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EPIDEMIOLOGY OF DEPRESSION AMONG INFERTILE AND FERTILE COUPLES IN SHIRAZ, SOUTHERN IRAN

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ABSTRACT

BACKGROUND: Depression is considered as one of the main psychological disorders associated with infertility. Depression may play a significant role in the life of infertile individuals, their infertility treatment follow-up and in their hopefulness for the future; it may also influence the intensity and continuousness of the mutual relationship of the affected couple. **AIMS:** This study was done to determine the depression rate and make a comparison between infertile and fertile couples with respect to the same. **SETTING AND DESIGN:** The depression rate was evaluated between two groups - infertile couples (case group) and fertile couples (control group). **MATERIALS AND METHODS:** Ninety-one infertile couples (cases) and 91 fertile ones (controls) were randomly enrolled in our study. Beck depression inventory (BDI) and demographic information were provided. **STATISTICAL ANALYSIS:** We used Chi-square, t-test; and one-way Analysis of Variance (ANOVA) was performed to find out significant difference between infertility duration in various couples and its effect on the score of depression. **RESULTS:** The BDI mean difference between infertile and fertile couples was significant ($P=0.015$). It was significantly more among couples with infertility from 1-3 years' duration compared to those with infertility of 1-year duration or less. **CONCLUSION:** Regarding the high rate of depression among infertile couples, it seems necessary to pay more attention to infertility centers that offer psychological and psychiatric services.

Key words: Depression, fertile couples, infertile couples

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Infertility is one of the main problems that couples may face. Approximately, 10 to 20% of couples may be involved.^[1] It was reported that 40% of infertilities were related to men, 40% to women and 20% to both sexes.^[2] The most common medical causes of infertility were reported to be irregular ovulation, endometriosis, defect in spermatogenesis and damage of fallopian tubes.^[2-4] Infertility is a phenomenon which influences all lifestyle aspects of a couple and has cultural, social, legal and, especially, psychological consequences.^[2]

The sorrow caused by infertility is often strong and is considered important; in many cases, the individual is not able to express it or find any place to relieve it.^[5] Depression is a reaction which appears as a consequence of sorrow.^[5] Various studies were conducted on the psychological aspects of infertility.^[6] Based on the findings of Domar *et al*, it is reported that infertile women had a remarkable score of depression compared to fertile women.^[7] At present prevalence of fertility is 10% in Iran and we are faced with an increase in the population of reproductive; therefore, the number of infertile couples will increase too.^[8] According to Shahbazi, the depression rate was more among women with infertility problems than among those whose husbands had the problem.^[9] Najmi *et al* noticed that depression, anxiety and incompetence were more in infertile women.^[10] Another survey showed a significant correlation between infertility duration, depression and anxiety.^[11] Therefore, depression could be one of the main psychological disorders associated with infertility, which appears after recognition of

infertility in an individual; and undoubtedly, the depression associated with infertility would have a significant impact on his/her interest in the treatment follow-up of infertility, hopefulness for the future and also on personal and social relationships.^[12] At present, prevalence of fertility is 10% in Iran and since we are faced with increasing reproductive women population, the number of infertile couples will increase too.^[8] According to Shahbazi *et al*, depression rate was more among those women who had infertility problems than among those whose husbands had this problem.^[9] Najmi *et al* noticed that depression, anxiety, inferiority and incompetency were more in infertile women.^[10] Another survey showed significant correlation between infertility duration, depression and anxiety.^[11] Recognizing the importance of infertility among the Iranian community and its impact on specific cultural, social aspects and the consequent depression among infertile couples, this study was undertaken to determine the depression rate among infertile and fertile couples.

MATERIALS AND METHODS

The depression rate among two groups - infertile couples (case group) and fertile couples (control group) - was evaluated. This research was done between April 2003 and March 2004. The infertile couples were selected from among those referring to Zeynabieh Hospital Infertility Center of Shiraz University of Medical Sciences and to infertility centers of private sectors in Shiraz, Southern Iran; and the fertile ones were selected randomly from among the available

population of Shiraz (couples in public places such as parks and in state organizations, universities, etc.). The selection criteria for cases of the study were as follows:

Case group (infertile couples): Minimum level of reading and writing (primary school degree), completing the questionnaire simultaneously by the husband and wife, suffering from no specific disease during the period of research, having passed at least 1 year after marriage and confirmation of the infertility by a specialist.

Control group (fertile couples): Having at least one child and no fertility problem during the period of research.

Variables such as age, level of education, occupation and age at marriage were matched. The data collection was performed by a demographic questionnaire and Beck depression inventory (BDI). To measure depression rate, we used Beck self-report questionnaire; however, its specificity and sensitivity were not so high but were acceptable. Beck questionnaire contents have been written by co-thinking and agreement of clinical specialists on pathological symptoms in depressive patients and it is in accordance with and comparable to DSM-IV criteria for depression. Test-retest reliability and validity of Beck questionnaire has been proved by several studies and researches.^[1] Beck suggested that a score greater than 9 points is indicative of depression symptomatology. BDI contained 21 questions and the total score range was determined to be from zero to 63. BDI score was also categorized in subgroups. The score

of 9 and less demonstrates a normal range, 10-15 indicates 'mild to moderate depressive symptoms,' and a score of 16 and more indicates clinical depression (score of 17-29 indicates moderate depression and a score of 30 or more indicates severe depression).^[1,13] When the qualified infertile and fertile couples were selected, the objectives of the study were explained to them and after receiving their consent, the questionnaire was completed separately and simultaneously. Beck questionnaire is a self-report questionnaire to be completed by the respondent without assistance. This study was approved by the ethics committee of Shiraz University of Medical Sciences.

Statistical analysis

Statistical Analysis was performed using statistical analysis SPSS software version 11.5. The descriptive variables such as mean, median, standard deviations were used. One-way analysis of variance was performed for finding out significant differences between infertility durations on the score of depression. Chi-square was performed for comparing the levels of depression of the infertile and fertile groups. T-test was performed for evaluating gender-wise scores of mean depression of the infertile and fertile groups.

RESULTS

In this survey, 123 infertile couples and 120 fertile couples (totally 486 persons) were enrolled in our study and they completed the questionnaires. After the first evaluation, 32 questionnaires from the infertile couples and 29 from the fertile group were disqualified for

incomplete filling, especially for not answering the Beck questionnaire. Finally, 91 questionnaires from the infertile and 91 from the fertile group were analyzed. In this study, the two groups - case and control - were matched for age, education degree, job and age at marriage.

Demographic characteristics of subjects are shown in Table 1. The subjects in this study were divided into four groups according to their age. A majority of participants in the case group were between the ages of 20 and 29 years and in control group - between 30 and 39 years. According to education, the subjects were divided into three groups. A majority of participants in both groups had diploma degree (secondary school degree). Based on the findings, the mean age of infertile couples was 28.62 years and the mean age of fertile couples (control group) was 29.58. Most of the participants in both groups married between the age of 20 and 29 years and a period of 4-10 years had passed

from the date of their marriage [Table 1].

The BDI score of 185 (50.8%) individuals was more than 10, showing that they were suffering from depression; ninety-seven individuals (26.6%) were from the infertile group and 88 (24.2 %) were from the fertile group. So, the depression frequency was more in the case group compared to the control group. The BDI mean difference between the two groups was significant ($P=0.015$) [Table 2]. Also, in the infertile group, 52 persons had BDI score over 16, indicating they had a clinical depression; and 36 persons in the fertile group had a score of more than 16. The depression mean score among the women in infertile group was higher than in the men of the same group, which was not statistically significant [Table 2]. The results by Chi-square showed a nonsignificant difference of depression severity between the two groups ($P=0.060$); because when the scores were being classified, we lost some information [Table 3].

Table 1: Demographic characteristics of subjects

Characteristic		Infertile group No.	Fertile group No.	
Age (y)	<20	4	3	
	20-29	100	82	
	30-39	68	91	
	≥40	10	6	
Mean of age (y)		28/62	29/58	P (NS)
Mean of marriage age (y)		23/55	22/91	P (NS)
Education	under Diploma	70	49	
	Diploma	70	80	P (NS)
	University	42	52	

Table 2: Comparison of mean BDI rates among infertile and fertile groups and gender-wise comparison

Groups	No	Mean	SD	Mean difference		95% CI of the difference		DF	T-test	P-value
					Lower	Upper				
Infertile	182	12.68		10.40	2.05	0.45	4.27	362	2.43	0.015
Fertile	182	10.63		7.95						
Male	91	11.46		10.16	-2.43	-5.46	0.60	180	-1.58	0.116
Female	91	13.89		10.55						

BDI - Beck depression inventory

Table 3: Comparison of depression severity among the two groups

Depression severity group	Non depression		Light depression		Mild depression		Severe depression		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Infertile	85	46.7	46	25.3	38	20.9	13	7.1	182	100
Fertile	94	51.6	52	25.6	33	18.1	3	1.6	182	100
Total	179	49.2	98	26.9	71	19.5	16	4.4	364	100

For through table $\chi^2 = 7.42$, $DF = 3$, P value = 0.060, For comparison light, mild and severe depression $\chi^2 = 6.55$, $DF=2$, P value = 0.038, For comparison light and mild depression $\chi^2 = 0.71$, $DF = 1$, P value = 0.398, For comparison light and severe depression $\chi^2 = 6.48$, $DF = 1$, P value = 0.011, For comparison severe and mild depression $\chi^2 = 4.14$, $DF = 1$, P value = 0.042

Table 4: Depression mean in relation to infertility duration

Infertility duration	No.	Mean	95% CI of the mean		DF	F	P value
			Lower	Upper			
One year	68	10.13	8.06	12.20	(2,179)	3.412	0.035
One to three years	62	14.55	11.63	17.47			
More than three years	52	13.77	10.78	16.78			

In this study, the depression rate among women who were the source of infertility was higher than those whose husbands were the source of infertility, which was not significant.

The depression mean among couples whose duration of infertility was between 1 and 3 years was more than the couples with 1 year or lesser duration of infertility ($P<0.05$), but no difference was seen among those having more than 3 years of infertility. Also, the depression mean among couples with more than 3 years of infertility (13.77) was higher than the depression mean of the couples with 1 year or less of infertility (10.13), which was not statistically significant [Table 4].

Duration of marriage had no effect on the depression rate among the two groups and the educational level and occupation had no effect on the depression rate of infertile couples too. In this study, in 5.5% of infertile couples, the infertility was of the secondary type.

DISCUSSION

The aim of this study was to compare the depression rate in infertile and fertile couples. This study can be valuable because it used a self-reported inventory that differs in both cost and time from a psychiatric structured interview. Nevertheless, the shortcomings of this inventory have been widely used in guiding research.

Based on the findings, the prevalence of depressive symptomatology, as indicated by BDI score ≥ 10 among infertile group (97 individuals), was higher in the infertile group than the fertile group (88 individuals). Also, the depression mean among the infertile group was significantly more than among the fertile group. The depression frequency and severity among infertile couples compared to fertile couples were higher. These findings were similar to those carried out by Domar *et al*, Berg *et al*, Vajmi *et al* and Alvani *et al*.^[7,10,11,14]

The remarkable point of this study was evaluation of the depression rate among infertile couples and a simultaneous study among both sexes; while previous studies, especially in Iran, were conducted to compare only infertile and fertile women. When couples are faced with infertility problems, the stress due to infertility is experienced individually.^[15] Therefore, it is necessary to study infertile couples - men and women - simultaneously to evaluate the depression rate in both sexes at the same time. This study showed a higher mean of depression in women compared with men among the infertile group, which was not statistically significant. A study by Khademi *et al* showed that depression mean scores were higher in females with infertility problems than males with this problem. In studies by Najmi *et al*, Khosrawi and Dhaliwal *et al*, the depression rate among infertile women was reported to be significantly higher than infertile men.^[10,16,17] The difference in the study method, limitation to select the study samples and the high number of couples with unrecognized type of infertility may be the causes of difference in the results of this study and those of the previous ones. Some studies have shown that infertile women have lower self-confidence and less satisfaction and experience more depression, stress, feeling of guilt and isolation compared to men.^[14] The perception of women about the cause of infertility may change her BDI score. Pressure on infertile women with female factor infertility is high. The risk of depressive symptomatology is lower when a woman thinks that the problem is a male factor. This type of cultural view has been observed in countries with family-based societies.^[16] In this study, the depression mean among the

couples with 1-3 years' duration of infertility was more than the couples with infertility duration of 1 year or less ($P<0.05$), but no significant difference was seen with those having more than 3 years' infertility duration. Also, no significant difference was seen between depression rates of couples with more than 3 years' infertility duration and those having 1 year or less of infertility duration. These findings confirm former studies. In a study, women with 2-3 years of duration of infertility suffered from more depression compared with those who experienced less than 1 year or more than 6 years of infertility.^[7]

In study by Alvani *et al*, a correlation was found between infertility duration and mental health rate and social aspects.^[14] In a study by Khademi *et al*, there was a positive relationship between infertility duration and depression scores. It seems that at an early stage of infertility, if the couple's hopefulness about the results of medical intervention and receiving support from the physicians and relatives for a higher pregnancy rate in the future be high and also if social and family stresses be absent and a deep understanding of infertility be present, mental stress and depression during the first year of infertility would be much lower. A long time period of infertility and repeated referring to the physicians, which are important physical stressing factors in infertile individuals; together with anxiety about the effectiveness of medical intervention, which is a psychological stressing factor in infertile persons, the infertility would gradually change to a chronic problem among infertile couples due to the barriers to reach one of the most

important goals of marriage - to be reproductive. While confronting this problem, the infertile couples would experience monthly cycles of hope and hopelessness,^[18] posing a high rate of stress that would increase the depression rate and finally, after years, they would gradually adjust with infertility using moderate mechanisms such as adoption; or they may continue their lives without any child and consequently, their stress and depression severity would decrease but would never disappear.

In this research, depression prevalence was high in the control group (24/4%). No research has been done widely in this form in Iran, i.e., by Beck questionnaire; but based on one research, depression rate was 16/7% in men and 30/5% in women.^[19]

Based on the findings, it is suggested that the infertile couples referring to infertility treatment centers should be screened in the beginning during the treatment period. We suggest that in the future, studies on psychological disorders in infertile couples should be evaluated by a clinical interview. The future studies can survey the factors arising out of the effects of psychiatric interventions (especially depression treatment) on infertility treatment success.

The limitations of this study were as follows:

1. Infertile couples were evaluated when referred to treatment centers for physician visits or preclinical work-up; that could influence the individual's mood and affect.
2. In this study, the infertile couples (case group) were selected from the persons referring to treatment centers and persons

not referring to treatment centers were not studied.

CONCLUSIONS

We conclude that depression can be one of the main psychological problems among infertile couples (especially women), which may affect all aspects of life of infertile couples and even the treatment processes of infertility, while infertility treatment centers pay less attention to such matters. Therefore, it may be desirable to establish psychological and psychiatric services in infertility treatment clinics and centers (especially in Iran), which undoubtedly would facilitate the treatment and follow-up procedures in order to reduce the psychological problems of infertile couples and their families.

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REFERENCES

1. Sadock BJ, Sadock VA. Kaplan and Sadock's comprehensive textbook of psychiatry, 7th ed. Lippincott Williams and Wilkins: Philadelphia; 2000. p. 1940-3.
2. Sadock BJ, Sadock VA. Kaplans and Sadocks symptoms of psychiatry behavioral sciences clinical psychiatry, 9th ed. Lippincott Williams and Wilkins: Philadelphia; 2003. p. 872-4.
3. Decherney AH, Pernoll ML. Current Obstetric and

- Gynecology Diagnosis and Treatment 1999.
4. Eskandari SH. Infertility and psychological moods. Payam Fertility Infertility 2000;2:14.
5. Garcia C. Infertility. Translated by Zandi A. Tehran Nashre-e-Enghelab 1999.
6. Grerl AL. Infertility and psychological distress: A Critical review of the literature. Soc Sci Med 1997;45:1679-704.
7. Domar AD, Broome A, Zuttermeister PC, Seibel M, Friedman R. The prevalence and predictability of depression in infertile women. Fertil Steril 1992;58:1158-63.
8. Saghi N, Toofani H, Afzalaghaie M, Shahrabadi H. Relation between psychological states of infertile ferules with length of treatment. J Gonabad Univ Med Sci 2003;19:44-8.
9. Shahbazi L. The survey and the comparison of depression rate in women who have infertility problems with the women who their husbands have infertility problem in referring to state infertility centers in Iran in 1993. Iran medical University: MA Nursing Thesis; 1993
10. Najmi B, Ahmadi SS, Ghasemi Gh. Psychological characteristics of infertile couples referring to Isfahan Infertility center. Med Quart J Fertile Infertile 2001;2:8.
11. Berg BJ, Wilson JF. Psychiatric morbidity in the infertile population: A reconceptualization. Fertil Steril 1990;53:654-61.
12. Carvygranth M. A guide to psychometry. Translated by Shatifi P and Nikkhoo M. Roshd Publishing Co: 2000.
13. Khademi A, Alleyassin A, Aghhosseini M, Ramezanzadeh F, Abhari AA. Pretreatment beck

depression inventory score is an important predictor for post-treatment score in infertile patients; A before-after study. BMC Psychiatry 2005;5:25.

14. Mazaheri MA, Keyghobadi F, Imani FZ, Feshang N, Yato M. Methods of problem solving and marriage agreement among fertile and infertile couples. Med Quart J Fertile Infertile 2001;2:8.
15. Alvani J, Niknam SH. A survey in the psychological complications from infertility among women. Shiraz University of Medical Sciences: MD Thesis; 2000.
16. Hossein MF, Farzadi L, Seyed-Fatemi N. Evaluation of Stressing factors and confronting guidelines among infertile women referring to Tabriz Alzahra Center in 1998. Med Quart J Fertile Infertile 2001;3:9.
17. Khosravi Z. Psychological health predicting factors among infertile couples. Med Quart J Fertile Infertile 2001;3:9.
18. Dhaliwal LK, Gupta KR, Gopalan S, Kulhara P. Psychological aspects of infertility due to various causes—Prospective study. Int J Fertil Womens Med 2004;49:44-8.
19. Kavyani H, Ahmadi AA, Nazari H. The prevalence of depression stressor in Tehran in 2000. Journal of Faculty of Medicine. Tehran University of Medical Sciences 2002;60:393-9.
20. Sargolzar MR, Moharrari F, Arshadi HR, Javidi K, Karimi Sh, Brodbar FM. Psychosexual and depression disorders in infertile women referring to Mashad Fertility Center. Med Quart J Fertil Infertil 2001;8:2.

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