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Original article

Anxiety, Depression, and Stress Among Infertile and Fertile Women in Tripoli, Libya

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Abstract
Infertility may be accompanied by psychological distress, but the distribution of depression, anxiety, and stress symptoms among women seeking care in Tripoli requires local evidence. This comparative cross-sectional study included 382 women (191 infertile and 191 fertile) recruited from hospitals, polyclinics, and infertility centres in Tripoli, Libya, from February to September 2022. Symptoms were assessed using the Depression Anxiety Stress Scales–21 (DASS-21). Categorical comparisons were performed using chi-square tests in SPSS version 21. Depression symptoms above the normal category were reported in 12.6% of infertile women versus 4.2% of fertile women (reported p = 0.005), and stress symptoms in 6.3% versus 1.6% (reported p = 0.032). Anxiety symptoms occurred in 23.0% and 17.8%, respectively (reported p = 0.253). Among infertile women, stress classification varied by duration of infertility (reported p = 0.005), whereas the corresponding association with depression (p = 0.244) or anxiety (p = 0.188) was not statistically significant. In this sample, infertile women were more frequently screened positive for depressive and stress symptoms than fertile women. No statistically significant between-group difference in anxiety was reported. The cross-sectional design does not establish causation.
Keywords. Infertility; Depression; Anxiety; Psychological Stress; DASS-21; Libya.

Introduction

Infertility is a reproductive health condition with potential emotional, interpersonal, and social consequences. A systematic review and meta-analysis reported an association between infertility and psychological distress, while comparative research has documented psychiatric symptoms in both infertile and fertile women [1,2]. These findings support assessment of mental health symptoms without assuming that infertility independently causes them. Studies in different settings have documented psychological symptoms among women experiencing infertility. A Ghanaian clinic-based survey evaluated depressive symptoms [3], and a systematic review of Iranian research described depression, anxiety, and related psychosocial concerns [4].

A later meta-analysis likewise demonstrated substantial variation in reported psychological outcomes across infertile populations [5]. Such findings support a context-specific comparison in Tripoli rather than direct extrapolation of rates across different instruments and populations. The present study compared the frequency and severity of depression, anxiety, and stress symptoms among infertile and fertile women in Tripoli, Libya, and explored sociodemographic and clinical correlates reported in the thesis.

Methods

Study Design and Setting

A comparative cross-sectional study was conducted in Tripoli, Libya, from February to September 2022. Recruitment took place at Tripoli University Hospital, Al-Khadra Hospital, Al-Badri Polyclinic, an infertility centre, Bedaya Clinic, and Noor Al-Haya Clinic.

Participants and Sample Size

A total of 382 women participated, comprising 191 women in the infertile group and 191 in the fertile comparison group. The sample size was calculated using StatCalc (Sample Size and Power). Women attending the participating facilities during the study period were approached and invited to participate. Eligibility and reproductive histories were assessed through face-to-face interviews using a structured questionnaire.

Women classified as infertile reported failure to achieve pregnancy after at least 12 months of regular unprotected sexual intercourse; both primary and secondary infertility were included. The fertile comparison group comprised women reporting a previous spontaneous pregnancy and live birth within the preceding 10 years. The stated inclusion criteria were marriage and reproductive age. Reported exclusion criteria were a previous psychiatric diagnosis, current psychological treatment, current pregnancy, or significant medical illness. Fertility status was assigned on the basis of information collected during interviews and questionnaires; independent confirmation by medical records or investigations was not documented.

Data Collection and Outcomes

Data were obtained through face-to-face interviews using a structured interviewer-administered questionnaire in both groups. The questionnaire covered age, duration of marriage, duration of infertility (where applicable), education, occupation, medical history, and gynaecological history. Psychological symptoms were assessed using the 21-item Depression Anxiety Stress Scales (DASS-21), comprising three seven-item subscales covering symptoms over the

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preceding week. Each item is scored from 0 to 3; standard DASS-21 scoring doubles the summed subscale scores before applying the conventional severity thresholds. The questionnaire was administered in Arabic translation. Details of any pilot validation, reliability coefficients, and the precise scoring implementation were not documented in the available study records. The reported symptom-severity categories were retained; DASS-21 results were not treated as clinical psychiatric diagnoses [6,7].

Statistical analysis

Categorical variables were compared using chi-square tests in IBM SPSS Statistics version 21. Statistical significance was set at $p < 0.05$. Reported test results were retained from the study records; participant-level data were not available for independent recalculation.

Results

Participant Characteristics

The study included 191 women in each group. Infertile women had a reported mean age of 33.5 ± 6.3 years, compared with 35.1 ± 5.6 years among fertile women. Age distribution, duration of marriage, and education differed between groups according to the reported p-values; occupation did not (Table 1).

Table 1. Selected sociodemographic characteristics of participants

Characteristic	Infertile (n=191)	Fertile (n=191)	Reported p
Age, mean ± SD (years)	33.5 ± 6.3	35.1 ± 5.6	0.020*
Age 20–30 years	70 (36.6%)	45 (23.6%)	
Age 31–40 years	91 (47.6%)	110 (57.6%)	
Age >40 years	30 (15.7%)	36 (18.8%)	
Marriage <5 years	94 (49.2%)	22 (11.5%)	0.0001*
Marriage 5–10 years	80 (41.9%)	80 (41.9%)	
Marriage >10 years	17 (8.9%)	89 (46.6%)	
University education or above	177 (92.7%)	170 (89.0%)	0.015*
Working	115 (60.2%)	96 (50.3%)	0.064*

**p-values from source table apply to the overall variable, not necessarily each row. Percentages for working status were calculated from the supplied counts and group denominators to ensure consistent denominators.*

Depression, Anxiety, and Stress

Depression and stress categories above normal were more frequent among infertile women. The observed difference in anxiety did not reach the reported significance threshold (Table 2). As the questionnaire is a symptom scale, these results describe screened symptoms rather than verified psychiatric diagnoses.

Table 2. Psychological symptom classification by fertility group

Outcome	Infertile (n=191)	Fertile (n=191)	Reported p
Depression above normal	24 (12.6%)	8 (4.2%)	0.005
Anxiety above normal	44 (23.0%)	34 (17.8%)	0.253
Stress above normal	12 (6.3%)	3 (1.6%)	0.032
Depression normal	167 (87.4%)	183 (95.8%)	
Anxiety normal	147 (77.0%)	157 (82.2%)	
Stress normal	179 (93.7%)	188 (98.4%)	

Counts derive from the original thesis distribution table; p-values are those stated for overall prevalence in its results text. Separate severity-distribution p-values in the thesis are 0.046, 0.165, and 0.038, respectively.

Table 3. DASS-21 symptom severity distribution

Outcome/category	Infertile	Fertile
Depression — mild	10 (5.2%)	4 (2.1%)
Depression — moderate	12 (6.3%)	3 (1.6%)
Depression — severe	1 (0.5%)	1 (0.5%)
Depression — extremely severe	1 (0.5%)	0 (0%)
Anxiety — mild	20 (10.5%)	18 (9.4%)
Anxiety — moderate	18 (9.4%)	13 (6.8%)
Anxiety — severe	6 (3.1%)	2 (1.0%)
Anxiety — extremely severe	0 (0%)	1 (0.5%)
Stress — mild	10 (5.2%)	2 (1.0%)
Stress — moderate	2 (1.0%)	1 (0.5%)

The source records no severe/extremely severe stress cases.

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Within-Group Associations

In the infertile group, depression was associated with duration of marriage (reported p = 0.021), education (p = 0.022), and occupation (p = 0.015), but not with duration of infertility (p = 0.244). Anxiety was not significantly associated with duration of infertility (p = 0.188). Stress was associated with duration of infertility (p = 0.005) and duration of marriage (p = 0.018). These comparisons were unadjusted and are vulnerable to multiple testing and confounding.

Table 4. Symptom frequencies across infertility-duration categories (infertile group)

Duration	Depression	Anxiety	Stress
1–5 years (n=115)	16 (13.9%)	29 (25.2%)	5 (4.3%)
6–10 years (n=59)	4 (6.8%)	10 (16.9%)	3 (5.1%)
11–15 years (n=14)	3 (21.4%)	3 (21.4%)	4 (28.6%)
≥16 years (n=3)	1 (33.3%)	2 (66.7%)	0 (0%)
Reported p	0.244	0.188	0.005

For the ≥16-year infertility-duration group, 1 of 3 women had depressive symptoms (33.3%). Interpretation is limited by the small number in this category.

Discussion

This comparative study found higher reported frequencies of depressive and stress symptoms among infertile than fertile women attending healthcare facilities in Tripoli. Although anxiety symptoms were numerically more common among infertile women, the reported difference was not statistically significant. These results are broadly consistent with literature documenting psychological distress in association with infertility, while showing that anxiety, depression, and stress do not necessarily have identical patterns [1,2,5]. Differences in reported symptom frequencies require cautious interpretation because healthcare settings, cultural context, fertility-treatment stage, assessment instruments, and study populations differ. The Ghanaian fertility-clinic survey [3] used a different assessment approach; the Iranian review [4] summarised heterogeneous psychosocial findings; and a global meta-analysis found substantial variation in outcomes and definitions [5].

A systematic review focused on low-resource settings also reported a substantial burden of depressive symptoms, although its pooled estimates are not directly interchangeable with this Tripoli DASS-21 sample [8]. The study reported a statistically significant association between infertility duration and stress classification, but not between infertility duration and depression or anxiety. This is more limited than the original thesis's broad claim of a strong correlation between infertility duration and all mental health outcomes. Infertility-related psychological experiences may vary with individual and contextual circumstances [9]. Moreover, sparse counts in the longest-duration categories and multiple unadjusted comparisons restrict the strength of subgroup conclusions. There were also baseline differences between fertility groups in age, marital duration, and education.

Because no adjusted regression analysis was reported, the independent association between infertility and each psychological outcome cannot be determined. The cross-sectional design precludes causal claims. The DASS-21 is a symptom screening instrument rather than a stand-alone clinical diagnostic interview [6,7]. The main strengths were the inclusion of a fertile comparison group, equal group sizes, and a common symptom scale.

Limitations include insufficient description of sampling and DASS-21 thresholds, lack of adjusted analyses, self-reported symptoms, recruitment from healthcare facilities rather than a population sample, possible selection bias, and inconsistencies in several thesis-reported data labels and percentages. The study does not report clinical interviews to confirm mental disorders. These issues should be transparently reported in accordance with recommendations for cross-sectional observational studies [10].

Conclusion

In this Tripoli sample, infertile women had higher frequencies of screened depression and stress symptoms than fertile women, while the anxiety difference was not statistically significant. These findings support consideration of psychological assessment within infertility services, but do not establish that infertility causes psychiatric disorders.

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Competing interests

The authors have nothing to declare.

Data Availability

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request.

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