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Quality of Life among Women with Primary and Secondary Infertility Attending a Private Fertility Center in Jeddah, Saudi Arabia: A Cross - Sectional Study

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ABSTRACT

Objective: The aim of this study was to determine the fertility quality of life (QoL) among women with primary and secondary infertility and to assess the factors related with QoL in women with infertility. *Material and Method:* This cross-sectional analysis has been performed from December 2019 to June 2020. We measured the quality of life of 264 infertile women attending Healthplus Fertility Center in Jeddah city using the FertiQoL questionnaire tool, One hundred and eighty-five women with primary infertility and 106 women with secondary infertility were compared for Qol subscales and other confounding factors like age and education using multiple regression analysis. *Results:* Women with secondary infertility obtained better scores in emotional, mind/body, Relational and social domains of the core subscale and total QoL ($p < 0.01$). Primary and secondary infertile women who got married for more than five years and had more than five years duration of infertility had a significantly low scores in total FertiQoL and its subscales ($p<0.001$). Women with primary infertility who had support from their families or friends achieved significantly higher scores in emotional, mind and body, relation, and social subscales besides the total QoL ($p<0.05$). Multiple regression evaluation confirmed that Secondary infertility and social assistance had a positive effect on total QoL scores while age and years of marriage had a negative impact. *Conclusion:* Fertility Quality of Life scores were better for women with secondary infertility, while the scores were negatively affected by being older in ager and being married for more than five years.

Key words: Quality of life; Infertility; Private center and Jeddah

1. INTRODUCTION

Infertility is "a disease of the reproductive system defined as ''*failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse*" (WHO, 2016). Primary infertility is being without any previous pregnancy. However, secondary infertility occurring in a couple who have conceived in the past ending with the birth or not (Hacker, et al., 2015). Infertility prevalence is considered very high in South Asia, Sub-Saharan Africa, North Africa/Middle East, and Central/Eastern Europe and Central Asia. The absolute number of infertile couples is 48.5 million (Mascarenhas, et al., 2012). The prevalence of primary clinical infertility in the Middle East and North Africa (MENA) region is estimated at 3.8% with the total clinical infertility, both primary and secondary infertility were at 17.2% (Eldib A, Tashani, 2018). The prevalence of infertility in Saudi Arabia according to a study from Eastern Saudi Arabia data is 18.93% (Al-Turki 2015).

Infertility is a pressured case for the couples who want to conceive. It caused significant social distress and related to various psychological and social disorders including depression, anxiety, social alienation , and sexual dysfunction (Maroufizadeh et al., 2016, Hossein et al., 2011). In addition, diagnosis and treatment of infertility can lead not only to be in distress or depression, but also it has an adverse effects on the quality of patient life (Maroufizadeh et al. 2018). Interestingly, The anxiety and depression rates among infertile women were equal to those in cardiac or cancer-related women or those diagnosed with human immunodeficiency (Cwikel et al., 2004). Some countries have legislation suggesting counseling as part of infertility care prior to initiation of therapy to reduce the psychological distress level among infertile women (Burns et al., 2007).

The Quality of Life program is one of Saudi Arabia's 2030 Vision Realization Programs. It aims to improve individual and family lifestyles and to create a community in which people have a healthy lifestyle (Quality Of Life Program, 2018), our objective in this study is to determine the fertility quality of life (QoL) among women primary and secondary infertility and to assess the factors related to QoL in women experiencing this condition.

2. MATERIAL AND METHODS

Design of study

The cross-sectional analysis included women with infertility attending HealthPlus Fertility Center in Jeddah, Saudi Arabia, from December 2019 to June 2020. Inclusion criteria were women between 15-49 years who failed to achieve pregnancy after at least one year of timely unprotected intercourse and able to read and write. Sample size calculated using sample size formula for mean estimation

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considering the expected standard deviation of QoL scores to be 11.78 (Dong & Zhou 2016), and tolerable error 1.5% at 95% confidence interval. Minimum size of the sample as calculated was 240, a 10% non-response rate added so that the final sample for the study was 264. Participants were selected by simple random technique and the response rate was 100%.

Questionnaire

There were three sections to the questionnaire. The first included questions relating to women's socio-demographic characteristics such as age, education and income level. The second included questions on the characteristics of infertility such as infertility type and duration. The third aimed to measure the Quality of life by internationally developed and validated FertiQol questionnaire (Fertility quality of life tool, 2020). A validated Arabic translation according to the FertiQoL group was used (Download FertiQoL, 2020). The FertiQoL questionnaire consists of two modules: the core module and the optional module for treatment. Core FertiQoL items contain 24 specific questions covering four subscales: Mind & Body, Relational, Social and Emotional domains. Each item scored has five categories ranging from 0to 4; the subscale scores calculated range from 0 to 100, with a higher score indicating a better quality of life (Scoring – Fertility quality of life tool, 2020). This study did not use the optional FertiQoL treatment module.

Data Collection

The questionnaire was self-administered, given to the participants at the infertility clinic after they finished the consultation and signed the informed consent form.

Data Entry and Statistical Analysis

The QoL scores were calculated by the Researchers Excel scoring FertiQol online system (Scoring – Fertility quality of life tool, 2020). Statistical analysis was carried out using SPSS 23.0 software (SPSS, Inc., Chicago, IL, USA). Continuous variables not normally distributed reported as median, categorical variables as numbers and percentages. Continuous variables further compared with Mann-Whitney U and Kruskal Wallis tests, the p value is less than 0.05 was considered statistically significant. To evaluate the impact of independent variables on total scores of QoL, a linear regression analysis was performed.

3. RESULTS

Participants' characteristics are plotted in Table 1. With primary (n=158) and secondary infertility (n=106). Primary infertile women were older 129(81.6%) versus 31(29.2%)(p<.001) and had a lower educational level 44(27.8%) versus 14(13.2%)(p 0.010). Also compared to the secondary infertility group, women with primary infertility had more than five years of marriage 136(86.1%) versus 33(31.1%)(p<0.001), prolonged duration of infertility 125(79.1%) versus 19(17.9%)(p<.001), and less social support 30(19%) vs 91(85.8%)(p<.001). No difference between the groups in terms of employment status, income levels and contraceptive use among the groups.

Table 1. Participants' characteristics

Characteristics of the participants	Primary infertility n (%) 158	Secondary infertility n (%) 106	P Value
Age			
<_30 years	8(5.10)	25(23.6)	<0.001
31–35 years	21(13.3)	50(47.2)	
>35 years	129(81.6)	31(29.2)	
The median age of participants	39	33	
Educational level			
Secondary	44(27.8)	14(13.2)	0.010
Diploma	31(19.6)	19(17.9)	
Bachelor	83(52.5)	73(68.9)	
Employment Status			
Non-employee	69(43.7)	44(41.5)	0.728
employee	89(56.3)	62(58.5)	
Income Saudi Riyals			0.973
<8000	23(14.6)	15(14.2)	

8000_14000	85(53.8)	56(52.8)	
>8000	50(31.6)	35(33)	
Years of marriage			
<5y	22(13.9)	73(68.9)	<0.001
>5Y	136(86.1)	33(31.1)	
Duration of infertility			
<2y	8(5.1)	32(30.2)	<0.001
2y-5y	25(15.8)	55(51.9)	
>5y	125(79.1)	19(17.9)	
Contraceptive use			
Yes	42(26.6)	27(25.5)	0.840
No	116(73.4)	79(74.5)	
Social support			
Yes	30(19)	91(85.8)	<0.001
No	128(81)	15(14.2)	

In the Core FertiQoL subscale, the women with secondary infertility obtained better scores for emotional (194.28 vs 91.05) (p<0.001), mind/body (195.41 vs 90.30) (p<0.001), relational (191.28 vs 93.06) (p<0.001) and social domains (191.28vs 93.06) (p < 0.001).The overall total scores were also significantly higher in women with secondary infertility (196.72 vs 89.41) (p<0.001) indicating better quality of life (Table 2).

Table 2. Comparison of women's FertiQoL scores with primary and secondary infertility

	Primary infertile N= 158 Mean rank	**Secondary infertile** N= 106 Mean Rank	*P- value*
Core fetiQoL			
Emotional	91.05	194.28	<.001
Mind and body	90.30	195.41	<.001
Relational	93.39	190.80	<.001
Social	93.06	191.28	<.001
Total FertiQoL	89.41	196.72	<.001

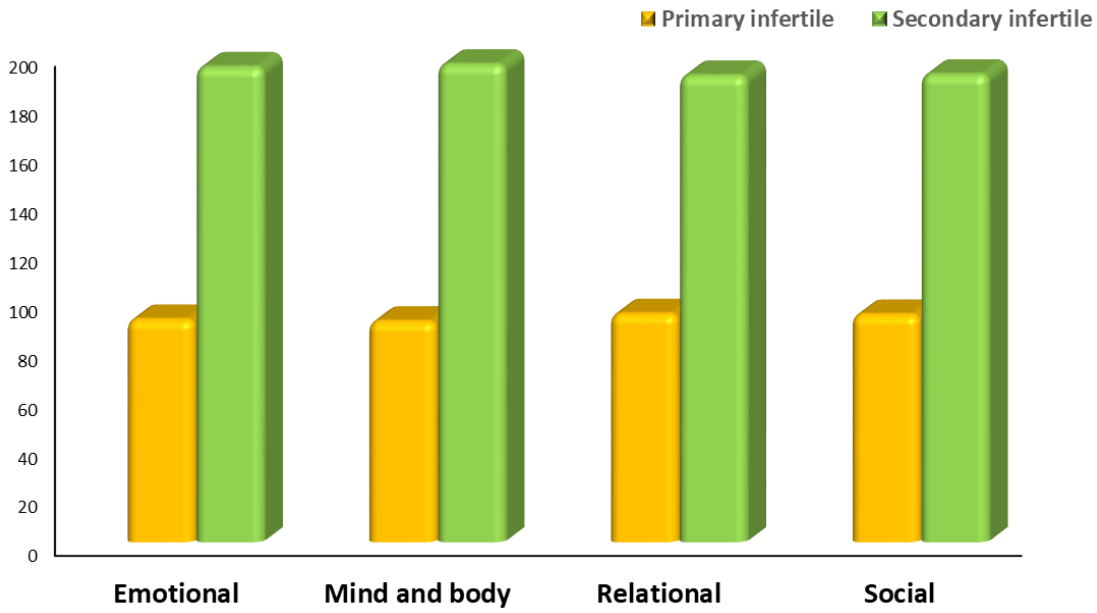

Figure 1: Comparison between Primary infertile and secondary infertile regarding Core fetiQoL

The study population was assessed using demographics and other variables for the FertiQoL subscales (Tables 3a and 3b). Effect of education of participants on QoL shows that women with primary infertility with bachelor's degree scored higher when compared to women with secondary infertility in emotional, mind and body, relational, social domains as well as total FertiQoL ($p<0.05$). In comparison, women with secondary infertility with bachelor's degree scored higher in all domains except for the social domain.

Both primary and secondary infertile women were married for more than five years and had more than five years duration of infertility obtained significantly low scores in total FertiQoL and in emotional, mind and body, relation, and social subscales ($p<0.001$). The study performed in terms of social support revealed that women with primary infertility who had support from their families or friends achieved significantly higher scores in the emotional, body and mind , relation, and social subscales besides the total QoL ($p<0.05$).

Table 3a. Comparing socio-demographic effect on QoL by type of infertility

	Emotional				**Mind/ Body**				**Relational**			
	Primary infertility		Secondary infertility		Primary infertility		Secondary infertility		Primary infertility		Secondary infertility	
Characteristics	Mean rank	p	Mean rank	p	Mean rank	p	Mean rank	p	Mean rank	p	Mean rank	p
Educational level												
Secondary	76.44		34.18		82.00		32.79		77.02		49.54	
Diploma	62.44	**0.027**	48.61	**0.017**	60.71	**0.035**	51.84	**0.016**	63.23	**0.043**	44.87	0.290
bachelor	87.49		58.48		85.19		57.90		86.89		56.51	
Employment Status												
Non-employee	68.33	**0.006**	41.98	**0.001**	73.90	0.173	42.50	**0.001**	67.96	**0.005**	48.82	0.183
employee	88.16		61.74		83.84		61.31		88.45		56.82	
Income												
<8000	70.57		36.23		87.07		30.50		71.87		35.77	
8000_14000	85.45	0.197	52.98	**0.024**	80.75	0.482	53.54	**0.002**	81.24	0.677	51.75	**0.009**
>8000	73.49		61.73		73.90		63.29		80.06		63.90	
Years of marriage												
<5y	114.93	**<0.001**	62.68	**<0.001**	126.20	**<0.001**	63.43	**<0.001**	115.64	**<0.001**	61.01	**<0.001**
>5Y	73.77		33.18		71.94		31.53		73.65		36.89	
Duration of infertility												
<2y	108.81		64.47		123.13		60.53		126.56		60.77	
2y-5y	106.96	**<0.001**	57.00	**<0.001**	115.90	**<0.001**	58.31	**<0.001**	107.96	**<0.001**	54.50	**0.038**
>5y	72.13		24.89		69.43		27.74		70.80		38.37	
Contraceptive use												
Yes	78.96	0.929	52.19	0.794	86.94	0.216	50.96	0.611	85.56	0.313	53.06	0.930
No	79.69		53.95		76.81		54.37		77.31		53.65	
Social support												
Yes	102.13		55.61		111.32		56.82		99.75		55.88	
No	74.20	**0.002**	40.70	0.077	72.04	**<0.001**	33.37	**0.005**	74.75	**0.007**	39.07	**0.048**

Table 3b. Comparing socio-demographic effect on QoL by type of infertility

	Social				Total FertiQoL			
	Primary infertility		Secondary infertility		Primary infertility		Secondary infertility	
Characteristics	Mean rank	p	Mean rank	p	Mean rank	p	Mean rank	p
Educational level								
Secondary	82.61		41.82		78.01		32.75	
Diploma	60.98	**0.040**	56.76	0.296	59.56	**0.013**	53.03	**0.021**
bachelor	84.77		54.89		87.73		57.60	
Employment Status								
Non-employee	69.66	**0.017**	47.89	0.109	66.12	**0.001**	43.11	**0.003**
employee	87.13		57.48		89.78		60.87	
Income								
<8000	75.15		41.47		74.83		30.40	
8000_14000	83.51	0.491	54.13	0.220	82.95	0.651	53.23	**0.002**
>8000	74.69		57.66		76.40		63.83	
Years of marriage								
<5y	118.43	**<.001**	60.36	**0.001**	126.75	**<0.001**	63.75	**<0.001**
>5Y	73.20		38.32		71.89		30.83	
Duration of infertility								
<2y	122.63		61.19		128.25		64.52	
2y-5y	116.68	**<.001**	59.21	**<0.001**	117.42	**<0.001**	57.50	**<0.001**
>5y	69.30		24.03		68.80		23.37	
Contraceptive use								
Yes	84.44	.412	55.41	0.706	86.44	0.251	51.46	0.690
No	77.71		52.85		76.99		54.20	
Social support								
Yes	105.87		54.53		112.95		56.53	
No	73.32	**<.001**	47.27	0.392	71.66	**<0.001**	35.31	**0.012**

Table 4 Multiple linear regression model with Total QoL taken as dependent variable

Independent variables	B	Standard error	Standardized coefficients of regression	T	p-value
(Constant)	121.297	7.896		15.362	.000
Age	-2.105	.190	-.464	-11.065	<.001
Educational level	.759	.843	.032	.900	.369
Employment status	1.705	1.434	.043	1.189	.236
Income	.544	.973	.018	.559	.577
Years of marriage	-5.893	1.901	-.143	-3.100	.002
Contraceptive use	.042	1.282	.001	.033	.974
Type of infertility	13.436	1.600	.334	8.396	<.001
Duration of infertility	-.159	1.351	-.006	-.118	.906
Social support	3.714	1.596	.094	2.327	.021

Table 4 displays multiple linear regression model that taken total QoI as dependent variable. The multiple regression analysis showed an association between total QoL and age, years of marriage, type of infertility and social support.

A linear equation is estimated by multiple regression analysis as follows: Total FertiQoL score =121.297+ (-2.105) Age + (-5.893) years of marriage+(13.436) type of infertility+(3.714) social support. The value of F was calculated as F= 120.9 ($p<0.001$). Secondary infertility and social support had a positive impact while age and marriage years had a negative effect on total QoL scores (Table 4).

4. DISCUSSION

Maternity in any community, particularly Arab and Muslim communities gives a woman a sort of social respectability for couples (Karabulut et al., 2013) while infertility has been perceived as a shameful status and considered a crisis with different psychological consequences, Additionally, it negatively impacts the quality of life of affected women, which consequently impair the delivered care and compliance with infertility treatment(Van Den Akker 2005). Thus identification of the factors influencing quality of life will probably enhance delivery of care and compliance with management. This study examined the quality of life among primary and secondary infertile women in Jeddah city, Saudi Arabia.

In this study, using a reliable and valid FertiQoL tool (Fertility quality of life tool, 2020). Women with secondary infertility achieved better overall QoL score and better scores for emotional, mind/body, relational and social subscales compared to those with primary infertility. In one research carried out by Karabulut et al., (2013) in Turkey, women with secondary infertility expressed better overall QoL in addition to better emotional, mind/body, social and tolerability domains than those with primary infertility. Both Saudi Arabia and Turkey are Muslim countries characterized by a conservative nature of variable degree of the society and predominant pronatalist attitude (believing that couples should have number of children as much as they prefer to). Therefore, this may mean that women with secondary infertility were less stressed as they had previous experience of being pregnant and already having a baby. It may make them respectable in the community and consequently expressed better QoL while those with primary infertility often suffer from social isolation and a lower desire to compliant with treatment.

The results from this study revealed, an association between women`s aging and overall QoL, even after the control of the confounders in multivariate analysis. This is could be explained by the fact that younger woman often had less physical and medical problems, more energy to be engaged in work, and higher self-esteem in comparison with older women. The same has been documented in other studies (Rashidi et al., 2008, Rezaei et al., 2016).

Also in the current study, more educated women with primary infertility scored higher in emotional, mind and body, relational, social domains as well as total FertiQoL than lower educated women while those with secondary infertility scored higher in all domains except for the social domain. Several other studies confirmed the association between higher women`s educational level and better QoL (Namdar et al., 2017; Wang et al., 2013; Hassanin et al., 2010; Chachamovich et al., 2017; Tao et al., 2012).

Both primary and secondary infertile women who got married for more than five years and had more than five years duration of infertility in the present survey expressed low scores in total FertiQoL and its subscales of emotion, mind and body, relationship and social life..

Bakhtiyar et al. (2019) in Iran observed that infertile experienced lower physical, mental, and environmental quality of life after ten years of their first marriage. Also, Rostami et al. (2013) documented that infertile women became less satisfied with her marriage after the first or second decade of marriage. Other studies found an association between duration of marriage and/or infertility and deterioration in the QoL (Karabulut et al., 2013; Ragni et al., 2005; Jahromi et al., 2018). This could be explained by the fact that with longer duration of marriage and/or infertility among infertile women, they lost the hope to get pregnant and also exposed to more pressure from both the family and community which adversely impact their quality of life by comparison, a study by Maroufizadeh et al. (2016) found that QoL is not associated with duration of infertility.

Social support reduces mental stress, which increases the chance of seeking and insisting on treatment (Steuber & High 2015). In our study women with primary infertility who had no social support showed lower scores in all domains. Previous study showed that women who expressed a need for psychological assistance in all fields had lower scores excluding the environment. Similarly other studies noted that emotional support in those with infertility is important in improving QoL (Kahyaoglu et al., 2015; Ried and Alfred 2013).

For the best of our knowledge, this study represents one of very few studies that compared quality of life between women with primary infertility and those with secondary infertility. However, its quality could be further improved if both males and females were investigated. We also thought including more centers would improve the quality since this is a single center data although this center provides good quality of care to the extent that patients attend from all over the Kingdom.

In conclusion, our findings indicate that QoL scores in secondary infertile women were better, though scores were negatively impacted by being older in ager and being married for more than five years. A comprehensive approach, including psychosocial

interventions and assistance, is important in order to enhance the QoL and well-being of these women. Also, we recommended further multi-center study including their men counterparts to have more comprehensive profile of the situation in Jeddah, Saudi Arabia.

5. CONCLUSION

Fertility Quality of Life scores were better for women with secondary infertility, while the scores were negatively affected by being older in ager and being married for more than five years.

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Contribution of Authors

Concept and designs was performed by YB, HA and FE, literature search and data analysis was done by RB, manuscript editing and review was done by BF and YB.

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Conflict of Interest

Authors have no conflict of interests, and the work was not supported or funded by any drug company.

Informed Consent

A consent was taken prior to participants' enrollment.

Ethical Approval

The ethics committee of Research and study Department-Jeddah Health Affairs approved this study (Approval number H-02-J-002). Participants were provided with clear explanation of intent and essence of the research, and an informed written consent has been signed by each participant.

Data and Material Availability

The data are ready to be available once requested by the editors and readers.

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