

Comparative Study of Levels of Anxiety, Depression and Quality of Life Between Fertile vs Infertile Women Attending a Tertiary Care Center

Ananda Reddy Endreddy*, Lakshmi Rajesh Chennareddy, Gautham Chowdary, Princy Sushmitha, & Bonthu Joelraju

Department of Psychiatry, Narayana Medical College, Nellore, Andhra Pradesh, India

*Corresponding author: Ananda Reddy Endreddy, Department of Psychiatry, Narayana Medical College, Nellore, Andhra Pradesh, India

Submitted: 17 April 2024 Accepted: 24 April 2024 Published: 30 April 2024

doi <https://doi.org/10.63620/MKJPNR.2024.1032>

Citation: Endreddy, A. R., Chennareddy, L. R., Chowdary, G., Sushmitha, P., & Joelraju, B. (2024). Comparative Study of Levels of Anxiety, Depression and Quality of Life between Fertile vs Infertile Women Attending a Tertiary Care Center. *J of Psych and Neuroche Res* 2(2), 01-05.

Abstract

Objective: The connection between psychological elements (stress, anxiety, and depression) and infertility is complex, influenced by multiple factors, and bidirectional. Infertile women are more likely to develop mental illnesses, marital dissatisfaction, and impaired quality of life compared to the individuals of the fertile group. Thus, the present study aimed to assess levels of anxiety, depression, and quality of life among infertile women compared to fertile women.

Methods: This case-control study conducted at a tertiary care center recruited 100 nulliparous women. The control group (N=100) comprised normal parous women who had at least one child. Outcome measures included standardized tools such as the WHOQOL-BREF questionnaire to assess the quality of life across multiple domains as well as the Depression Anxiety and Stress Scale (DASS-21) to measure levels of anxiety, depression, and stress.

Results: Baseline socio demographic parameters were comparable between the two groups. The mean age of infertile women was 30.6 ± 3.9 years compared to 31.5 ± 3.2 years in fertile women ($P=0.076$). Using the WHOQOLBREF scale, we found that the quality of life was better in the fertile group compared to the infertile group through all the domains ($P<0.001$). The infertile group had a significantly higher number of women with anxiety ($n=63$), depression ($n=67$), and stress (29) respectively.

Conclusion: Infertile women experienced a lower quality of life in various domains, higher levels of anxiety, and increased rates of depression compared to fertile counterparts.

Keywords: Stress, Quality of Life, Mental Health, Infertility, Depression, Anxiety

Introduction

Pregnancy, and bringing a new life into the world, is regarded as a valued role for women all over the world [1]. As a result, women who are struggling to conceive frequently experience feelings of depression, anxiety, isolation, and loss of control [2]. In addition to the feeling of unfulfillment that these women often experience, they are also exposed to domestic violence and other forms of emotional trauma, especially in patriarchal societies [3]. Infertility is described as the inability to conceive after a year of consistent, unprotected sexual activity. The World Health Organization (WHO) identifies infertility as a major healthcare

and social problem that leads to mental health issues like depression and anxiety, marital conflict, social isolation, and sexual dysfunction [4]. Compared to their male counterparts, women who are infertile appear to be more sensitive to stress. Couples who are struggling with infertility experience a heavy psychological load that negatively affects their quality of life [5].

Literature suggests that infertility and its association among females differs in diverse population groups, depending upon the demographic, economic, and social structure of the population under study [6]. Several studies have explored the quality of

life in infertile women, predominantly employing descriptive approaches and relying on cross-sectional methodologies [7]. However, these studies have been limited by their lack of a comparison group, hindering the comprehensive analysis of the influence of infertility on various facets of life. This study was conducted to assess the quality of life and physical and mental health of women being treated for infertility.

Methods

Study Overview and Participants

This case-control study was conducted from January 2024 to march 2024 at Narayana medical college hospital, a tertiary care hospital in south India. A detailed history was taken followed by clinical examination, including relevant anthropometric measurements, gynecological examination, systemic examination, and examination for secondary sexual characteristics. The participants were asked to complete a questionnaire that comprised of tools for assessing the level of anxiety, depression, and the overall quality of life. All the questions were translated into telugu (local language) to avoid any misunderstanding because of the language barrier and explained properly to each participant.

Ethical Considerations

The Institutional Ethics Committee of Narayana Medical College approved the study protocol (protocol number = NMC/IEC/23/163 and date of acceptance December 12,2023), requiring to obtain signed informed consent from the study patients.

Study Criteria

After obtaining ethical clearance, women between 20 and 38 years of age willing to sign the informed written consent were recruited. Women with known psychiatric illness or diagnosed mental health issues or an episode of anxiety or stress in the past three months and women with current use of alcohol or drugs were excluded. Cases comprised 100 nulliparous women attending the outpatient department of the hospital seeking treatment for primary or secondary infertility, while couples with male factor infertility were excluded. Controls were 100 normal parous women who had at least one child older than one year. Pregnant women and women less than four months from the last childbirth were excluded as controls. Infertility was defined as not being able to achieve pregnancy after one year of having regular, unprotected intercourse.

Study Instruments

Assessments We used various tools to assess these parameters and the quality of life of infertile women, namely, the WHO Quality of Life (WHOQOL-BREF) and Depression Anxiety and Stress Scale (DASS-21). WHOQOL-BREF was used to assess the quality of life. It comprises 26 questions divided into four domains: physical, psychological, social, and environmental. The scores were transformed on a 0-100 scale [8]. Permission to use the WHOQOL instruments was obtained. DASS-21 is a set of 21 questions with seven items per scale and was used to measure the negative emotional states of anxiety, stress, and depression [9].

Sample Size

Convenience sampling (time-bound study) was used to obtain the sample size.

Data Collection Procedures:

Subjects were selected based on inclusion and exclusion criteria. Informed consent was obtained, and sociodemographic and clinical details were recorded using the pro forma designed for the study. Subjects received an assessment of MMSE and ACE for the severity of mild and major neurocognitive disorders. CSDD was used to assess depression, and WHO-QoL-BREF was used to assess the QoL among patients.

Statistical Analysis

Continuous normally distributed variables were compared using independent t-tests, while continuously distributed nonparametric variables were compared using the Mann-Whitney U test. Comparing categorical variables was done using the chi-square test. Cronbach's alpha was used to measure the tool's reliability. In this study, we used Microsoft Excel and Statistical Package for the Social Sciences software version 25 for Windows (SPSS Inc., Chicago, Illinois, USA) to compute all study variables. The differences between groups were considered significant if p-values were lesser than 0.05.

Results

A total of 200 women were recruited with 100 infertile women and 100 normal controls. The women in both groups were comparable in terms of education, occupation, family structure, socioeconomic status, and other baseline characteristics, as shown in Table 1.

Mean age was comparable between cases and controls (30.6 ± 3.9 versus 31.5 ± 3.2 years; $P=0.076$). Menstrual irregularity was higher in fertile women compared to infertile women ($P=0.015$). Most patients in the present study had primary infertility (74%), while the rest were nulliparous females with secondary infertility.

The factors affecting fertility among infertile women were also identified. Tubal factors were the most common (45%), followed by polycystic ovary syndrome (PCOS) (18%), grade IV endometriosis (7%), uterine fibroids (4%), and endocrine factors (4%), while 22% cases had unexplained infertility. The quality of life and status of anxiety and depression were assessed using questionnaires, and fertile women fared better in terms of quality of life and mental status compared to the infertile women, as shown in Table 2. Infertile women scored lower in all the domains of WHOQOL-BREF, including physical, psychological, social, and environmental. The assessment tools demonstrated high internal reliability, enhancing confidence in the observed differences between infertile and fertile women. Based on the DASS-21 scale, approximately 29% of the infertile women were found to be stressed, and there was a high prevalence of anxiety (63%) and depression (67%). The psychological parameters assessed (e.g., stress, anxiety, and depression) were found to be significantly higher in infertile women compared to the fertile group.

Table 1: Depicting the results of Baseline characteristics of both groups of the study population

Baseline characteristics,	Infertile group (N=100) n (%)	Fertile group (N=100), n (%)
Age (years) (mean ± SD)	30.6 ± 3.9	31.5 ± 3.2
Education status		

Primary education	65 (65)	54 (54)
Secondary education	26 (26)	46 (46)
Higher education	9 (9)	0 (0)
Socioeconomic status		
Upper middle	20 (20)	27 (27)
Lower middle	30 (30)	30 (30)
Upper lower	32(32)	24(24)
Lower	18 (18)	19 (19)
Menstrual cycles		
Regular	83 (83)	69 (69)
Irregular	17 (17)	31 (31)
Abortion history		
No abortions	74 (74)	79 (79)
One abortion	22 (22)	11 (11)
Two abortions	3 (3)	7 (7)
Three abortions	1 (1)	3 (3)
Contraception		
Yes	2 (2)	45 (45)
No	98 (98)	55 (55)

Table 2: Comparison of quality of life and mental health status between the groups DASS-21: Depression Anxiety and Stress Scale. Transformed World Health Organization Quality of Life Brief Version (WHOQOL-BREF) domain scores are shown ranging from 0 to 100 and are scaled in a positive direction (a higher score denotes a higher quality of life)

Scales	Reliability (Cronbach's alpha)	Infertile women (N=100)	Fertile women (N=100)	P value
WHOQOL-BREF (mean ± SD)				
Physical domain	0.95	56.5 ± 6.4	77.7 ± 7.2	<0.001
Psychological domain		54.2 ± 6.5	80.4 ± 6.1	<0.001
Social domain		57.2 ± 10.1	74.7 ± 10.3	<0.001
Environment domain		57.7 ± 7.6	76.3 ± 6.4	<0.001
DASS-21 stress scale				
Stress	0.76	29 (29)	4 (4)	0.001
Normal		71(71)	96(96)	
DASS-21 anxiety level				
Anxiety	0.65	63 (63)	20 (20)	<0.01
Normal		37(37)	80(80)	
DASS-21 depression level				
Depression	0.50	67 (67)	2 (2)	0.01
Normal		33(33)	98(98)	

Discussion

The WHO estimates that 60-80 million couples in the world are infertile. It is not only a gynecological problem but also a bio-psychosocial health problem that causes social distress, marital conflict, sexual dissatisfaction, and psychological issues like depression, anxiety, and social isolation [10]. There are higher levels of anxiety and depression among women compared to men during infertility treatment [4]. Infertility is a multidimensional problem, which lowers the quality of life and affects the psychological, environmental, physical, and social functioning of an individual [11]. It has detrimental psychosocial and cultur-

al repercussions and causes, anxiety, social exclusion, deprivation, instability in marriages, loss of self-esteem, loss of gender identity, loss of control, and feelings of shame and self-blame [12]. The present study evaluated the impact of infertility on the mental health of women at a tertiary health care center in south India, and showed that infertile women have a diminished quality of life across multiple dimensions. Several aspects of quality of life, including physical, mental, social, and environmental wellbeing, were found to be lower among infertile women compared to their fertile counterparts. This study aligns with previous research demonstrating this cause-and-effect relationship

[13].

The mean age of infertile women in our study was 30.6 years and that of fertile women was 31.52 years, and both groups were comparable. This agreed with the observations made by Dyer et al. and Bakhtiyar et al. in their studies, where there was no significant difference in the mean age of fertile and infertile women presenting in the outpatient department (OPD) [7,13]. In contrast, Aduloju et al. observed a significantly higher mean age of fertile women compared to that of infertile women in their study [14]. This difference in observation could be because infertile women presented relatively earlier to their OPD than fertile women.

Based on the WHOQOL-BREF, we observed that infertility affects the physical and psychological health of women, disturbs their social relationships and environment, and, consequently, lowers the quality of life of these women. Bakhtiyar et al. observed that while infertile women experience a relatively low quality of life in physical, mental, and environmental health subscales than fertile women, they attained higher scores in the social domain. The reason behind this could be that infertile women in Iran receive increased social support, stemming from various factors such as personal connections or familial ties [7]. Aduloju et al. reported worse quality of life, in the mean scores of physical, psychological, and environmental functions in the infertile group [14].

We found that based on the DASS-21 scale, infertile women were more depressed compared to the fertile controls, with the difference being statistically significant. This was consistent with the results of studies by Lakatos et al. and Lund et al. [15,16]. Lakatos et al. found that 44.8% of moderate to severe depression in cases with infertility, while a high level of anxiety was reported in around 40% of cases. Hasan et al. evaluated the mental health status of Bangladeshi women undergoing fertility treatment and reported a high prevalence of depression, anxiety, and stress (59.7%, 55.0%, and 48.7%, respectively) [17]. Shahraki et al. found that women with primary infertility suffered more from depression than those with secondary infertility [18]. Social factors have the potential to impact infertility, and it is reasonable to anticipate that the occurrence of mental health disorders among individuals facing infertility may differ across various cultures. Various studies globally have explored the relationship between infertility and anxiety. For example, anxiety symptoms were observed in 52-83.8% of infertile women in China, 33% in Hong Kong, 86.6% in Iran, 67% in Spain, and 24.9% in the Netherlands, Belgium, and France [1].

Xiaoli et al. in their cross-sectional study evaluating the quality of life in infertile women found that, when compared to fertile women, infertile women had significantly lower overall and comprehensive quality of life ratings and greater anxiety levels [19]. This was consistent with the present study as we found higher stress and anxiety in the infertile group.

The strength of our study lies in the fact that two different tools with good reliability were used to assess the levels of stress, depression, anxiety, and quality of life.

Study Limitations

One of the limitations of the study was that it was a hospital-based study and may limit the generalizability of the findings to the wider community. It is anticipated that women visiting the clinic may receive social support from their spouses. Cultural beliefs regarding the importance of childbearing within marital relationships may vary, potentially impacting quality of life. However, this aspect was not explored in the present study.

A community-based approach might uncover distinct findings regarding the quality of life among infertile women who choose alternative treatment options or opt for no treatment at all. Hence, future studies that adopt a community-based and multicultural approach may provide deeper insights into the influence of cultural beliefs on the quality of life among infertile women.

Summary

The present study sheds light on the significant psychological burden experienced by women struggling with infertility. The findings reveal that infertile women face a lower quality of life across various domains, including physical, psychological, social, and environmental well-being, compared to their fertile counterparts. The prevalence of anxiety and depression among infertile women underscores the need for comprehensive psychosocial support and healthcare interventions in infertility management. The study findings underscore the multidimensional impact of infertility, emphasizing the need for comprehensive healthcare approaches to address the psychosocial challenges faced by women undergoing infertility treatment. Future research should adopt a community-based and multicultural approach to further explore the influence of cultural beliefs on the quality of life among infertile women and explore interventions and support mechanisms to mitigate the psychological burden experienced by infertile women.

Financial Support and Sponsorship

None.

Conflicts of Interest

The authors declare no conflicts of interest in writing this article.

References

1. Namdar, A., Naghizadeh, M. M., Zamani, M., Yaghmaei, F., Sameni, M. H., et al. (2017). Quality of life and general health of infertile women. *Health and Quality of Life Outcomes*, 15, 139.
2. Rooney, K. L., & Domar, A. D. (2018). The relationship between stress and infertility. *Dialogues in Clinical Neuroscience*, 20(1), 41-47.
3. Onat, G. (2014). Development of a scale for determining violence against infertile women: a scale development study. *Reproductive Health*, 11, 18.
4. Gdańska, P., Drozdowicz-Jastrzębska, E., Grzechocińska, B., Radziwon-Zaleska, M., Węgrzyn, P., et al. (2017). Anxiety and depression in women undergoing infertility treatment. *Ginekologia Polska*, 88(2), 109-112.
5. Maroufizadeh, S., Hosseini, M., Foroushani, A. R., Omani-Samani, R., Amini, P., et al. (2018). The effect of depression on quality of life in infertile couples: an actor-partner interdependence model approach. *Health and Quality of Life Outcomes*, 16, 73.
6. Sarkar, S., & Gupta, P. (2016). Socio-demographic cor-

- relates of women's infertility and treatment seeking behavior in India. *Journal of Reproduction & Infertility*, 17(3), 123-132.
7. Bakhtiyar, K., Beiranvand, R., Ardalani, A., Changae, F., Almasian, M., et al. (2019). An investigation of the effects of infertility on women's quality of life: a case-control study. *BMC Women's Health*, 19, 114.
 8. The WHOQOL Group. (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychological Medicine*, 28(3), 551-558.
 9. Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335-343.
 10. Dokras, A., Stener-Victorin, E., Yildiz, B. O., Li, R., Ottey, S., et al. (2018). Androgen excess-polycystic ovary syndrome society: position statement on depression, anxiety, quality of life, and eating disorders in polycystic ovary syndrome. *Fertility and Sterility*, 109(5), 888-899.
 11. Chachamovich, J., Chachamovich, E., Fleck, M. P., Cordova, F. P., Knauth, D., Passos, E., et al. (2009). Congruence of quality of life among infertile men and women: findings from a couple-based study. *Human Reproduction*, 24(9), 2151-2157.
 12. van Balen, F., & Bos, H. M. W. (2009). The social and cultural consequences of being childless in poor-resource areas. *Facts, Views & Vision in ObGyn*, 1(2), 106-121.
 13. Dyer, S. J., Abrahams, N., Mokoena, N. E., Lombard, C. J., van der Spuy, Z. M., et al. (2005). Psychological distress among women suffering from couple infertility in South Africa: a quantitative assessment. *Human Reproduction*, 20(7), 1938-1943.
 14. Aduloju, O. P., Olaogun, O. D., & Aduloju, T. (2018). Quality of life in women of reproductive age: a comparative study of infertile and fertile women in a Nigerian tertiary centre. *Journal of Obstetrics and Gynaecology*, 38(2), 247-251.
 15. Lakatos, E., Szigeti, J. F., Ujma, P. P., Sexty, R., Balog, P., et al. (2017). Anxiety and depression among infertile women: a cross-sectional survey from Hungary. *BMC Women's Health*, 17, 48.
 16. Lund, R., Sejbaek, C. S., Christensen, U., & Schmidt, L. (2009). The impact of social relations on the incidence of severe depressive symptoms among infertile women and men. *Human Reproduction*, 24(11), 2810-2820.
 17. Hasan, A. B. M. N., Sharif, A. B., Jahan, I., & Begum, M. R. (2023). Mental health status and the quality of life of infertile women receiving fertility treatment in Bangladesh: a cross-sectional study. *PLoS Global Public Health*, 3(10), e0001371.
 18. Shahraki, Z., Tanha, F. D., & Ghajarzadeh, M. (2018). Depression, sexual dysfunction and sexual quality of life in women with infertility. *BMC Women's Health*, 18, 92.
 19. Xiaoli, S., Mei, L., Junjun, B., Shu, D., Zhaolian, W., et al. (2016). Assessing the quality of life of infertile Chinese women: a cross-sectional study. *Taiwanese Journal of Obstetrics & Gynecology*, 55(2), 244-250.