RESEARCH

Psychiatric morbidity and quality of life in infertile females: a cross-sectional, case-controlled hospital-based study

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Abstract

Background: Infertility is a huge global problem with a significant mental health burden. Infertility could become a source of continuous stress leading to psychosocial issues including stress, anxiety, depression, and low self-esteem in these women. A cross-sectional, case-controlled study was conducted between January 2021 and November 2021 to study the effect of infertility on mental health and quality of life. A semi-structured questionnaire was used for sociodemographic and clinical variables. The Oslo Social Support Scale-3 and FertiQol were used to study social support and quality of life respectively. Psychiatric morbidity was assessed using ICD-10 symptom checklist. A total of 56 cases and 102 controls were studied.

Results: The mean age of cases and controls was 30.4 ± 3.5 years and 31.9 ± 2.9 years, respectively. Young infertile females, primary infertility, and female factor for infertility were associated with higher psychiatric morbidity. Psychiatric morbidity was seen in 46.4% of infertile women. FertiQoL score for the infertile group was 64.61 ± 5 with the lowest score in the emotional domain (45.10) and mind-body domain (54.86) ($p < 0.0001$). The scores in the relational domain and social domain were higher (85.2 and 73.3, respectively). The scores in the mind-body domain and emotional domain were poor among the infertile women regardless of the presence of psychiatric morbidity (48.27 vs 59.80 and 43.57 vs 46.57) ($p < 0.0001$–0.04).

Conclusions: Our study emphasizes the role of more qualitative instruments like FertiQoL in studying the well-being of infertile women. Even in the absence of psychiatric morbidity, the QoL score could still predict mental well-being in fertility-related issues.

Keywords: FertiQoL, Social support, Infertility, Mental health, Kashmir

Background

Procreation is an essential human desire, and hence, infertility causes a great deal of psychosocial distress [1]. Infertility can affect both men and women and is defined by WHO as the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse [2, 3]. Infertility is further categorized into primary and secondary. Primary infertility is defined as the nonachievement of the first pregnancy. In contrast, secondary infertility is defined as the inability to achieve a subsequent pregnancy irrespective of the previous pregnancy outcome [4].

The prevalence of infertility has been increasing alarmingly with more than 48 million couples and 186 million individuals worldwide [5]. Sufficient evidence indicates that infertility is a major cause of stress among women and more so among women with primary infertility [6]. Infertility is a source of intense painful emotional

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experience leading to psychosocial issues including stress, anxiety, depression, and low self-esteem in these women [7, 8]. All these factors result in poor mental and social well-being of these women, and the same reflects in poor quality of life among these females [9].

In India, the overall prevalence of infertility lies in between 3.9 and 16.8% [10]. Most studies by Indian researchers have focused on the psychiatric diagnoses that occur during infertility treatment. The reported morbidity has been between 30 and 60% [11–13]. Mental health issues in conjunction with quality of life among infertile women have not been thoroughly addressed in Third-World countries. If at all, this distress has been measured in the form of quantitative variables like morbidity, but qualitative reflectors like the quality of life are less studied [10, 12, 14, 15].

We planned this study in Government Medical College, Anantnag, which has been functioning as the only tertiary care center in South Kashmir since 2019. It caters to a population of 2.67 million approximately spread over five districts and two regions of Jammu and Kashmir. This study aimed to assess the impact of infertility on mental health and quality of life in females.

Methods

A semi-structured questionnaire with standardized, validated scales was used to obtain the sociodemographic and clinical characteristics, social support, the presence of psychiatric morbidity, and quality of life. Patients who fulfilled the definition of infertility and consented to participate were selected from the outpatient infertility clinic of a teaching hospital (Government Medical College, Anantnag) and labelled as cases. The operational definition of infertility was failure to achieve a clinical pregnancy after 12 months of regular and unprotected sexual intercourse [2]. Patients with a history of previous psychiatric illness, mental retardation, history of chronic medical illness or surgical illnesses with a protracted course, receiving treatment for active medical illness, or receiving contraceptive medications were excluded. Fertile females with at least one living child in the reproductive age group (18–45 years) visiting the hospital for minor obstetric/gynecological ailments and sociodemographic characteristics similar to that of the cases were selected from the gynecological outpatient department of the same hospital and labelled as controls. Patients who had delivered in the past 6 weeks, underwent a major surgery, survived an obstetric/gynecological/surgical/medical complication in the recent past were excluded from the control group. The study was time-bound and conducted over 11 months (January 2021 to November 2021). The purpose of the study was explained, and informed consent was obtained from the respondents.

Responses were obtained using a face-to-face interview after the questionnaire was explained in lay language. Responses were recorded by resident doctors who were well versed in questionnaire administration and interview techniques.

Sociodemographic and clinical information which included age, duration of infertility/marriage, educational level, occupation, domicile, socioeconomic status (modified Kuppuswamy scale), type of infertility, cause of infertility, and modality of treatment sought were recorded.

Social support was evaluated using the Oslo Social Support Scale-3. It is a brief and validated instrument to assess the level of social support and comprises a set of three questions. Responses were derived both from sum total and item-by-item rating [16].

The presence of psychiatric diagnosis was done using the ICD-10 symptom checklist for mental disorders, version 1.1. This symptom checklist is based on the 10th revision of the International Classification of Diseases, a medical classification list by the World Health Organization, and is a highly validated, widely accepted, and uniform instrument to assess the presence of psychiatric morbidity [17].

Quality of life was assessed using FertiQoL, an internationally validated and standardized instrument for women experiencing fertility problems. FertiQol is a more sensitive, reliable, and valid measure of quality of life in infertile women than general measures of quality of life such as WHOQOL-BREF and SF-36 [18]. It measures the effect of infertility problems in different areas such as self-esteem, emotions, general health, partnership, family and social relationships, work-life, and future life plans. The personal QoL dimension includes two domains, a six-item emotional domain and a six-item mind-body domain. The interpersonal QoL dimension includes a six-item relational domain and a six-item social domain. Only the four core domains of FertiQoL were studied. The maximum possible scaled score obtainable is 100 representing the highest QoL, and a value of 75 is taken as the benchmark normal value [19, 20].

The data was compiled in an Excel master sheet, and SPSS version 19 was used to analyze it. The chi-square test was used to evaluate the differences between dependent categorical variables in the population. The Student's *t*-test was used when two independent groups were compared, and the *t*-test was extended to ANOVA when more than two groups were compared. A *P*-value of less than 0.05 was taken as statistically significant.

Complete privacy and confidentiality were ensured during the process of study. Ethical approval was taken from the Ethics Committee of Government Medical College Anantnag. All procedures followed during the study were the Helsinki Declaration of 1964 as revised in 2013.

Results

Sociodemographic variables

Of the 206 women sampled, 56 meeting the definition of infertility were taken as cases, and 102 fertile women with matched sociodemographic profile were included as controls. The mean age of cases was 30.4 ± 3.5 years, and that of controls was 31.9 ± 2.9 years. The majority of these women belonged to the age group 25–35 years. Majority of women were married for less than 8 years [$n = 37$ (cases); $n = 78$ (controls)]. More than half (65%; 33 cases and 70 controls) of the study population was either illiterate or educated up to the primary level. The majority of cases and controls were homemakers (75% and 78%, respectively). Most of the study population was rural [$n = 37$ (cases); $n = 65$ (controls)]. The distribution of both cases and controls was comparable across various socioeconomic classes (Table 1).

Twenty-two patients in the case group were seeking drug therapy, while 14 had underwent diagnostic and therapeutic procedures. Thirty-seven infertile women sought help from faith healers. Only two infertile patients did not seek any remedy. The total figures are more than 56 as many of them had sought more than one type of treatment. The majority of cases ($n = 47$) as well as controls ($n = 82$) had good or strong social support.

Psychiatric morbidity

Psychiatric morbidity was seen in 46.4% of the infertile women ($n = 26$). The most prevalent morbidity was panic disorder ($n = 8$), followed by depression ($n = 5$) and somatization ($n = 4$). Only 15.6% ($n = 16$) of fertile women fulfilled the criteria for a psychiatric illness with an almost equal distribution among different diagnoses. One participant in each fertile and infertile group reported suicidality. Among the cases, higher psychiatric morbidity was present in the age group of 25–35 years (53.9%), and a similar pattern was seen in controls. Psychiatric morbidity was significantly higher in the cases across all age groups ($p = 0.005$–0.05). We also observed that psychiatric morbidity was significantly higher in the earlier years of marriage as compared to the later years (69.2% & 56.2% vs 30.7% & 43.8%; $p < 0.0001$).

Psychiatric morbidity was more prevalent both in cases and controls in illiterate or lower educational groups (primary and secondary school level). There was a statistically significant difference in the psychiatric morbidity between cases and controls in the illiterate group ($p < 0.0001$). Homemakers suffered psychiatric morbidity more often than working women both in the cases and controls (84.6% and 75%, respectively). Infertile homemakers demonstrated a significantly higher psychiatric morbidity when compared with fertile homemakers (p

< 0.0001). Rural infertile population had a significantly higher psychiatric morbidity (80.7%; $p < 0.0001$).

Psychiatric morbidity was higher in the upper-lower, lower-middle, and upper-middle socioeconomic classes, both in case and control groups (80.7% and 93.7%, respectively). This difference in the psychiatric morbidity between cases and controls was statistically significant ($p = 0.01$–0.05). Women with secondary infertility demonstrated lower psychiatric morbidity as compared to women with primary infertility (92.3% vs 7.7%). Coexistent or independent male factor for infertility was associated with a lower mental health burden.

Social support and quality of life

Total and individual domain scores were significantly better in controls compared to cases (p 0.04–0.0001). The total score on FertiQOL for the infertile group was 64.61 ± 4.7 with the least score in the emotional domain (45.10) and mind-body domain (54.86) with $p < 0.0001$. The scores in the relational and social domains were significantly higher (85.2 and 73.3, respectively). Regardless of the presence of psychiatric morbidity, the scores in the mind-body domain and emotional domain were poor among the infertile group (48.27 vs 59.80 and 43.57 vs 46.57) with $p < 0.0001$. Similarly, the scores in the social and relational domains were better irrespective of the psychiatric diagnosis (73.10 vs 73.49 and 78.60 vs 88.63, respectively). These results were statistically significant ($p < 0.0001$–0.04) (Table 2).

Comparatively, women in the fertile group reported a higher total FertiQOL score of 82 ± 4.8. Among fertile women, the scores for different domains of FertiQOL were above the benchmark of 75 ($p < 0.0001$). The presence of psychiatric morbidity did not decrease the QoL scores below the benchmark of 75 in the fertile group. Women with good or strong social support were affected less commonly with psychiatric illness when compared with women who lacked social support ($p = 0.001$–0.006) (Table 2).

Discussion

Globally, infertility has been on a rise for a long time, affecting approximately 8–12% of couples [5, 21]. In addition to social stigmatization, marital disharmony, and economic consequences, infertility has been associated with a high prevalence of mental health issues. All these factors eventually are reflected as poor quality of life in the affected women [22–24].

Sociodemographic factors have been seen to affect the mental health of infertile women significantly [25]. Younger infertile women were found to seek medical help more often, and psychiatric morbidity affected a larger proportion of this group. As has been seen, women

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Table 1 Comparison between infertile group and fertile group as regard sociodemographic and clinical variables (denominators indicate the respective proportions)

Variable		Infertile group/cases		Fertile group/controls		Chi-square	*p*-Value
		Total case $n = 56$ (%)	Cases with psychiatric illness $n = 26$ (%)	Total controls $n = 102$ (%)	Controls with psychiatric illness $n = 16$ (%)		
Age in years	18–25	7/56 (12.5)	2/26 (7.7)	14/102 (13.7)	2/16 (12.5)	0.61	> 0.05
	25–35	28/56 (50.0)	14/26 (53.9)	56/102 (54.9)	9/16 (56.2)	0.20	0.005
	35–45	21/56 (37.5)	10/26 (38.4)	32/102 (31.4)	5/16 (31.2)	6.39	0.01
Duration of marriage (infertility) in years	< 8	37/56 (66.0)	18/26 (69.2)	78/102 (76.4)	9/16 (56.2)	23.22	< 0.0001
	> 8	19/56 (34.0)	8/26 (30.7)	24/102 (23.6)	7/16 (43.8)	0.25	0.61
Educational level	Illiterate	20/56 (35.7)	11/26 (42.3)	42/102 (41.1)	6/16 (37.5)	11.29	< 0.0001
	Primary	13/56 (23.2)	4/26 (15.3)	28/102 (27.4)	5/16 (31.2)	0.86	0.35
	Secondary	11/56 (19.6)	5/26 (19.3)	20/102 (19.6)	4/16 (25.0)	2.23	0.13
	Graduate and higher	12/56 (21.4)	6/26 (23.1)	12/102 (11.7)	1/16 (6.3)	5.04	0.02
Occupation	Housewife	42/56 (75.0)	22/26 (84.6)	80/102 (78.4)	12/16 (75.0)	19.14	< 0.0001
	Employed	14/56 (25.0)	4/26 (15.4)	22/102 (21.6)	4/16 (25.0)	0.53	0.46
Domicile	Rural	37/56 (67.0)	21/26 (80.7)	65/102 (63.7)	11/16 (68.7)	17.38	< 0.0001
	Urban/semiurban	19/56 (34.0)	5/26 (19.3)	37/102 (36.3)	5/16 (31.2)	1.40	0.23
Socioeconomic status (modified Kuppuswamy scale)	Upper	5/56 (8.9)	3/26 (11.5)	4/102 (3.9)	0	2.75	0.09
	Upper Middle	15/56 (26.7)	7/26 (27.0)	23/102 (22.5)	4/16 (25.0)	3.78	0.05
	Lower Middle	20/56 (35.7)	9/26 (34.6)	43/102 (42.1)	7/16 (43.8)	5.94	0.01
	Upper Lower	12/56 (21.4)	5/26 (19.3)	28/102 (27.4)	4/16 (25.0)	3.61	0.05
	Lower	4/56 (7.1)	2/26 (7.7)	4/102 (3.9)	1/16 (6.3)	0.53	0.46
Type of infertility	Primary	49/56 (87.5)	24/26 (92.3)	-	-	-	-
	Secondary	7/56 (12.5)	2/26 (7.7)	-	-	-	-
Cause of infertility	Female factor	33/56 (58.9)	18/26 (69.2)	-	-	-	-
	Male factor	8/56 (14.2)	2/26 (7.7)	-	-	-	-
	Both male and female	15/56 (26.7)	6/26 (23.0)	-	-	-	-
Type of infertility treatment	Faith healer	37/56 (66.0)	18/26 (69.2)	-	-	-	-
	Drug therapy	22/56 (39.2)	10/26 (38.4)	-	-	-	-
	IVF surgery	14/56 (25.0)	4/26 (15.3)	-	-	-	-
	No treatment sought	2/56 (3.5)	0	-	-	-	-
Oslo social support scale score	Minimal	9/56 (16.0)	6/9 (66.7)	20/102 (19.6)	2/10 (10.0)	9.97	0.001
	Good/fair	27/56 (48.2)	13/27 (48.1)	53/102 (51.9)	10/53 (18.7)	7.48	0.006
	Strong	20/56 (35.7)	7/20 (35.0)	29 /102 (28.4)	4/29 (13.7)	3.05	0.08
Psychiatric diagnosis	Depression	6/56 (10.7)	-	2/102 (1.96)	-		-
	Mania		-	2/102 (1.96)	-		-
	Panic disorder	8/56 (14.2)	-	4/102 (3.9)	-		-
	Obsessive-compulsive disorder	2/56 (3.5)	-	2/102 (1.96)	-		-
	GAD/other anxiety disorders	4/56 (7.1)	-	3/102 (2.9)	-		-
	Somatization	5/56 (8.9)	-	2/102 (1.96)	-		-
	Suicidality	1/56 (1.7)	-	1/102 (0.09)	-		-
	No psychiatric diagnosis	30/56 (53.5)	-	86/102 (84.3)	-	10.82	0.004

early in their married/infertile life tend to seek frequent consultations and try multiple treatment options which has strongly been associated with increased stress and subsequent development of mental health issues [26]. Older women presented to the infertility clinic less often, as they could have exhausted options in medical

Table 2 Relationship between FertiQoL scale and infertility

Variable		Mind-body domain		Emotional domain		Social domain		Relational domain		Total FertiQoL	
		Score	SD	Score	SD	Score	SD	Score	SD	Score	SD
Infertile group/cases	**Psychiatric morbidity present (*n*= 26)**	48.27	4.1	43.57	5.4	73.10	3.2	78.60	4.7	**52.6**	**4.2**
	Psychiatric morbidity absent (*n*= 30)	59.80	3.0	46.57	4.2	73.49	2.8	88.63	3.7	**66.5**	**3.4**
	Total (*n*= 56)	54.86	3.2	45.10	4.1	73.3	3.5	85.2	5.2	**64.6**	**4.7**
Fertile group/controls	**Psychiatric morbidity present (*n*= 16)**	77.98	4.6	75.21	2.6	75.10	5.6	86.72	5.7	**79.4**	**4.4**
	Psychiatric morbidity absent (*n*= 86)	92.02	2.8	80.20	4.9	79.41	3.2	86.10	4.8	**84.8**	**3.8**
	Total (*n*= 102)	84.17	4.7	79.10	3.8	78.44	4.5	86.32	5.0	**82.0**	**4.8**
	T-stat	14.61		12.34		3.86		0.62		7.75	
	P-value	< 0.0001		< 0.0001		< 0.0001		0.04		< 0.0001	

treatment, accepted childlessness as God's wish, and sought other means of completing a family like adoption [27]. This positive effect of age indicates that with maturity, women develop resilience and are better equipped to tackle the infertility experience [28, 29].

The prevalence of primary and secondary infertility varies in different regions of the world with a reported higher prevalence of primary infertility in the developing world. Being part of the developing world, a higher representation of primary infertility cases was expected in our study population [30]. Similar trend has also been seen elsewhere in developing world [31].

Researchers have found that significantly more patients with primary infertility have psychopathology than patients with other forms of infertility and healthy controls [32]. We also observed a higher prevalence of psychiatric morbidity in women with primary infertility. As observed in the present study, the coexistent or independent male factor for infertility has been seen to help females share the burden of infertility equally with males and lesser morbidity development [33]. As in other areas of the developing region, a multipronged approach with a strong reliance on faith healers was expected [34]. Khayata et al. who investigated the treatment seeking in infertile couples also observed the multimodal approach of infertile women while help seeking [35].

Forty-six percent of the infertile women had psychiatric morbidity, which was comparable to other studies from India reporting morbidity of 30 to 60% [10–15]. Although we did not study the longitudinal development or causation of psychiatric morbidity among the study participants, the percentage is well above the baseline mental health issues in this region [36]. So presumably the presence of mental health issues could be due to the effects of infertility-related direct and indirect stress [33]. Since perceived support has been shown to mitigate the effect of psychological distress, and it is an important tool to deal with the stress related to infertility, fair/strong social support in most cases could explain the nondevelopment of mental health problems in half of the cases [37–39].

Furthermore, our study population had controls matched with respect to most of the sociodemographic variables, social support, and quality of life could be reliably evaluated to understand the effect of infertility on mental well-being. Quality of life in our patients was assessed by FertilityQoL, which is an instrument specific to assess the living condition in case of fertility-related issues [20, 40]. The overall QoL scores were significantly lower in the infertile group compared to the control group. Previous studies from India and other countries have shown similar results with significantly lower values of total FertiQoL scores in infertile women [14, 15, 41].

Among both cases and controls, the QoL scores seemed to be unaffected by the presence of psychiatric morbidity. Further infertility seemed to be an independent variable affecting QoL scores regardless of associated psychiatric morbidity. However, Sule observed that quality-of-life scores in couples with infertility were affected by the presence of psychiatric morbidity. The respective total QoL score in Sule's and our study was 55.8 and 69.8 vs 52.5 and 66.5 with and without psychiatric morbidity. In either of these studies, the QoL scores in infertile women were well below benchmark (75) regardless of morbidity. Furthermore, Sule did not compare it with control group, which would have checked the effect of infertility [11].

Emotional and mind-body domains consistently and significantly scored lower even in the absence of psychiatric morbidity which suggests that infertility could be an independent variable that affects these domains of QoL. This finding was in agreement with many studies conducted worldwide including the original developmental study of FertiQoL by Boivin et al. [19, 42, 43] Desai et al. while studying the Indian population also observed that

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the emotional domain is the worst affected by infertility-related issues [14]. However, Singh et al. in Patna city observed a lower social domain score in infertile women from a predominant urban sample [44].

Our case group scored better in the social and relational domains as compared to the mind-body and emotional domains. This might be because infertile women usually receive more care and social support leading to a better sense of social well-being. As has been observed that good social support helps to mediate stress and maintain social and interpersonal areas of the human psyche [45], a significant role is also played by the intact societal and family fabric present in this part of the world [46]. Since social and relation domains are directly related to the presence of social support and good interpersonal relationships, these scores remained consistently in the normal range even if some of these females had mental health morbidity.

Conclusions

Our study emphasizes the role of more qualitative instruments like FertiQoL in studying the well-being of infertile women. Even in the absence of psychiatric morbidity, the QoL score could still predict mental well-being in fertility-related issues. Many of these females, although well-maintained in social and interpersonal relations, may suffer in emotional and psychological aspects of health. Infertile females score lower in QoL even without the development of obvious psychiatric morbidity. Rather than looking for psychiatric morbidity, focusing on overall well-being with instruments like FertiQoL could be a better reflection of mental well-being. It also reflects the unmet mental health needs of this section.

Shortcomings of the study

The sample size was modest which restricted the statistical power to conclude. The sample taken during a year could be confounded by the environmental and financial factors prevailing during that year. The cross-sectional design of our study did not enable us to understand whether the psychiatric morbidity truly was a result of the experience of infertility. The direct comparison of low QoL versus morbidity as a consequence of infertility was not studied. Further research is required, including a diverse sample and longitudinal design to establish the temporal association with greater certainty vis-a-vis change in QoL score.

Abbreviations

OPD: Outpatient department; ICD-10: International Classification of Diseases-10; SPSS: Statistical Package for Social Sciences; ANOVA: Analysis of variance; WHOQOL-BREF: World Health Organization Quality-of-Life-BREF; SF-36: 36-Item Short-Form Health Survey.

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