

Comparative Assessment of Anxiety, Depression, and Quality of Life in Infertile Versus Fertile Women: A Case-Control Study Using WHOQOL-BREF and DASS-21

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Abstract: Background: Infertility creates both reproductive health breakdowns and causes female mental distress around the world. Patients who experience emotional pain from their infertility problems often receive little attention from healthcare professionals. **Objective:** We assessed and measured these factors using established mental health evaluation tools in women who cannot have children compared to those who can. **Methods:** A team conducted this research by examining 50 women between the ages of 20 and 38 years old. The research team studied 25 infertile women and 25 child-bearing women who visited a main hospital's tertiary care clinic. We collected data by asking women to answer the WHOQOL-BREF about their life quality in four areas plus the DASS-21 to measure their emotional health indicators. We performed separate t-tests and chi-square tests with SPSS version 26 to analyze the data. **Key Findings:** The levels of depression anxiety and stress were higher in women facing infertility because their scores at M=21.81 for depression M=16.86 for anxiety and M=23.55 for stress consistently exceeded those of fertile women at M=10.00 M=8.60 M=11.03 (p<0.001 all comparisons). The quality of life surveys showed that female infertility reduced scores in every major life aspect (p < 0.001). There was a link between participation group and educational level (p=0.019) yet no association appeared between participation group and social class (p=0.60). **Conclusion:** The issues related to infertility produce emotional suffering and a reduction of everyday living experiences for female patients. Our results show fertility care needs a system that adds psychological testing and assistance. Scientists should study how people cope with infertility while sampling different groups of participants.

Keywords: Anxiety, depression, DASS-21, infertility, WHOQOL-BREF, women's health.

INTRODUCTION

Infertility, defined as the inability of couples to achieve pregnancy within 12 months of trying affects many people worldwide and creates major emotional and social impacts (Vander Borgh & Wyns, 2018). The condition goes beyond physical problems since it causes deep emotional harm to how someone feels about themselves and relates to others. Women who cannot have children strongly experience mental and social struggles because these elements are central to who they are (Hasanpoor-Azghdy et al., 2014).

Psychological testing shows women dealing with infertility show increased distress such as anxiety, depression, and reduced life quality worldwide (Bagade et al., 2022). Infertility impacts women most severely when their community links motherhood to how they are viewed as individuals. A worldwide research analysis showed that infertile women show more anxiety and depression plus lowered life happiness everywhere they conducted research (Braverman et al., 2024).

Research from Bangladesh determined that 60% of women with infertility faced clinical depression plus 55% had anxiety symptoms that harmed their life quality (Hasan et al., 2023). Scientists in India discovered that infertile women experience greater anxiety and

depression while scoring worse than ordinary fertile women on the entire WHOQOL-BREF assessment (Bahadur et al., 2024).

Reproductive health services should pay more attention to the mental health needs of patients experiencing infertility. Many women experience infertility treatment without proper mental health check-ups because mental screening is rarely part of infertility care (Lasuh, 2020). Our research evaluates how mental health issues impact the quality of life differently in women based on infertility status using recognized assessment scales DASS-21 and WHOQOL- BREF. Infertile women will present higher mental distress levels and reduced quality of life in all tested areas than women who can get pregnant. Our research shows the need for mental health support to be part of infertility treatment programs through our examination of patient differences.

Our research goal is to measure and compare how infertile and fertile women manage anxiety, depression, and lifestyle quality. Specifically, the study aims to:

- ❖ Evaluate the prevalence and severity of anxiety and depression in infertile women using the DASS-21 (Depression, Anxiety, and Stress Scale).
- ❖ Assess the quality of life in both infertile and fertile women using the WHOQOL-BREF

- questionnaire across its four domains: physical health, psychological health, social relationships, and environment.
- ❖ Compare the psychological well-being and quality of life between infertile and fertile women.
 - ❖ Identify correlations between mental health variables (anxiety, depression) and quality of life scores among infertile women.
 - ❖ Based on prior research evidence and theoretical frameworks, the following hypotheses are proposed:
- ❖ H1: Infertile women will have significantly higher levels of anxiety compared to fertile women.
 - ❖ H2: Infertile women will report significantly higher levels of depression than their fertile counterparts.
 - ❖ H3: Infertile women will demonstrate significantly lower scores in all domains of quality of life compared to fertile women.
 - ❖ H4: There will be a negative correlation between levels of anxiety/depression and quality of life scores among infertile women.

P – Population/Patient	Women of reproductive age (20–38 years) attending a fertility clinic or gynaecology department
I – Intervention/Exposure	Infertility (either primary or secondary)
C – Comparison	Fertile women (having at least one live birth)
O – Outcome	Levels of anxiety, depression (measured by DASS-21), and quality of life (measured by WHOQOL-BREF)

Table 1: PICO Framework

Research question: "Among women of reproductive age, how does infertility affect levels of anxiety, depression, and quality of life compared to fertile women?"

LITERATURE REVIEW

Pathak et al. (2025) found that among 1,530 Indian women struggling to get pregnant 21% displayed depression signs while both anxiety and psychological distress concerned a quarter of these women. Through PHQ-4 evaluation this research identifies major mental health problems linked with fertility delays. Since the study depends on a short self-report tool its capability to detect all psychological aspects remains limited. The research project shows no comparison between these women and women who can get pregnant naturally. Our research uses a case-control method and identifies healthy women to discover both conditions between fertility and mental health.

Mor et al. (2024) found that depression affected 46% of 200 infertile men while anxiety reached 51% and stress levels stood at 59.5% during their study. Participants mainly resorted to planning for their future (96%), taking action (91.5%), and practising religious faith (89.5%) in response to their condition. This mixed-methods study reveals important information about males coping with infertility but excludes female participants and examines only coping

methods instead of outcome quality. Our research includes women participants to examine the relationship between their mental health and treatment quality of life during infertility treatment.

According to Choudhary et al. (2024), depression hit 67% and anxiety affected 63% of infertile women who scored below fertile women in every WHOQOL-BREF domain at $P < 0.001$ (2024). Although this research establishes solid baseline measures it does not investigate what makes patients feel emotionally bad or how their cultural backgrounds impact them. Our research design includes speaking to patients alongside collecting scientific stats for meaningful insight.

Niazi et al. (2024) found in their case-control study from Afghanistan that 62% of infertile women had depression which is linked to stigma and decreased social support. Data from this research highlights the worldwide effects of infertility on mental health yet doctors should apply its findings only to Indian urban settings. Our study examines Indian conditions to show where specific help programs should be set up.

Research from Kamboj et al. (2023) reveals that North Indian women who cannot get pregnant have worse mental health results than regular pregnant women. Infertile women develop anxiety and depression from stress while fertile women develop depression alone in relation to stress. Although it has a well-engineered design and works with a large participant

pool of 500 people, the study failed to include information about various treatment phases or treatment success. Our research expands this work by monitoring how infertility treatment stages affect mental well-being.

According to Wadadekar et al. (2021), people in Indian infertile couples rated average mental and physical quality of life lower than men featured in their study especially through emotional and mind-body measures of FertiQoL. Bone patients from farming areas experienced lower quality of life results compared to those with single fertility problems or partner pathology

alone. The analysis lacks an examination of depression and anxiety even though the study used proper cultural methods. Our research connects mental health evaluation with QoL evaluation by using proven psychometric scales.

According to Wdowiak et al. (2021), infertility treatment diminishes quality of life across all key domains especially when using non-ART methods like IUI. The research reveals women who undergo such treatment fare worse than IVF recipients in terms of mental health social interaction and ecological well-being results ($p < 0.001$ $p = 0.009$ $p = 0.004$). While this study handles 1200 women through 2 quality of life measurements it lacks the connection of its findings to both clinical anxiety and depression data. The research study does not test infertile women against women who can naturally conceive. Through our analysis, we capture both mental health signs and Quality of Life data to compare healthcare between fertile and IVF- treated women.

The results of Shahraki et al. (2018) show that women with infertility had stronger depression symptoms (18 ± 9.5 BDI score) and poorer sexual health quality of life (73.4 ± 16.5 SQOL-F score) compared to healthy controls (SQOL-F: 94.1 ± 12.8 ; $p < 0.001$), especially among those who experienced sexual difficulties. This study stands alone by focusing on sexual health needs of female infertility patients. The study focuses only on the Iranian population with infertility and uses a different QoL assessment system from WHOQOL-BREF. Our investigation goes further by studying how overall quality of life and psychological well-being are impacted by sexual function alongside culturally sensitive tools in Indian research settings.

According to Li et al. (2019), stress related to infertility lowered fertility quality of life by 0.403 points ($p < 0.001$). The article also finds that resilience strengthened quality of life through its moderating effect ($\beta = 0.317$, $p < 0.001$) which accounted for 36.3% of the outcome variance. This research project gives detailed statistical findings but does not evaluate the effects on psychological issues such as depression and anxiety. The research findings cannot

effectively apply to South Asian populations because of cultural differences. We expand these findings by studying QoL and mental health at the same time in a controlled case-design examined among Indian patients.

Research by Prasad et al. (2017) demonstrates North India patients who sought assisted reproduction services had 60.11% to 64.86% clinical depression rates along with anxiety at 27% to 37% levels based on the HAM-A and SCAT exams. The results demonstrate that 80% of these women experienced high everyday life stress levels while more than half of them scored poorly on FertiQoL measures for emotional, relationship and social well-being. The research used several psychological questionnaires (HAM-D, ADI, CMI, FertiQoL, PSLES) to offer an extensive view of patient status. The research focuses on ART patients but provides no information about their fertility peers or healthy women who do not seek treatment. The research revealed that women with lower education showed reduced capacity to handle treatment and maintained a worse quality of life which guides cultural intervention design. Our research supports past research about ART patients and extends understanding to all women with infertility through direct comparisons to fertile women.

MATERIALS AND METHODS

Study Design

This research design compares how anxiety, depression, and daily life affect women with infertility from women with the ability to become pregnant. This research takes the case- control approach to see how infertility affects mental health by directly checking the psychological changes between infertile and fertile women of similar age from the same social environment.

Setting and Participants

Researchers conducted their observations at the gynaecology obstetrics department of SMCH's tertiary care facility. The study included women visiting the infertility clinic or general gynaecology department at the hospital for evaluation. The research included 50 women with 25 cases of women who could not get pregnant and 25 controls made up of pregnant women who were matched to cases by their ages and marital lengths.

Inclusion Criteria

- ❖ Women aged 20–38 years
- ❖ Literate and able to comprehend the study tools
- ❖ Married for more than 2 years
- ❖ For the case group: Diagnosed with primary or secondary infertility (failure to conceive after 12 months of unprotected intercourse)
- ❖ For the control group: At least one live birth with no known fertility issues

Exclusion Criteria

- ❖ Women with known psychiatric illnesses or under psychotropic medication
- ❖ Diagnosed endocrine disorders (e.g., thyroid dysfunction, PCOS)
- ❖ Chronic illnesses such as diabetes or cardiovascular disease
- ❖ History of recent traumatic life events (e.g., bereavement in the last 6 months)

Sample Size

Our research team selected 50 women through purposive sampling and split them into two groups of 25 as cases and controls. The small study sample gave researchers an initial chance to compare different psychological test results.

Data Collection Tools

We used two tested tools to gather our data.

- ❖ WHOQOL-BREF measures the quality of life in 26 items and checks physical, psychological, social, and environmental well-being areas. Researchers worldwide recognize its effectiveness and it shows accurate results for Indian people and other populations.
- ❖ The 21-item DASS-21 tool helps measure overall depression anxiety and stress symptoms based on patient reactions in the past week. Healthcare settings and real-world environments use this tool consistently and scientific checks show it measures well.

Procedure

The study team explained its goals to participants who then signed permission forms for the research. After approving participants for the study they needed to answer the WHOQOL-BREF and DASS-21 questionnaires in a private environment to keep their information private. Study personnel read every question for participants who could not read.

We used a semi-structured questionnaire to gather basic personal information of our participants including their age, time with their spouse, education status, earnings, and house location. The team collected all required information during four weeks of sessions where each meeting with the participant lasted around 30 to 45 minutes.

Ethical Approval

The research team performed this study according to the rules from the Declaration of Helsinki. The Institutional Ethics Committee of SMCH approved the study through [Insert Approval Code Here]. Everyone who participated gave their permission before the study started and their privacy stayed protected throughout.

Statistical Analysis

Data input and analysis methods used SPSS Release 26.0 from IBM Corp. in Armonk New York. We presented continuous score results as the mean standard deviation format for DASS-21 and WHOQOL-BREF tests. We used an independent t-test to determine if infertile

and fertile women had different mean results. Data from Categorical values underwent Chi-square tests for analysis. Our results are considered statistically meaningful when the probability is less than 0.05.

The research team analyzed information more deeply to check if education background and marriage years change which psychological effects appear in couples. We calculated Pearson's correlation to evaluate how DASS-21 subscale scores relate to WHOQOL-BREF domain scores.

RESULTS

Demographic Data

The research used 50 female participants split in half into both fertile and infertile groups with 25 individuals in each set. The two groups of women contained participants aged 30.4 years with fertility and 30.0 years without it showing no substantial age gap. The study revealed that infertile participants were usually younger women between 22 and 38 years old while the fertile group included women between 23 and 39 years old.

Group	Count	Mean	Std Dev	Min	25%	Median (50%)	75%	Max
Fertile	25	30.4	5.37	23	25.0	29.0	35.0	39
Infertile	25	30.0	4.85	22	26.0	31.0	33.0	38

Table 1: Age Summary by Group

The educational level of infertile women stood higher than fertile women because 8 participants attained postgraduate degrees versus 2 participants in this group. More fertile women pursued undergraduate education while only 4 percent of the infertile group did the same. Educated people understand fertility problems better because they use medical solutions more often than others.

Group	Primary	Secondary	Undergraduate	Postgraduate
Fertile	3	6	14	2
Infertile	4	9	4	8

Table 2: Education Levels by Group

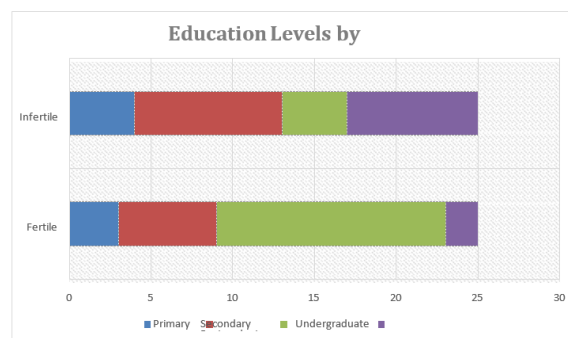


Figure 1: Education Levels by Group

The fertile women spread evenly among low, middle, and high-income groups but the infertile women mainly came from the upper bracket with half of them in this bracket. People from lower income groups might face challenges when trying to get infertility treatment because of economic barriers.

Table 3: Socio-Economic Status by Group

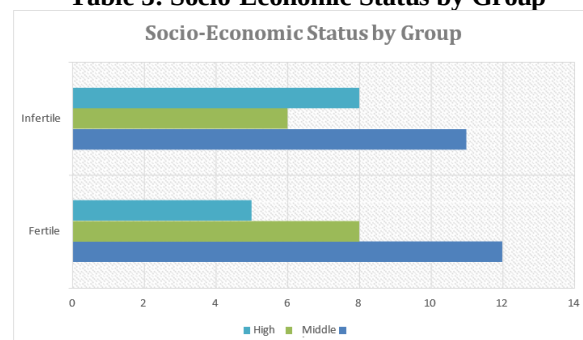


Figure 2: Socio-Economic Status by Group

Psychological Scores and Quality of Life: Group-wise Comparison

Statistics show that infertile women have significantly lower psychological health scores than women who can get pregnant. People who do not get pregnant experience more intense emotional problems. They scored 21.81 and 16.86 points each on depression and anxiety tests and reported 23.55 stress points through the DASS-21 assessment. The fertile women scored only 10.00, 8.60, and 11.03 on each measurement indicating minimal emotional strain.

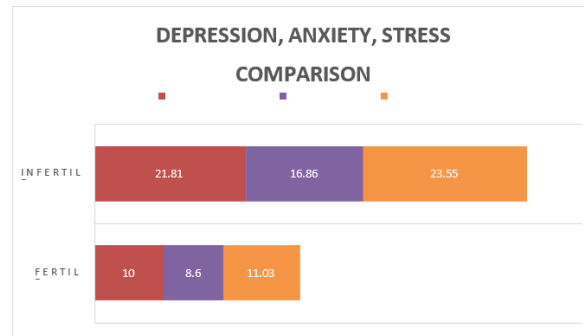


Figure 3: Depression, Anxiety, Stress Comparison

Fertile women show better quality of life throughout all WHOQOL-BREF rating areas. People who can get pregnant scored 67.13 on health assessments but the infertile group only managed 53.36. Psychological health stood at 67.29 points for the fertile group while infertile women scored 51.27 points. Additionally, social relationships reached 63.67 points for the fertile group and 48.70 points for the infertile women. Environmental well-being measurements also demonstrated higher performance by those with fertility compared to the study group.

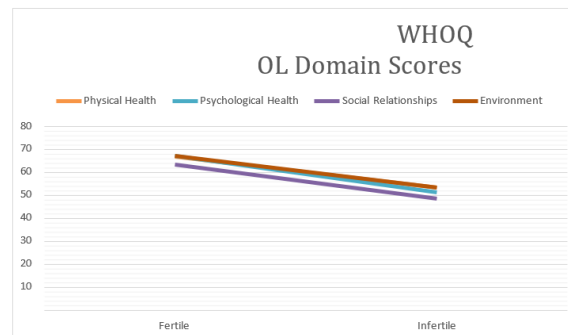


Figure 4: WHOQOL Domain Scores Across Groups

Each survey result links infertility directly to emotional health issues and satisfaction decline which both trace back to failed reproductive ambitions and heightened social demands that harm romantic relationships.

Statistical Comparison: Psychological and Quality of Life Metrics

Independent sample t-tests revealed statistically significant differences between infertile and fertile women across all DASS-21 and WHOQOL-BREF dimensions. Infertile women had notably higher scores on:

- Depression ($t = 6.77$, $p < 0.001$),
- Anxiety ($t = 4.20$, $p < 0.001$), and
- Stress ($t = 10.69$, $p < 0.001$),

indicating worse psychological distress compared to fertile counterparts.

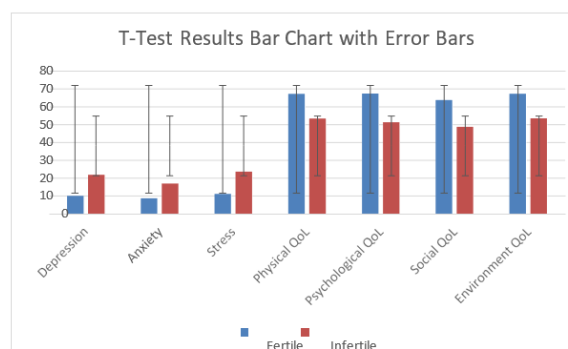


Figure 5: T-Test Results Bar Chart with Error Bars

In contrast, quality of life scores were significantly lower in the infertile group:

- Physical ($t = -5.17$, $p < 0.001$),
- Psychological ($t = -5.70$, $p < 0.001$),
- Social ($t = -4.46$, $p < 0.001$), and
- Environmental ($t = -6.02$, $p < 0.001$).

These results highlight the pervasive mental health and QoL disparity due to infertility.

Chi-square tests showed a significant association between group and education level ($\chi^2 = 9.90$, $p = 0.019$), suggesting differing educational backgrounds among the groups. However, socio-economic status distribution was not significantly different ($\chi^2 = 1.02$, $p = 0.60$).

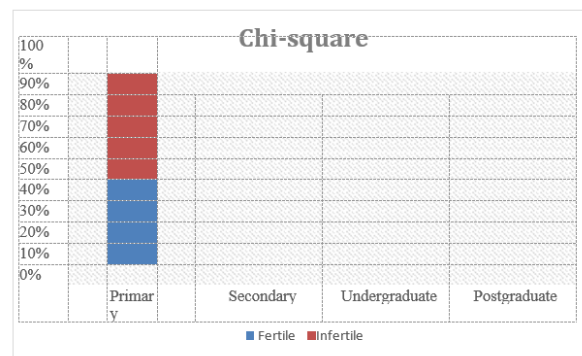


Figure 6: Chi-Square Graph

DISCUSSION

Interpretation of Key Findings

The research shows female infertility patients suffered from increase anxiety depression and stress while obtaining lower quality of life measurements than women who were fertile. The data confirms what researchers already know that infertility impacts both physical health and emotional well-being of patients. Infertile women rated much lower than others in both psychological and social aspects of the WHOQOL-BREF showing how fertility struggles hurt their emotions and lead to social isolation. The p value of less than 0.001 in all areas demonstrates a reliable way to understand the observed pattern.

Comparison with Existing Literature

Our results support the outcome of Bahadur et al.'s (2024) research which they obtained using similar methods during their case-control study. Women who tried to have children but could not respond with more emotional stress and worse life quality than women who remained childless. Statistical tests showed strong differences between these groups in every measurement area ($p < 0.001$) (Bahadur et al., 2024).

Braverman et al. (2024) reviewed research from countless medical systems to demonstrate anxiety and depression occur frequently among infertile people. According to Lasuh (2020), emotional distress caused by infertility decreases how well women live their daily lives (Lasuh, 2020).

5.3 Possible Reasons for Findings

Several explanations underlie the psychological vulnerability of infertile women. The effects of infertility strongly impact how women view themselves and how society sees them especially when people in a woman's world hold motherhood as the core element of a woman's existence. When people around them judge and force their family to try stronger treatments while others link failure to worthlessness infertile women might feel unworthy and bad about themselves. Women feel excessive stress from both the medical procedures and the unknown results of infertility treatments. Repeated failure to get pregnant creates a negative emotional pattern that wears down sufferers mentally over time.

Research shows that emotional responses from fertility treatment plus biological hormone shifts make mental health difficulties worse according to Massarotti et al. (2019). Education level job status and living area differences between city and country impress Namdar et al (2017) research on stressed women who cannot have children.

5.4 Implications for Mental Health and Gynecology Practice

The psychosocial findings of this study call for an integrative approach to infertility care. The healthcare staff at reproductive healthcare facilities needs to screen patients regularly for mental health concerns. Healthcare providers should use quick DASS-21 and HADS self-report questionnaires to screen patients for stress during treatment at both their initial meeting and ongoing appointments.

Special counseling support groups and mindfulness-based programs would improve patient mental well-

being which helps more people succeed with assisted reproductive technology. Medical staff should understand and support patients' emotional responses during treatment sessions that linger or end in failure.

Patients experiencing fertility challenges have higher stress levels and worse quality of life than their partners so combined psychological support should be included in treatment planning (Palomba et al., 2018).

5.5 Strengths and Limitations of the Study

The case-control research method provides powerful insights because the study directly compares infertile women and their healthy counterparts using evaluated assessment tools like WHOQOL-BREF and DASS-21. Adding both emotional and quality of life measurements allowed researchers to see how infertility affects patients in multiple life areas.

However, limitations must be acknowledged. The sample size, while sufficient for preliminary insights, limits the generalizability of findings. The chosen sampling method possibly caused study bias because people who visited tertiary care facilities differed socially from other citizens. People tend to report their responses based on what others want to hear through surveys that they complete themselves. The researchers failed to examine how people cope with stress and develop resilience to manage their emotional suffering. The study brings valuable results to support research that promotes mental health services in fertility treatment.

CONCLUSION

The study proves that women dealing with infertility face greater stress while showing severe anxiety and depression symptoms and suffer in multiple key aspects of their life. The study proves infertility creates strong emotional pain combined with social effects. The case-control method lets researchers compare infertility patients with fertile women which proves infertility creates mental and physical health problems.

Medical teams need to start checking for emotional health and offer support to people dealing with infertility. WHOQOL-BREF and DASS-21 instruments help healthcare providers recognize psychological risks in their patients.

Future research demands larger clinical trials across multiple facilities plus explores elements that aid infertility patients like dealing strategies and their ability to recover alongside sources of social assistance. Working with mental health professionals in fertility care teams benefits patients by improving both their emotional health and their overall treatment results.

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