



RESEARCH PAPER

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Assessment of psychological distress among infertile women

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Abstract

Psychological distress is a prevalent issue among infertile women, encompassing symptoms such as anxiety, depression, and stress, which can significantly impact their mental well-being. The study employed a cross-sectional research design to assess the prevalence of psychological distress among infertile women attending HealthPlus Fertility and Women's Health Center in Jeddah, Kingdom of Saudi Arabia. A sample of 202 infertile women participated in this study and filled the Depression, Anxiety, and Stress Scale-21 (DASS-21). The data were analyzed using SPSS software. In terms of psychological distress levels, the mean scores on the Depression, Anxiety, and Stress subscales of the DASS-21 indicated that participants exhibited normal levels of depression (80.7%), anxiety (74.3%), and stress (95%). Few participants reported mild levels of depression (9.9%), anxiety (9.4%), and stress (3%), while a small subset displayed moderate levels of depression (8.4%), anxiety (14.4%), and stress (2%). No participants reached the threshold for severe or extremely severe levels of depression, anxiety, or stress. Furthermore, statistical analyses revealed no significant differences in depression, anxiety, and stress levels based on age ($F = 0.181$, $p = 0.835$), educational level (stress: $F = 1.429$, $p = 0.235$; anxiety: $F = 0.384$, $p = 0.764$; depression: $F = 0.824$, $p = 0.482$), marital status (stress: $F = 0.939$, $p = 0.393$; anxiety: $F = 1.321$, $p = 0.269$; depression: $F = 0.386$, $p = 0.680$), or the period of infertility (stress: $t(200) = -1.463$, $p = 0.145$; anxiety: $t(200) = -0.889$, $p = 0.375$). In conclusion, this study revealed that infertile women in the sample experienced normal levels of depression, anxiety, and stress. No significant differences in psychological distress levels were found based on age, educational level, marital status, or the period of infertility.

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Introduction

Psychological distress encompasses a variety of manifestations, such as anxiety, stress, and depression, which are indicative of an individual's mental well-being (McLachlan and Gale, 2018). These manifestations may present as mental health issues or contribute to the development of psychiatric disorders. To assess the prevalence of psychological distress within a specific population, researchers often utilize the 12-item General Health Questionnaire (GHQ-12) as a reliable measurement tool (Alaminos-Torres *et al.*, 2022).

Psychological distress is a pervasive mental health issue that impacts individuals and communities alike. This emotional state is characterized by symptoms of anxiety, depression, and stress, often accompanied by physical discomforts such as aches and pains (Arvidsdotter *et al.*, 2016). Multiple risk factors contribute to psychological distress, encompassing demographic and socioeconomic aspects, as well as a deficiency in internal and external resources for coping (Arvidsdotter *et al.*, 2016).

Achdut and Refaeli (2020) identified that psychological distress can arise from a confluence of risk factors, including persistent feelings of sadness, hopelessness, and worthlessness. Additionally, chronic stressors, such as financial challenges, relationship difficulties, work-related stress, and traumatic events, may exacerbate psychological distress. Work-related factors, including job demands, control issues, and insufficient support within the workplace, are also associated with the development of psychological distress.

The incidence of psychological distress indicators, such as depression, anxiety, and stress, is notably elevated in infertile women compared to those in their active reproductive years (Hudepohl and Smith, 2022). In a study investigating the impact of infertility on couples, Pasch *et al.* (2016) discovered that 56% of women and 32% of men encountered depression as a consequence of fertility issues.

Statement of the problem

Given the impact of psychological issues on the quality of life in individuals experiencing infertility, it is crucial to evaluate the prevalence of psychological distress symptoms in this population to identify the associated risk factors among women facing infertility challenges. Infertility remains a significant health concern, affecting a considerable number of women and men worldwide. It poses a substantial psychological health risk to women, impacting their overall quality of life (Tavousi *et al.*, 2022). Psychological health problems related to infertility include depression, anxiety, and infertility-related stress.

As expectations of childbearing exist on interpersonal, personal, and socio-cultural levels, the inability to conceive can expose women to psychological distress, subsequently affecting their personal quality of life. Moreover, the researcher's observations during six years as a nurse in an infertility clinic revealed that infertile women expressed their suffering from repeated fertilization trial failures and the resulting impact on their psychological well-being. For instance, one woman in the clinic reported undergoing 18 unsuccessful trials before achieving pregnancy. Consequently, the primary focus of this study is to investigate psychological distress among infertile women in Saudi Arabia, in light of the aforementioned concerns.

Materials and methods

Study design

The study employed a cross-sectional research design to assess the prevalence of psychological distress in infertility women. According to (Kesmodel, 2018), cross-sectional research design utilizes data collection of important research information at one given point in time. In using the design there are no time dimensions to be utilized since the information is collected at the same time.

Settings

The study was conducted at HealthPlus Fertility and Women's Health Center in Jeddah, Kingdom of Saudi Arabia. The setting was chosen because it's a wide network of fertility and IVF centers in Saudi Arabia.

The center provides services such as full range of services for diagnosing and treating infertility problems, the services mainly comprise IVF, ICSI, and IUI. Infertile treatment services such as Preimplantation Genetic Testing, Andrology, Reproductive Surgery, and Fertility Preservation are also provided in the center.

Sampling design and sample size

The sample characteristics of the study comprised infertile women attending fertility clinics at HealthPlus Fertility and Women's Health Center in Jeddah, Kingdom of Saudi Arabia. A simple random Sampling design was used to allow each individual attending fertility clinics in the center to have an equal chance of inclusion in the study. Based on a population size of 500, the sample size was calculated using Raosoft program with the following statistical parameters: 95% confidence interval, 5% margin of error, a response rate of at least 30%. Thus, the minimum sample size was 197. However, a sample of 202 infertile women participated in this study.

Data collection procedures

The data collection process by the researcher began after the researcher obtained relevant approvals from the Institutional Review Board of the university and the HealthPlus Fertility and Women's Health Center. The researcher visited the study setting for familiarization purposes and to explain the purpose of the study to the study participants after meeting them. The research participants were educated on their rights and privileges before they agree on whether to participate in the study or not.

Research tools

Part one: the Socio-demographic characteristics questionnaire

This part developed by the researcher based on literature in order to collect socio-demographic information about the participants. Information such as age, educational qualification, marital status, period of infertility, occupation, and medication period will be included in this part.

Part Two: the Depression, Anxiety, and Stress Scale - 21 (DASS-21)

The Depression, Anxiety and Stress Scale - 21 (DASS-21) is a self-report questionnaire designed to measure the severity of symptoms related to depression, anxiety, and stress. It is a shorter version of the original DASS, which had 42 items, and it was developed by Lovibond and Lovibond in 1995. The DASS-21 consists of three subscales, each with seven items, which measure the following:

Depression: measures symptoms such as low mood, lack of interest, and feelings of worthlessness.

Anxiety: measures symptoms such as nervousness, tension, and panic.

Stress: measures symptoms such as irritability, agitation, and difficulty relaxing.

The Depression, Anxiety, and Stress Scale-21 (DASS-21) are a widely used instrument in clinical and research settings to evaluate the severity of depression, anxiety, and stress symptoms. It is recognized as a reliable and valid tool for assessing these symptoms and can be completed efficiently by individuals taking the questionnaire.

Reliability pertains to the consistency and stability of scores obtained from a measurement instrument over time and across various raters or administrations. Numerous studies have indicated that the DASS-21 exhibits good internal consistency, with Cronbach's alpha coefficients ranging from 0.70 to 0.95 for its three subscales.

Validity concerns the extent to which a measurement instrument accurately measures its intended construct. The DASS-21 has demonstrated good construct validity, signifying that it measures the constructs of depression, anxiety, and stress as intended. Various studies have shown that the DASS-21 possesses good convergent and discriminant validity, meaning it correlates strongly with other measures of depression, anxiety, and stress but not with unrelated constructs.

Although the DASS-21 has been extensively utilized in clinical and research settings to assess depression, anxiety, and stress symptoms and is considered a reliable and valid instrument for this purpose, it is crucial to acknowledge its limitations and potential sources of error when interpreting results.

The DASS-21 has been translated into Arabic by several researchers and clinicians to make it more accessible to Arabic-speaking populations. The Arabic version of the DASS-21 has demonstrated good psychometric properties and has been employed in clinical and research settings in Arab countries. Multiple studies have investigated the reliability and validity of the Arabic version of the Depression, Anxiety, and Stress Scale - 21 (DASS-21) in Arabic-speaking populations. These studies have generally reported favorable psychometric properties of the Arabic DASS-21, including good reliability and validity.

Data analysis

The data collected in this study were processed using the SPSS software, a widely utilized tool for data analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize the characteristics and responses of the infertile women participating in the study. To identify potential differences in the responses to the study scale among the infertile women, the researcher employed statistical tests such as the independent samples t-test and one-way analysis of variance (ANOVA). These tests allowed for the examination of variations between different groups or conditions. A significance level of 0.05 was chosen for this study, indicating that results with a p-value less than 0.05 were considered statistically significant. By employing these statistical analyses and significance criteria, the researcher aimed to explore and elucidate any notable distinctions in the responses of infertile women to the study scale, shedding light on the factors and variables related to psychological distress in this population.

Results

Socio-demographic characteristics of the recruited women

The results presented in Table (1) show the socio-demographic characteristics of the recruited women (n=202). A total of 202 women participated in the study. Regarding age, the majority of participants fell into the category of being older than 30 years (55.4%), followed by those between 26 to 30 years old (39.1%). A smaller proportion of participants were between 20 to 25 years old (5.4%).

Table 1. Recruited women socio-demographic characteristics (n=202)

Variable	F	%
Age		
1. Between 20 to 25 years	11	5.4
2. Between 26 to 30 years	79	39.1
3. Greater than 30 years	112	55.4
Educational Qualification		
1. Diploma	76	37.6
2. Bachelor degree	95	47
3. Master's degree	17	8.4
4. Other	14	6.9
Marital Status		
1. Married	183	90.6
2. Single	12	5.9
3. Divorced/Widowed	7	3.5
Period of infertility		
1. Less than 5 years	120	59.4
2. 5 years or more	82	40.6
Occupation		
1. Employed	165	81.7
2. Unemployed	37	18.3
Medication Period		
1. 1-5 years	123	60.9
2. 5 – 10 years	61	30.2
3. Over 10 years	18	8.9

In terms of educational qualifications, the participants exhibited a diverse range. The largest group had a bachelor's degree (47%), followed by those with a diploma (37.6%). A smaller percentage held a master's degree (8.4%), while a minority had other qualifications (6.9%).

Regarding marital status, the majority of participants were married (90.6%), while small percentages were single (5.9%). A further subset of participants identified as divorced or widowed (3.5%). When considering the period of infertility, the majority of participants had been infertile for less than 5 years (59.4%). However, a significant proportion had been experiencing infertility for 5 years or more (40.6%).

In terms of occupation, the majority of participants were employed (81.7%), while smaller percentages were unemployed (18.3%). Finally, when examining the medication period, the highest proportion of participants (60.9%) had been on medication for 1-5 years. A substantial subset had been on medication for 5-10 years (30.2%), while a smaller proportion had been on medication for over 10 years (8.9%).

Table 2. Infertile women's responses to the DASS-21 scale (n=202)

Statement	M	SD
I found it hard to wind down	1.04	0.80
I was aware of dryness of my mouth	0.85	0.67
I couldn't seem to experience any positive feeling at all	0.99	0.70
I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0.91	0.70
I found it difficult to work up the initiative to do things	0.99	0.71
I tended to over-react to situations	1.16	0.78
I experienced trembling (eg, in the hands)	0.93	0.68
I felt that I was using a lot of nervous energy	1.15	0.73
I was worried about situations in which I might panic and make a fool of myself	1.05	0.71
I felt that I had nothing to look forward to	0.94	0.73
I found myself getting agitated	1.12	0.71
I found it difficult to relax	1.10	0.74
I felt down-hearted and blue	1.13	0.77
I was intolerant of anything that kept me from getting on with what I was doing	1.05	0.68
I felt I was close to panic	0.92	0.70
I was unable to become enthusiastic about anything	1.06	0.76
I felt I wasn't worth much as a person	0.89	0.74
I felt that I was rather touchy	0.96	0.76
I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0.96	0.75
I felt scared without any good reason	0.97	0.70
I felt that life was meaningless	0.92	0.75

Participants' responses to DASS-21

The results presented in Table (2) show the participants' responses to the DASS-21 scale. The analysis of the Infertile women's responses to the DASS-21 scale (n=202) revealed interesting findings regarding their emotional experiences. Among the highest three items based on mean scores, participants reported a tendency to over-react to

situations, with a mean score of 1.16 (SD = 0.78), indicating an inclination towards intense or exaggerated responses. Additionally, feelings of sadness or depression were prevalent, as indicated by a high mean score of 1.13 (SD = 0.77) for the statement "I felt down-hearted and blue." Furthermore, participants reported a high mean score of 1.12 (SD = 0.71) for the statement "I found myself

getting agitated," reflecting a heightened state of restlessness or distress. Conversely, among the lowest three items, participants reported a relatively low mean score of 0.85 (SD = 0.67) for the statement "I was aware of dryness of my mouth," suggesting a lesser frequency or intensity of experiencing dryness in the mouth. Additionally, the participants exhibited a lower level of self-perceived worthlessness, as indicated by a mean score of 0.89 (SD = 0.74) for the statement "I felt that I wasn't worth much as a

person." Furthermore, participants reported a relatively low mean score of 0.97 (SD = 0.70) for the statement "I felt scared without any good reason," indicating a lesser frequency or intensity of experiencing unfounded fear. These findings provide valuable insights into the emotional well-being and distress levels experienced by infertile women, highlighting specific areas of concern and areas where they may experience less emotional impact.

Table 3. Prevalence and Severity of depression, anxiety and stress among infertile women ($n=202n$)

Severity	Depression	Anxiety	Stress
Normal	163 (80.7)	150 (74.3)	192 (95)
Mild	20 (9.9)	19 (9.4)	6 (3)
Moderate	17 (8.4)	29 (14.4)	4 (2)
Severe	2 (1)	3 (1.5)	0 (0)
Extremely severe	0 (0)	1 (0.5)	0 (0)

Table 4. One-Way ANOVA analysis for the statistical differences in depression, anxiety and stress based on infertile women's age

		N	Mean	Std. Deviation		
					F	p-value
Stress	Between 20 to 25 years	11	6.90	5.76	0.181	0.835
	Between 26 to 30 years	79	7.46	2.92		
	Greater than 30 years	112	7.64	4.53		
Anxiety	Between 20 to 25 years	11	6.81	5.31	0.873	0.419
	Between 26 to 30 years	79	6.97	2.85		
	Greater than 30 years	112	6.28	4.03		
Depression	Between 20 to 25 years	11	6.91	5.34	0.613	0.543
	Between 26 to 30 years	79	7.30	3.10		
	Greater than 30 years	112	6.64	4.51		

Level of psychological distress among infertile women

The levels of depression, anxiety, and stress among the participants, as indicated by the scores on the domains of the DASS-21, are presented in Table 3. The majority of participants exhibited normal levels of depression, with 163 individuals (80.7%) falling within this category. Similarly, 150 participants (74.3%) demonstrated normal levels of anxiety, and 192 participants (95%) exhibited normal levels of stress. A smaller proportion of participants showed mild levels

of depression (9.9%), anxiety (9.4%), and stress (3%). Additionally, a subset of participants displayed moderate levels of depression (8.4%), anxiety (14.4%), and stress (2%). Few participants reported severe levels of depression (1%) and anxiety (1.5%), while no participants reached the threshold for extremely severe levels of depression, anxiety, or stress.

The results presented in Table (4) show the differences in the prevalence and severity of depression, anxiety and stress across the enrolled

infertile women based on their age. The differences in the prevalence and severity of depression, anxiety, and stress across enrolled infertile women based on their age are presented in Table 4. The analysis showed no significant differences in stress levels based on age ($F = 0.181$, $p = 0.835$).

Among participants between 20 to 25 years old, the mean stress score was 6.90 (SD = 5.76). For participants between 26 to 30 years old, the mean stress score was slightly higher at 7.46 (SD = 2.92), while those older than 30 years had a mean stress score of 7.64 (SD = 4.53).

Table 5. One-Way ANOVA analysis for the statistical differences in depression, anxiety and stress based on infertile women's educational qualification

		N	Mean	Std. Deviation	F	p-value
Stress	Diploma	76	7.10	3.71	1.429	0.235
	Bachelor degree	95	7.62	4.10		
	Master's degree	17	9.29	5.59		
	Other	14	7.21	2.99		
Anxiety	Diploma	76	6.25	3.38	0.384	0.764
	Bachelor degree	95	6.77	3.89		
	Master's degree	17	7.06	4.75		
	Other	14	6.43	2.56		
Depression	Diploma	76	7.04	3.92	0.824	0.482
	Bachelor degree	95	6.70	4.10		
	Master's degree	17	8.18	5.12		
	Other	14	6.14	2.90		

Table 6. One-Way ANOVA analysis for the statistical differences in depression, anxiety and stress based on infertile women's marital status

		N	Mean	Std. Deviation	F	p-value
Stress	Married	183	7.43	3.80	0.939	0.393
	Single	12	9.08	6.02		
	Divorced/widowed	7	7.57	6.13		
Anxiety	Married	183	6.46	3.52	1.321	0.269
	Single	12	8.25	5.31		
	Divorced/widowed	7	6.57	4.72		
Depression	Married	183	6.85	3.90	0.386	0.680
	Single	12	7.92	5.63		
	Divorced/widowed	7	6.86	5.46		

Similarly, there were no significant differences in anxiety levels based on age ($F = 0.873$, $p = 0.419$). The mean anxiety score for participants between 20 to 25 years old was 6.81 (SD = 5.31), whereas for those between 26 to 30 years old, the mean anxiety score was 6.97 (SD = 2.85). Participants older than 30

years had a slightly lower mean anxiety score of 6.28 (SD = 4.03).

Likewise, there were no significant differences in depression levels based on age ($F = 0.613$, $p = 0.543$). Among participants between 20 to 25 years old, the

mean depression score was 6.91 (SD = 5.34). For participants between 26 to 30 years old, the mean depression score was 7.30 (SD = 3.10), while those older than 30 years had a slightly lower mean depression score of 6.64 (SD = 4.51).

The One-Way ANOVA analysis was conducted to examine the statistical differences in depression, anxiety, and stress levels based on the educational level of infertile women. The results are presented in Table 5. Regarding stress levels, there was no statistically significant difference observed among the different educational levels ($F = 1.429$, $p = 0.235$). Participants with a diploma had a mean stress score of 7.10 (SD = 3.71), those with a bachelor's degree had a mean stress score of 7.62 (SD = 4.10), individuals with a master's degree had a higher mean stress score of 9.29 (SD = 5.59), and those with other qualifications had a mean stress score of 7.21 (SD = 2.99).

Similarly, for anxiety levels, no significant differences were found based on educational level ($F = 0.384$, $p = 0.764$). Participants with a diploma had a mean anxiety score of 6.25 (SD = 3.38), those with a bachelor's degree had a mean anxiety score of 6.77 (SD = 3.89), individuals with a master's degree had a mean anxiety score of 7.06 (SD = 4.75), and those with other qualifications had a mean anxiety score of 6.43 (SD = 2.56).

In terms of depression levels, no significant differences were observed across different educational levels ($F = 0.824$, $p = 0.482$). Participants with a diploma had a mean depression score of 7.04 (SD = 3.92), those with a bachelor's degree had a mean depression score of 6.70 (SD = 4.10), individuals with a master's degree had a higher mean depression score of 8.18 (SD = 5.12), and those with other qualifications had a mean depression score of 6.14 (SD = 2.90).

The findings indicate that there were no statistically significant differences in depression, anxiety, and stress levels based on the educational level of infertile

women. Participants across different educational backgrounds exhibited relatively similar levels of psychological distress.

The One-Way ANOVA analysis was conducted to examine the statistical differences in depression, anxiety, and stress levels based on the marital status of infertile women. The results are presented in Table 6.

Regarding stress levels, no statistically significant differences were observed among the different marital statuses ($F = 0.939$, $p = 0.393$). Married participants had a mean stress score of 7.43 (SD = 3.80), while single participants had a higher mean stress score of 9.08 (SD = 6.02). Infertile women who were divorced or widowed had a mean stress score of 7.57 (SD = 6.13).

Similarly, for anxiety levels, no significant differences were found based on marital status ($F = 1.321$, $p = 0.269$). Married participants had a mean anxiety score of 6.46 (SD = 3.52), single participants had a higher mean anxiety score of 8.25 (SD = 5.31), and infertile women who were divorced or widowed had a mean anxiety score of 6.57 (SD = 4.72).

In terms of depression levels, no significant differences were observed across different marital statuses ($F = 0.386$, $p = 0.680$). Married participants had a mean depression score of 6.85 (SD = 3.90), single participants had a mean depression score of 7.92 (SD = 5.63), and infertile women who were divorced or widowed had a mean depression score of 6.86 (SD = 5.46).

The findings suggest that there were no statistically significant differences in depression, anxiety, and stress levels based on the marital status of infertile women. Participants across different marital statuses exhibited relatively similar levels of psychological distress.

The Independent samples t-test analysis was conducted to examine the statistical differences in depression, anxiety, and stress levels based on the period of infertility among infertile women. The results are presented in Table 7.

Regarding stress levels, no statistically significant difference was found based on the period of infertility ($t(200) = -1.463$, $p = 0.145$). Infertile women who had been experiencing infertility for less than 5 years had a mean stress score of 7.19 (SD= 3.98), while those who had been infertile for more than 5 years had a slightly higher mean stress score of 8.04 (SD= 4.11).

Similarly, for anxiety levels, there was no significant difference based on the period of infertility ($t(200) = -0.889$, $p = 0.375$). Infertile women who had been experiencing infertility for less than 5 years had a mean anxiety score of 6.38 (SD= 3.75), while those who had been infertile for more than 5 years had a mean anxiety score of 6.85 (SD= 3.61).

Table 7. Independent samples t-test analysis for the statistical differences in depression, anxiety and stress based on infertile women's period of infertility

	Period of Infertility	N	Mean	Std. Deviation	Std. Error Mean	t	p-value
Stress	Less than 5 years	120	7.19	3.98	.36290	-1.463	0.145
	More than 5 years	82	8.04	4.11	.45431		
Anxiety	Less than 5 years	120	6.38	3.75	.34222	-	0.375
	More than 5 years	82	6.85	3.61	.39878		
Depression	Less than 5 years	120	6.53	3.93	.35876	-1.665	0.098
	More than 5 years	82	7.85	4.19	.46245		

Table 8. Independent samples t-test analysis for the statistical differences in depression, anxiety and stress based on infertile women's occupation

	Occupation	N	Mean	Std. Deviation	t	p-value
Stress	Employed	165	7.87	3.97	2.543	0.012
	Unemployed	37	6.03	4.06		
Anxiety	Employed	165	6.77	3.68	1.595	0.112
	Unemployed	37	5.70	3.68		
Depression	Employed	165	7.23	3.95	2.354	0.020
	Unemployed	37	5.51	4.27		

In terms of depression levels, no significant difference was observed based on the period of infertility ($t(200) = -1.665$, $p = 0.098$). Infertile women who had been experiencing infertility for less than 5 years had a mean depression score of 6.53 (SD= 3.93), while those who had been infertile for more than 5 years had a slightly higher mean depression score of 7.85 (SD= 4.19).

The Independent samples t-test analysis was conducted to examine the statistical differences in depression, anxiety, and stress levels based on the occupation of infertile women. The results are presented in Table 8.

Regarding stress levels, a statistically significant difference was found based on occupation ($t(200) = 2.543$, $p = 0.012$). Employed infertile women had a higher mean stress score of 7.87 (SD= 3.97), while unemployed infertile women had a lower mean stress score of 6.03 (SD = 4.06).

Similarly, for anxiety levels, there was no significant difference based on occupation ($t(200) = 1.595$, $p = 0.112$). Employed infertile women had a mean anxiety score of 6.77 (SD = 3.68), while unemployed infertile women had a slightly lower mean anxiety score of 5.70 (SD = 3.68).

In terms of depression levels, a statistically significant difference was observed based on occupation ($t(200) = 2.354, p = 0.020$). Employed infertile women had a higher mean depression score of 7.23 (SD = 3.95), while unemployed infertile women had a lower mean depression score of 5.51 (SD = 4.27).

The Independent samples t-test analysis was conducted to examine the statistical differences in depression, anxiety, and stress levels based on the

medication period of infertile women. The results are presented in Table 9.

Regarding stress levels, there was no statistically significant difference found based on the medication period ($t(182) = -1.610, p = 0.109$). Infertile women who had been on medication for 1-5 years had a mean stress score of 7.22 (SD = 4.37), while those who had been on medication for 5-10 years had a slightly higher mean stress score of 8.21 (SD = 2.87).

Table 9. Independent samples t-test analysis for the statistical differences in depression, anxiety and stress based on infertile women's medication period

	Medication Period	N	Mean	Std. Deviation	t	p-value
Stress	1-5 years	123	7.22	4.37	-1.610	0.109
	5-10 years	61	8.21	2.87		
Anxiety	1-5 years	123	6.11	3.85	-2.984	0.003
	5-10 years	61	7.75	2.68		
Depression	1-5 years	123	6.54	4.21	2.086	0.038
	5-10 years	61	7.82	3.18		

Similarly, for anxiety levels, a statistically significant difference was found based on the medication period ($t(182) = -2.984, p = 0.003$). Infertile women who had been on medication for 1-5 years had a lower mean anxiety score of 6.11 (SD = 3.85), while those who had been on medication for 5-10 years had a higher mean anxiety score of 7.75 (SD = 2.68).

In terms of depression levels, a statistically significant difference was observed based on the medication period ($t(182) = -2.086, p = 0.038$). Infertile women who had been on medication for 1-5 years had a lower mean depression score of 6.54 (SD = 4.21), while those who had been on medication for 5-10 years had a higher mean depression score of 7.82 (SD = 3.18).

Discussion

Based on the results presented, several key findings emerge from the study. Firstly, in terms of socio-demographic characteristics, the majority of the recruited infertile women were aged over 30 years and held a bachelor's degree. The participants exhibited a diverse range of educational

qualifications, with a substantial proportion having a diploma. Most of the participants were married and had been experiencing infertility for less than 5 years. Furthermore, the majority of participants were employed, and a significant proportion had been on medication for 1-5 years.

Regarding psychological distress, the responses to the DASS-21 scale provided valuable insights into the emotional experiences of infertile women. Participants reported a tendency to overreact to situations, feelings of sadness or depression, and a sense of agitation. These findings highlight the heightened emotional reactivity and distress experienced by infertile women. Conversely, participants reported a lesser frequency or intensity of experiencing dryness in the mouth, feelings of worthlessness, and unfounded fear. These results indicate areas where infertile women may experience less emotional impact.

The socio-demographic characteristics of the recruited women revealed some interesting findings.

The majority of participants were older than 30 years, with 55.4% falling into this age category. This is consistent with previous studies that have shown a higher prevalence of infertility among women in their thirties (Smith *et al.*, 2018). The educational qualifications of the participants varied, with a significant proportion having a bachelor's degree. This finding aligns with a study by Wang *et al.* (2020) that reported higher educational attainment among infertile women. The majority of participants were married, which is expected as marriage is a common stage of life when individuals desire to start a family. These findings corroborate previous research highlighting the impact of marital status on infertility (Jung *et al.*, 2020). Furthermore, the duration of infertility varied, with a substantial proportion experiencing infertility for more than 5 years. This is consistent with studies indicating that the duration of infertility is an important factor in psychological distress among infertile women (Gameiro *et al.*, 2018).

The assessment of psychological distress using the DASS-21 scale provided valuable insights into the emotional experiences of infertile women. The findings suggest that infertile women experience elevated levels of emotional distress, particularly in terms of over-reactivity, sadness, and agitation. These results are consistent with previous studies that have reported high levels of depression, anxiety, and stress among infertile women (Verhaak *et al.*, 2017; Lakatos *et al.*, 2017). However, it is worth noting that infertile women reported relatively lower levels of dry mouth and unfounded fear compared to the general population. This may indicate that their distress is more focused on specific emotional domains related to their infertility experience. These findings highlight the specific emotional challenges faced by infertile women and emphasize the importance of addressing their psychological well-being.

The levels of depression, anxiety, and stress among the participants further support the presence of psychological distress in this population. The majority of participants exhibited normal levels of depression,

anxiety, and stress, which is encouraging. However, a subset of participants demonstrated mild to moderate levels of distress. These findings align with previous research showing a continuum of distress levels among infertile women, with a significant proportion experiencing clinically significant levels of psychological distress (Hammarberg *et al.*, 2017; Wu *et al.*, 2019). The low prevalence of severe levels of distress suggests that most participants in this study may have coping mechanisms in place or access to support systems that help mitigate the severity of their emotional distress.

Examining the differences in depression, anxiety, and stress levels based on age, no significant differences were observed. This finding is consistent with a study by Gameiro *et al.* (2018) that found no association between age and psychological distress among infertile women. These results suggest that age may not be a significant factor in determining the emotional well-being of infertile women.

Analyzing the differences in psychological distress based on educational level, no significant differences were found. These findings align with a study by Pasch *et al.* (2018), which reported no association between educational level and psychological distress among infertile women. The lack of significant differences suggests that educational background may not be a significant predictor of emotional distress in this context.

Investigating the differences in psychological distress based on marital status, no significant differences were observed. These findings are consistent with previous research that found no association between marital status and psychological distress among infertile women (Lakatos *et al.*, 2017). This suggests that the emotional well-being of infertile women is not influenced by their marital status.

Analyzing the differences in psychological distress based on the period of infertility, no significant differences were found. This is contrary to previous studies that have reported a positive association

between the duration of infertility and psychological distress (Greil *et al.*, 2019). The lack of significant differences in this study may be due to the relatively small sample size or other factors not accounted for in the analysis.

Examining the differences in psychological distress based on occupation, a statistically significant difference was found for depression levels. Employed infertile women had higher levels of depression compared to unemployed women. This finding contradicts a study by Lakatos *et al.* (2017), which reported no association between employment status and psychological distress among infertile women. Further research is needed to understand the underlying factors contributing to this difference.

Analyzing the differences in psychological distress based on the medication period, no significant differences were found for stress levels. However, a significant difference was observed for anxiety and depression levels. Infertile women who had been on medication for 5-10 years reported higher levels of anxiety and depression compared to those on medication for 1-5 years. These findings suggest that the duration of medication use may be a contributing factor to psychological distress among infertile women. However, more research is needed to explore this relationship further.

Conclusion

In conclusion, this study sheds light on the psychological distress experienced by infertile women and provides valuable insights into their emotional well-being. The findings indicate that infertile women commonly experience intense emotional responses, feelings of sadness and depression, and a heightened state of restlessness or distress. However, the study also reveals areas where infertile women may experience less emotional impact, such as a lower frequency of dry mouth and unfounded fear. The results highlight the need for enhanced emotional support, tailored coping strategies, and increased awareness among healthcare professionals and the general public. Moreover, a multi-disciplinary approach and appropriate resource allocation are

recommended to address the psychological needs of infertile women effectively. By implementing these recommendations, healthcare providers, researchers, and administrators can work towards providing holistic and patient-centered care, ultimately improving the well-being of infertile women.

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