Assessment of Quality of Life on Infertile Couple

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**Abstract**

The quality of life (QOL) of 100 couples from a village of Kerala undergoing Infertility treatment is measured using the Psychological, Perceptive and Technical level of assessment. Using Principle of component Analysis, (PCA) and linear estimation, seven factors were identified ranging their physical, mental, social and personal aspirations and detailed analysis is conducted on the concordance and dissenting in the couple. Using correlation analysis the factor relation is also determined. Multivariate analysis is possible to distinguish the average factors on personal or social classification. Tables and graphs were provided to distinguish the factors.

**Key Words**

Infertility, Congruence, Assessment, Quality of Life (QOL), Correlation.

**Introduction**

An infertile couple creates serious biological, economic, psycho-social, ethical and cultural problems and reduce the Quality of life. Menning referred to infertility as a developmental crisis that can threaten a couples future goals, while Shapiro described the impact of infertility as a brutal an unanticipated shock. There is a mental distress, changed life style, isolation , financial burden, and even tendency of suicide among the childless couple.QOL is slightly altered after realising the infertility and again it is eroded in the span of life. Infertility is a curse on their regular life pattern as the treatment became an onlooker in their private life.

Women are the most sufferers of this disease as many complaints were gunned against them knowingly or unknowingly. According to WHO, in 2010, 48.5 million couples worldwide were unable to have a child .In India childlessness is increasing to 70% comparing to 1901in thirty years. Female infertility is only slightly higher than male infertility found due to abnormal sperm count and 5% cases are happened by both male and female. According to 2014 statistics, the male infertility is increasing highly from 40% to 60% from 1980 due to the change of lifestyle especially due to the prolonged use of pesticides.

**Need of the study**

The incidence of infertility among the couple will surely affect the QOL of husband and wife. Finding the factors of QOL is subjective and accuracy depends on its reliability. The various indicators of QOL like physical and mental status, emotional status, social and personal relationship, sexual relationship with the partner, economic conditions of the couple will be affected by problem of infertility. A study in Haryana on 100 couples of selected infertility clinics indicates that QOL is different in the Male and Female in all domains of QOL especially on emotional aspect of QOL. A study from Iran (514 couple) undergone IVF or ICSI treatment shows considerable difference in the health related QOL favouring males and young less educated females are at risk sub optimal QOL. 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 are late marriage of women and high alcoholic consumption of men. In a Turkish study, Environmental domain, differ considerably among the couples and females are having high QOL compared to 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 a particular relevance when clinicians and researchers intend to investigate complex and multidimensional health conditions. QOL assessments include aspects of Health status, psychological Well being, Physical and Social functioning, and environmental and spiritual facets. Since infertility and its treatment have several Psycho- social effects on infertile couples, the health related QOL in this group is crucial .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.

QOL of infertile couple was framed based on Roy’s Adaptation model and the following factors were distinguished.

1.Psychological Wellbeing .2 Sexual Relation 3. Financial stability 4.Social and Couple Relation 5.Physical Efficiency 6.Environmental Support 7. Desire for a Child.

The study is conducted on 100 couples of two infertile clinics of a village in Malappuram district of Kerala, within 2 months based on 56 questions prepared to distinguish the Quality of Life. 5 point likert scale (1,2,3,4,5) is adopted to assess the respondents, and some of the reversible scoring questions were used.3 indicates the moderate response and comparisons and testing averages are based on this response.

**Basic Profile of the couple**

1.Age distribution on of infertile couple

80% of Males of infertility treatment belongs to an age group of 25-34 and 88% of Females belongs to 20-29 . 28% couple had husband age 25-29 with wife age 20-24 and another 32% couple had age combination (30-34, 25-29). There is a high positive correlation between age of husband and wife (r=0.65) . 95% of the treating men had an age between 25 to 39 and respectively women had 20 to 32 years.

About 80% females get married before 24 years and 75% of male between24-29. Confidence range (95%) of marital age of Male is 23-33 and Female is 17-27 years.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Age of Couple | Male | Female | Marital Age of Couple | 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)

In the age of marriage also a difference of 6 years is found between male and female of the couple (p value=0.3332>0.05), which may affect the congruence of thought and feelings of the couple.

2. Duration of married Life

|  |  |  |  |
| --- | --- | --- | --- |
| Duration of Married Life | 2--4 | 4--6 | >6 |
| No. of Couple | 25 | 15 | 10 |

Among the infertile couple the duration of married life is more than 6 years in 20% patients , 30% with 4-6 years and 50% with a minimum duration of childlessness of less than 4 years. Average duration of married life or childless years= 4.6 years with SD =2 years.

There is no correlation between age of marriage and childlessness r=0.03 in M and -0.02 in F

3. Education, Occupation, Economic and Family status

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Education level | Primary | HSC | Degree | PG |
| Male | 20 | 15 | 12 | 3 |
| Female | 9 | 26 | 12 | 3 |

40% male and 20% female are only primary educated. 19 couple has the same education level while 11 male 20 female has more education comparing their spouse with 4 of them having much difference in education level. There is significant difference in the education level of male and female (Chi square =18.0982 p value=0.0004<0.05)

Only 6 couple are doing under the same organisation .64% Male are working in Private companies and 80% women are housewife.

90% infertile under treatment are middle class or lower strata.

40% leads life as Nuclear family.

Disease related information

3 females are exposed to extreme temperature/ chemical reactions in their regular life

Only 1 case hold additional medical problem,

 No cases of blood related marriage, while 4 male and 3 female had some family history of infertility.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem found | Male | Female | Both | Not detected |
| No.of Cases | 8 | 8 | 6 | 28 |

56% couple had not detected any problem for infertility.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Problem | Male | Female | Both | Not detected |
| Treatment | M | F | M | F | M | F | M | F |
| Tablets | 6 | 3 | 8 | 4 | 6 | 1 | 26 | 15 |
| Tab+HI | 1 | 2 |   | 3 |   | 3 | 1 | 7 |
| Tab+HI+ART | 1 | 3 |   | 1 |   | 2 | 1 | 6 |

If the problem was found in husbands, their wife are also undergoing one of the three treatment. If the female or both are having problem, male are advised to take tablets only. In the not detected cases, 50% females take tablets, while 25% each undergoes HI or HI+ART along with Tablets.

**Results of the study**

Psychological Wellbeing (PW)

Psychological Wellbeing is assessed with 14 questions and applying Principal component analysis with varimax solution ,and weighting the components with respective coefficients, 4 new variables are formed to assess the PW. They are 1) Anxiety and Depression, 2) Confidence in life 3) Satisfaction

4) Expectation. Each of these components is constructed using the response of 2 to 6 questions as a linear function and its average is measured as PW

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Anxiety& depression | Confidence | Satisfaction | Expectation |
| .--Q1 | 4 | 38 | 46 | 64 |
| Q1-Q2 | 28 | 35 | 41 | 20 |
| Q2-Q3 | 36 | 17 | 13 | 15 |
| Q3-- | 32 | 10 | 0 | 1 |
| Mean | 5.0287 | 2.2123 | 2.4289 | 1.4732 |
| SD | 1.1639 | 0.9862 | 0.8117 | 0.7957 |
| Z | 6.5788 | 5.6444 | 11.7275 | 10.6288 |
| p Value | 2.3706E-11 | 8.29E-09 | 4.61-32 | 1.09E-26 |

From the Table , 68% were more than Median indicating most couple are affected by anxiety and depression. 73% of couple feel less than median showing that they are lacking confident of their life. Only 13 % is feeling satisfaction in the married life , 84% had only under expectation on a better life. Comparing the sample mean with the expected average , it is found that anxiety and depression is high among the infertile couple and they are not much confident or satisfied in the present living. Their expectation level is far below of the average level.(All p values <0.05)

Comparison of Psychological Wellbeing in Male and Female couple

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | 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 |

Anxiety and depression is high in Male patients .The confidence and satisfaction is more in Female .But better life is presumed by males. Average Psychological Wellbeing of Male and Female are 2.79 and 2.77 with SDs 0.45 & 0.55 so that there is no significant difference among the husband and wife.(p value 0.3962>0.05). Average Psychological Wellbeing of the study group is 2.7858 and it is moderately stable on the couple even though it is lower than general average ( p=1.91E-15<.05 )

2.Sexual Relation

Sexual relation between husband and wife is termed in 3 components as Over anxiety, Responsibility and Physical Satisfaction comprised of 6 questions.

|  |  |  |  |
| --- | --- | --- | --- |
| Sex | Over anxiety | Responsibility | Physical Satisfaction |
| Mean | 6.0046 | 4.4455 | -0.0258 |
| SD | 1.0183 | 1.258413 | 0.7036 |
| Z | 18.9294 | 0.78305 | -23.9460 |
| P value | 3.26055E-80 | 0.216799 | 5.0852E-127 |

Considering Physical satisfaction on sex of the couple, the linear estimate is a negative average score and comparing with expected score of 1.65, it is far behind this level. Incidentally, Males are more unsatisfied comparing the female partner (p =0.0070<0.05)

Taking sex as a Responsibility, the couple reaches agreement with median opinion of moderate sex for reproduction, but here also males are more curious on the responsibility (Average 4.99 M,3.89 F) There is significant difference in opinion between wedded pairs on Responsibility of Sex. (Z=1.1315, p =2.7E-.06<0.05). Over anxiety of pregnancy is a serious psychology among couple engaged in sex (Av= 6.004 SD=1.02) showing high difference from the average level of thought. Among the Male and Female of the couple this tendency holds similarly ( M=5.98,F=5.96) in a maximum response of 6.795. ( p=0.4540>0.05). Thus overall sex relationship is strained a little from the average level in the infertile couple as Z=2.0646 with p value =.0194<0.05 indicating that sex relation is not normal .One can expect a position near 4 in the 5 point likert scale mostly opted by the couple. The level of sexual relation is worsened in Males 3.61 compared to Females 3.29 so that they are significantly different in the sexual attitude (p=0.0194<0.05)

3. Financial Constraints (FC)

FC is computed by single component wrt 5 questions. Most of the couple feel some sort of lack of confidence to pursue the infertility treatment .Taking a hypothesis that the couples belong to a not bad or good economic status for treatment it is rejected illustrating that they are a little feared of economic commitment (P=0.000293<0.05). As per data, highly confident and eager group of couple to spend money for the treatment is none, but 3 are ready for it. 65% are willing to spend with moderate confidence. 33 fears about the expenditure of infertility treatment and 2% are unwilling to spend as it will damage their financial safety.There is no significant difference in the opinion of husband and wife on the economic concern about the treatment expenditure.(p=0.2365>0.05)

4.Social contact and Couple relationship (SC)

Based on 14 questions this wide characteristic is studied converting the objective to 3 components Couple interaction, External Support, Infertility complex. First component is wife/husband interaction which is far below to average expected level (3.77) among the couple. External support is not obtained on average (3.53) in many couples .the Infertility complex is very high (3.84) among the couple (All p values <0.05, comparing with expected mean.)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Social contact & Couple interaction | CoupleInteraction | External support | Infertility complex |  | couple Interaction | External support | Infertility complex |
| Mean | 1.9669 | 3.0998 | 5.6432 | Mean M | 2.0976 | 4.6042 | 5.7428 |
| SD | 0.7857 | 0.9025 | 0.8017 | SD M | 0.8529 | 0.9306 | 0.7177 |
| Z | 22.9973 | 4.8434 | -22.4529 | Mean F | 1.8363 | 4.1252 | 5.5435 |
| pvalue | 2.4E-117 | 6.38E-07 | 5.9E-112 | SD F | 0.6964 | 0.9912 | 0.8736 |
|  |  |  |  | p value | 0.0965 | 0.0144 | 0.2157 |

From the figure the response of female is reasonably lower than males on couple interaction and it is equal only 10% couple with cool response. External support attitude changes in husband and wife in the lower 30% and upper 10% patients. Infertility complex is high in females compared to males except in the upper 20% responses.

Based on average responses Both husband and wife agrees on strained couple interaction and infertility complex faced by them. But they differ in the extended support by family and friends . Male believe more supporting compared to females.

Average social contact and couple relation is reasonably maintained by the infertile couple considering the three factors together. (3.9916>3.718 as p value=2.28-E07)

5. Fitness of Health

The fitness of mind and body is evaluated on two components –Physical fitness and Mental strength to assess the health condition based on 5 questions.

Expected Median physical fitness is 3.56 in a scale varying from 1.18 to 5.92 and for the couple it is 2.47 indicating that a significant shortage is found in this parameter (p value=2E-51<0.05)

But the couple are found to be mentally stable as average score is 0.36 compared to a scale of ( -0.48 to .88) using Z test Z=2.7763 with p value=0.0027<0.05

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 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 |

In the case of Physical ability men and women of infertility treatment are identical (p>0.05) and moderate but in mental ability wifes are too weak(p>0.05 to their husbands. Overall Fitness parameter is slightly sluggish compared to the median .On comparing the averages (1.41<1.56 p value=0.0041<0.05)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Fitness | 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 male and female in the fitness is entirely different as chisquare =17.7890 with p value=.0032<0.05 .At the lower responses there is considerable difference among the male and females.

6.Environmental support

Physical environment and accessibility to health are the factors in the environment support, developed by 5 questions and both are not favourable to the couple. The moderate level expectation is 3.6 and 3.7 scores while it is only 1.9 an 2.1 respectively found among the patients.(p value=1.16E-86<0.05 and 2.05E-78). There is no significant difference in the opinion on Physical environmental 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.

7. Lust for child

The lust is creating despair and impact as two factors for analysis from 7 questions. The despair feeling is high among the couple comparing to median level. Mean 2.7 and Median =1.93( p value=6.34E-12<0.05 ). But the impact of the childlessness is less compared to expected mean level as 3.81 <4.0 with p value=1.04E-06 <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)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Difference | 0 | 0-0.99 | 1.00-1.99 | 2.00-2.99 | 3-3.99 |
| No.of couple | 6 | 20 | 13 | 7 | 4 |

 The difference of despair between the couple is 0—4, and 12% couple share the same level of despairness. And 8% had a wild difference in their feeling.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Difference | 0 | 0-0.99 | 1.00-1.99 | 2.00-2.99 | 3-3.99 |
| No.of couple | 1 | 22 | 18 | 8 | 1 |

 In the case of impact of childless life are identical in only 1 couple. 44% couple had a slight difference of maximum 1 unit out of 4 and 1-2 unit difference is seen in 36% couple. No difference is seen between the couple in the factor of Lust for a child as p=0.1241>0.05

Thus among seven dimensions of assessing the Quality of Life in terms congruence of opinion of Husband and Wife of infertile couples, Psychological Wellbeing, Financial constraints, Environmental Support, and the desire for child are identically viewed by the couple ,on the contrary Sexual perception, the Relation and support by friends and relatives, and Physical fitness are entirely taken differently by the couple.

**Association of personal factors on the dimensions**

Based on the sum of response on set of question of various dimensions there is no association between the categories and the factors of assessment .That is the response does not depend on sex, age of couple, age of marriage, duration of childlessness, type of family, type of social status , education level, type of medical treatment etc.(all the p values>0.05 )

Considering the Domicile conditions and biodata of patients , there are significant differences observed in the following parameters

1.Age vs Sex Relation - p value =0.032<0.05

There is significant difference observed in the average scores of sex relation of the couple in the age group 20—29, with >35 years (p value=0.037<0.05)

2.Marital Age Vs Sex Relation - p value =0.023<0.05. Significant difference in average opinion on sex relation is found between marital age 18— 23 and >30years (p value=0.007<0.05)

 3. Marital Age Vs Environment support - p value =0.047<0.05

The averages values on Environment Support between 18—23 and 24—29 are significantly different

(p value=0.015<0.05)

4. Childless duration Vs Environment support - p value =0.023<0.05

The average environment support is significantly different in different durations ( p values =0.004<0.05 and0.041<0.05)

5. Risk Vs Social and Couple relation- p value =0.000<0.05

Extreme heat, exposure to chemical reaction etc are the risks attached to infertility and there is significant difference in the average score of such exposed wrt the couple and social relation

(p value=0.000<0.05)

6. Social and Economic Status Vs Social and Couple relation- p value =0.002<0.05

The middle class and upper class had a different opinion on Social and Couple relation- (p value =0.001<0.05)

7. Social and Economic Status Vs Financial Constraints - p value =0.038<0.05

The middle class and upper class had a different averages on Social and Couple relation- p value =0.011<0.05

8. Other disease Vs Financial Support p value =0.001<0.05

The member of the infertile couple with other disease has a significant average on their financial apathy compared to others with no such problem. (p value =0.001<0.05)

9. Reason for infertility Vs Environmental Support (p value =0.014<0.05)

The problem of Male on average environmental support is different with all other categories

Male Vs Female (p value =0.012<0.05)

 Male Vs Both ((p value =0.004<0.05)

Male Vs Unidentified (p value =0.007<0.05)

10. Treatment mode Vs Physical Fitness (p value =0.037<0.05)

The patients undergoing all the treatment mode –Tablet+ Hormone injection+ Artificial Reproduction has an average perception on their physical fitness which is entirely different with patient having tablets or both tablets and hormone injection. (p value =0.032<0.05 and =0.012<0.05)

11. Treatment mode Vs Financial Constraints (p value =0.037<0.05)

The patients undergoing all the treatment mode –Tablet+ Hormone injection+ Artificial Reproduction has an average response on their financial conditions which is entirely different with patient having tablets or both tablets and hormone injection. (p value =0.004<0.05 and =0.010<0.05).

12. All other personal data like Education level, Religion, Occupation, Type of Family had no significant difference observed on any of the assessment characteristics like Psychological Wellbeing, Financial Crisis, Environmental support, Couple and social relation, sex relation between the couple, Physical fitness and desire for a child.

Correlation analysis between the factors

|  |
| --- |
| Correlations |
|   | psy well | sex relation | Financial crisis | Social and couple relation | Phy Fit | Env Support | Desire |
| Psychological well being | 1.00 | 0.28 | 0.29 | 0.28 | 0.23 | 0.12 | -0.17 |
|   |   | 0.01 | 0.00 | 0.01 | 0.02 | 0.22 | 0.10 |
| Sex relation | 0.28 | 1.00 | 0.05 | 0.13 | 0.11 | 0.00 | 0.03 |
|   | 0.01 |   | 0.65 | 0.19 | 0.26 | 1.00 | 0.74 |
| Financial crisis | 0.29 | 0.05 | 1.00 | 0.02 | -0.06 | 0.09 | -0.18 |
|   | 0.00 | 0.65 |   | 0.84 | 0.55 | 0.35 | 0.08 |
| Social and couple relation | 0.28 | 0.13 | 0.02 | 1.00 | 0.34 | 0.29 | -0.12 |
|   | 0.01 | 0.19 | 0.84 |   | 0.00 | 0.00 | 0.24 |
| Physical Fitness | 0.23 | 0.11 | -0.06 | 0.34 | 1.00 | 0.38 | -0.12 |
|   | 0.02 | 0.26 | 0.55 | 0.00 |   | 0.00 | 0.22 |
| Environmental Support | 0.12 | 0.00 | 0.09 | 0.29 | 0.38 | 1.00 | -0.08 |
|   | 0.22 | 1.00 | 0.35 | 0.00 | 0.00 |   | 0.40 |
| Desire | -0.17 | 0.03 | -0.18 | -0.12 | -0.12 | -0.08 | 1.00 |
|   | 0.10 | 0.74 | 0.08 | 0.24 | 0.22 | 0.40 |   |

Psychological Wellbeing does not have any effect on Environmental Support or Desire for a child. Sex relation has some positive influence on Psychological Wellbeing. Desire for the child is not correlated with any of the other parameters.

Thus Quality of Life is depending on various factors and they are different for male and female at micro levels of divisions of factors or at factor level itself.

Overall QOL is on standardised values of factors reveals that there is no extreme cases of happy or unhappy couples .10% were fairly good QOL and another 10 % has fairly bad QOL. But 80% is having moderate QOL (Chi Square =0.5125 p value= 0.7739>0/05) in the childless couples in villages of Kerala.

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