

Assessment of Quality of Life (QoL) of Infertile Couples in India

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Abstract

Infertility is admittedly a complicated problem leading to psychological, social and environmental consequences worldwide. Even though in ancient India, it was considered as a curse of God dilated to biological problem, now it is widely connected with life style, custom and individual habits. The rate of infertility was too low in 1900 and compared with this base year, it has now increased up to 71%, due to various factors like environment, employment, marital life. There is also, no difference in the causes of infertility between male and female. In many studies in India, Indonesia, Philippines, Turkey and Iran, there is a considerable difference in the quality of life (QoL) of an infertile couple. Infertile females were more educated, but they are equally more passionate, psychologically isolated, blamed and less healthy even showing tendency of suicide than their male counterparts. This study refers to lifestyle of infertile couple undergoing IVF treatment which will be a helpful tool to identify the patient in terms of QoL followed by him or her. Demographic factors related to the seven dimensions of Roy's Adaptation Method of QoL studied using R programming and SPSS. Principle Component Analysis is employed to distinguish the independent factors, and multivariate analytic results are also deployed.

Keywords: Quality of Life, Infertility, Principle Component Analysis

1 Introduction

An infertile couple creates serious biological, economic, psycho-social, ethical and cultural problems that reduce the QoL. Menning mentioned infertility as a developmental crisis that can threaten a couple's future goals, while Shapiro described the impact of infertility as a brutal and unanticipated shock. QoL is slightly declined on realizing

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infertility and again it is further eroded in the due course. Infertility hinders their smooth family life and the treatment often intrudes into their private life.

Women are mostly the victims of infertility as many accusing fingers are often raised against them. According to WHO, in 2010, 48.5 million couples worldwide were unable to have a child. Female infertility is higher than male infertility by a margin of 10%, and 5% of infertility is caused by both. According to 2014 statistics, the male infertility rate is increasing rapidly from 40% to 60% from 1980 due to the employment and change of lifestyle, especially due to the prolonged intake of pesticides and medicines. According to Peter Robert Brisden (Group Medical Director of Bourn-Hall clinic –The World's first IVF clinic) the reason for increased rate of infertility in Kerala was late marriage of women and high alcoholic consumption of men. QoL refers to the degree to which the person is able to function at usual level of activity, with or without minimal compromise of routine activities. QoL assumes particular relevance when clinicians and researchers intend to investigate complex and multidimensional health conditions. The infertile couple may be struggling with negative feeling leading to lack of congruence in their sexual, marital psychological and social living so that their QOL findings are most required for further treatment.

The purpose of the paper is to explore identical and distinct opinions of the couple on seven dimensions of QOL and also to evaluate overall opinions. Uni-variate and Multivariate analysis are adopted to distinguish male and female responses. There is significant difference observed in the couple on most of the dimensions.

2 Method

Data were collected from two infertility clinics of Malappuram district of Kerala, India and a random sample of 100 couples were selected facing the infertility for more than 3 years. The questionnaire consists of 56 questions in seven dimensions suggested by Roy's adaptation method to identify QOL of couple and responses are entered in likert scale from 1 to 5 in a positive scaling. There are questions with reverse opinions suggested for direct interpretation without hesitation or avoiding ambiguity and it is further translated to positive scale for analysis. Students of Nursing from EMSM College is engaged for 50 days to collect the data and the reliability of the data is ensured by Cronbach's Alpha >0.6 for each dimensions and further consistency analysis by split half and CV method.

The dimensions were 1. Psychological Wellbeing –PW .2 Sexual Relation-SR 3. Financial Stability-FS 4. Social and Couple Relation-SCR 5. Physical Efficiency –PE 6. Environmental Support-ES 7. Desire for Child-DC. PW is composed of 14 questions having responses on confidence, depression, anxiety and satisfaction of life. 6 questions were framed on SR concerning sexual practices–mechanical, pleasurable and desirous. FS is comprised of 5 questions on fear of cost of treatment and financial stability. SCR is responded with 14 queries dealing with support of friends and relatives. Also it studies the intimacy between the couple. PE is evaluated with 5 responses on efficiency of health and leniency to bad habits. 5 questions were used to find ES depicting accessibility to treatment and atmosphere of living. DC is in terms of 6 questions representing distress, scope, ultimate state of life etc.

3 Results

3.1 Basic Profile Analysis

Table 3.1.1: Age of couple and their marital age.

Age	Male	Female	Marital Age	Male	Female
Average	32.30	25.69	Average	27.70	21.94
SD	3.86	3.43	SD	2.68	2.83

Average age difference between Male and Female in the couple is 6 years (p value=0.4074>0.05). Also the age of marriage of husband and wife differs by 6 years in the couple (p value=0.3332>0.05).

Table 3.1.2: Duration of childlessness

Duration	3--5	5--7	>7
No. of Couple (%)	50	30	20

50% was suffering infertility for more than 5 years. Average childless years, the couple suffers was 5.5 years and 95% patients were bearing the agony for 2 to 9 years.

Table 3.1.3: Cause detected

Problem found	Male	Female	Both	Not detected
No of Cases (%)	16	16	12	56

More than half of the patients were having unidentified reasons for infertility

3.2 Univariate Analysis

For 6 dimensions (Except DC), the average opinion of male and female of the couple were less than 3 showing that they are mild, less satisfied and inert comparing with median opinion 3. Desire for child is moderate in male while it is more than moderate in female.

Table 3.2.1: Average responses of 7 dimensions by Male and Female.

Dimensions	\bar{X} Male	t-test	P value	\bar{X} Female	t-test	P value
PW	2.2457 (< 3)	-20.2971	2.2e-16	2.5785 (< 3)	-9.7471	2.2e-16
SR	1.7766 (< 3)	-19.5275	2.2e-16	1.8133 (< 3)	-17.6484	2.2e-16
FC	2.552 (< 3)	-5.7811	1.106e-08	2.46 (< 3)	-6.2948	6.89e-10
SCR	2.0385 (< 3)	-25.0293	2.2e-16	1.8442 (< 3)	-30.6426	2.2e-16
PF	1.904 (< 3)	-20.5136	2.2e-16	1.804 (< 3)	-21.0269	2.2e-16
ES	1.624 (< 3)	-29.1554	2.2e-16	1.64 (< 3)	-25.7533	2.2e-16
DC	2.9828 (> 3)	-0.2278	0.41	3.2057 (> 3)	2.4908	0.9934

Table 3.2.2 Difference of responses of 7 dimensions by Male and Female

Dimensions	Difference: M-F	Welch Two Sample t-test	P value
PW	-0.3328	-5.8384	3.288e-09
SR	-0.0367	-0.399	0.345
FC	0.092	0.7958	0.2133
SCR	0.1943	3.609	0.0002
PF	0.1	1.2814	0.1003
ES	-0.016	-0.2259	0.4107
DC	-0.2229	-1.9945	0.02325

PW, SCR and DC are significantly different among male and female.

3.3 Principle Component Analysis -PCA

3.3.1 Psychological Wellbeing –PW

PW is evaluated by 4 factors.- 1) Anxiety and Depression (A), 2) Confidence in life (C) 3) Satisfaction (S) 4) Expectation (E).

Table 3.3.1 Comparison of Psychological Wellbeing in Male and Female couple

PW	Anxiety& Depression	Confidence	Satisfaction	Expectation
Male Average	5.3601	1.9055	2.2312	1.6931
Female Average	4.6973	2.5191	2.6266	1.2533
Male SD	0.9881	0.7669	0.6910	0.9246
Female SD	1.2395	1.0885	0.8798	0.5706
p value	0.0013	0.0003	0.0013	0.0020

All factors of PW are significantly different in Male and Female. Anxiety and Expectation of better life is found more in Male while the present life is much accustomed by Females.

3.3.2 Sexual Relation –SR

SR is deduced by the involvement of Over Anxiety (OA), Responsibility (R), and Physical Satisfaction (PS) in their marital activities.

Taking sex as a Responsibility, the couple reaches agreement with moderate sex for reproduction. (Average 4.99 M, 3.89 F). But there is significant difference in the pairs on Responsibility of Sex. ($Z=4.5484$, $p=2.7 \times 10^{-6} < 0.05$). Over anxiety of pregnancy is a psychological disturbance among the couple engaged in sex. ($Av= 6.004$ $SD=1.02$) showing an elevated response comparing expected level 4.58. This tendency holds similarly in both sexes ($M=5.98, F=5.96$, $p=0.4540 > 0.05$). Overall sex relationship is strained beyond statistical limits and abnormal as $Z=2.0646$ with p value $=0.0389 < 0.05$ between sterile husband and wife. The index of SR is worsened more in Males 3.61 compared to Females 3.29.

3.3.3 Financial Constraints (FC)

Most of the couple fears economic liability to pursue the infertility treatment ($>70\%$).

As per data, 2% is only ready to continue the treatment irrespective of the cost, but 65% were willing to spend with moderate confidence and 2% were unwilling to spend, as it will damage their financial safety. There is no significant difference in the opinion of husband and wife on the cost of treatment expenditure ($p=0.2365 > 0.05$).

3.3.4 Social contact and Couple relationship (SCR)

Couple interaction, External Support, and Infertility complex are the 3 independent components derived using PCA. Wife/Husband interaction is far below (1.96) compared to average expected level (3.77). External support is also not offered or received by many affected couples (3.1 compared to 3.72). The Infertility complex is very high (5.64) among the couple comparing with average 3.08. But there is no significant difference in the opinion on couple relation and infertility complex but external support is more felt by Males.

	Couple Interaction	External Support	Infertility Complex
Mean M	2.0976	4.6042	5.7428
SD M	0.8529	0.9306	0.7177
Mean F	1.8363	4.1252	5.5435
SD F	0.6964	0.9912	0.8736
p value	0.0965	0.0144	0.2157

Average SCR is reasonably maintained by most of the infertile couple (sample average $=3.9916 >$ expected average 3.718 as p value $=2.28 \times 10^{-7}$).

3.3.5. Physical Fitness PF

The fitness of mind and body is evaluated by two components –Physical fitness and Mental strength. Median PF is 3.56 in a scale from 1.18 to 5.92 and for the couple it is only 2.47 indicating that a significant shortage is found (p value= $2E-51 < 0.05$). Also the couple were lacking mental stability as $Z=2.7763$ with p value= $0.0027 < 0.05$ in comparing with median value.

	Male	Female	t	p value
Physical fitness	2.48	2.54	0.1832	0.8555
Mental strength	0.64	0.07	3.736	0.0004

There is no significant difference in the PF of men and women of infertility treatment, but an irreparable difference is seen in the mental strength of wife and husband. Overall PF is slightly sluggish compared to the median ($1.41 < 1.56$ p value= $0.0041 < 0.05$).

PF	0--1	1--2	2--3	3--4	4--5	5--6
Female	7	1	6	15	17	4
Male	2	0	9	18	11	10

The distribution of PF of male and female is entirely different as Kolmogorov Smirnov statistic $D=0.12$ with p value= $.0032 < 0.05$.

3.3.6 Environmental support ES

Physical environment and accessibility to health are the factors in the environment support, and both are not favorable to the couple. There is no significant difference in the opinion on Physical environment and accessibility factors of male and female ($p=0.3654 > 0.05$, $0.4730 > 0.05$).

The opinion of the couple together on Environmental support is varying from very difficult to very pleasant as follows

Environmental Support	Very difficult	Reasonable	Satisfactory	Good	Pleasant
Couple	11	18	16	4	1

68% are feeling moderate Environmental support as reasonable or satisfactory.

3.3.7 Desire for child DC

The desire is creating two factors - despair and impact. The despair feeling is high among the couple comparing to average level, Sample mean = 2.7 and Average =1.93 (p value= $6.34E-12 < 0.05$).

	Male Mean	Male SD	Female Mean	Female SD
Despair	2.7208	1.4007	2.6741	0.7988
Impact	3.6942	0.9988	3.9223	1.4474

No significant difference is found in the desperation or childless impact on Male and Female ($p=0.8382>0.05$ and $0.3611>0.05$). No difference is observed between the couple in the factor of DC as $p=0.1241>0.05$. Thus among seven dimensions of assessing the QoL in terms congruence of opinion of Husband and Wife of infertile couples, Financial Constraints, Environmental Support, and the Desire for Child are identically viewed by the couple. On the contrary Psychological Wellbeing, Sexual Relation, the Couple Relation and support by friends and relatives, and Physical Fitness are taken differently by the couple. And in almost all dimensions there is slack of scoring assessed by the couple comparing with expected average score.

3.4 Multivariate Analysis

3.4.1 Comparison of SR wrt 3 vectors OA, R, PS on Male and Female

Group	Df	Wilks	approx F	num Df	den Df	Pr(>F)
1	1	0.69595	1.7475	3	12	0.2106(>0.05)

Using Manova, there is no significant difference in SR among the male and female.

3.4.2 Effect of Social Status based on PW, FS, SCR, ES.

The couple are grouped into poor, middle class and upper middle class and there is significant difference in the QoL wrt to 4 dimensions $W=0.77726$ approx $F=3.1553$ p value = 0.002241 (<0.05).

3.4.3 Effect of Reason for infertility based on PW, SR, PF, DC

No QoL difference is found in males but it is significant in females. Similarly no difference observed in reasons of both sex and significant difference in non detected patients.

$T^2 = 0.4248$, p -value = 0.7878 (M), $T^2 = 4.1037$, p -value = 0.04253 (F), $T^2 = 1.0815$, p -value = 0.4337 (Both), $T^2 = 5.259$, $T^2 = 5.259$, p -value = 0.001189 (Not detected).

3.4.4 Testing QoL for Specified Median response of 7 dimensions (3.18, 3.36, 3.23, 3.71, 1.56, 1.97, 3.16)

QoL is estimated as the average of seven dimensions and there is significant difference in the opinion of the couple on QoL defined on seven dimensions. Hotellings T^2 for specified mean give $T^2 = 119.2365$, p -value $< 2.2e-16$ (<0.05).

3.4.5 Comparison between Male and Female QoL on 7 Dimensions created using PCA

	PW	SR	FS	SCR	PF	ES	DC
Mean_Male	2.7975	3.6196	3.0143	3.7182	1.5633	1.9768	3.1643
Mean_Female	2.7741	3.3299	3.0831	3.4218	1.2676	1.9980	3.3414

Hotelling's two sample T^2 -test give $T^2 = 3.6389$, p-value = 0.001651(<0.05). There is significant difference in the QoL of Male and Female in the Couple.

3.4.6 Equality of QoL wrt demographic conditions

a. *Three age groups*: From R program with one way manova, Wilks statistics = 0.6805, $F=1.2429$ p value =0.2616>0.05 in Male and $W=0.7766$, $F=0.7891$ p value=0.6779 >0.05 in Females indicating that there is no significant difference in QoL of three age group of patients w r t 7 different dimensions.

b. *Duration of childlessness*: It make differences in the QoL on 7 dimensions among the couples when the duration is prolonged more than 7 years , and for 5 to 7 years couple and no difference in up to 5 year couple. Using Hotellings test, $T^2 = 2.8105$, p-value = 0.01772 (> more than 7 years), $T^2 = 4.7969$, p-value = 0.00879 (5—7 years) and $T^2 = 2.1382$, p-value = 0.07816 (up to 5 years)

c. *Education*: There is no difference of QoL among the less educated couple.(Up to Secondary Schooling) $T^2 = 1.5678$, p-value = 0.1972(>0.05)

d. *Religion*: No QoL changes are felt in Hindus while slight differences were found in Muslims

$T^2 = 1.5208$, p-value = 0.2042(Hindu) & $T^2 = 3.2835$, p-value = 0.005394 (Muslim)

e. *Economic*: Among the poor or remaining groups no QoL difference is found between male and female, $T^2 = 1.2734$, p-value = 0.2911(Poor) & $W=0.9714$, approx $F= 0.6974$, p value =0.5956(other groups)

f. *Treatment*: There is significant difference in the QoL of male and female patients taking Tablets. $T^2 = 3.4319$, p-value = 0.003638 as well as Tablets + HI + ART, $T^2 = 2.9619$, p-value = 0.0240.

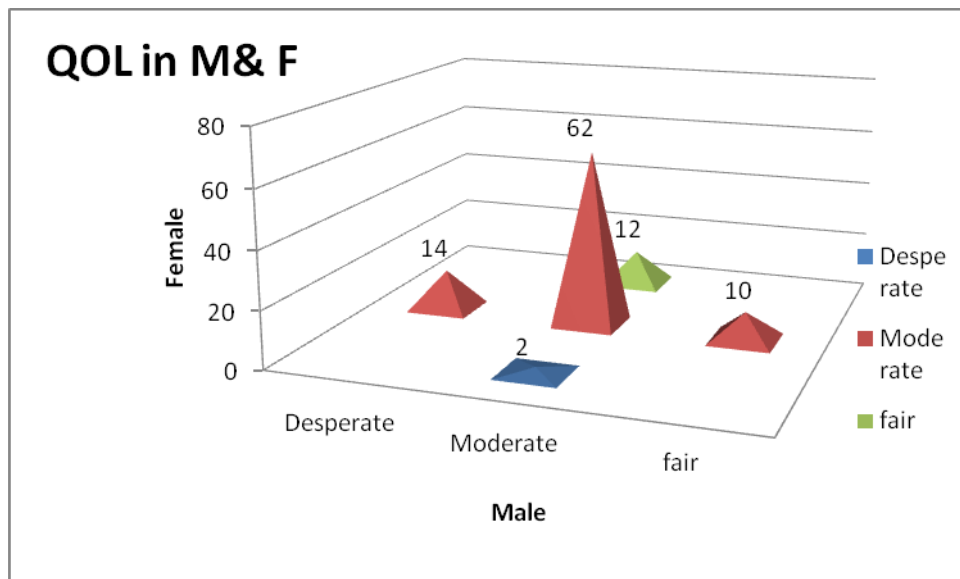


Figure 3.4.1: QOL among 100 Pairs

62% pairs had moderate QoL while 86% female follows moderate QoL. 12% male admit fair QoL with their spouses admit only moderate QoL. 14% female feels Desperate and another 10% with Fair QoL. Only 2% of male survive on Desperate QoL.

4 Conclusion

QoL assessment displays a subdued quality followed by most of the infertile couples. There is a difference in QoL of males and females especially in matters of Psychological Wellbeing, Sexual Relation and Physical Fitness and Social and Couple Relationship. Male want a better life while females are satisfied by the present living. Over anxiety of pregnancy is a psychological disturbance among the couple engaged in sex. Most of the couples fear the economic burden of treatment, rearing children etc. Sterile women are found to be reluctant to disclose their problems to others. Further, it is revealed that there is a considerable difference in the mental strength of wife and husband. No significant difference is however found in the desperation caused by childless impact on Male and Female.

Unlike men, QoL varies in women of different age group. In the initial stages of treatment, both husband and wife keep an identical QoL, but in later stages, when the treatment prolongs, wives settle themselves to the present condition while husbands strive hard to tide over the problem. It is also detected that there is a difference between patients who consume basic medicines and those who undergo advanced and costlier treatment. Majority of couples follow a moderate QoL, and nearly 10 % enjoy a fair life, while 10% of the female and 2% of male have a desperate QoL.

References

- [1] Fleur Heyliger. Realities in child bearing, *Clinical Obstetrics and Gynecology*, **42**(1), (2001),164-168.
- [2] Mariana Moura Ramos et al. Psycho Social Adjustments in Infertility, Vol **11**, (2010) 299-319.
- [3] Rebecca Dillu, Poonam Sheoran, Jyothi Sarin. An exploratory study to assess quality of life of infertile couple at selected infertility clinics in Haryana, *IOSR Journal of Nursing and Health Sciences*, Vol **2**, (3), (2013),45-51.
- [4] Arifuddhin Ahamed et al. Psychological evaluation of the couple attending an infertility clinic in a tertiary care teaching hospital. *International Journal of current research and academic review*, Vol **2** (2), (2014), 133-147.
- [5] Charlotte Warren Gash. Worldwide infertility rate unchanged in 20 years-says WHO, *Bio News*, (2013), 687.
- [6] Nursen Bolsoy, Ayten Taspinar, Oya Kavlak, Ahsen Sirin. Difference in quality of life between infertile women and men in Turkey, *JOGNN*, Vol **39**(2),(2010), 191-198.
- [7] Jothimoni G Nagarajah. Quality of marital life among the wives of alcohol dependents, *Nightingale Nursing Times*, Vol.**6**(8), (2010),30-35.
- [8] Andrews F M, Abbey A, Halman. L.J. Stress from infertility, marriage factors and subjective well being of wives and husbands, *Journal of Health and Social Behaviour*, **32**(3)(1991),238-53.
- [9] Sarwat Sulthan, Azam Tahir. Psychological consequences of infertility, *Hellenic Journal of Psychology*, Vol.**8**, (2011), 229-247.
- [10] Dieime Elaine Pereira de Faria et al. The effect of infertility on spouse's relationship, Vol **46**(4), *Revisita de Escola de Enfermagem da USP*, (2012), 794-801.
- [11] Nahar A, Begum H A, Mannon M A, Azad A K. Role of male factors in infertility, *Journal of Preventive and Social Medicine*, Vol **18**(1), (1999), 16-21.
- [12] Damaris Munos et al. Infertility related stressors in couples initiating In Vitro Fertilisation , *Annuary of Clinical and Health Psychology*, 5,(2009), 95-101.
- [13] Ramya Ramachandran. Assess the Psycho Social problems of infertile couple attending selected infertility clinics in Bangalore, Dissertation submitted at Goutham College of Nursing , Bangalore (2014).
- [14] Rose M.N. *Foundations of Nursing Research* (5th Ed), Pearson Education Publication, USA, (2008).
- [15] Health correspondent, Male and Female infertility keeps on rising, *New Indian Express*, (2014).
- [16] Special Reporter, Infertility rising at an alarming rate in Kerala, *Times of India*, (2012).