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Original Article

Depression among infertile women in Basrah, Iraq: Prevalence and risk factors

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Abstract

Background: The extent of depression and its risk factors among infertile women may vary across different populations. The current study aimed to examine the prevalence and risk factors of depression among infertile women in Basrah, Iraq.
Methods: This was a cross-sectional study including 251 infertile women who attended the infertility and *in vitro* fertilization unit in Basrah City. They were interviewed using a structured questionnaire. Depression was assessed by Interactional Classification of Diseases-Version 10 (ICD-10) criteria.
Results: The prevalence of depression among infertile women was 68.9%. It was significantly related to primary type of infertility, duration of infertility and treatment, and threat of husband's remarriage.
Conclusion: The rate of depression among infertile women in Basrah was high. Infertile women need psychological assessment and intervention as part of their medical treatment process.

Keywords: Basrah; depression; infertility; prevalence

1. Introduction

Infertility is defined as "the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse."[1] The prevalence of infertility differs greatly from one country to another, being 15% globally, > 30% in some developing countries,[2] and 17−28% in industrialized countries.[3] Infertility can be categorized as primary and secondary infertility, according to whether a woman has had a previous pregnancy or not.[4] Both men and women may have problems that might result in infertility.[5] However, irrespective of who is infertile in the couple, infertility is considered a stressful condition, particularly for women, who are commonly blamed for the cause of infertility,[6] which affects many aspects of their lives, such as their social, physical, and psychological well-being.[7] It may even affect interest in infertility treatment.[8] The social stigma of being childless among infertile women is so severe in some communities that such women are neglected and socially isolated.[9]

The prevalence of depression in infertile women ranges from 8% to 54%.[10] Depression is thought to be a major public health problem associated with infertility, particularly in developing countries, where having a child is very important for sociocultural, economic, and religious reasons.[11,12]

Age over 30 years, duration of infertility, low educational level, and low social support were the main risk factors for depression.[11,13,14]

The importance of infertility as a major public health problem, and the scarcity of studies on this topic in Basrah

Conflicts of interest: The authors declare that there are no conflicts of interest related to the subject matter or materials discussed in this article.

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City motivated the conduction of this study, which aimed to examine the prevalence and risk factors of depression among infertile women in Basrah.

2. Methods

2.1. Study setting and design

This was a descriptive cross-sectional study, conducted at the infertility and *in vitro* fertilization unit in Basrah City over a period of 9 months from January 1, 2013 to September 30, 2013. This study was approved by the Research and Ethics Committee of the College of Medicine, Basrah University.

2.2. Sampling methods and sample size

A convenience sample of 275 consecutive infertile women of reproductive age (15–45 years) attending the infertility and *in vitro* fertilization unit in Basrah City were invited to participate in the study. The inclusion criteria were as follows: women who had failed to conceive after 1 year of unprotected regular sexual intercourse, with no previous conception, without using any type of contraceptive, and women who had failed to conceive again after 1 year of unprotected regular sexual intercourse after previously having conceived at least once, without using any type of contraceptive.

Patients were excluded from the study if they were younger than 15 years or older than 45 years, had attended this unit before completing 1 year of unprotected sexual intercourse, had been diagnosed to have a past history of depressive disorder or generalized anxiety disorders prior to infertility diagnosis, had depression secondary to any organic disorder apart from infertility, or declined to participate.

2.3. Data collection

After participants provided informed consent, they were interviewed using a special structured questionnaire designed for the purpose of this study. It included information on personal data (age, duration of marriage, education, occupation, educational level of the husband, and income), infertility history, and social history, including if the patient was threatened by her husband to have another marriage (wife), or if she suffered abuse or neglect or was stigmatized. The major depressive episodes were diagnosed according to the Interactional Classification of Diseases-Version 10 (ICD-10) criteria, which are reliable diagnostic criteria and internationally recognized as the gold standard.[15] For a diagnosis of depression, at least four out of 10 depressive symptoms required to be present; three of these are key symptoms that include persistent sadness or low mood, and/or loss of interests or pleasures, and fatigue or low energy. The other seven symptoms are disturbed sleep, poor concentration or indecisiveness, low self-confidence, poor or increased appetite, suicidal thoughts or acts, agitation or slowing of movements, and guilt or self-blame. Symptoms should have been persistent for at least 2 weeks. Mild depression is considered if a total of four symptoms are present, at least two of them being key symptoms. Moderate depression is considered if five to six symptoms are present, two of them being key symptoms, while depression is considered severe if seven or more symptoms are present, including all three key symptoms.[16]

2.4. Statistical analysis

Statistical analysis of the data was done using SPSS version 19 (SPSS Inc., Chicago, IL, USA). Chi-square test (χ^2) or Fisher's exact test was used to detect associations between variables. Binary logistic regression was performed considering depression as the dichotomous variable, with the referent category being not having depression, to identify the independent risk factors associated with depression. A p value < 0.05 was considered statistically significant.

3. Results

A total of 251 women who fulfilled the inclusion criteria and were willing to participate were included in the study, giving a response rate of 91.3%. The age of the study population ranged between 16 years and 45 years with a mean ± standard deviation of 24.26 ± 8.5 years and a mean (± standard deviation) marriage duration of 7.4 (± 4.5) years. Primary infertility was prevalent in 64.9% of the study population, while 35.1% of them had secondary infertility, and 46.2% had been infertile for 5–10 years.

Depression was found to be prevalent in 68.9% of the study population (Table 1).[17–21,11,22–25,14] Of the depressed women, 42.2% had mild depression, 50.3% had moderate depression, and only 7.5% had severe depression (Figure 1).

The univariate analysis showed that infertility duration of > 5 years was significantly associated with depression [odds ratio (OR), 2.03; 95% confidence interval (CI), 1.17–3.52; $p = 0.011$]. Primary infertility was also found to be significantly associated with depression (OR, 1.99; 95% CI,

Table 1
Prevalence of depression in the study population in comparison with that in some other countries.

Country	Prevalence of depression (%)
Pakistan (2004)[17]	46
Taiwan (2004)[18]	17
Nigeria (2006)[19]	42.9
Sweden (2008)[20]	10.9
Poland (2009)[21]	35.4
Saudi Arabia (2011)[11,21]	53.8
Italy (2011)[22]	17.9
Turkey (2012)[23]	65
China (2012)[24]	14.8
Iraq (Baghdad, 2012)[a]	69.3
Iran (2013)[25]	46
Ghana (2013)[14]	62
This study (2013)	68.9

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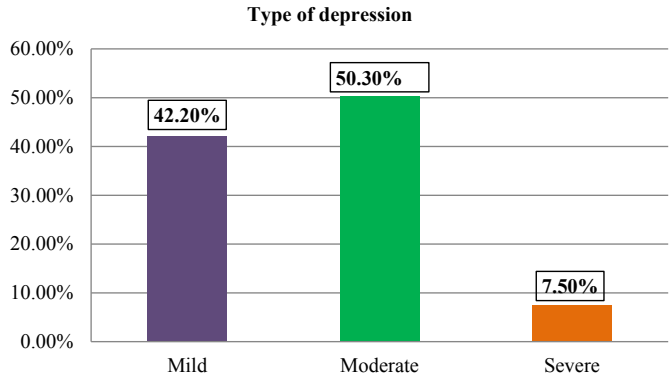

Figure 1. Distribution of severity of depression.

1.15–3.46; $p = 0.013$). The other variables that were found to be significantly associated with depression were duration of treatment and husband's threatening of another marriage. All other studied variables showed no significant association with depression (Table 2).

Logistic regression analysis showed that the independent significant predictors of depression were husband's threatening of another marriage, primary infertility, duration of infertility, and duration of treatment (Table 3).

Table 3
Logistic regression analysis.

Variable	β-coefficient	p	OR	95% CI for OR	
				Lower	Upper
Husband's threatening of another marriage	0.961	0.018	2.61	1.18	5.79
Primary infertility	0.747	0.010	2.11	1.19	3.73
Duration of infertility	0.653	0.021	1.92	1.10	3.35
Duration of treatment (>3 y)	0.644	0.023	1.91	1.09	3.32

CI = confidence interval; OR = odds ratio.

4. Discussion

The prevalence of depression among infertile women in the current study was high compared with that reported in some Western countries. However, it is in line with that reported in other parts of Iraq or some Islamic or developing countries (Table 1).

Depression is a common reaction to infertility, which often follows the feeling of loss of identity, defectiveness and incompetence, or a sense of social stigma.[9,26] In an Eastern country, having a child is very important for cultural, economic, and social reasons, or for religious beliefs, compared to that in a Western country.[18] In addition, differences in tests used for assessment of depression may also be considered to result in such variations in the prevalence of depression between different studies.

Women with a longer duration of infertility showed a significantly higher depression rate than those with a shorter duration (OR, 1.92; 95% CI, 1.10–3.35; $p = 0.021$), which agrees with results reported by others.[13,27] In the early years of infertility, women or couples may be hopeful about the success of medical intervention, whereas with an increase in the duration of infertility, such hope may decrease, particularly with repeated failure of treatment and in absence of social support from the partner or other family members.[28,29] By contrast, other studies showed either no association between depression and infertility duration[30] or weakening of association with time due to adjustment to the condition or due to adoption.[13,31,32]

The type of infertility also found to have a significant association with depression. Women with primary infertility were more depressed than their counterparts who had secondary infertility (OR, 2.11; 95% CI, 1.19–3.73; $p = 0.010$). Primary infertility indicates inability to have a child, leading to the feeling of loss of the essence of female identity and role of motherhood, which is more traumatic to infertile woman.[14]

Duration of treatment was found to be significantly associated with depression (OR, 1.91; 95% CI, 1.09–3.32, $p = 0.023$), a result that is in agreement with the report of Ozkan and Baysal.[33] Repeated failure of intervention combined with financial burden may contribute to such an association.[34]

Infertile women who reported a lack of spousal support, or bad relations with their partners or other family members

Table 2
Association of the studied risk factors and depression.

Variable	Depression (n = 173) No. (%)	No depression (n = 78) No. (%)	OR (95% CI)	p
Husband's threatening of another marriage	44 (25.4)	9 (11.9)	2.62 (1.21–5.67)	0.013[a]
Absence of emotional support	25 (14.5)	5 (6.4)	2.47 (0.9–6.71)	0.069
Duration of treatment (>3 y)	106 (61.3)	34 (43.6)	2.05 (1.13–2.37)	0.009[a]
Infertility duration (>5 y)	92 (53.2)	28 (35.9)	2.03 (1.17–3.52)	0.011[a]
Primary infertility	121 (69.9)	42 (53.8)	1.99 (1.15–3.46)	0.013[a]
Marriage duration (>5 y)	110 (63.6)	43 (55.1)	1.42 (0.83–2.45)	0.204
Age (>30 y)	72 (41.6)	27 (34.6)	1.35 (0.77–2.35)	0.293
Wife's educational level (<12 y)	110 (63.6)	50 (64.1)	1.02 (0.59–1.79)	0.937
Income (<500,000 ID)	91 (52.6)	39 (50.0)	0.90 (0.53–1.54)	0.703
Occupation (housewives)	143 (82.7)	59 (75.6)	0.65 (0.34–1.25)	0.703
Husband's educational level (<12 y)	106 (61.3)	39 (50.0)	0.63 (0.37–1.08)	0.094

CI = confidence interval; ID = Iraqi dinar; OR = odds ratio.
[a] Significant association.

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usually showed higher rates of depression.[19,31,35,36] In Eastern societies, particularly Islamic ones, having a child is a crucial factor for family stabilization. Infertile women experience negative social and marital consequences such as divorce, abuse, or being threatened by their husbands with another marriage, and consequently become psychologically upset.[37] In the current study, husband's threatening of another marriage was significantly associated with depression (OR, 2.61; 95% CI, 1.18−5.79; $p = 0.018$).

In agreement with other studies,[11,23,33,38] our study showed that depression was more common among housewives and those with higher education level but without significant association. In closed societies such as ours, only higher education and employment may lead women to joyful aspects of their life and help decrease psychological stress.[11,37,38]

In accordance with Al-Homaidan's study,[11] our study showed no association between age and depression.

One limitation of this study is that the studied women were those who attended the *in vitro* fertilization unit for treatment. Therefore the results cannot be generalized to all infertile women in the general population.

In conclusion, the prevalence of depression among infertile women in Basrah was high and comparable to that reported in some other Eastern countries, but it was higher than that in Western countries. Therefore, infertile women need psychological assessment and intervention as part of their medical treatment process.

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