

Assessment of Quality of Life of an Infertile Woman

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Abstract:

Background: In this study, we wanted to assess the quality of life (QoL) in terms of emotional, mind-body, relational and social subscales in women with infertility using the FertiQoL instrument, to determine the association between socio-demographic determinants and QoL scores based on FertiQoL instrument in women with infertility. **Methods:** This hospital-based, single-center cross-sectional study included 209 female patients who visited the department of gynaecology at Sree Balaji Medical College and Hospital over the course of two years, from September 2019 to September 2021, with fertility issues. **Results:** This study was conducted among 209 women patients who presented with fertility problems to the Department of Gynaecology at Sree Balaji Medical College and Hospital. The association between socioeconomic status and total Core FertiQoL scores, religion, and total Core FertiQoL scores, residence, and total Core FertiQoL scores, and type of family and total Core FertiQoL scores, was found to be statistically significant. In correlation analysis, the age group was negatively correlated ($r = -0.164$) with total mean scores of Core FertiQoL and was found to be statistically significant and whereas in infertility duration it was negatively correlated ($r = -0.256$) with total mean scores of Core FertiQoL that was found to be statistically significant. **Conclusion:** Women with fertility issues were found to have lower QoL determined by using FertiQoL. Infertile women screened at the infertility clinic should be evaluated for psychological well-being and they might be counselled based on their health status. Coping strategies may be helpful to maintain better QoL.

Keywords: Quality of Life, Infertile Women

Background:

Infertility is unable to conceive after twelve months or more of unprotected sexual activity in either the male or female reproductive system. Primary infertility is when a person has never been pregnant, but secondary infertility is when an individual had at least one previous pregnancy. Infertility in males is most commonly caused by sperm ejection problems, sperm absence or low quantities, or sperm structure and motility defects. A multitude of issues with the ovaries, uterus, fallopian tubes, and endocrine system can cause infertility in women.^[1] Based on WHO estimates, female factors were the aetiology in 37% of infertility; male and female factors were found in thirty-five percent of couples; and male factor infertility was found in 8% of couples. Ovulatory abnormalities accounted for 25% of all cases. Endometriosis accounted for 15% of all cases, 12 percent of women had pelvic adhesions and tubal

occlusion accounted for 11% of all cases. Other tubal/uterine anomalies accounted for 11% of all cases. Hyperprolactinemia accounted for 7% of the population.^[2] Infertility rates can approach 30% in several parts of the world, including South Asia, Sub-Saharan Africa, the Middle East and North Africa, Central and Eastern Europe, and Central Asia.^[2] The overall frequency of primary infertility in India ranges from 3.9 to 16.8%. Infertility rates vary by state, ranging from 3.7 percent in Uttar Pradesh, Himachal Pradesh, and Maharashtra to 5% in Andhra Pradesh and 15% in Kashmir.^[3] Couples who are unable to conceive may experience psychological distress and have a lower health-related quality of life (QoL).^[4] Infertile patients and patients who are receiving infertility treatment may notice a reduction in their QoL.^[5] In the view of the culture and value systems in which they live and their lives, a person's QoL is defined as their perception of their place in life in relation to their objectives, perceptions, values, and concerns, as

well as their health and wellbeing, psychological functioning, relative independence, social relations, personal beliefs, and relationship to salient features of the environment.^[6]In a systematic review, Hubens et al. found that infertility/ subfertility causes lower QoL among health and well - in one or more categories.^[7]QoL of a patient has been reported to be impacted by infertility and fertility therapies, with impairments in psychological well-being, sexual satisfaction, and marital partnership. Furthermore, the stigmatising nature of infertility prevents patients from discussing their condition, resulting in a lack of social support. In addition, failure treatment cycles increase patients' anxiety and sadness levels, as well as a woman's risk of suicide. All of these psychological variables linked to infertility may affect patients' decisions to stop therapy too soon, lowering their chances of becoming pregnant. Psychological therapies are necessary for infertile patients to improve their mental health, reduce drop-out rates, and maybe raise pregnancy rates.^[8]Infertility and a negative attitude about it cause a higher degree of stress for females, which can lead to problems including family instability, domestic abuse, shame, deprivation, and separation. The QoL associated with infertility (QoL) of infertile couples is currently regarded as an important tool for assessing infertility. Due to the multiple negative medical, psychological, and social implications of infertility, examining QoL components in these couples may lead to the identification of various criteria of lifestyle in this population and assist them in planning better management.^[9]It is estimated that one out of every eight couples (or 12% of married women) has difficulty in conceiving or maintaining a pregnancy. Despite the high occurrence of infertility, the majority of infertile women do not tell their tale to family or friends, making them more vulnerable psychologically. Shame, guilt, and low self-esteem can result from a lack of natural reproduction. These unpleasant emotions can lead to despair, worry, distress, and a poor quality of life to varied degrees among women.^[10]QoL is measured on a variety of scales and could be checked using either general or morbidity-specific assessments. FertiQoL has been established to be a valid, reliable, and highly sensitive disease-specific tool of QoL among individuals with fertility issues, having good psychometric qualities, to begin with. It assesses the influence of fertility issues on

varying aspects of life, including emotions, health and well-being, cognitive skills, daily living performance, partnership, and social and familial interactions.

Aims and Objectives:

- To assess the quality of life (QoL) in terms of emotional, mind-body, relational and social subscales in women with infertility using FertiQoL instrument at Shree Balaji Medical College and Hospital.
- To determine the association between socio-demographic determinants and QoL scores based on FertiQoL instrument in women with infertility at Shree Balaji Medical College and Hospital.

Methods:

This was a hospital-based single-centred cross-sectional study conducted among 209 women patients who presented with fertility problems to the Department of Gynaecology at Sree Balaji Medical College and Hospital, for 2 years from September 2019 to September 2021 after obtaining clearance from the institutional ethics committee and written informed consent from the study participants.

Inclusion Criteria:

- All infertile women of reproductive age irrespective of the cause of infertility.
- Infertile women with a comorbid illness like Diabetes, Hypertension, Dyslipidemia and Hypothyroidism
- Those who were interested to participate in this study.

Exclusion Criteria:

- Infertile women with psychiatric morbidities.
- Participants who refused to give consent for this study.

Statistical Methods:

Statistical Package for Social Sciences (SPSS) version 23 was used to predict the data, which was

developed in Microsoft Excel 2013. The mean, standard deviation, and percentages were used to represent continuous and categorical variables, respectively. The independent T-test for continuous variables and the chi-square test for proportions were used to investigate the link between socio-

demographic characteristics and quality of life. Regression analysis was used to examine the impact of independent risk factors on FertiQoL scores. With a 95 percent CI, the significant p-value was less than 0.05.

Results:

Variable	Emotional Mean± SD	Mind-body Mean±SD	Relational Mean±SD	Social Mean±SD	Total Core Mean± SD
Upper middle/ Middle	54.75 ± 10.561	54.67±10.176	72.31±8.753	65.11±6.185	246. 84± 27. 476
Lower middle	42.00±0.410	46.00±0.762	58.00±0.502	54.00±0.156	200. 00± 0.925
P value	0.002	0.026	0.001	0.001	0.001
Association between Socioeconomic status and Core FertiQoL mean scores					
Variable	Emotional Mean ±SD	Mind-body Mean ± SD	Relational Mean ± SD	Social Mean ± SD	Total Core Mean ± SD
Hindus	53.73 ±10.823	54.88±10.529	71.77±9.619	64.27±6.672	244. 65± 29. 823
Others	58.30±8.375	50.96±5 .867	72.26±1.13	67.89±2.47	249. 41± 13. 962
P value	0.417	0.037	0.060	0.792	0.006
Association between Religion and Core FertiQoL mean scores					
Table 1					

The association between socioeconomic status and total Core FertiQoL scores was found to be significant statistically. Upper middle/middle socioeconomic status participants had better significant QoL scores in the emotional domain, mind–body, relational domain, social domain, and total Core FertiQoL mean scores. The association between religion and total Core FertiQoL scores was found to be significant statistically. Hindus had better significant QoL scores in mind–body FertiQoL mean scores.

Variable	Emotional Mean ±SD	Mind-body Mean ± SD	Relational Mean ± SD	Social Mean ± SD	Total Core Mean ± SD
Urban	55.65 ±10.443	55.00±10.535	71.69±9.617	64.65±6.829	247. 12± 29. 924

Rural	45.33±7.000	50.19±5.144	72.78±0.847	65.30±1.683	233.59±3.285
P value	0.001	0.021	0.559	0.628	0.021
Association between Residence and Core FertiQoL mean scores					
Variable	Emotional Mean ±SD	Mind-body Mean ± SD	Relational Mean ± SD	Social Mean ± SD	Total Core Mean ± SD
Nuclear	53.91 ±11.285	53.08±9.506	71.85±9.615	64.35±6.675	243.18±29.764
Joint	57±3.672	62.75±10.168	71.75±2.319	67.25±3.329	258.75±6.808
P value	0.152	0.001	0.958	0.025	0.006
Association between Type of family and Core FertiQoL mean scores					
Table 2					

The association between residence and total Core FertiQoL scores was found to be significant statistically. Participants residing in urban areas had better QoL scores in the emotional domain, mind – body and total Core FertiQoL mean scores.

The association between the type of family and total Core FertiQoL scores was found to be significant statistically. Participants from the joint family had better QoL scores in mind–body, social domain and total Core FertiQoL mean scores.

Variable	Emotional Mean ± SD	Mind-body Mean ±SD	Relational Mean ± SD	Social Mean ± SD	Total Core Mean ± SD
Yes	71.00 ±7.264	69±13.49	80.5±2.594	78±4.151	298.5±22.312
No	53.12±9.807	53.33±9.01	71.21±8.959	63.78±5.402	241.45±24.62
P value	0.001	0.001	0.001	0.001	0.001
Association between Family history of infertility and Core FertiQoL mean scores					
Variable	Emotional Mean ± SD	Mind-body Mean ± SD	Relational Mean ± SD	Social Mean ± SD	Total Core Mean ± SD
Yes	52.32±9.079	53.88±9.514	71.91±9.402	63.56±5.104	241.68±23.721
No	60.86±12.647	56±11.869	71.57±7.539	68.57±8.468	257 ±37.723
P value	0.001	0.201	0.817	0.001	0.001
Association between treatment status and Core FertiQoL mean scores					
Variable	Emotional Mean	Mind-body	Relational Mean	Social	Total Core Mean ±

	\pm SD	Mean \pm SD	\pm SD	Mean \pm SD	SD
Less than 5 years	55.58 \pm 11.571	53.97 \pm 9.886	73.78 \pm 8.991	65.78 \pm 6.507	249.12 \pm 28.864
\geq 5 years	50.88 \pm 6.410	55.50 \pm 10.762	66.50 \pm 6.5	61.88 \pm 5.156	234.75 \pm 23.925
P value	0.004	0.334	0.001	0.001	0.001
Association between duration of infertility and Core FertiQoL mean scores					
Table 3					

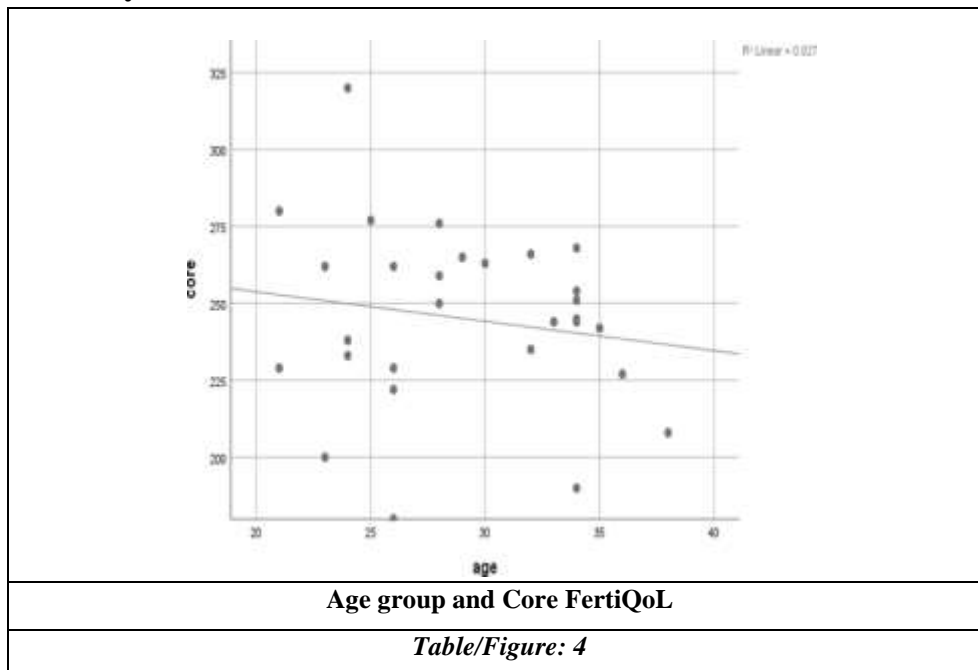
The association between a family history of infertility and total Core FertiQoL scores was found to be significant statistically. Participants with a family history of infertility had better QoL scores in the emotional domain, mind-body, relational domain, social domain and total Core FertiQoL mean scores.

The association between treatment taken for infertility and total Core FertiQoL scores was

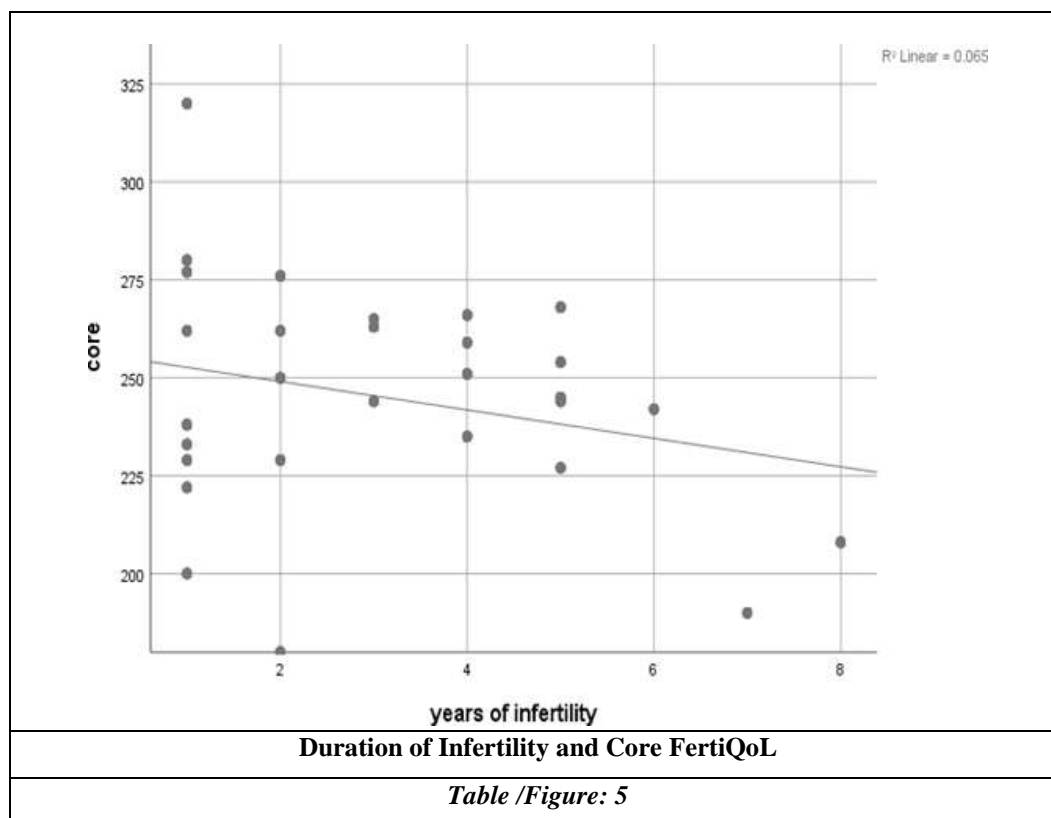
found to be significant statistically. Participants in the early stage who did not undergo treatment had better QoL scores in the emotional domain, social domain and total Core FertiQoL mean scores.

The association between the duration of infertility and total Core FertiQoL scores was found to be significant statistically. Infertile women with less than five years of duration had better QoL scores in the emotional domain, relational domain, social domain and total Core FertiQoL mean scores

Correlation analysis:



The age group was negatively correlated ($r = -0.164$) with total mean scores of Core FertiQoL and it was statistically significant ($p = 0.081$). The domains of Core FertiQoL like emotional ($r = -0.228$, $p=0.001$), relational ($r = -0.161$, $p=0.020$) and social domain ($r = -0.258$, $p=0.001$), also had a significant negative correlation with age group.



Infertility duration was negatively correlated ($r = -0.256$) with total mean scores of Core FertiQoL and it was significant statistically ($p = 0.001$). The domains of Core FertiQoL like emotional ($r = -0.283$, $p=0.001$), relational ($r = -0.289$, $p=0.001$) and social domain ($r = -0.382$, $p=0.001$), also had a significant negative correlation with duration of infertility.

Discussion:

Quality of life

Our research reported the total QoL mean score using the FertiQoL instrument as 346.85 ± 50.36 ranging from 222 – 410. The mean scores of QoL were lower among infertile women.

Wu et al^[11] measured QoL using the FertiQoL instrument among eighty-one infertile women with endometriosis who were having IVF therapy. The total FertiQoL score was 62.3 ± 11 as it was lower due to sample size as our study included 209 participants.

Sut H K P et al^[12] study declared that the overall score for the total FertiQoL was 66.0 ± 14.5 which was similar to our study results. Namdar et al conducted a study in Iran with 146 infertile women

and reported the mean total score of the QoL questionnaire as 61.8 ± 2.9 . The score was lower in this study, as this study utilized the SF QoL questionnaire for evaluating QoL. But the QoL mean scores based on this study instrument were lower that was similar to our study results. Using the SF 36 QoL instrument, Amiri et al^[13] found that the total mean score of QoL among 511 infertile women in Iran was 61.42 ± 16.09 . This result revealed lower scores among infertile women as compared with our results.

The Core FertiQoL mean score was 245.27 ± 28.3 ranging from 180 – 320. The mean score of the emotional domain was 54.32 ± 10.63 ranging from 36 – 78, mind–body domain was 54.38 ± 10.125 ranging from 38 – 82, relational domain was 71.83 ± 8.984 ranging from 54 – 92 and the social domain was 64.74 ± 6.402 ranging from 52 – 82. The emotional and mind-body domains were found to be lower scores compared with other domains. Overall, the Quality of life mean scores were lower among infertile women.

Hsu P et al^[14] study analyzed that the overall scores for the Core FertiQoL were 55.12 ± 13.72 which were lower compared with our study which could be due to psychosocial adaptation of Indian women. This study also found that the domains like

emotional, mind body, relational, and social mean scores were 54.81 ± 19.4 , 51.58 ± 24.29 , and 54.8 ± 11.1 and 59.32 ± 11.05 respectively. This result was similar to our study results except for the relational domain.

Sut H K P et al study found that the domains like emotional, mind body, relational and social mean scores were 53.9 ± 20.3 , 65.4 ± 22.5 , 76.0 ± 16.9 and 69.4 ± 21.3 respectively. This study's results were similar to our study results. Dural et al study^[5] among Turkish infertile women using the FertiQoL instrument, mind – the body mean score was 63.04 ± 23.71 , relational was 76.38 ± 17.16 , social was 67.81 ± 20.55 and the emotional mean score was 53.60 ± 21.27 . This study's results were found to be nearly similar to our study results.

In a study conducted in Turkey, Karabulut et al^[15] found that the domains like emotional, mind-body, relational and social of Core FertiQoL scores were 57.21 ± 23.11 , 68.41 ± 22.72 , 77.33 ± 17.99 and 68.55 ± 19.37 respectively among primary infertility women. The domains like emotional, mind-body, relational and social of Core FertiQoL scores were 64.75 ± 20.42 , 76.43 ± 17.09 , 78.75 ± 15.34 and 76.77 ± 15.59 respectively among secondary infertility women. This study revealed that relational domain had a high score compared with other domains in both primary and secondary infertility. As our study included both primary and secondary infertility, this study's results were comparable to our study results.

Priangga et al^[16] study found that the domains like emotional, mind-body, relational and social mean scores were 63.79 ± 18.86 , 66.05 ± 18.22 , 75.19 ± 15.11 and 68.99 ± 18.63 respectively. This study also revealed that relational domain had a high score compared with other domains similar to our study results. The 137 patients in the Ni Y et al^[17] study in China among infertile women with RIF patients found that the mean score of the emotional domain was 56.17 ± 17.05 , mind–body domain was 54.29 ± 17.96 , the relational domain was 63.96 ± 12.53 and the social domain was 64.78 ± 18.13 which was similar to our study results.

Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument among 300 infertile women and found that the mean score of total FertiQoL was 28.2 ± 8.5 and the subscales like emotional, mind-body, relational and social domain

mean scores were 27.9 ± 9.7 , 31.3 ± 13.8 , 27.4 ± 11.4 and 17.6 ± 13.5 respectively. The scores were lower compared with our study results, which might be due to socio-cultural factors and psychological disturbances which play a major role in better quality of life.

Lasuh et al^[18] study done at Vellore, Tamil Nadu reported that the total mean score of Core FertiQoL was 66 ± 16 and the subscales like emotional, mind-body, relational and social domain mean scores were 64 ± 24 , 57 ± 21 , 76 ± 18 and 65 ± 22 respectively which showed similar results.

Namdar et al.^[4] conducted a study in Iran with 146 infertile women, in which the spiritual dimension of QoL was reported with a high mean score compared with physical, psychological, economic, emotional, sexual and social dimensions as similar to our study as emotional and social dimensions had lower scores.

PCOS patients with fertility issues had significantly lower QoL scores (SF 36 scale) than women with other aetiology of infertility, based on the Barcelona study by Naumova et al. This study's results were also similar to our study as the majority of infertile women in our study were diagnosed with PCOS. PCOS patients with infertility had lower QoL scores. In a study of Taiwanese infertile women, Xiaoli et al^[19] found worse QoL scores using WHO QoL – 100 scale which was similar to our study results.

Total treatment FertiQoL (n = 160) mean score was 126.925 ± 10.917 ranging from 107 – 147. The environment domain mean score was 63.22 ± 5.852 ranging from 54 – 72 and tolerability mean score was 63.71 ± 5.801 ranging from 53 – 75.

Wu et al measured QoL using the FertiQoL instrument among eighty-one infertile women with endometriosis who were having IVF therapy. The total treatment FertiQoL score of 61.9 ± 10.8 was similar to our study results. In Hsu P et al study, the overall score for treatment FertiQoL was 56.40 ± 10.96 . Treatment domains like environment, tolerability and total treatment mean scores reported in infertile women were 54.63 ± 9.19 , 59.04 ± 18.99 and 56.4 ± 10.96 respectively. This study reported lower scores compared with our study results that might be due to the sample size in the Hsu P et al study (534) and better treatment

facilities.

In Sut H K P et al study, the overall score for the Treatment FertiQoL was 65.40 ± 14.96 , treatment domains like environment, and tolerability reported in infertile women were 63.3 ± 14.7 and 68.6 ± 22.3 respectively. Similar results were observed in our study. In a study conducted in Turkey, Karabulut et al found that treatment domains like environment and tolerability reported in primary infertile women were 64.01 ± 15.72 and 65.97 ± 21.23 respectively. Treatment domains like environment and tolerability were reported in secondary infertile women as 63.18 ± 14.89 and 74.48 ± 18.4 respectively. The tolerability domain among secondary infertile women was higher compared to our study results due to population characteristics of secondary infertile women, as they had one past pregnancy. They might have a coping strategy to lead better QoL.

Priangga et al study of Indonesian women found that treatment domains like environment, and tolerability were reported in infertile women as 75.64 ± 16.55 and 66.23 ± 19.17 respectively. The environment domain score was higher in this study that could be due to better healthcare facilities and management.

The 137 patients in the Ni Y et al study in China among infertile women with RIF patients found that the therapy module had a score of 61.99 ± 10.65 . The environment module subscales like the environment mean score were 66.88 ± 11.72 and the tolerability domain mean score was 54.65 ± 15.51 which was similar to our study results. Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument and found that the mean score of the environment domain in treatment FertiQoL was 38.8 ± 11.4 and the tolerability domain was 24.9 ± 15.1 which shows that lower scores might be due to the management of infertility among women and socio-cultural characteristics of Mumbai women hindering them to get access towards health care.

Most studies proved lower mean scores of QoL in infertile women. The relational domain reported higher scores compared with other domains of Core FertiQoL.

Moderators of quality of life among

infertile women:

Shrestha et al study at Kathmandu showed that there was no statistically significant relationship between socio-demographic characteristics and QoL using SF 36 survey in primary & secondary infertility.

Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument among 300 infertile women and found the link between QoL and age ($p=0.766$) was not statistically significant. A study done at Vellore, Tamil Nadu among primary infertile women reported that the association between QoL scores and socio-demographic variable age group ($p = 0.760$) was found to be not significant. (Lasuh et al, 2020). These studies were similar to our study results as there was no association between age and total Core FertiQoL scores.

Namdar et al^[4] study in Iran with 146 infertile women found that the age of infertile women did not correlate with any aspect of QoL which was in contrast to our study that might be due to population characteristics.

Among the Turkish population, Karabulut et al found that the couples' relationships were more strongly affected when they were less than 30 years old (Relational domain; $p = 0.004$) which was similar to our study.

Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument among 300 infertile women and found the relationship between Quality of Life and educational status ($p=1.000$) that was not statistically significant. A study done at Vellore, Tamil Nadu among primary infertile women reported that the association between QoL scores and socio-demographic variables like education ($p=0.173$), was found to be not significant. (Lasuh et al, 2020). These studies were contradictory to our study results and it might be due to sample size.

Namdar et al study in Iran found that educated women ($P = 0.015$) had better QoL. In a study done in Turkey, Karabulut et al found that the level of education and 2 ° infertility had a beneficial influence on total QoL ratings. Desai et al. evaluated Core FertiQoL scores in infertile women in a study conducted in Hyderabad that better

emotional and relational scores were connected with university education (graduate and post-graduation) on subscale analysis which was similar to our study results. A study done at Vellore, Tamil Nadu among primary infertile women reported that the Core FertiQoL mean scores were higher among employed infertile women compared with housewives and the association was found to be statistically significant which was nearly similar to our study results. (Lasuh et al, 2020).

Namdar et al conducted a study in Iran and found that the participants with greater earnings had better QoL which was similar to our study results. In an Iranian study of 511 infertile women, Amiri et al found that high-income individuals had significantly higher QoL mean ratings and other sociodemographic factors were not linked to QoL ratings of the SF 36 QoL scale. A study done at Vellore, Tamil Nadu among primary infertile women reported that the association between QoL scores and sociodemographic variables like income (0.085) was found to be not significant which was in contrast to our study results. (Lasuh et al, 2020)

Namdar et al study in Iran with 146 infertile women to assess different aspects of QoL, found that the participants residing in rural regions had the worst QoL similar to our results. A study done at Vellore, Tamil Nadu among primary infertile women reported that the association between QoL scores and sociodemographic variables like residence ($p=0.585$) was found to be not significant. (Lasuh et al, 2020)

Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument among 300 infertile women and found the relationship between Quality of Life and comorbidities ($p=0.847$) as not statistically significant as similar to our results.

In an Iranian study of infertile women, Alamiet al^[20] reported that, a statistically significant association between quality of life and infertility treatment history ($P=0.011$). Shrestha et al study^[21] at Kathmandu showed that there was a statistically significant link in the infertility duration and QoL of primary and secondary infertility with a kid. In an Iranian study of infertile women, Alami et al declared that a statistical association was discovered between the quality of life and infertility treatment history ($P=0.011$).(61). Karabulut et al study found that the

total QoL score and long-term infertility were correlated to lower ratings in the mind/body, social, and tolerability categories ($p=0.05$). These studies were similar to our study results as the duration of infertility had an impact on QoL.

Banerjee et al study in Mumbai evaluated the QoL using the FertiQoL instrument among 300 infertile women and found that the relationship between Quality of Life and infertile duration ($p=0.085$) was not statistically significant. A study done at Vellore, Tamil Nadu among primary infertile women reported that the association between QoL scores and other sociodemographic variables and duration of infertility was found to be not significant which was in contrast to our study results that might be due to sample size and sampling methods.

Conclusion:

This study revealed that the women with fertility issues had lower QoL using a disease-specific instrument named FertiQoL. The domains reported lower scores among Core FertiQoL mean scores. Socio-demographic determinants like socioeconomic status, residence, family history of infertility, treatment is taken for infertility and duration of infertility had a significant association with Core FertiQoL. Age group and duration of infertility had a negative correlation with Core FertiQoL. Duration of infertility (more than five years) had a significant negative impact on the emotional, relational and social domains of Core FertiQoL. The treatment mean scores were also lower among infertile women. So, it was concluded that there were lower mean scores in QoL among females with fertility issues. The infertile women screened at the infertility clinic should be evaluated for psychological well-being and they might be counselled based on their health status. Coping strategies may be helpful to maintain better QoL.

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