Keywords: Quality of Life, Women, Infertility, WHOQOL

Introduction

Infertility is a frustrating experience for women. It is estimated that such a condition may affect at least 60 to 80 million women around the world and the annual growth for such a trend is about 2 million worldwide (1). It is suggested that infertility and its treatment has played an important role in the field of psychology. Several studies have shown that infertility raises the risk of psychological problems, which may affect the health-related quality of life (2-3). However, some studies have not adequately confirmed the differences in most domains of Health-related Quality of Life in infertile women (4). Quality of life, according to the WHO is defined as "people's perception of their position in life in the context of the culture and value systems in which they live and in

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relation to their goals, expectations, standards and concerns" (5). When QoL is used in reference to medicine and healthcare, it has frequently been referred to as Health Related Quality of Life (HRQOL). The assessment of health-related quality of life has become increasingly important as an additional outcome measure in recent scientific literature (6).

Furthermore, several HRQOL instruments have been developed since 1980s to measure both physical health and psychological well-being of women (7). David Epstein produced a multiple regression model with a number of variables to obtain information on the types of changes observed in physical, mental and emotional states, stress, life enjoyment, and the overall quality of women (8). Most of the instruments measuring the quality of life have been developed in developed countries such as English, Australia, and Brazil and have also been translated into Farsi. Few recent studies have focused on the impact of infertility on HRQL (2, 4).

In Iran, the diagnosis and treatment of infertility has not been given adequate support by the government. In other words, either the assisted reproduction services are private or they are located in university-affiliated hospitals. Even though these services are part of the general public health system, the medication utilized in the treatment is not provided for free and is a considerable cost for these patients (9). Therefore, the treatment of infertility and the QoL of Iranian women are equally important. Knowing about the effects of infertility on QoL will be greatly helpful in providing decent care for women. In this study, we made an attempt to test the hypothesis that women who had experienced infertility reported lower QoL score. We used a measure of lifetime-experienced infertility.

Materials and Methods

A retrospective, descriptive, epidemiological study was conducted on the quality of life (QoL) factors associated with infertility in urban and rural women in Babol, Iran. The required sample size was calculated to be 1,414. Cluster sampling proportionate to population size, with 120 clusters and 12 subjects in each cluster, was used to identify potential participants. The inclusion criteria for the study were: being married for at least one year, being within 20 to 45 years of age, being mentally sound, and having the ability to understand the questionnaire with the assistance of an interviewer. The sampling frame comprised the list of census enumeration of population in each area and the household information from the 2009 Population Census. Each of the six districts in Babol County was subdivided into one or two cities and rural aggregations. The primary sampling unit (PSU) for this study was a district in urban areas, or a village in rural areas. Because the total number of districts and villages was relatively equal at the first stage of sampling, 120 PSU (60 in urban areas and 60 in rural areas) were randomly selected. A standard cluster sampling technique was used as it allowed a small number of PSUs from a large population to be studied and provided statistically valid data. At the second stage of sampling, about 12 households per PSU on average in urban areas and about 12 households per PSU on average in rural areas were selected. Every selected cluster was approached by the supervisors and team leaders so that they could identify eligible women who fulfilled the selection criteria after taking consent. A starting household was randomly selected in each cluster. Houses were surveyed one after the other until the entire selected cluster was fully surveyed. Out of the total 1,414 women visited at their home, 59 (5.2%) declared they were avoiding pregnancy, and 274 (19.4%) said they did not like to participate in this study; thus a total number of 1,081 interviews were completed with the participation rate of 80.6 percent on the whole.

This study was approved by Babol University of Medical Sciences for ethics in medical research. The written informed consent was obtained from all participants in the study. Trained skillful personnel approached the women in the room, and carried out a brief, face-to-face interview with each woman to collect socio-demographic information. After the interview, the women were invited to complete QoL instruments. The following instruments were used to collect data for the purpose of this study:

The first instrument was a socio-demographic and clinical data form, which assesses age, age at marriage, educational level, BMI, own occupation, partner occupation, socio-economic status, the medical diagnosis of the etiology of infertility, and the duration of conception attempts.

The second instrument which was used to measure the physical and psychological aspects of health-related quality of life was the Wellness and Quality of Life Questionnaire (WHOQOL), which was developed by David Epstein (8). It has been translated into Farsi and

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validated by several researchers (10). The questionnaire provides score of QoL by measuring individual scores domain. Lower scores in three domains: physical state, mental/emotional state, and stress evaluation mean better QoL. Higher scores in life enjoyment and the overall quality of life mean better QoL. Its five domains are physical (which including items regarding pain, feeling of tension, energy and fatigue, sleep, the incidence of colds or flu, the incidence of headaches and the incidence of dizziness or light-headedness), mental/emotional health (depression/anxiety and emotional control), stress (which includes items regarding general well-being, emotional well-being, significant relationships, family, health, sex life, work, and coping with daily problems), life enjoyment (including items about overall score for the Life Enjoyment) and the overall score represents an assessment of QoL and health satisfaction.

The fertility status and the cause of infertility were assessed through a self–report questionnaire. Infertility referred to a delay in conception for least 12-months of unprotected intercourse. Lifetime infertility in this study is referred to couples who had experienced infertility, as defined above, for at least time during their married life (11). Voluntary childlessness was defined by not reporting having problems with becoming pregnant or childbirth (12). The validity and reliability of the questionnaires were assessed by pro-testing. The alpha coefficient and the internal consistency of the infertility questionnaire were 0.80 and 0.89 respectively.

Table 1. Sample characteristics (n =1,140)

Sample characteristics	n (%)
Age (years)	
≤35	682 (59.8)
>35	458 (40.2)
Age at marriage (years)	
<19	477 (41.8)
19-35	654 (57.4)
>35	9 (0.8)
Years of education completed	
<9	382 (33.5)
9-12	492 (43.2)
>12	266 (23.3)
Own occupation	
Manageable / professor	113 (9.9)
Intermediate	118 (10.4)
Routine & manual occupation	909 (79.7)
Partner occupation	
Manageable / professor	283 (24.8)
Intermediate	733 (64.3)
Routine & manual occupation	124 (10.9)
BMI (kg/m2)	
Underweight/ Normal (<25)	385 (33.8)
Overweight/ Obese (≥25)	755 (66.2)
Fertility problems	
No infertility	913 (80.1)
Experienced infertility	168 (14.7)
Voluntary infertility	59 (5.2)

The weights of women were recorded through digital scales to the nearest 100 grams, with the participants minimally clothed and without shoes. The heights were measured with a tape measure, (13). Body mass indices were calculated through the formula of weight (kg) / height^2 (m) (14).

Statistical analysis

All analyses were performed through SPSS (version 16.0). Logistic regression was used to determine clinical and socio-demographic predictors for the scores in each domain of the both instruments. The model that included the scores of each domain separately as dependent variables was tested. The independent variables (the predictors) were age, the educational level, the previous reproductive tract surgery, the duration of conception attempts, sexual life and the use of previous assisted reproduction techniques, which showed P= 0.2 in the bivariate tests. The final multivariate model, including lifetime infertility as dependent variable, was found to be P =0.2 in the bivariate analyses. To test the association between QoL and the characteristics, a stepwise multiple logistic regression was used. Odds ratio (ORs) was assessed through maximum likelihood and was computed through the associated 95% of CI. All independent variables that met the above criteria were included in the multiple logistic regression. A P value of 0.05 or less was considered significant.

Results

Table 1 summarizes the characteristics of the sample included in further logistic regression. Out of the 1,140 women who participated in this study, 4.2% (59/1414) specifically reported that they had been avoiding pregnancy and preferred voluntary childlessness. The mean QoL of married women within 20 to 45 years of age in physical status, mental/emotional state, stress evaluation, life enjoyment, and overall QoL were 19.0 ± 5.3, 20.0 ± 6.8, 23.4 ± 7.8, 32.6 ± 5.3, and 61.5 ± 10.1 respectively. Among those who attempted conception (n=1,081), 168 women experienced difficulty

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Table 2. Mean Wellness and Quality of Life scores married women accordance on fertility problems status

	Total	Experienced infertility(n=168)	No history of infertility(n=912)	
Domains	Mean±SD	Mean±SD	Mean±SD	P Value
Physical state	19.0±5.3	18.9±4.9	19.1±5.4	0.609
Mental/emotional state	20.9±6.8	20.7±6.9	21.0±6.8	0.624
Stress evaluation	23.5±7.8	23.1±7.6	23.5±7.8	0.629
Life enjoyment	32.0±5.3	32.7±4.8	32.5±5.3	0.624
Overall quality of life	61.5±10.1	61.8±9.6	61.2±10.0	0.427

conceiving at some stage in their lives. In this study, we compared the quality of life of women who had experienced infertility with other fertile ones. There was no statistically significant result found in the mean scores of the five domains (physical state, mental/emotional state, stress evaluation, life enjoyment, and overall quality of life) between the fertile and infertile groups (Table 2).

Table 3 describes the results of logistic regression of each WHOQOL domain; five domains showed significant predictors in the model proposed (Table 3). This Physical State Scale had a range of 10-50 (10 items scored from 1 to 5). It showed BMI as a predictor, indicating that the underweight/ normal domain (<25 Kg/m^2) represented better scores compared with the overweight one (obese ≥ 25 $Kg/m^{2)}$. The mental/emotional state domain had a range of 10-50 (10 items scored from 1 to 5). It showed intermediate own occupation domain represented lower chance of higher (worse) score when compared with managerial / professor and routine own occupation one. In addition, experienced infertility had fatter chance of higher (worse) score in this when compared with the other groups. The evaluation scale of the stress status domain had a range of 10-50 (10 items scored from 1 to 5). The WHOQOL stress domain did not show any statistical significance with any of the characteristics of women included. The life enjoyment domain was very useful in focusing on overall score for the life enjoyment by summing the scores for each question. This life enjoyment scale had a range of 11-55 (11 items scored from 1 to 5). It showed that own occupation, partner occupation, and age were regarded as predictors, indicating that intermediate own occupation, manageable/ professor partner occupation, and age≤ 35 years represented lower chance of higher (better) score when compared with the other groups. The overall score of quality of life scale had a range of 14-98 (14 items scored from 1 to 7). The intermediate own occupation and age≤ 35 years were associated with worse scores in this domain. No experienced infertility was associated with better scores in the overall score.

Discussion

Many studies have shown that assessing QoL in several health conditions, including infertility is suitable (15). This study strove to identify the socio-demographic variables, associated with better or worse scores, in different domains for WHOQO, based on a sample of Iranian women. Moreover, it tried to evaluate the effects of the experienced infertility on the quality of life of the women.

This study found that there was no significant difference in the mean scores in all sub domains of QoL scale between the fertile and infertile groups. These findings are in accordance with the results found by Ragni et al. (4) and Fekkes et al. (2) who did not find any significant differences when they compared the data obtained by the instruments SF-36 and The Hopkins Symptom Checklist for infertile women and the normative data of Italian and Dutch populations. On the other hand, there are some studies that showed QoL scores of the infertile group were significantly worse than those of the fertile one (2-3, 16). Since the total number of children in fertile women was more compared with those who experienced infertility, the quality of life in fertile group is considered to have been affected by such factors as difficulties due to child care, such as fatigue and insomnia. After adjusting confounding variable, we found that the fertile group had higher chance of higher (better) score in overall score domain of QoL scale than the one that experienced infertility. Also, the infertile group had

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Table 3. Logistic regression to determine odds ratio (OR) among women aged 20 to 45 years in each WHQOL domain (n=1,140)

Variables	Physical	Mental/emotional	Stress	Life enjoyment	Overall Qol
	> 18 a	>20 a	>23 a	> 32 a	> 60 a
	OR(CI 95%)	OR(CI 95%)	OR(CI 95%)	OR(CI 95%)	OR(CI 95%)
Fertility problems					
Experienced infertility	0.94(0.51-1.76)	2.15(1.14-4.03)*	1.43(0.77-2.66)	1.13(0.58-2.20)	1.58(0.80-3.14)
No infertility	1.16(0.61-1.86)	1.55(0.89-2.72)	1.26(0.72-2.20)	1.24(0.68-2.25)	2.55(1.37-4.77)*
Voluntary infertility	1.00	1.00	1.00	1.00	1.00
Age (years)					
≤35	0.97(0.74-1.27)	1.02(0.77-1.33)	1.27(0.97-1.67)	0.61(0.46-0.82)*	0.75(0.56-0.99)*
>35	1.00	1.00	1.00	1.00	1.00
Age at marriage (years)					
<19	0.45(0.11-1.88)	0.71(0.17-2.94)	0.57(0.14-2.39)	0.39(0.8-2.01)	1.29(0.32-5.19)
19-35	0.62(0.15-2.55	0.70(17-2.87)	0.74(0.18-3.06)	0.53(0.10-2.74)	1.68(0.42-6.71)
>35	1.00	1.00	1.00	1.00	1.00
Years of education completed					
<9	0.54(0.36-0.83)*	0.71(0.46-1.08)	1.08(0.71-1.63)	0.83(0.53-1.30)	1.28(0.84-1.95)
9-12	0.86(0.59-1.26)	0.89(0.60-1.30)	0.96(0.66-1.40)	1.15(0.77-1.72)	1.44(0.98-2.12)
>12	1.00	1.00	1.00	1.00	1.00
Own occupation					
Manageable /professor	0.82(0.50-1.34)	1.84(1.09-3.11)*	0.67(0.41-1.09)	0.63(0.37-1.07)	0.72(0.44-1.18)
Intermediate	0.70(0.47-1.06)	0.74(0.49-1.11)	0.72(0.48-1.07)	0.39(0.25-0.61)*	0.39(0.26-0.59)*
Routine & manual occupation	1.00	1.00	1.00	1.00	1.00
Partner occupation					
Manageable/ professor	1.38(0.88-2.17)	1.18(0.75-1.84)	1.04(0.67-1.61)	0.56(0.34-0.91)*	0.58(0.36-0.91)
Intermediate	1.16(0.78-1.72)	1.16(0.78-1.73)	0.93(0.63-1.38)	0.66(0.43-1.03)	1.06(0.71-1.60)
Routine & manual occupation	1.00	1.00	1.00	1.00	1.00
BMI (kg/m2)					
Underweight/ Normal (<25)	0.74(0.57-0.96)*	0.73(0.56-0.94)*	1.17(0.90-1.53)	1.11(0.84-1.47)	0.91(0.70-1.19)
Overweight/ Obese (≥25)	1.00	1.00	1.00	1.00	1.00

*P <0.05.

[a] Median per domain.

higher chance of higher (worse) QoL scores in mental/emotional state domain than the fertile one.

In the present study, the women with the age range of ≤ 35 had worse scores in life enjoyment, and overall quality of life when compared with women with the age range of >35. Chachamovich et al. (15) described that increased age was associated with better scores in the general health and physical functioning domains. This may be explained by older women who had more life experience and therefore better coping strategies that would make them more able to deal with the problems. In addition, taking into account that BMI compatibility is a factor affecting QoL. It is thought that lower BMI compatibility of the women in the study group is a factor that raises their physical and mental/emotional state domain QoL.

The lower education textiles, when compared with the upper one, are associated with better scores in the physical state domain. Conversely, they represented a higher chance of performing better in the state domain. There is a study that reported the education of subjects within the age range of 9 to 11, which represented a better scores in QoL when compared with the education of subjects at the age of 11 or more (15). Therefore, the variable education may represent an indicator that holds for some characteristic variables. This determines the fact that such relationships need to

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be specifically studied through, particularly designed investigations for more tangible results.

Conclusion

There were some limitations in this study; the women in different stages of infertility and treatment were selected and included in the same group, which may be regarded as a source of heterogeneity. This could further result in heterogeneity to biased risk estimates. In addition, recall bias was possible, resulting in differential recalls between fertile and infertile women. Further, we used a cross-sectional design to assess identification factors associated with increase or decrease in QoL, which limited our ability to assess causal inferences. We believe that longitudinal studies are required for the confirmation of some causal assumptions derived from the described associations (17). However, appropriate analysis of the population-based data represents a valuable initial step in assessing the prevalence of infertility in this region. Finally, lack of representativeness of the sample limited the generalizability of the findings, and the use of non-standard instruments for the sake of data collection may have resulted in misclassification of women, resulting in the incomparability of results with those of the previous studies. Despite the limitations mentioned, this study has important implications for future research and programs. Our study suggests that infertility is associated with worse scores in the mental/emotional state domain and overall score in QoL. The findings of this study could be used not only to make efficient interventions for infertile women, but also to promote improvements in the QoL of women.

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Conflict of interest

None declared.

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