History of Medicine, 2023, 9(1): 671-677
DOI: 10.17720/2409-5834.v9.1.2023.072

Anxiety and Depression Among Women Undergoing Infertility Treatments and Women with Natural Pregnancies

Roqia Saleem Maabreh[1]* Mahmoud Hasan Alrabab'a[2], Hekmat Yousef Al-Akash[3], Raya Alhusban[4], Mohammad Y. Al-zaatreh[5]

[1]RN, PhD, CNS / Associate professor, Al- Balqa Applied University/ Prince Al Hussein Bin Abdullah II Academy for Civil Protection, Jordan
EM: dr.roqiamaabreh@yahoo.com
RN, PhD / Assistant professor, Al-Balqa Applied University/ Prince Al Hussein Bin Abdullah II Academy for Civil Protection, Jordan
EM: mahmoud_hr111@yahoo.com
[3]RN, PhD, CNS / Associate Professor/ Applied Science Private University/ Jordan
EM: H_alakash@asu.edu.jo
[4]Assistant professor/Private Zarqa University/ Jordan
[5]RN, PhD, Assistant professor, Al-Balqa Applied University, Prince Al Hussein Bin Abdullah II Academy for Civil Protection, Jordan
EM: Mohammad.zaatreh@bau.edu.jo

*Corresponding author: Roqia saleem Maabreh (dr.roqiamaabreh@yahoo.com)

Received: 20 January 2023 **Accepted:** 15 April 2023

Citation: Maabreh RS, Alrabab'a MH, Al-Akash HY, Alhusban R, Al-zaatreh MY (2023) Anxiety and Depression Among Women Undergoing Infertility Treatments and Women with Natural Pregnancies. History of Medicine 9(1): 671-677. https://doi.org/10.17720/2409-5834.v9.1.2023.072

Abstract

Background: infertile women often experience many social and psychological challenges, including mental distresses and social discrimination. Some of the mostly reported psychological manifestation include depression and anxiety. To address the challenges, medical technological advances have recently advanced, and some technologies, such as the in-vitro fertilization were developed to help infertile women to babies from their own ovaries. However, little evidence has reported the current level of anxiety and depression among women attending in-vitro fertilization treatment. Purpose: to assess and compare the level of depression and anxiety among infertile women undergoing in-vitro fertilization and the naturally pregnant women at north of Jordan. Methods: descriptive cross-sectional research was conducted, data was collected using a research questionnaire from a total of 251 pregnant women in Jordan. The analysis was then performed using the descriptive statistics and Chi-square test of SPSS, version 26. Results: the study found out that 60.3% (n=91) and 24.9% (n=81) of the women undergoing in-vitro fertilization had anxiety and depression, respectively. Comparatively, 36% (n=36) and 31.1% (n=47) of the women with natural pregnancy had anxiety and depression, respectively. Overall, there was a statistically significant higher number of women experiencing anxiety than those with natural pregnancy (p=. 001). However, there was no statistically significant difference in cases of depression among women undergoing in-vitro fertilization and those with natural fertilization (p=.557). Conclusion: overall, mental distresses are more prevalent among women undergoing in-vitro fertilization than those of natural fertilization, and hence the need for more

psychosocial support among women undergoing in-vitro fertilization.

Keywords
Depression, anxiety, pregnancy, in vitro fertilization (IVF), infertility, psychological effects

Infertility is a serious reproductive failure represented by a failure to reproduce that affects both males and females and has negative consequences spreading across psychological and social impacts (Iordachescu et al., 2021; Szkodziak, Krzyżanowski, & Szkodziak, 2020). Infertility may arise from many different causes, including polycystic ovary syndrome, premature ovarian insufficiency, uterine fibroids, and endometriosis (Beke, 2019; Carson & Kallen, 2021). Other causes include occupational, environmental, genetic, dietary, and lifestyle-related factors may be highly relevant (Esteves, Santi, & Simoni, 2020). However, in some cases, it may be difficult to determine the cause of infertility, so it is known as idiopathic infertility (Bracke et al., 2018).

Many risk factors of women infertility have also been reported, such as number of both children and pregnancies, family support, smoking, history of mental disorders, alcohol intake, and daily medication use (Silva et al., 2016). The study by Bisetegen et al. (2016) also documented various risk factors of depression, including poverty, unfulfilled reproductive health needs, and obstetric complications such as history of fetal loss, unplanned pregnancy, and previous history of depression.

The prevalence of women infertility varies from one place to another and from time to time. According to Purvis and Christiansen (1992), infertility affects between 8% and 12% of the global population, with secondary infertility being more frequently than primary infertility. At the same time, Bisetegen et al. (2016) reported prevalence of infertility among women to be 11.8%. this is slightly higher than the figures reported by Ajinkya et al. (2013) who noted a prevalence of 9.18% among women. As such, technological interventions, such as assisted reproductive technology (ART) involving the in-vitro fertilization (IVF) treatment have been developed to help the infertile women (Kushnir et al., 2017). The IVF treatment is considered the most successful and effective form of ART, which has become frequently and increasingly used treatment for infertility since the birth of the first IVF baby in 1978 (Kupka et al., 2015; Hoeger et al., 2013). According to global data, infertility affects approximately 15% of couples worldwide, reaching 48.5 million couples and 186 million individuals (Salmanov et al., 2022).

Nevertheless, pregnancy; whether from natural process or IVF, causes diverse range of negative psychosocial challenges among women. A study performed in Rwanda by Umuziga, Adejumo, and Hynie (2020) among 165 women in their first and second trimesters of pregnancies found high prevalence of psychological symptoms among the infertile women. For instance, it was noted that 37.6% of participants experienced symptoms of depression and 28.2% had symptoms of clinical anxiety. Studies done among the infertile women have also reported diverse range of psychosocial symptoms. For instance, Al-Homaidan (2011) reported that 53.8% of infertile women and 37.2% of fertile women were depressed. In another study, Maroufizadeh *et al.* (2017) established that 49.6% of infertile women patients were anxious, while 33.0% were depressed.

Infertility is described as a stressful event that can cause crisis reactions with symptoms of depression, anxiety, and disturbance in relationships between couples Nagórska et al. (2019). Remarkably, infertility may significantly alter the life of infertile individuals causing considerable major psychological distress. Studies have shown that infertile women frequently express feelings of anger, shock, sadness, frustration, and poor self-esteem as a result of their

inability to conceive, give birth, and have children, all of which are important aspects of feminine identity and they also may believe they are less worthy and respected than others (Fang et al., 2021; Nagórska et al., 2019; Pawar, Jadhav, & Shah, 2019). At the same time, studies have observed that Women who receive ART with being unable to become pregnant, as well as women who experience abortion following assisted reproduction, are at risk for extended stress and depression (de Castro et al., 2021).

Moreover, it has been reported that stressful life experiences are reported more frequently in women than in men, and they have been linked to an increased chance of developing severe major depression (Kiani et al., 2021). Other studies have shown that women are two to three times more likely than men to develop major depression, and the highest incidence are reported among females during their reproductive years (Jiang et al., 2022; Slavich & Sacher, 2019). However, some evidence shows that women who underwent IVF treatment had higher levels of depression and anxiety than women who attempted to become pregnant naturally (Läänelaid et al., 2021). Overall, many psychosocial symptoms of mental distresses have been reported among infertile women seeking IVF treatment. Some of the symptoms include depression, anxiety, infertility-specific distress, and general perceived stress (Coussa, Hasan, & Barber, 2020) (Wichman et al., 2011). Cases of self-esteem, despair, symptoms and adjustment disorders have also been reported among infertile women undergoing IVF (Coussa et al., 2020; Smith, 2019) (Klock & Greenfeld, 2000).

Joelsson *et al.* (2017) also evaluated the prevalence of anxiety and depressive symptoms among women seeking infertility therapy with women who became pregnant naturally, and anxiety and depression symptoms were reported in 57.6% of sub-fertile women and 15.7% of non-pregnant women. In contrast, anxiety symptoms were reported in 21.1% of pregnant women who underwent ART, and depressive symptoms were reported by 8.5%. While according to Hashemieh *et al.* (2013) reported that anxiety was seen in 34% of the Jordanian infertile women.

Apart from stress symptoms, crisis and grief reactions have been significantly observed among women who are undergoing IVF, which manifest through four major emotional reactions, including the initial stage (shock, surprise, denial), the reactive stage (frustration, anger, anxiety, guilt, grief, depression, isolation), the adaptive stage (acceptance) and a resolution stage (planning for future solutions) (Fabiana Meijon, 2019) (de Castro et al., 2021; Hill et al., 2019).

The empirical-based indications therefore give a clue that there could be the same cases of psychosocial distress among the infertile women undergoing the IVF treatments in Jordan. Therefore, it is important to assess the cases of anxiety and depression symptoms in IVF and naturally pregnant women to help the authorities and decision-makers in taking proper and early intervention efforts. Accordingly, this study focused on examining the prevalence of anxiety and depression symptoms among IVF pregnant women compared with naturally pregnant women in Jordan.

Methodology

A descriptive cross-sectional study design was applied. Data was collected from 251 women , 151 women are affected by both primary and secondary infertility with no successful pregnancies and 100 were pregnant naturally, Sample size was determined through statistical techniques, and the research participants were randomly selected chosen from north of Jordan between September 2022 and January 2023. Participants were selected based on three considerations - women undergoing IVF treatment, pregnant women via IVF, and women with related infertilities that were diagnosed by a physician and have a clinical history. The exclusion criteria focused on women who had chronic diseases, mental or psychological

disorders.

A questionnaire was used consisting of the sociodemographic characteristics, Hospital Anxiety and Depression Scale (HADS). The HADS scale is a commonly used self-report includes 14 items, and was developed by Zigmond and Snaith in 1983 to evaluate signs of anxiety and depression, items are scored from 0 (no symptoms), to 3 (severe symptoms) (appendix 2). Values are ranged from 0 to 21; higher scores indicates higher levels of anxiety and depression. A total score 7 and less indicates a normal case, whereas a total score between 8-10 indicates a borderline and 11-21 score indicates abnormal case. The collected data was then summarized in tables and then analyzed using two statistical tests of SPSS, version 26.

Results

A total of 251 women participated in this study. Most participants (76%) were between the age of 18 and 35 years, with the average being 29.4 years. The majority 132 (52.6%) of the participants had a college or university education. It was also observed that 53.2% (n=131) of the participants were housewives while 39.8% (n=100) had employment. Ove 60% (n=151) of the participants were undergoing in-vitro fertilization treatment while 39.8% (n=100) had natural pregnancy (Table 1).

Table 1. Distribution of participants according to their socio-demographic data

Items	Variables	Frequencies	Percentage (%)
Woman age	Less than 18	3	1.2
	18-35	191	76
	More than 35	57	22.7
Woman's educational level	Primary	20	7.9
	Secondary	99	39.4
	College/University	132	52.6
Woman's work status	Employed	100	39.8
	Housewife	131	53.2
Pregnancy	Natural	100	39.8
	In-vitro fertilization	151	60.2

This study further compared the prevalence of anxiety symptoms among IVF pregnant with those of natural pregnancies. Accordingly, it was observed that 48.9% of the naturally pregnant women experienced anxiety compared to 51.1% of IVF pregnant women. This result indicates a significant difference between IVF pregnant women and naturally pregnant women (P = 0.01) (Table 2).

Table 2 The prevalence of anxiety symptoms among IVF pregnant women and naturally pregnant women

Variable		Anxiety		Total	Chi	P. value
		No	Yes			
IVF	Count	60	91	151	12.14	0.01
	Percentages	39.7%	60.3%	66.7%		
Natural	Count	64	36	100		
	Percentages	64%	36%	33.3%		
Total	Count	124	127	251		
	Percentages	100.0 %	100.0 %	100.0 %		

This research further observed that 49% of naturally pregnant women experienced depression compared to 51% of IVF pregnant women. This result indicates that there is no statistically significant difference between IVF pregnant women and naturally pregnant women (P = 0.557) (Table 3).

Table 3 The prevalence of depression symptoms among IVF pregnant women and naturally pregnant women

	Depression	Total	Chi	P. value

		No	Yes			
Natural	Count	104	47	151		
	Percentages	68.8 %	31.1%	66.7%		
IVF	Count	19	81	100	0.345	**0.557**
	Percentages	77.1%	24.9%	33.3%		
Total	Count	123	128	251		
	Percentages	49.0%	51.0%	100.0%		

Discussion

This study noted that approximately, 36% of naturally pregnant women and 31.1% exhibited anxiety and depression symptoms, respectively. In addition, nearly half of the IVF pregnant women and nearly one-third had anxiety and depression symptoms. Furthermore, the analysis revealed that the prevalence of anxiety was higher among IVF pregnant women than naturally pregnant women, with significant differences (P = 0.01). Furthermore, the prevalence of depression was greater among IVF pregnant women than among naturally pregnant women as well as depression in naturally pregnant women. However, these results are not compatible with those of a study conducted in Brazil by Silva et al. (2017) and in Pakistan by Ali et al. (2012), who discovered that depression was prevalent in 26.8% and 20.4% of naturally pregnant women, respectively.

Nevertheless, many other researchers have reported different prevalence of anxiety and depression among the naturally and IVF women. For instance, Alqahtani et al. (2018) reported that the prevalence of anxiety and depression among natural pregnant women in Saudi Arabia was 23.6% and 26.8%, respectively. Al- Azri et al. (2016) studied naturally pregnant Omani women to determine the prevalence of depression and risk variables. They discovered that 24.3% of them were depressed. Furthermore, Mohammad et al. (2011) discovered that prenatal depression was prevalent in 19% of pregnant Jordanian women. These differences could arise from the management strategies employed by the healthcare agencies in these different places.

Comparatively, in Sweden, Joelsson et al. (2017) employed the HADS and the Edinburgh Postnatal Depression Scale (EPDS) to investigate the prevalence of anxiety and depression symptoms among naturally pregnant women and women pregnant following ART. They discovered that anxiety symptoms were common, depression was present in 21.1% of women who became pregnant following ART, while it was present in 8.5% of them. In contrast, they discovered that 18.8% of naturally pregnant women had anxiety symptoms, compared to 10.3% who had depressive symptoms. There were no significant differences between the two groups. Hashemieh *et al.* (2013) investigated the level of anxiety among ARTs are being used to help pregnant Iranian mothers. They discovered that 34% of women experienced moderate to severe anxiety.

At the same time, Hobfoll et al. (2012) discovered that being female and being older were both directly connected to lower subjective health and were somewhat mediated by psychological distress. They also discovered that higher economic resource loss, lower income, and lesser education were all linked to poor subjective health. Furthermore, an alternative model investigating subjective health as a mediator of psychological distress indicated that subjective health mediated the association between resource loss and psychological discomfort to some extent.

According to the findings of this study, natural pregnant women and IVF pregnant women had roughly the same risk of experiencing anxiety and depression symptoms. Furthermore, as compared to other studies, the prevalence of anxiety and depression was high in both groups of participants (natural and IVF) in this study. Moreover, these findings are not surprising since studies have confirmed that every woman gets through this phase with some experience of anxiety or

depression symptoms (Hippman & Balneaves, 2018). These findings suggest that the various effects could be attributable to political, social, cultural, and economic factors that influence participants' mental health. These impacts could also be attributed to the peculiar Palestinian environment.

Conclusion

The study's findings found out that IVF pregnant women are more likely than naturally pregnant women to have anxiety and depression symptoms. The difference is more apparent in symptoms of anxiety than in depression. In fact, the significant difference was only observed in cases of anxiety. Nevertheless, the two conditions are dynamic psychological illnesses whose incidences vary with time and circumstances that surround the victims. Based on these observations, it there is a need for the IVF centers to provide psychological counseling services to women seeking such services. Moreover, prenatal anxiety and depression screening should be standard practice in all antenatal clinics and IVF institutes.

References

Beke A (2019) Genetic causes of female infertility. Genetics of Endocrine Diseases and Syndromes 111: 367-383. DOI: https://doi.org/10.1007/978-3-030-25905-1_17

Bracke A, Peeters K, Punjabi U, Hoogewijs D, & Dewilde S (2018) A search for molecular mechanisms underlying male idiopathic infertility. Reproductive biomedicine online 36 (3): 327-339. DOI: https://doi.org/10.1016/j.rbmo.2017.12.005

Carson SA, & Kallen AN (2021) Diagnosis and management of infertility: a review. Jama 326 (1): 65-76. DOI: https://doi.org/doi:10.1001/jama.2021.4788

Coussa A, Hasan HA, & Barber TM (2020) Impact of contraception and IVF hormones on metabolic, endocrine, and inflammatory status. Journal of assisted reproduction and genetics 37 (6): 1267-1272. DOI: https://doi.org/10.1007/s10815-020-01756-z

de Castro MHM, Mendonça CR, Noll M, de Abreu Tacon FS, & Do Amaral WN (2021) Psychosocial aspects of gestational grief in women undergoing infertility treatment: a systematic review of qualitative and quantitative evidence. International Journal of Environmental Research and Public Health 18 (24): 13143. DOI: https://doi.org/10.3390/ijerph182413143

Esteves SC, Santi D, & Simoni M (2020) An update on clinical and surgical interventions to reduce sperm DNA fragmentation in infertile men. Andrology 8 (1): 53-81. DOI: https://doi.org/10.1111/andr.12724

Fang M, Li G, Kang X, Hou F, Lv G et al. (2021) The role of gender and self-esteem as moderators of the relationship between stigma and psychological distress among infertile couples. Psychology, Health & Medicine 26 (10): 1181-1194. DOI: https://doi.org/10.1080/13548506.2020.1808233

Hill RM, Kaplow JB, Oosterhoff B, & Layne CM (2019) Understanding grief reactions, thwarted belongingness, and suicide ideation in bereaved adolescents: Toward a unifying theory. Journal of Clinical Psychology 75 (4): 780-793. DOI: https://doi.org/10.1002/jclp.22731

Hippman C, & Balneaves LG (2018) Women's decision making about antidepressant use during pregnancy: A narrative review. Depression and Anxiety 35 (12): 1158-1167. DOI: https://doi.org/10.1002/da.22821

Iordachescu DA, Gica C, Vladislav EO, Panaitescu AM, Peltecu G et al. (2021) Emotional disorders, marital adaptation and the moderating role of social support for couples under treatment for infertility. Ginekologia Polska 92 (2): 98-104. DOI: https://doi.org/10.5603/GP.a2020.0173

Jiang Y, Zou D, Li Y, Gu S, Dong J et al.

(2022) Monoamine neurotransmitters control basic emotions and affect major depressive disorders. Pharmaceuticals 15 (10): 1203. DOI: https://doi.org/10.3390/ph15101203

Kiani Z, Simbar M, Hajian S, & Zayeri F (2021) The prevalence of depression symptoms among infertile women: a systematic review and meta-analysis. Fertility research and practice 7 (1): 1-10. DOI: https://doi.org/10.1186/s40738-021-00098-3

Kushnir VA, Barad DH, Albertini DF, Darmon SK, & Gleicher N (2017) Systematic review of worldwide trends in assisted reproductive technology 2004–2013. Reproductive Biology and Endocrinology 15 (1): 1-9. DOI: https://doi.org/10.1186/s12958-016-0225-2

Läänelaid S, Ortega FB, Kunovac Kallak T, Joelsson L, Ruiz JR et al. (2021) Physical and sedentary activities in association with reproductive outcomes among couples seeking infertility treatment: a prospective cohort study. International Journal of Environmental Research and Public Health 18 (5): 2718. DOI: https://doi.org/10.3390/ijerph18052718

Nagórska M, Bartosiewicz A, Obrzut B, & Darmochwał-Kolarz D (2019) Gender differences in the experience of infertility concerning polish couples: preliminary research. International journal of environmental research and public health 16 (13): 2337. DOI: https://doi.org/10.3390/ijerph16132337

Pawar A, Jadhav BS, & Shah BR (2019) Prevalence of anxiety and depressive disorders and the role of coping strategies in females with infertility. Indian Journal of Mental Health 6 (2): 145-156. URL: https://www.indianmentalhealth.com/pdf/2019/vol6-issue2/Original_Researc_Paper_4.pdf

Purvis K, & Christiansen E (1992) Male infertility: current concepts. Annals of medicine 24 (4): 259-272. DOI: https://doi.org/10.3109/07853899209149953

Salmanov AG, Vitiuk AD, Kovalyshyn OA, Baksheev SM, Kutytska TV et al. (2022) Prevalence and risk factors of infertility in Ukraine: results a multicenter study (2019-2021). Wiadomości Lekarskie 75 (5. Pt. 2): 1234-1241. URL: https://repo.odmu.edu.ua/xmlui/handle/123456789/11809

Slavich GM, & Sacher J (2019) Stress, sex hormones, inflammation, and major depressive disorder: Extending Social Signal Transduction Theory of Depression to account for sex differences in mood disorders. Psychopharmacology 236 (10): 3063-3079. DOI: https://doi.org/10.1007/s00213-019-05326-9

Smith AF. (2019). *Family Processes and Child Mental Health: Unpacking Nature from Nurture*. (Doctoral dissertation). University of Sussex. http://dx.doi.org/10.13140/RG.2.2.15183.23201

Szkodziak F, Krzyżanowski J, & Szkodziak P (2020) Psychological aspects of infertility. A systematic review. Journal of International Medical Research 48 (6): 1-13. DOI: https://doi.org/10.1177/0300060520932403

Umuziga MP, Adejumo O, & Hynie M (2020) A cross-sectional study of the prevalence and factors associated with symptoms of perinatal depression and anxiety in Rwanda. BMC pregnancy and childbirth 20 (1): 1-10. DOI: https://doi.org/10.1186/s12884-020-2747-z