JRHS
Journal of Research in Health Sciences
journal homepage: www.umsha.ac.ir/jrhs

Original Article

Quality of Life and Its Related Factors in Infertile Couples

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ARTICLE INFORMATION

Article history:
Received: 31 July 2013
Revised: 02 November 2013
Accepted: 04 December 2013
Available online: 15 December 2013

Keywords:
Infertility
Quality of life
Self-esteem
Satisfaction

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ABSTRACT

Background: Health related quality of life (QoL) has now been considered as a main tool for outcome measurement in infertility. The present study aimed to determine the association between general and specified QoL with different psychological aspects of self-esteem, social support, sexual satisfaction, and marital satisfaction in a sample of Iranian infertile couples.

Method: This cross-sectional study was conducted on 385 infertile couples referred to the Fatemieh Hospital in Hamadan City, western Iran in 2012.To measure the self-esteem, the Iseng test was used. The social support scaling developed by Cassidy and Long was used for assessment of social support. The sexual satisfaction was also assessed by the Lindaberg questionnaire. For assessing the general QoL state, the WHO-QoL-BREF and FertiQoL tools were employed.

Results: Self-esteem scores were lower in the couples with longer infertility duration. The social support mean score was lower in low income couples. Those with higher educational level, shorter infertility duration, and higher income were more satisfied from their marital relationships. Besides, we revealed that the previous failed efforts for treatment of infertility were adversely associated with the lower social support and sexual satisfaction. The higher educational level, higher monthly income, living in urban area, shorter duration of marriage and infertility, and male gender were associated with better QoL status in the most components. Associations between QoL and self-esteem, social support, sexual satisfaction, and marital satisfaction were significant (P<0.05).

Conclusion: The QoL status in infertile couples is directly associated with their self-esteem, social support, sexual satisfaction, and marital satisfaction.

Citation: Keramat A, Masoumi SZ, Mousavi SA, Poorolajal J, Shobeiri F, Hazavehie SMM. Quality of Life and Its Related Factors in Infertile Couples. J Res Health Sci. 2014;14(1):57-64.

Introduction

Health related quality of life (QoL) has been now considered as a main tool for outcome measurement in infertile couples. Due to different physical, psychological, and social inappropriate effects of infertility, evaluating the components of QoL in these couples may lead to identify different aspects of life style in these populations and help them to schedule favorable treatment more efficiently[1,2]. Furthermore, despite development of different techniques for treatment of infertility and achieving reproductive health, concerns about QoL in infertile couples has been clearly decreased due to the nature of the problem as well as to its complex relationship with psychological status[3,4].

Infertility can be adversely associated with relational, sexual and psychosocial wellbeing and directly with stressful and tensional situations[5]. In this line, the association between QoL in infertile couples and their self-esteem and satisfaction from sexual and marital relationships is also suggested. Like many women, men also suffer from low self-esteem, anxiety, isolation, blame, and greater sexual inadequacy when they are struggling with male infertility[6].

Hynes et al. (1992) assessed women at admission for IVF (In Vitro Fertilization) and then following failure of IVF. They found that women admitted for IVF were more depressed, had lower self-esteem and were less confident than control group of fertile women. After IVF failure, the infertile couples experienced much less self-esteem and an increased depression compared to pretreatment[7]. It seems that infertility may place a heavy burden upon people's self-esteem, and stress arises from this negative self-concept. As previously defined, self-esteem known as the evaluative dimension of the self that includes feelings of worthiness, prides and discouragement and in fact is a disposition that a person has which represents their judgments of their own

worthiness[8]. In addition, in several studies the impact of infertility on both marital adjustment and sexual functioning has been investigated[9]. A cross-sectional study was conducted by Valsangkar et al. (2011) to evaluate the impact of infertility on marital adjustment, sexual functioning and QoL. The data were obtained from 106 women who met the definition of infertility selected from Prathima Institute of Medical Sciences in Karimhagar, India. In this study Logistic Regression analysis revealed a significant effect size of infertility on marital adjustment and sexual functioning[10]. Monga et al. (2004) evaluated the hypothesis that infertility might result in decreasing of QoL and marital discard and sexual dysfunction of the 18 infertile couples who seek treatment for infertility in Sandiego, California. Accordingly, women reported poor marital adjustment and QoL and men experienced less intercourse satisfaction[11]. Lee et al. (2001) compared the differences in distress, marital and sexual satisfaction in husbands and wives based on infertility reasons. Overall, 138 infertile couples who were patient at a medical center in Taipei, Taiwan participated in this study. The results expressed that women had less marital and sexual satisfaction and those with a female infertility had higher distress in self-esteem to infertility[12]. In recent years the prevalence of depression is not only high but also increasing[13]. Infertility related stress has negative effect on quality of life in infertile men and women. There is a direct relationship between different aspects of QoL and sexual or marital satisfaction in infertile couples[14].

The present study aimed to determine the association between general and specified QoL with different psychological aspects of self-esteem, social support, sexual satisfaction, and marital satisfaction in a sample of Iranian infertile couples.

Methods

This cross-sectional analytical study was carried out at IVF ward in Fatemieh Hospital in Hamadan city from September to November 2012.Considering the mean and standard deviation of quality of life to be 0.83 and 1.62 respectively[15], we reached at a sample of 385 at a 0.05 significance level. Inclusion criteria were primary or secondary infertility with male or female reason. Exclusion criteria were physical injuries and diseases, adoption, and death of their relatives during the last two months. Couples completed the questionnaires separately in the hospital setting.

Data on general characteristics were collected using a validated structured questionnaire including demographics, educational level, and occupation, reason of infertility (man or woman), duration of infertility, history of infertility treatment, residential region, and family monthly income. The subjects completed the Iseng and Cassidy questionnaire, WHO-QoL-BREF and FertiQoL questionnaires and marital and sexual satisfaction questionnaires. Because many questionnaires were used in this study, in order to prevent the fatigue of participants, questionnaires were completed in duration of treatment of patients.

To measure self-esteem, the Iseng test used consisted of seven questions with self-scoring that ranged from zero to 20 for a question. The three scales were used for grouping this questionnaire, including low (scale 0 to 70), moderate (scale 71 to 110), and high (scale 111 to 140). This version has been previously validated and is described in detail[16].

Social Support Scaling developed by Cassidy and Long was used for assessment of social support. This questionnaire consists of 7 sentences based on a double-value grading that higher grades refer to high perceived social support. In this regard, all questions are rated zero to 2 with a minimum score of zero and a maximum of 14 and total scale ranged 0 to 4 for mild social support, 5 to 9 for moderate social support, and 10 to 14 for high social support. Previously reliability of this scale was confirmed in Iran.

The Lindaberg questionnaire is a valid and accurate measure of the sexual satisfaction that comprises 17 questions that evaluate different aspects of sexual satisfaction. The questions were scored 1 to 5 the lowest score 17 and the highest score 85. The total score varies from 17 to 51 (for low satisfaction), 52 to 67 (for intermediate satisfaction), and 68 to 85 (for high satisfaction). Thus, higher scores are associated to the higher degree of sexual satisfaction. Its reliability has been confirmed by previous researches in Iran[17].

Data of marital satisfaction were collected using the Enrich questionnaire of which consists of 47 statements with five choices. A mean score of 50 with the standard deviation of 10 was considered to measure marital satisfaction. Scores equal or lower than 30 were considered “very unsatisfactory”, 31-40 “unsatisfactory”, 41-60 “fairly satisfactory”, 61-70 “satisfactory”, and over 70 “very satisfactory” relationships. The content validity of this questionnaire was already approved in Iran. Its reliability has been investigated in previous studies inIran[18]. The division of these scales was done according to the questionnaires direction.

For assessing general QoL status, the World Health Organization(WHO-BREF)questionnaire was employed with 26items.The WHO-QoL instruments, by focusing on individuals' own views of their well-being, provide a new perspective on disease[19].The recognition of the multidimensional nature of QoL in the WHO-QoL-BREF is based on a four-domain structure: (a) Physical health activities of daily living; (b) psychological body image and appearance; (c) social and personal relationships; and (d) environmental–financial resources. A summation and calculation of the mean score for each domain was done. According to the methodology, we transformed the domain scores to a 0 to 100-point scale by using the WHO-QoL transformation table[20]. A higher score on these 4 questionnaires indicates a better QoL. A study conducted by Nejat et al (2006) demonstrated good-to-excellent reliability and acceptable validity of this questionnaire in various Iranian populations[21]. Due to the integration of infertility and QoL, merging QoL assessment in clinical practice for fertility problems should become a standard of care for infertile couples[22]. FertiQoL tool was used for assessment of specified QoL in studied women. It is specifically designed for infertile patients to assess their QoL by experts from the European Society of Human Reproduction and Embryology and the American Society of Reproductive Medicine.

FertiQoL is a reliable and sensitive measurement tool for QoL specifically in individuals with fertility problems. FertiQoL consists of 36 items scored according to 5 response categories. The response scale has a range of 0 to 4. Higher scores mean higher quality of life. FertiQoL yields six subscales and three total scales with a range of 0 to 100. The division of these scales was done according to the questionnaires direction. This questionnaire has two major compo-

nents. It consists of core FertiQoL (including four subscales of emotional, mind/body, relational, and social), and treatment FertiQoL (including two subscales of environment and tolerability).

Two additional single items (marked A & B on the FertiQoL questionnaire) capture an overall evaluation of physical health and satisfaction with quality of life and not used in FertiQoL scoring[23]. Regarding reliability of each employed questionnaires, we obtained acceptable reliability for all tools examined by the Cronbach's alpha coefficient analysis. (Iseng, 0.83; Cassidy, 0.81; Lindaberg, 0.94; Enrich, 0.91; WHO physical domain, 0.78; WHO psychiatric domain, 0.77; WHO social domain, 0.66; WHO environment domain, 0.79; Core (FertiQoL), 0.89; Treatment (FertiQoL), 0.71).

The Research Ethics Committee of the Shahroud University of Medical Sciences approved the study protocol and all couples were recruited voluntarily and gave their written informed consent to participate in the study.

The results were reported as mean ±SD for quantitative variables and number (percentages) for categorical variables. The quantitative variables were compared using *t*-test and ANOVA test and categorical variables were compared using chi-squared test after testing for normal distribution. Multivariable regression analysis was used to determine relationship of both general and specified QOL scales and other aspects including self-esteem, sexual satisfaction, marital satisfaction, and social support level. All statistical analyses were performed at the 95% significance level using the statistical software Stata version 11.2 (StataCorp, College Station, TX).

Results

Majority of the participants (83.5%) had a high level of self-esteem and this component was low only in 3 couples (0.85%). Regarding association between self-esteem and baseline characteristics (Table 1), no significant association was found between self-esteem scale and other baseline information except for infertility duration that was longer in the participants with higher score (*P*=0.010).

Table 1: Comparison of self-esteem, social support, life satisfaction and sexual satisfaction mean score across demographic characteristics using *t*-test or ANOVA (n=385)

Variables	Iseng (self-esteem)			Cassidy (social support)			Lindaberg (sexual satisfaction)			Enrich (Marital satisfaction)		
	Mean	SD	*P* value	Mean	SD	*P* value	Mean	SD	*P* value	Mean	SD	*P* value
Gender			0.977			0.703			0.355			0.496
Female	121.16	14.51		9.39	2.38		64.13	13.90		147.20	24.20	
Male	121.11	15.05		9.49	2.56		65.46	13.28		148.90	21.98	
Age group (yr)			0.079			0.063			0.516			0.411
18-25	123.79	10.99		9.63	2.27		66.53	12.18		149.65	22.94	
26-35	121.54	14.74		9.54	2.42		64.55	13.91		148.62	23.62	
36-45	117.73	16.31		8. 97	2.66		63.46	14.20		144.20	23.09	
46-55	114.58	26.39		7.00	2.70		60.83	15.51		138.75	15.44	
Educational level			0.318			0.077			0.773			0.023
Primary school	122.90	12.74		9.13	2.39		64.67	13.24		143.76	23.76	
Secondary school	122.44	13.23		9.38	2.34		63.73	13.87		144.62	22.11	
High school	119.11	15.93		9.22	2.52		64.51	13.07		148.78	22.46	
Academic	122.09	15.69		10.02	2.47		65.89	14.83		153.78	24.59	
Occupation			0.894			0.930			0.362			0.347
Working	121.03	15.95		9.44	2.59		65.35	13.97		149.11	23.20	
Not working	121.24	13.54		9.42	2.33		64.06	13.37		146.81	23.45	
Reason of infertility			0.801			0.986			0.203			0.188
Female	120.90	16.51		9.42	2.38		65.66	14.39		150.96	23.29	
Male	120.71	15.19		9.42	2.58		65.69	13.32		148.29	23.27	
Both	122.09	12.74		9.47	2.38		62.60	13.15		144.62	22.89	
Duration of marriage (yr)			0.227			0.045			0.126			0.167
1-5	122.56	15.62		9.82	2.48		66.74	13.14		152.29	23.05	
6-10	120.29	13.40		9.10	2.38		63.35	13.71		144.64	22.64	
11-15	117.72	16.08		8.87	2.73		62.66	14.97		143.32	24.61	
16-20	122.25	12.81		9.94	1.40		60.82	12.10		150.77	25.59	
21-25	127.33	6.95		9.71	1.49		63.17	13.08		137.67	14.15	
Duration of infertility			0.010			0.105			0.233			0.002
1-5	122.04	14.72		9.62	2.47		65.45	13.67		150.08	22.81	
6-10	120.60	12.59		8.96	2.25		63.39	13.68		144.56	23.03	
11-15	109.68	19.49		8.59	3.08		58.81	12.16		137.65	23.63	
16-20	125.06	16.41		10.21	1.21		64.22	15.07		156.50	29.30	
21-25	123.75	5.06		9.50	1.91		60.00	13.04		141.00	16.09	
Number of children			0.216			0.639			0.161			0.719
0	121.04	14.89		9.44	2.47		64.73	13.44		148.05	23.50	
1	120.49	12.25		9.17	2.41		62.31	15.15		149.46	19.96	
>1	133.83	6.57		10.20	1.78		74.24	12.44		140.60	25.85	
History of treatment			0.842						0.020			0.267
Yes	121.08	15.19		9.18	2.56		63.24	13.40		146.56	23.76	
No	121.39	14.25		9.70	2.30		66.53	13.47		149.29	23.82	
Income (US$)			0.354						0.308			0.001
<170	120.59	15.95		9.19	2.18		64.10	13.34		144.27	22.52	
170-339	122.24	13.44		9.53	1.94		66.47	13.14		152.45	22.71	
≥340	124.46	7.22		10.50	1.65		65.52	15.22		157.80	19.29	
Region			0.392						0.882			0.064
Urban	120.78	14.81		9.45	2.50		64.67	13.93		149.13	23.41	
Rural	122.39	14.35		9.31	2.29		64.42	12.66		143.80	22.85	

About two-third of couples had mild social support and the scale of this item was considerably low in couples with the history of previous treatment (*P*=0.040) and also in those with lower monthly income (*P*=0.030). With respect to sexual satisfaction, the level of satisfaction was high in more than half of the couples and was moderate in one-third of them. The sexual satisfaction score was significantly lower in the couples who experienced previous treatment of infertility (*P*=0.020). Among all couples, those with higher educational level (*P*=0.020) with shorter infertility duration (*P*=0.002) and those with higher income (*P*=0.001) were more satisfied from their marital relationships. Overall, 3.5% were completely unsatisfied, 30.4% were partially satisfied, 56.8% were satisfied, and others were very satisfied from their marital relationships.

Regarding the general QoL status measured using WHO-QoL-BREF tool (Table 2), there was a direct association between physical component score and education level (*P*=0.010) and income (*P*=0.03). Besides, the score of this component was significantly higher in those who were resident in urban areas (*P*=0.010).

Table 2: Comparison of WHO domains mean score across demographic characteristics using *t*-test or ANOVA (n=385)

	Physical			Psychological			Social			Environmental		
Variables	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**
Gender			0.107			0.098			0.653			0.375
Female	68.97	17.03		59.68	17.05		66.44	19.14		59.87	16.50	
Male	71.82	16.46		62.69	17.51		67.35	19.01		58.31	16.73	
Age group (yr)			0.326			0.309			0.022			0.116
18-25	70.62	16.31		61.08	17.99		68.05	17.32		58.49	16.29	
26-35	70.40	16.64		61.59	16.71		68.05	19.57		60.47	16.57	
36-45	69.44	18.11		59.23	18.22		62.62	18.21		57.06	16.80	
46-55	55.00	17.06		47	16.63		45.50	20.63		44.00	15.51	
Educational level			0.001			0.431			0.136			0.001
Primary school	65.33	15.90		60.33	18.46		62.20	20.62		53.73	18.79	
Secondary school	65.61	17.94		58.98	15.88		65.56	18.18		57.07	15.36	
High school	72.73	16.09		61.07	17.15		65.84	18.80		59.88	15.28	
Academic	75.90	14.38		63.21	17.16		71.11	18.53		65.16	15.97	
Occupation			0.127			0.075			0.897			0.964
Working	71.50	16.40		62.55	16.97		66.93	19.14		59.23	16.19	
Not working	68.86	17.16		59.39	17.44		66.68	19.05		59.30	16.95	
Reason of infertility			0.129			0.037			0.187			0.060
Female	70.09	15.74		60.51	16.69		66.00	21.01		61.91	15.58	
Male	71.57	16.56		63.35	16.83		68.80	19.07		59.28	16.40	
Both	66.94	18.69		57.42	18.25		64.09	18.60		56.17	16.56	
Duration of marriage (yr)			0.234			0.044			0.004			0.330
1-5	71.53	16.33		63.55	16.30		70.70	17.48		61.18	14.87	
6-10	69.80	15.71		59.10	17.04		63.79	19.17		57.76	17.76	
11-15	66.61	20.16		58.10	19.04		64.10	23.45		59.12	17.66	
16-20	72.30	20.19		60.92	20.50		68.66	14.41		57.50	19.64	
21-25	60.50	12.21		48.83	9.21		52.16	8.58		52.16	9.38	
Duration of infertility			0.102			0.065			0.019			0.013
1-5	71.37	15.78		62.30	16.55		68.90	18.05		61.22	15.51	
6-10	67.33	16.76		57.92	17.56		62.65	21.57		55.36	18.13	
11-15	67.81	18.07		55.13	18.36		59.68	19.78		54.61	16.60	
16-20	60.66	18.82		53.00	25.40		67.66	12.12		49.16	20.08	
21-25	59.25	15.56		53.00	3.46		54.75	9.50		54.75	10.68	
Number of children			0.210			0.098			0.750			0.148
0	69.93	16.73		60.18	17.36		66.78	18.77		58.69	16.28	
1	69.38	17.64		64.15	13.43		65.91	20.59		62.60	16.92	
>1	84.75	14.77		75.00	29.96		73.50	27.68		70.50	23.44	
History of treatment			0.472			0.005			0.110			0.500
Yes	69.35	17.18		58.45	17.61		64.45	19.61		58.63	16.18	
No	70.62	16.57		63.41	46.84		69.49	18.33		59.80	17.02	
Income (US$)			0.003			0.399			0.435			0.001
<170	67.92	15.74		60.38	17.17		65.97	19.85		56.65	16.75	
170-339	72.60	17.31		62.96	16.93		68.55	19.20		61.23	15.83	
≥340	77.26	12.24		62.30	14.60		69.23	14.07		68.46	16.81	
Region			0.012			0.224			0.602			0.001
Urban	71.22	16.87		61.42	16.88		67.01	18.88		61.02	16.22	
Rural	66.06	16.25		58.82	18.63		65.77	19.67		52.77	16.39	

The QoL psychological component score was also higher in couples with shorter duration of marriage (*P*=0.040) and those with no history of previous infertility treatment (*P*=0.006). In addition, the score of this item was also higher in couples which the problem is due to male infertility (*P*=0.030).

Social component of QoL was also higher in younger couples (*P*=0.020) especially in couples with shorter duration of marriage (*P*=0.004), and in those with shorter infertility duration (*P*=0.010). Furthermore, mean environmental component score was significantly higher in the couples with higher educational level (*P*=0.001) shorter duration of infertility (*P*=0.010) higher income (*P*=0.001) as well as in those who were resident in urban areas (*P*=0.001).

Association between different QOL components considering various domains of FertiQoL test and baseline variables were also assessed (Table 3). Mean score of emotional domain was higher in men than in women (*P*=0.001) higher in workers than unemployed persons (*P*=0.001) and higher in those without history of fertility treatments (*P*=0.010).

Table 3: Comparison of FertiQoL domains mean score across demographic characteristics using *t*-test or ANOVA (n=385)

	Emotional			Mind/Body			Relational			Social			Environmental			Tolerability		
Variables	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**	**mean**	**SD**	***P* value**	**Mean**	**SD**	***P* value**
Gender			0.001			0.001			0.336			0.091			0.199			0.007
Female	47.98	20.96		55.60	21.64		62.24	17.92		58.18	20.17		58.89	14.36		57.75	20.29	
Male	55.50	23.35		63.07	23.78		64.08	18.96		61.70	19.45		60.93	15.25		60.45	19.60	
Age group (yr)			0.463			0.862			0.129			0. 582			0.308			0.868
18-25	49.10	21.56		57.48	21.72		64.97	18.62		59.54	20.12		62.40	15.36		57.74	20.26	
26-35	50.61	21.88		58.31	23.01		63.44	18.28		59.60	20.04		58.70	14.57		56.32	20.44	
36-45	53.33	21.27		60.53	23.64		60.29	17.73		60.17	19.22		59.68	14.33		58.31	19.95	
46-55	62.50	34.19		60.41	24.17		46.87	21.88		45.83	28.46		58.33	18.16		60.41	90.45	
Educational level			0.084			0.044			0.002			0.587			0.105			0.345
Primary	50.32	18.97		55.20	20.43		58.77	14.05		57.07	18.42		61.51	13.83		60.71	20.05	
Secondary	46.60	19.49		55.38	21.40		59.28	16.22		59.19	19.92		61.86	15.54		55.84	21.02	
High	51.58	23.18		59.22	22.78		65.77	18.84		60.08	21.51		58.61	14.77		56.00	18.61	
Academic	54.78	23.16		63.64	24.37		66.57	21.68		61.25	18.74		57.12	14.06		55.96	21.72	
Occupation			0.0005			0.001			0.303			0.158			0.460			0.069
Working	55.09	22.41		62.84	23.32		64.00	19.36		61.11	19.56		60.30	15.32		59.02	20.65	
Not Working	47.32	20.63		54.77	21.65		62.07	17.38		58.23	20.23		59.15	14.19		55.21	19.65	
Infertility Reason			0.358			0.047			0.290			0.077			0.222			0.170
Female	54.12	24.68		60.95	23.50		63.95	19.40		63.62	18.21		59.80	13.08		57.61	20.82	
Male	50.57	20.49		60.08	20.31		64.47	17.94		58.96	19.31		60.36	14.91		57.55	20.84	
Both	49.92	22.67		53.45	26.00		60.70	18.31		57.48	22.41		56.92	16.27		52.73	19.52	
Duration of marriage (yr)			0.999			0.709			0.059			0.995			0.970			0.906
1-5	50.84	22.85		58.77	24.16		64.85	19.56		59.27	20.44		60.19	15.18		56.84	21.15	
6-10	51.19	20.47		59.76	20.43		63.46	15.14		59.87	18.11		59.06	13.24		57.64	19.21	
11-15	50.41	24.35		54.66	25.33		57.50	21.57		59.33	24.21		59.77	15.49		55.71	20.41	
16-20	51.28	13.46		56.73	22.66		59.61	18.11		61.53	15.22		59.72	17.76		53.17	22.75	
21-25	52.38	16.66		62.50	21.38		52.38	19.22		59.52	24.61		57.66	25.96		61.25	9.27	
Infertility Duration			0.275			0.065			0.021			0.314			0.567			0.078
1-5	51.59	22.42		59.49	23.02		64.85	19.56		60.50	20.13		59.97	14.27		57.10	20.20	
6-10	50.09	20.98		57.88	21.32		63.46	15.14		57.78	19.59		58.49	17.76		57.64	20.00	
11-15	43.84	21.60		46.32	22.83		57.50	21.57		53.07	21.58		57.01	15.58		46.02	15.91	
16-20	49.30	8.90		61.11	20.86		59.61	18.11		61.80	18.14		63.75	27.63		66.66	21.53	
21-25	67.70	21.61		72.69	19.69		52.38	19.22		96.79	13.33		67.91	14.08		62.50	10.20	
Number of children			0.028			0.060			0.098			0.025			0.093			0.008
0	49.95	21.45		57.71	22.60		63.16	18.37		58.69	19.72		59.39	14.56		65.36	19.52	
1	59.68	23.50		66.66	23.55		64.37	17.42		67.60	19.96		60.46	16.14		58.84	23.23	
>1	50.83	25.06		55.83	16.29		45.83	18.16		55.83	28.19		77.77	10.48		91.66	7.21	
Treatment History			0.018			0.032			0.673			0.661			0.091			0.074
Yes	48.49	21.28		56.18	22.62		62.82	17.78		59.23	19.78		58.49	15.60		55.18	20.81	
No	53.80	22.16		61.21	22.81		63.62	19.01		60.14	20.34		61.10	13.42		58.97	19.55	
Income (US$)			0.280			0.168			0.098			0.030			0.550			0.459
<170	49.82	20.82		57.06	21.99		61.72	18.08		57.24	19.83		58.67	14.06		56.91	19.66	
170-339	52.50	21.42		60.58	22.43		64.59	17.91		62.62	18.21		60.58	15.52		58.40	21.31	
≥340	56.08	28.16		64.58	28.70		69.07	20.88		63.78	23.41		69.72	18.33		52.97	20.27	
Region			0.199			0.099			0.947			0.507			0.939			0.814
Urban	51.82	21.86		59.70	22.68		63.30	18.33		60.08	19.80		59.79	14.51		56.87	19.97	
Rural	48.40	21.34		55.13	22.48		62.98	17.88		58.47	19.72		59.65	15.35		57.47	21.14	

Mean score of mind/body domain was also higher in men (*P*=0.001) higher education level subgroup (*P*=0.040) employed ones (*P*=0.001) and in the group without history of fertility treatments (*P*=0.030). The couples with higher educational level (*P*=0.002) with shorter duration of marriage (*P*=0.050) and shorter duration of infertility (*P*=0.020) had higher average score of relational domain.

Furthermore, social domain was also higher in those with higher income (*P*=0.030) and lower number of children (*P*=0.020). Environmental domain score of FertiQoL was not correlated with any baseline characteristics. Tolerability was significantly higher in men (*P*=0.010). Physical health domain was scored higher in those without history of treatment against infertility (*P*=0.038).

Our study showed using multivariable linear regression models strong associations of self-esteem, social support, sexual satisfaction, and marital satisfaction with various components of general and specified QoL measured by the WHO-QoL-BREF and FertiQoL tools, respectively (Table 4).

Table 4: Correlation between self-esteem, social support, marital and sexual satisfaction mean score and WHO & FertiQoL mean score by regression analysis

Item	Beta	SE	*P*value
Iseng			
WHO somatic domain	35.86	0.28	<0.001
WHO psychiatric domain	7.25	0.44	<0.001
WHO social domain	15.52	0.42	<0.001
WHO environment domain	24.20	0.29	<0.001
Core (FertiQoL)	23.14	0.29	<0.001
Treatment (FertiQoL)	26.83	0.26	<0.001
FertiQoL (Total)	25.58	0.29	<0.001
Cassidy			
WHO somatic domain	5.97	0.049	<0.001
WHO psychiatric domain	5.98	0.058	<0.001
WHO social domain	5.86	0.053	<0.001
WHO environment domain	6.40	0.051	<0.001
Core (Fertiqol)	7.42	0.034	<0.001
Treatment (Fertiqol)	8.13	0.021	<0.001
Fertiqol (Total)	6.37	0.051	<0.001
Lindaberg			
WHO somatic domain	34.40	0.21	<0.001
WHO psychiatric domain	11.40	0.30	<0.001
WHO social domain	10.33	0.34	<0.001
WHO environment domain	12.26	0.84	<0.001
Core (Fertiqol)	12.57	0.28	<0.001
Treatment (Fertiqol)	34.42	0.14	<0.001
Fertiqol (Total)	21.92	0.23	<0.001
Enrich			
WHO somatic domain	44.25	0.40	<0.001
WHO psychiatric domain	25.82	0.54	<0.001
WHO social domain	19.63	0.73	<0.001
WHO environment domain	30.78	0.44	<0.001
Core (Fertiqol)	39.29	0.30	<0.001
Treatment (Fertiqol)	40.60	0.27	<0.001
Fertiqol (Total)	39.57	0.31	<0.001

Discussion

The present study achieved some important findings. In the first step regarding association between couples characteristics and self-esteem, social support, sexual and marital satisfaction, we showed that self-esteem score was lower in the couples with longer infertility duration, social support score was lower in low income couples, and those with higher educational level, with shorter infertility duration, and those with higher income more satisfied from their marital relationships. Besides, we revealed that the previous effort for treatment of infertility was adversely associated with lower social support and sexual satisfaction.

It seems that because prolonged infertility can be accompanied with common psychological negative consequences such as stress and anxiety, longer infertility can potentially influence infertile couple's self-esteem. As previously shown by Cox et al. (2006), self-esteem can be increased following achievement of a successful treatment for infertility and is negatively correlated with anxiety during pregnancy[24]. It has been well agreed that individuals perceiving high social support tend to perceive better adjustment to infertility[25]. Similarly, higher level of social support seems to be naturally dependent to better economic status[26]. Thus, higher social support in the couples with appropriate economic status is expectable.

Given the severity and breadth of negative psychological and psychosocial correlation between fertility problems, infertility, and fertility treatment, there is a clear need for effective social supports for this population. Infertility has been associated with marital problems and conflicts. This can be problematic as the marital relationship is seen as the most important source of support in the context of infertility treatment.

Having social support from family, partner and friends can reduce the impact of a large number of life stressors[26,27].Both infertile men and women experience greater dissatisfaction with themselves, their marriages, and infertility-related stress and its treatment have a negative effect on the relationship both directly and indirectly[28]. Thus, higher sexual and marital dissatisfaction in those with repeated scheduling for treatment of infertility is respected.

In second step, we tried to assess relationships between different components of general and especial QoL with baseline characteristics in infertile couples. In total, higher educational level, better monthly income, residency in urban area, shorter duration of marriage, shorter duration of infertility, and male gender were overall associated with better QoL status in most of the components. Educational level, female gender; poor marital relationship, previous in vitro fertilization (IVF) attempts and duration of infertility are negatively associated with physical, mental and emotional domains of QoL[29]. QoL has emerged as a well-established concept to address these issues.

QoL assessments include aspects of health status, psychological well-being, physical and social functioning, and environmental and spiritual facets[30]. Therefore, QoL status in infertile couples may be inversely influenced by different personal and familial aspects as well as by different aspects of infertility and its treatment.

In the next step and as the main study endpoint, we evaluated the association between QoL with self-esteem, social support, sexual satisfaction, and marital satisfaction. Because both QoL components and all of above psychological indices have common psychological borders, the obtained results in order to strong correlation between QoL and these indices are predictable. According to the previous observations, self-esteem can improve inter-personal relationship; social supports are significantly associated with higher scores in aesthetics, social disruption, and general mental health as well as with fewer depressive symptoms; positive

quality of life indicators correlate with the level of sexual satisfaction; and marital satisfaction is an important determinant of quality of life. This evidences supported our findings in the present study.

The current study contains a number of limitations. First, because of cross-sectional study design; claims of directional influence to total population of infertile couples cannot be made. Second, the number of questions was long, so some responses may influenced by fatigue and the responses may be cursory.

Conclusions

The result of this study showed that couples characteristics were associated with the components of general and especial QoL and different aspect of life style. Furthermore QoL was strongly correlated with self-esteem, social support, sexual and marital satisfaction among infertile couples. However, conduction a national survey may be helpful.

Acknowledgement

This study is a part of PhD thesis and is supported by grant 9110 from Shahroud University of Medical Sciences Research Council. We thank the university authorities who offered critical administrative support and managerial services in carrying out the study and also all researchers for their help and support.

Conflict of interest

The authors declare that have no conflicts of interest.

Funding

This study was funded by the Vic-Chancellor of Research and Technology of Shahroud University of Medical Sciences.

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