Two Main Independent Predictors of Depression Among Infertile Women: An Asian Experience

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SUMMARY

Objective: The aim of this study was to identify personal, familial or social predictors of depression in infertile women seeking treatment.

Materials and Methods: This cross-sectional study included 193 infertile women who had been referred to an infertility center, where they were either undergoing treatment or investigative procedures. During separate interviews, questionnaires were filled out for each of the participants. The Beck Depression Inventory was used to assess the severity of depression.

Results: The mean age of the participants was 27.3 ± 5.6 years and the mean length of married life was 5.6 ± 5.3 years. The mean length of time for which they had been seeking infertility treatment was 4.1 ± 3.01 years. Women with Beck scores indicating that they were not depressed constituted 27.46% of the participants, while 72.54% seemed to be suffering from some degree of depression. Linear regression analysis showed that the only independent predictors of depression were the irrational parenthood cognition score and psychologic pressure exerted by relatives on the infertile couple.

Conclusion: Irrational parenthood cognitions and pressure by relatives were the two main independent predictors of depression among infertile women. [*Taiwan J Obstet Gynecol* 2008;47(2):163–167]

Key Words: Beck Depression Inventory, depression, infertility, Iran

Introduction

For millions of couples around the world, the inability to have children is a personal tragedy. For a significant proportion of them, the private agony is compounded by a social stigma, which can have serious and far-reaching consequences [1].

Approximately 10–15% of couples of reproductive age are involuntarily childless. This may vary from 8% to 33% in different study populations and depending on the definition, and is thought to be increasing [2,3].

One of the most intriguing aspects of the study of infertility is its relationship with psychology, particularly the various contrasting ways in which the causality of the relationship between psychologic problems and infertility has been interpreted. Since biblical times, it has been noted that involuntarily childless women frequently show behavior that would be interpreted today as a sign of psychologic problems.

Childbearing is an important aspect of most marriages. For most couples, conceiving and raising children are expected outcomes of their sexual relationship, and this may be particularly so in Eastern societies. Social and parental pressures to perpetuate the family name can place a psychologic burden on the infertile couple [4]. In addition, the physical, psychologic and financial challenges associated with assisted reproductive techniques may have further impacts on the couple. Ethnic differences occur in attitudes towards female

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Accepted: October 4, 2007

infertility, and no doubt religion and culture can also affect the psychologic aspects of conditions such as infertility and childlessness [5].

Many studies have focused on the importance and prevalence of depression in infertility, but very little research has been published concerning preventable predictors of depression among infertile women. Some predictors vary greatly among different cultural settings. The aim of this study was to identify any personal, familial or social predictors of depression in infertile women seeking treatment.

Materials and Methods

In this cross-sectional study, 193 women referred to the Majidi Infertility Center for infertility treatment or initial investigation were studied. All the women visiting the center over a 6-month period from January 2006 were enrolled.

During separate interviews, questionnaires were filled out for each of the participants and other information was extracted from their medical records. The questionnaires were self-instructed, but interviewers were available to help participants with poorer educational backgrounds. Demographic information and medical histories were recorded. Two separate parts of the Beck questionnaire and a specific questionnaire (Farsi questionnaire) for irrational parenthood cognition in infertility were also completed. The Beck Depression Inventory (BDI) was used to assess participants' severity of depression. The reliability and validity of the BDI have been demonstrated in many studies. In accordance with the test guidelines, a score of 10 or more indicates the presence of clinically meaningful depression. The Farsi questionnaire for irrational parenthood cognition has been tested in a pilot study and shown to be reliable [6].

Data were analyzed using the STATA version 8 (STATA Corp., Houston, TX, USA) software package. The results from various groups were compared using Chi-squared tests, *t* tests and one-way ANOVA. Regression analysis was used to check the independent effect of covariates. The significance level was considered to be $p < 0.05$ (95% confidence level).

Results

The mean age of the participants was 27.3 ± 5.6 years. The mean length of married life was 5.6 ± 5.3 years. Housewives constituted 84.9% of the women, while 45.2% had at least a high school diploma. Those with academic degrees were 21.3% of the women and 32.2% of their husbands. Eighty couples (41.5%) suffered from female infertility, 28 (14.5%) suffered from male infertility, and 42 (21.7%) suffered from combined-type infertility, while the cause of infertility was unknown in 43 (22.2%) of the participants. The mean length of time for which the patients had been seeking infertility treatment was 4.1 ± 3.01 years.

Table 1. Grouping of patients ($n = 193$) based on Beck score

	% (*n*)
Lower unreliable score (0–3)	20 (10.36)
Normal variation	33 (17.1)
Mild to moderate depression	58 (30.05)
Moderate to severe depression	58 (30.05)
Severe depression	21 (10.88)
Upper unreliable score (> 40)	3 (1.55)

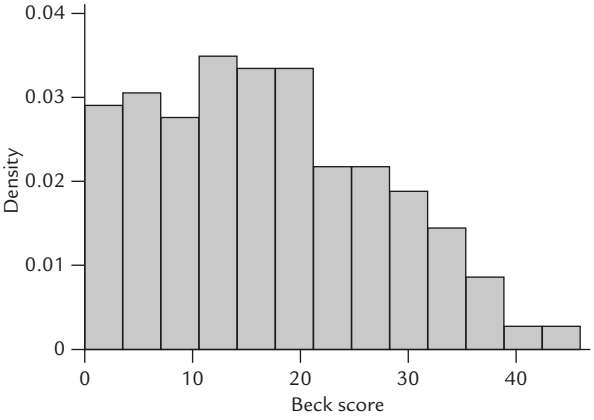

Figure 1. Histogram of Beck scores.

The Beck scores indicated that 27.46% of women were not depressed, while 72.54% seemed to have some degree of depression (Table 1). A histogram of Beck scores is shown in Figure 1. The Beck scores were lower in those women whose husbands were solely responsible for the infertility. The mean Beck scores for women of couples suffering from different types of infertility are shown in Figure 2.

We excluded from our analyses scores below 4, which were below the usual scores for normal people, as these were assumed to be due to possible denial of depression or to patients giving false answers. Similarly, we excluded scores above 40, which were significantly above the scores expected even for severely depressed people, suggesting possible exaggeration of depressive symptoms or possibly characteristic of histrionic or borderline personality disorders. After taking these exclusions into account, 33 patients (19.4%) were considered not to be depressed, 58 (34.1%) were considered to have mild to moderate depression, 49 (28.8%) to have moderate

to severe depression and 30 (17.6%) to have severe depression. Linear regression analysis showed an independent predictive effect only for irrational parenthood cognition score and psychologic pressure exerted by relatives on the infertile couple (as perceived by the wife). Thus, women with more irrational parenthood cognitions and those who were under higher psychologic pressure from their relatives regarding their infertility problems were more prone to depression. The distribution of irrational parenthood cognitions in women regarding infertility is given in Table 2.

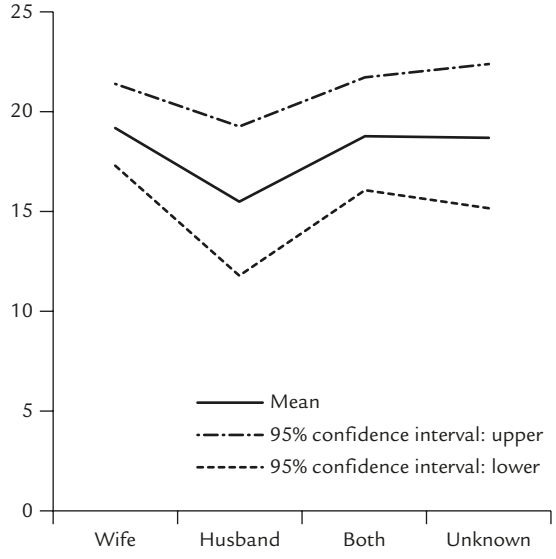

Figure 2. Comparison of mean Beck scores for different infertility types.

Discussion

Although a potential relationship between depression and infertility has been suspected for many years, the literature is often confusing and this topic has only recently been subjected to systematic investigation.

About 46% of participants in our study had either moderate or severe depression, though not all of these cases were attributable to infertility. The BDI is regarded as a screening test and has good sensitivity but lacks specificity. The incidence of depression has been reported to vary widely among different countries and societies. Interestingly, some studies have shown that depression among infertile people is no more common than in the general population [7,8].

Table 2. Distribution of irrational parenthood cognitions

Sentences stating an irrational belief regarding infertility	Attitudes regarding the irrational belief sentences				
	Completely disagree	Disagree	No idea	Agree	Completely agree
1. Having a child is the most important thing in life	2.50	0.50	4.50	33.50	59.00
2. A life without children is useless and empty	8.00	6.50	12.00	31.50	42.00
3. It is absurd that some people can have children quite easily, while others never can	19.10	25.13	8.04	15.58	32.16
4. The whole world revolves around children	11.50	11.00	8.50	29.00	40.00
5. Friends have no idea what those people who cannot have children go through	2.50	9.00	6.50	18.50	63.50
6. It is impossible to understand why some women decide to have an abortion	10.55	16.58	12.06	19.60	41.21
7. You start feeling inferior when you cannot have children	20.50	11.00	6.00	29.00	33.50
8. You start hating your body when you cannot have children*	35.00	9.00	7.50	24.50	23.50
9. An IVF treatment is extremely heavy and painful	3.00	8.00	6.50	36.50	46.00
10. Your whole world is destroyed when you or your partner has your/her period after replacement of the embryos	3.00	5.50	6.50	20.00	65.00
11. The waiting during an IVF cycle puts you through hell	4.00	8.50	7.00	29.50	51.00
12. One's whole world is destroyed when the last IVF treatment fails	5.50	3.50	7.00	11.50	72.50
13. Not having children causes lifelong suffering	3.00	6.50	7.50	28.50	54.50
14. One would want to do anything to get pregnant	Deleted due to low reliability and ethical limitations				

**There was one missing value in this question, leading to a 0.5% undercount. IVF = in vitro fertilization.*

Several studies, mostly from the Eastern countries, have shown that the reactions of relatives and families of the infertile couple have a major impact on the treatment-seeking behavior of infertile women and on the development of depression and psychologic symptoms [8–17]. Irrespective of infertility, it has been shown that verbal abuse of a wife by her husband or his relatives is a predictor of depression [18].

Some studies have shown that a lower level of husband support or a husband's negative reactions are associated with depression and psychologic problems in infertile women [8,9,12,16,19]. Such an association was not found in a Korean study [20]. The role of relatives in predisposing infertile women to depression has mostly been a focus of research in developing countries, especially in Asian and African countries. A study in China stated that although differences in cultural, ethnic and religious norms existed between Chinese and Western societies, Chinese couples' response to infertility was similar to that of Western couples. The major difference was that parents-in-law played an important role in Chinese society, especially in determining marital satisfaction [13]. In many developing countries, such as Iran, a shift from traditional extended families towards nuclear families has started but is not yet complete, especially among the lower socioeconomic groups. This increases the authority of close relatives, especially the husband's relatives, and the opportunities for them to interfere in the domestic problems of couples. A Pakistani study on health-seeking behaviors of couples with secondary infertility showed that family pressure and the desire of husbands or in-laws for a son accounted for 22.6% and 20.4%, respectively, of the reasons for seeking infertility treatment [21]. In Karachi, Pakistan, it was reported that a woman was persuaded by her mother in-law to seek infertility treatment early in the first month of her marriage [10]. Polygamous marriages are not popular and are even criticized in Iran; but in some Arabic and African countries, they are common and are related to the psychologic outcomes of infertility and infertility treatment-seeking behaviors [15,16,22–24]. However, in many Eastern countries including Iran, bearing a child is considered to be an important stabilizing factor in a marriage. This may explain why an infertile woman is under pressure, even from her own parents [19].

We found that depression scores were lower when only the husband was identified as the cause of the infertility. This result was not statistically significant, possibly because of the low power of this study, but it suggests that in all forms of infertility, except male infertility, the woman is considered to be more to blame than her husband, or is less able to deal with the responsibility than her husband. Some studies have found a greater psychologic effect of female infertility, but a strong relationship between the type of infertility and depression is not generally accepted [14,25–27].

We found no independent association between duration of infertility and depression, which is in line with the findings of four other studies in Japan, USA, Iran and Nigeria [16,19,27,28]. Kee et al [20] found that the Beck score among Korean infertile women was moderately elevated during the first 3 years of infertility but subsequently decreased, which was similar to the findings of a Turkish study [20]. A Chinese study, using a different methodology, conversely found a negative correlation between infertility duration, psychologic health status and marital quality [29].

We found a strong association between irrational parenthood cognitions and Beck score; women with more irrational parenthood cognitions were more prone to developing depression. This was consistent with results of previous research [19,30]. A few studies have also shown an association between irrational parenthood cognitions and quality of life in infertile women [6,24,31–33].

The findings of this research suggest that depression due to infertility or its treatment could be reduced by managing the roles of husbands and relatives through consultation and family education plans, and mass media education. Depression could also be reduced by improving social awareness and attitudes toward alternatives to having one's own child and lowering irrational parenthood cognitions through specific psychologic consultations or interviews.

Acknowledgments

This research was approved and financially supported by the research committee of the Tabriz University of Medical Sciences. We thank all the physicians and staff working in Majidi Infertility Center who helped us to conduct this research.

References

1. World Health Organization. Infertility. Geneva: World Health Organization, Aug 22, 2006.
2. Evers JL. Female subfertility. *Lancet* 2002;360:151–9.
3. Lapane KL, Zierler S, Lasater TM, Stein M, Barbour MM, Hume AL. Is a history of depressive symptoms associated with an increased risk of infertility in women? *Psychosom Med* 1995;57:509–13.
4. Whiteford LM, Gonzalez L. Stigma: the hidden burden of infertility. *Soc Sci Med* 1995;40:27–36.

5. Inhorn MC, Buss KA. Ethnography, epidemiology and infertility in Egypt. *Soc Sci Med* 1994;39:671–86.
6. Amanati L. *Measuring quality of life in infertile women referred to Valiasr Infertility Research Center* [dissertation]. Faculty of Nursing and Midwifery, Iran University of Medical Sciences, 2006.
7. Brasile D, Katsoff B, Check JH. Moderate or severe depression is uncommon in women seeking infertility therapy according to the beck depression inventory. *Clin Exp Obstet Gynecol* 2006;33:16–8.
8. Guz H, Ozkan A, Sarisoy G, Yanik F, Yanik A. Psychiatric symptoms in Turkish infertile women. *J Psychosom Obstet Gynaecol* 2003;24:267–71.
9. Beutel M, Kupfer J, Kirchmeyer P, et al. Treatment-related stresses and depression in couples undergoing assisted reproductive treatment by IVF or ICSI. *Andrologia* 1999;31: 27–35.
10. Bhatti LI, Fikree FF, Khan A. The quest of infertile women in squatter settlements of Karachi, Pakistan: a qualitative study. *Soc Sci Med* 1999;49:637–49.
11. Ellison MA, Hall JE. Social stigma and compounded losses: quality-of-life issues for multiple-birth families. *Fertil Steril* 2003;80:405–14.
12. Gulseren L, Cetinay P, Tokatlioglu B, Sarikaya OO, Gulseren S, Kurt S. Depression and anxiety levels in infertile Turkish women. *J Reprod Med* 2006;51:421–6.
13. Lee TY, Sun GH. Psychosocial response of Chinese infertile husbands and wives. *Arch Androl* 2000;45:143–8.
14. Lee TY, Sun GH, Chao SC. The effect of an infertility diagnosis on the distress, marital and sexual satisfaction between husbands and wives in Taiwan. *Hum Reprod* 2001; 16:1762–7.
15. Sami N, Ali TS. Psycho-social consequences of secondary infertility in Karachi. *J Pak Med Assoc* 2006;56:19–22.
16. Upkong D, Orji E. Mental health of infertile women in Nigeria. *Turk Psikiyatri Derg* 2006;17:259–65. [In Turkish]
17. Winkvist A, Akhtar HZ. God should give daughters to rich families only: attitudes towards childbearing among low-income women in Punjab, Pakistan. *Soc Sci Med* 2000;51: 73–81.
18. Patel V, Kirkwood BR, Pednekar S, et al. Gender disadvantage and reproductive health risk factors for common mental disorders in women: a community survey in India. *Arch Gen Psychiatry* 2006;63:404–13.
19. Matsubayashi H, Hosaka T, Izumi S, Suzuki T, Kondo A, Makino T. Increased depression and anxiety in infertile Japanese women resulting from lack of husband's support and feelings of stress. *Gen Hosp Psychiatry* 2004;26:398–404.
20. Kee BS, Jung BJ, Lee SH. A study on psychological strain in IVF patients. *J Assist Reprod Genet* 2000;17:445–8.
21. Sami N, Ali TS. Health seeking behavior of couples with secondary infertility. *J Coll Physicians Surg Pak* 2006;16:261–4.
22. Barden-O'Fallon J. Associates of self-reported fertility status and infertility treatment-seeking in a rural district of Malawi. *Hum Reprod* 2005;20:2229–36.
23. Donkor ES, Sandall J. The impact of perceived stigma and mediating social factors on infertility-related stress among women seeking infertility treatment in Southern Ghana. *Soc Sci Med* 2007;65:1683–94.
24. Khayata GM, Rizk DE, Hasan MY, Ghazal-Aswad S, Asaad MA. Factors influencing the quality of life of infertile women in United Arab Emirates. *Int J Gynaecol Obstet* 2003;80:183–8.
25. Demyttenaere K, Bonte L, Gheldof M, Vervaeke M, Meuleman C, Vanderschuerem D, D'Hooghe T. Coping style and depression level influence outcome in *in vitro* fertilization. *Fertil Steril* 1998;69:1026–33.
26. 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.
27. Ramezanzadeh F, Aghssa MM, Abedinia N, Zayeri F, Khanafshar N, Shariat M, Jafarabadi M. A survey of relationship between anxiety, depression and duration of infertility. *BMC Womens Health* 2004;4:9.
28. Abbey A, Halman LJ, Andrews FM. Psychosocial, treatment, and demographic predictors of the stress associated with infertility. *Fertil Steril* 1992;57:122–8.
29. Wang K, Li J, Zhang JX, Zhang L, Yu J, Jiang P. Psychological characteristics and marital quality of infertile women registered for *in vitro* fertilization–intracytoplasmic sperm injection in China. *Fertil Steril* 2007;87:792–8.
30. Glover L, Hunter M, Richards JM, Katz M, Abel PD. Development of the fertility adjustment scale. *Fertil Steril* 1999;72:623–8.
31. van Balen F, Trimbos-Kemper TC. Factors influencing the well-being of long-term infertile couples. *J Psychosom Obstet Gynaecol* 1994;15:157–64.
32. Fekkes M, Buitendijk SE, Verrips GH, et al. Health-related quality of life in relation to gender and age in couples planning IVF treatment. *Hum Reprod* 2003;18:1536–43.
33. Aliyeh G, Laya F. Quality of life and its correlates among a group of infertile Iranian women. *Med Sci Monit* 2007;13: CR313–7.