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Original Article

Determinants of Quality of Life in Serbian Infertile Couples

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Abstract

Background: This study aimed to examine the quality of life and the factors that determine the quality of life of infertile couples.

Methods: The research was conducted as a cross-sectional study at the Gynecology and Obstetrics Clinic "Narodni Front" in Belgrade, the Special Gynecology Hospital "Ferona" in Novi Sad, the Special Hospital for the Treatment of Sterility and In Vitro Fertilization "Spebo Medikal" in Leskovac and the General Hospital in Valjevo, Serbia in 2022, on a sample of 378 infertile couples. The data were collected by means of a questionnaire, the integral part of which is the standardized FertiQoL scale. Independent *t*-test and one-way ANOVA were used to determine differences. A value of $P<0.05$ was considered statistically significant.

Results: Women achieve a significantly lower score on the quality of life questionnaire (69.34±11.05) compared to men (73.96±9.87). Women exhibit significantly lower scores in the area of physical, emotional and social functioning ($P<0.05$). Men who live in the countryside show a lower quality of life score in the emotional ($P=0.029$) and social ($P=0.042$) domains. In addition, men over 40 years of age and with a high level of education have a lower quality of life ($P=0.08$).

Conclusion: Women have a lower quality of life, as do men from rural areas and over 40 years of age. A multidisciplinary approach and community education, as well as the provision of social support with a special emphasis on emotional and material support, would significantly contribute to improving the quality of life of infertile couples.

Keywords: Infertility; Quality of life; Infertile couples

Introduction

Infertility is a complex crisis that has a significant impact on almost all dimensions of quality of life, a serious health problem that causes personal, family and social problems. Infertility is defined as the impossibility of pregnancy within a period of one year due to regular, unprotected sexual

relations (1). It is divided into primary and secondary (2). Infertility is equally represented in both sexes in 40%, while the remaining 20% are unexplained causes (3).

On a global level, it is estimated that 17.5%, or one in six people, has a problem with infertility during the reproductive period (4). The results of the Republic Institute of Statistics show that 15% of couples in Serbia have problems with infertility (5).

Given the established negative reactions associated with infertility that affect life satisfaction and well-being, the success of treatment and willingness to continue treatment is extremely important to assess and improve quality of life in the context of this problem. Evaluation of the quality of life allows understanding the impact of health conditions or interventions on a person from a broader perspective, and determining the factors that affect the quality of life can improve the comprehensive treatment of people with infertility. Previous research indicates that age, level of education, partner relationships, economic factors, social activities, communication, treatment and duration of infertility, mental health and sexuality are factors that have an impact on the quality of life (6-8). The quality of life is also affected by negative emotional experiences, anxiety, depression and stress, which are often present in infertile couples. All these factors are related to different traditional attitudes of society, as well as the costs of infertility treatment. Numerous techniques are used in the assessment of the quality of life of infertile couples, and the fertility quality of life (FertiQoL) is most often applied in the population of infertile couples (9, 10).

We aimed to examine the quality of life and the factors that determine the quality of life of infertile couples.

Materials and Methods

Participants and study design

The cross-sectional study was conducted from June 1st to December 30th, 2022, at the Gynecology and Obstetrics Clinic "Narodni Front" in Belgrade, the Special Gynecology Hospital "Ferona" in Novi Sad, the Special Hospital for the Treatment of Sterility and In Vitro Fertilization "Spebo Medikal" in Leskovac and the General Hospital in Valjevo, Serbia on a sample of 378 couples diagnosed with primary or secondary infertility. The data were collected using a convenience sampling method and through one-on-one direct interviews.

The respondents were informed about the purpose, topic and all the details of the examination. Infertile couples, male and female partners filled the questionnaire separately, answering the questions without mutual discussion. Incomplete questionnaires were not considered for statistical analysis.

Ethical consideration

All procedures were performed in accordance with the Declaration of Helsinki (11). The study was approved by the Ethics Committee (No.05006-2022-3861/1; No.0401-1/1-22; No.03/01; No.OBV01-2215) of selected health institutions. Written informed consent was obtained from all infertile couples before data collection.

Measurements

Participants completed a questionnaire that included demographic and background information such as age, gender, educational level, employment status, income level, duration of marriage, duration of infertility, type of infertility (primary or secondary), cause of infertility (male, female, both, and unexplained), number of in vitro fertilization and quality of life. Data on quality of life were viewed as a dependent variable, while all other variables, i.e. characteristics of the respondents, were viewed as independent.

FertiQoL questionnaire (12), which is publicly available and consists of two parts, was used to assess the quality of life in the context of sterility: the first part, the core quality of life (Core FertiQoL) and the second part, the quality of life in the field of treatment (Treatment FertiQoL). Scaled scores can range from 0 to 100, with higher scores reflecting higher quality of life.

Statistical analysis

Statistical analysis was performed using the software SPSS 18.0 (Chicago, IL, USA). Continuous variables were expressed as mean ± standard deviation and categorical variables as absolute numbers and percentages. An independent t-test and one-way ANOVA was used to compare mean of QoL overall scores and sub-item scores among infertile male and female partners. A value of $P<0.05$ was considered as statistically significant.

Results

The sample consisted of 378 couples, with a mean age of 36.76 years (SD = 5.52 years). The characteristics of couples are presented in Table 1.

Table 1: The characteristics of couples.

Variable	*Men*		*Women*	
	N	%	N	%
Age group(yr)				
20-29	24	6.3	52	13.8
30-39	211	55.8	240	63.5
>40	143	37.8	86	22.8
Average age	38.08±5.76		35.24±5.46	
Type of settlement				
urban settlement	260	68.8	263	69.6
other settlement	118	31.2	115	30.4
Education level				
elementary and lower	15	4.0	15	4.0
medium	207	54.8	144	38.0
higher	156	41.3	219	57.9
Employment Status				
employed	350	92.6	326	86.2
unemployed	28	7.4	52	13.8
Material status				
I (bad and very bad)	20	5.3	15	4.0
II (middle)	246	65.1	264	69.8
III (good and very good)	112	29.6	99	26.2
In total	378	50.0	378	50.0

On average, the respondents have been married or cohabiting with their current partner for 8.41±4.53 (min1, max 25) years. Pregnancy was achieved in 35% of cases, while in 65% of cases it was primary infertility. The largest share of couples (50.5%) is 1-3 years into the infertility treatment process, while 36.8% of them are over 4-6 years into the treatment process. The cause of infertility in about 40% of cases was explained by some of the factors related to the female sex, in 35.1% the infertility was related to the male sex, and in 10.3% to common causes. In about 14.7% of infertility cases, there are no medical causes.

As many as 88.9% of couples have had up to 3 attempts at in vitro fertilization (IVF), which in the largest percentage (39.7%) ended in spontaneous abortions, while 27.5% of pregnancies ended in natural childbirth. In our research, the largest number of respondents (89.3%) were satisfied with their general physical condition and current life (73.3%), which is very important for the success of the IVF procedure, while there were no significant differences in relation to gender in self-assessment of health ($\chi2=0.527$; $P=0.768$) nor in life satisfaction ($\chi^2=3.051$; $P=0.217$).

The mean Total FertiQoL score was 71.6 (SD = 10.7). In general, women achieve a significantly lower score on the quality of life questionnaire (69.34±11.05) compared to men (73.96±9.87), which indicates a worse quality of life in infertile women. Women exhibit significantly lower scores in the area of physical, emotional and social functioning, as well as in the general core score of quality of life compared to men. When it comes to quality of life in the domain of treatment, when comparing the scores of the subscale Quality of life in the domain of characteristics and effects of treatment, no statistically significant differences were found between the sexes (Total Treatment FertiQoL score and The Treatment Environment subscale score).

The results show that in both men and women, the core quality of life is better than the quality of life associated with in vitro fertilization (Table 2). Therefore, the respondents are not completely satisfied with the procedures for conducting in vitro fertilization, nor with the attitude of medical workers towards them, and information about that procedure is not fully available to them, either.

Table 2: Differences in FertiQoL domains in relation to gender

Subscale of FertiQoL	***Men***	***Women***	***t test***	***p***
	Mean ± SD	Mean ± SD		
Emotional	76.99±15.56	68.35±17.95	7.069	0.001
Mind/body	76.04±17.71	66.38±20.46	6.937	0.001
Relational	82.52±12.02	80.78±13.23	1.882	0.060
Social	80.54±15.45	75,68±18,49	3.921	0.001
Core FertiQoL	79.02±12,44	72.80±14.41	6.355	0.001
Environment	63.46±19.73	58.25±19.83	-1.789	0.074
Tolerability	64.21±18.76	66.58±17.66	1.631	0.061
Treatment FertiQoL	63.84±11.01	62.42±11.10	1.775	0.076
Total FertiQoL	73.96±9.87	69.34±11.05	0.069	0.001

Couples with primary infertility have a lower quality of life regarding lower scores on the emotion, body/mind, social aspect subscales, while the differences in the average score values on the partner relationship subscales and subscales in the treatment domain are not significant. Couples who have been in the process of infertility testing and treatment for more than 10 years have statistically significantly lower scores on the emotion subscale, while within the other subscales there were no significant differences in average score values in relation to the length of infertility treatment. The number of in vitro fertilization attempts up to 3 times is a significant predictor of a better quality of life in the domain of emotions, body/mind and social aspects (Table 3).

The analysis according to the place of residence showed that the Emotional and Social mean score is lower in men who live in the countryside compared to those who live in the city. Men who have a good material status achieve significantly higher scores for emotional, mind/body and social domains, while women achieve higher scores for emotional and social domains (Table 4).

Table 3: Difference in FertiQoL domains in relation to type, cause and duration of infertility and number of IVFs

Variable	*Emotional mean ± sd*	*Mind/body mean ± sd*	*Relational mean ± sd*	*Social mean ± sd*	*Environment mean ± sd*	*Tolerability mean ± sd*	*Total fertiqol mean ± sd*
Type of infertility							
Primary infertility	69.6±17.3	68.1±19.9	81.7±12.5	76.2±18.3	64.6±18.4	61.5±20.5	70.3±10.6
Secondary infertility	74.1±17.2	72.7±19.4	81.5±12.8	79.0±16.5	66.8±17.6	59.4±18.8	72.3±10.7
P value	0.001	0.002	0.851	0.033	0.117	0.179	0.015
Causes of infertility							
Male factor	68.9±17.5	66.1±20.9	79.9±12.9	75.7±18.2	64.4±17.6	59.3±19.1	69.2±10.9
Female factor	66.7±18.8	65.5±20.9	79.6±14.1	74.2±19.1	67.3±18.5	55.7±20.3	68.2±11.7
Both	69.5±16.4	69.3±20.2	82.7±10.5	76.5±18.6	70.2±15.3	61.5±20.1	71.6±9.8
Unexplained	67.4±17.5	64.6±18.7	84.0±13.4	77.1±18.0	67.1±17.3	57.9±19.6	69.7±10.3
P value	0.715	0.733	0.134	0.744	0.302	0.237	0.377
Duration of infertility							
<5	70.7±17.8	68.1±19.7	80.7±12.8	76.3±17.7	66.1±18.1	57.9±19.1	70.0±10.4
5-10	64.3±17.8	63.2±20.7	81.8±12.9	74.7±19.6	66.7±16.1	58.1±21.6	68.1±11.8
≥10	62.8±16.3	63.6±23.4	75.5±16.8	74.5±20.9	69.5±19.1	62.3±18.4	68.0±12.3
P value	0.002	0.089	0.097	0.713	0.658	0.589	0.282
Number ivf							
Until 3	69.3±17.6	67.5±19.5	80.9±12.9	76.5±17.9	66.5±17.9	58.7±19.3	69.9±10.5
Over 3	58.0±18.9	55.5±12.2	77.2±15.5	69.4±21.6	66.7±15.9	55.1±23.9	63.7±13,4
P value	0.000	0.000	0.089	0.021	0.948	0.285	0.001

Table 4: Relationship between women's and men's sociodemografic characteristics and the subscale of Emotional, Mind/body, Relational and Social

Variable	*Emotional*				*Mind/body*				*Relational*				*Social*			
	Men		Women		Men		Women		Men		Women		Men		Women	
	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*
Age group (yr)																
20-29	74.6	0.551	63.4	0.102	74.3	0.812	63.9	0.249	88.0	0.061	83.5	0.229	79.8	0.793	72.4	0.325
30-39	76.6		68.9		75.8		66.1		82.3		80.5		80.1		75.8	
>40	77.9		69.6		76.6		68.5		81.7		79.6		81.2		77.2	
Type of settlement																
Urban settlements	78.2	0.029	68.8	0.376	77.1	0.099	65.8	0.454	82.6	0.814	80.6	0.842	81.6	0.042	75.3	0.627
Other settlements	74.3		67.1		73.7		67.5		82.3		80.9		78.1		76.3	
Education level																
Elementary and lower	75.5	0.247	69.0	0.731	76.1	0.519	69.3	0.665	73.8	0.009	81.5	0.974	83.1	0.104	75.2	0.853
Medium	75.8		67.4		75.1		67.2		83.4		80.8		79.0		75.0	

Table 4: Continued…

Higher	78.5		68.9		77.2		65.6		82.1		80.7		82.3		76.1	
Employ-ment status																
Employed	76.9	0.94	68.5	0.51	75.9	0.18	66.4	0.93	82.5	0.52	80.5	0.47	80.5	0.80	75.8	0.67
Unem-ployed	77.0	0	66.8	6	77.0	5	66.1	9	82.8	2	82.0	3	79.9	3	74.6	5
Material status																
I (bad and very bad)	71.2	0.02 0	63.0	0.06	67.3	0.00 0	64.5	0.06 0	83.1	0.97 5	86.3	0.12 6	73.0	0.00 0	73,2	0.02 0
Ii (inter-mediate)	76.0		67.3	8	74.6		64.8		82.4		80.0		78.8		74,0	
Iii (good and very good)	80.0		71.6		80.6		70.5		82.5		82.0		81.1		80.3	

Men over 40 years of age and with a high level of education achieve a lower quality of life on the treatment characteristics subscale than women who live in the countryside and have higher education. When it comes to the subscale of Tolerability, significantly lower scores are achieved by men over 40 years of age (Table 5).

Table 5: Relationship between women's and men's sociodemografic characteristics and the subscale of Environment, Tolerability and Total FertiQoL

Variable	***Environment***				***Tolerability***				***Total fertiqol***			
	Men		Women		Men		Women		Men		Women	
	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*	Mean	*P*
Age group(yr)												
20-29	74.7	0.008	71.2	0.062	57.5	0.429	56.8	0.003	74.7	0.884	68.5	0.841
30-39	65.6		65.1		63.2		60.6		73.7		69.5	
>40	61.3		67.7		64.3		52.3		74.1		69.2	
Type of settlement												
Urban settlements	62.9	0.712	64.8	0.003	63.7	0.901	58.2	0.958	74.3	0.148	68.9	0.338
Other settlements	67.1		70.6		62.7		58.3		73.1		70.1	
Education level												
Elementary and lower	74.7	0.008	76.4	0.015	57.5	0.429	48.6	0.144	73.5	0.844	70.0	0.813
Medium	65.6		68.4		63.3		59.5		73.7		68.7	
Higher	61.3		64.7		64.3		58.0		74.3		69.0	
Employment status												
Employed	64.1	0.257	66.2	0.355	63.6	0.820	58.1	0.716	73.9	0.444	69.3	0.856
Unemployed	65.4		68.7		61.8		59.1		74.1		69.6	
Material status												
I (bad and very bad)	64.4	0.998	71.1	0.483	68.7	0.151	46.8	0.078	71.6	0.008	67.5	0.049
Ii (intermediate)	64.2		66.0		62.1		59.0		73.0		68.5	
Iii (good and very good)	64.1		67.4		65.5		57.7		76.3		71.6	

Discussion

With our research, we evaluated the quality of life of infertile couples, as well as the factors that affect their quality of life. Almost two-thirds of couples have primary infertility. The cause of infertility is 35.1% related to male in and40%related to female. Most of the surveyed couples are satisfied with their general physical condition and current life, and there are no significant differences in relation to gender, self-assessment of health and life satisfaction. Research conducted in centres in Isfahan states that the cause of infertility in 30% of cases is related to women, 20% to men, while in 17% it is related to both partners (13). Bueno-Sánchez L and colleagues conducted a study in Valencia from 2018 to 2020 on a sample of 219 heterosexual couples and came to the result that in 50.7% the problem of infertility is related to the female sex. Research by Bhamani et al., on a sample of 334 couples, indicates a higher percentage of male infertility and the presence of primary infertility in 87.4% of cases (14,15).

The study we conducted shows that women have a significantly lower quality of life score (69.34±11.05) compared to men (73.96±9.87) in the domain of physical, emotional and social functioning. There are no differences in the characteristics and impact of treatment on quality of life. Both men and women rated core quality of life better than IVF-related quality of life. Research results consistently show that women who have problems with sterility have a worse quality of life compared to men (16-18). Our results coincide with the results of a group of authors led by Bose S who, in a sample of 100 couples, determined that men report a significantly better quality of life compared to women in the emotional and social dimensions of quality of life and the dimension of tolerance (19), which confirms the study from India (20). Partially the same results are shown by a study conducted on a sample of 47 couples in Italy, where the quality of life in women is lower in the domain of emotional, social, physical-mental, and core quality of life (21). Bueno-Sánchez L and colleagues confirmed that women have a worse quality of life compared to men, but the differences in the domains of quality of life are not statistically significant (14). A study by Ha and Ban conducted in South Korea, on a sample of 150 couples, highlights a significantly worse quality of life for women in all domains compared to husbands (22), which is in line with other research (23, 24). The stigmatization of women and the pressure they experience due to the inability to conceive, the feeling of less value as a woman, the fear of treatment failure are the reasons for a lower quality of life. Often taking the blame on oneself, a sense of shame and low self-esteem leads to changes in the emotional state, psychological vulnerability and social isolation, which also affects the assessment of the quality of life.

Lower scores in the evaluation of the quality of life on the emotion, body/mind, social aspect subscales were shown by couples with primary infertility in the study we conducted. The results of Wadadekar et al are in agreement with our results, and they say that couples with secondary infertility have better scores in all domains except the relational domain compared to couples with primary infertility (25). Therefore, concern about the impossibility of achieving pregnancy in primary infertility compared to secondary infertility is one of the reasons for the lower quality of life of couples with primary infertility.

Statistically significantly lower scores in the quality of life are shown by our respondents who have been in the process of examination and treatment for more than ten years. Less than three attempts have a positive impact on the dimensions of emotions, body/mind and social aspect. Research in Iran also indicates a higher quality of life score in couples with a shorter duration of infertility (27). We assume that the reason for this is the long-term treatment process and the fear of the possibility of decreasing fertility over time. Royani and colleagues come to the conclusion that the cause and duration of infertility are not significantly related to the quality of life (26). It is expected that a number of respondents accept

problems and face them regardless of their duration.

Our study shows that both place of residence and financial status have a significant impact on certain domains of quality of life. Male respondents who live in the countryside have lower scores than respondents who live in the city. The assumption is that men from rural areas have less social support, and that it will be difficult to confide in people from the surrounding area for fear that they will look down on them because of their problem with infertility, which is also connected with the traditional cultural patterns of behaviour in rural areas of Serbia. When it comes to material status, male respondents, in addition to emotional and social aspects, show better results in the body/mind area. Women have better scores in the emotional and social domains, which coincides with a study conducted in Turkey on a sample of 150 couples where women with higher incomes have better results in the social domain (28). Financial stability greatly contributes to a better quality of life and their safety, social security and treatment, because high prices for infertility treatment and insufficient financial resources can lead to greater anxiety and a poorer quality of life.

On the treatment characteristics subscale, highly educated men over 40 years of age have worse results, the results are similar for female respondents who live in rural areas and have the same level of education. A high level of education is associated with a higher quality of life (29). All these results show us that a high level of education is recognized as an important predictor of quality of life, because it is expected that couples with a higher level of education have more positive views, as well as greater mutual support during infertility treatment, and greater social support that is present in couples who live in the city. The results of the author who conducted the research in Iran and the Athens Naval Hospital-Assisted Reproduction Unit are in accordance with this (26, 30). Our research shows that men over 40 years of age have a lower score on the Tolerability subscale.

Conclusion

Infertile couples are satisfied with their physical condition and current life, and there are no significant differences in relation to gender, self-assessment of health and life satisfaction. Women have worse quality of life in the physical, emotional and social domains. There are no statistically significant differences between men and women in the domain of treatment characteristics and effects. Couples with primary infertility, a longer period of infertility and a greater number of IVF attempts have a significantly lower quality of life. Men from rural areas and over 40 years old have a lower quality of life. A multidisciplinary approach and community education, as well as the provision of social support with a special emphasis on emotional and material support, would significantly contribute to improving the quality of life of infertile couples.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of Interest

The authors declare that there is no conflict of interests.

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