PSYCHOLOGY

A Study on Psychological Strain in IVF Patients

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Submitted: December 28, 1999
Accepted: January 29, 2000

Purpose: *The objectives of this study were to compare average stress levels in infertile women to fertile women, to determine the stress levels whether the patients was pregnant or not pregnant, and to examine for a cross-section of infertile patients in different stages of medical investigation for the infertility.*
Methods: *One hundred thirty-eight women receiving medical treatment for infertility attended the program. The State Trait Anxiety Inventory (STAI) and the Beck Depression Inventory (BDI) of perceived stress associated with the infertility was the outcome measure.*
Results: *Infertile women showed significant increases in trait anxiety and depressive symptoms than the fertile women. Anxiety and depression in the in vitro fertilization (IVF)-failed women were significantly higher than the IVF-success women. According to the duration of infertility, STAI and BDI were moderately elevated in the first stage (< 3 year). There was a trend of a decreasing psychological stress with an advanced infertility duration. On depression scales, the intermediate and final duration of infertility patients showed less symptomatology than the first-stage patients. Contrary to the expectation, demographic factors such as religion and husband cooperation were not related to the experience of stress.*
Conclusions: *We must pay an attention to the infertile patient, especially from the initial infertility workup. We recommend psychological counselling for IVF-failed patients.*

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KEY WORDS: Psychological stress; infertile women.

INTRODUCTION

In the past, traditionally if Korean women were infertile, they were regarded as having one of the "seven largest sins." Thus, they were stressed from the mistreatment at the hands of their own family members. Academically, the emotional response to the infertility has been characterized as a grief reaction, and this includes feelings of anxiety, anger, alienation, guilt, and depression.

Infertile women have been found to have greater levels of trait and repressed anxiety, tension, guilt feelings (1), depressive symptoms (2), and anger and frustration (3). Unfortunately, much of the data concerning the psychological adjustment of infertile women are based either on anecdotal evidence or derived from nonstandardized measures.

A perception of distress also may be influenced by prolonged contact with the infertility workup and treatment. A previous study by Berg et al. (4) documented the acute reaction to the initial diagnosis and treatment overlaid with a chronic strain response to a longer-term treatment. Few studies have reported whether the psychological stress of response to the duration of infertility and the patient's age may increase or decrease.

The present study addresses three related issues. First, it compares psychological stress of fertile women and infertile women, and those women who underwent in vitro fertilization (IVF) who conceived and those who did not conceive. Second, it compares the function of a cross section of infertile patients from three different stages of the medical investigation according to

1058-0468/00/0900-0445$18.00/0

the (a) duration of infertility (less then 3 years, 3–5 years, 5 years longer) and according to (b) age (less than 30 years, 30–35 years, over 35 years). Finally, it was investigated whether a reaction to husband's support affected psychological stress.

MATERIALS AND METHODS

Patients Population

Data were obtained from 138 women as a study, group who entered the IVF program and 78 fertile women who visited the outpatient department at the Chung-Ang university Hospital during the period of January 1997 to July 1999. None of the women had undergone psychological or psychiatric treatment. The ages of the study group were 32.76 ± 3.71 years. A control group consisted of 77 women aged 32.96 ± 3.25 years (similar age distribution as the infertile group) who already had at least one child.

Psychological Tests and Questionnaires

Each participant was given a written questionnaire using the BDI and STAI. A Korean version of the BDI was chosen to measure depression, as it is one of the most widely used instruments for assessing both intensity of depression and for detecting depression in normal population. Both the reliability and validity of this scale have been substantiated through a large body of research ($\alpha = 0.86$).

A Korean version of Spielberger's STAI also was used. This test is composed of a state anxiety questionnaire, assessing a person's transient anxiety in response to a certain situation, and a trait anxiety questionnaire, which reflects individual differences in anxiety as a personality trait.

Statistical analysis was carried out using the SPSS PC statistical package at the 5% level of significance.

RESULTS

Demographic Profile

The mean duration of infertility was 5.53 (1–16) years, and the duration of infertility workup was 2.81 (1–14) years. The mean age of fertile women was 32.96 years.

Table I. Clinical Characteristics of Pregnant and Nonpregnant Women[a]

	Pregnant ($n = 47$)	Nonpregnant ($n = 91$)
State anxiety[b]	38.23 ± 5.84	47.32 ± 6.72
Trait anxiety[b]	38.74 ± 3.98	49.35 ± 6.72
BDI[b]	27.32 ± 5.84	33.43 ± 6.72

[a] Values are means ± SEM.
[b] $P < 0.05$.

Psychological Tests

Mean (±SD) trait anxiety score of the infertile women was higher than the fertile women's score (43.56 ± 8.24, 46.23 ± 8.24, respectively; $P < 0.05$). State anxiety score was similar in both groups. A mean score of BDI of the infertile women was higher than the score of the fertile women (27.24 ± 6.72, 26.32 ± 7.43, respectively; $P < 0.05$).

Table I illustrates the levels of STAI and BDI by pregnant women and nonpregnant women after IVF treatment. State anxiety, trait anxiety, and depression were significantly lower in pregnant women (38.23, 38.74, 27.32, respectively) than nonpregnant women (47.32, 49.35, 33.43, respectively; $P < 0.05$).

Table II illustrates the fluctuation of the scales measuring the aspects of psychological distress according to the duration of infertility. STAI and BDI were moderately elevated in first stage (<3 year) (49.24, 52.92, 36.42, respectively). There was a trend of a decreasing psychological stress with advanced infertility duration. On depression scales, intermediate- and final-stage infertility patients showed less symptomatology than first-stage patients (36.42, 30.24, 29.32, respectively).

Table III shows level of anxiety and depression by age of infertile women. Trait anxiety and depression remained at an essentially the same level across the stages except the state anxiety, suggesting that these symptoms may not be strongly related to infertile women's age.

Table II. Comparison of Anxiety and Depression According to Duration of Infertility[a,b]

	< 3 yrs ($n = 16$)	3–5 yrs ($n = 49$)	> 5 yrs ($n = 16$)
State axiety	49.24 ± 5.27	38.72 ± 3.82	35.24 ± 0.90
Trait anxity	52.92 ± 5.72	43.23 ± 3.84	38.21 ± 6.21
BDI	36.42 ± 10.55	30.24 ± 4.94	29.32 ± 5.24

[a] Values are means ± SEM.
[b] All values $P < 0.05$ by ANOVA.

Table III. Comparison of Anxiety and Depression According to Female Age[a]

	Under 30 (n = 26)	31–35 (n = 82)	Above 35 (n = 30)
State axiety	50.38 ± 4.72[b]	43.63 ± 5.50[b]	44.19 ± 6.69
Trait anxity	45.13 ± 4.99	43.32 ± 3.72	43.27 ± 5.58
BDI	34.97 ± 8.32	35.24 ± 7.54	33.84 ± 7.25

[a] Values are means ± SEM.
[b] $P < 0.05$ by ANOVA.

Table IV shows whether the infertile women had experienced more positive or negative emotional feelings according to husband support or not. There was a trend toward a lower state anxiety and depression in women who had been supported by husband (46.04 vs. 50.25, 45.41 vs. 43.33, 30.87 vs. 38.33, respectively). But there was no significant difference between both groups. Many husbands were very supportive on the treatment of infertility. As there were only four husbands who were not supportive in our study, it is difficult to find a statistical significance.

DISCUSSION

In the present study, we explored the hypothesis that when infertile women are trying to get help through the assisted reproductive technology (IVF-ET), they experience more psychological distress than women who eventually conceive spontaneously. We also compared functioning of a cross-section of infertile patients from three different stages of the medical investigation according to the age and the duration of infertility of those infertile women.

Infertility has been considered a potent source of stress for most, if not all, couples unable to conceive. Although recent techniques and related procedures have provided many couples with new opportunities for pregnancy, they also can prolong the agony of disappointment.

Table IV. Comparison of Anxiety and Depression According to Husband Support[a]

	Cooperation (n = 73)	Uncooperation (n = 4)
State axiety[b]	46.04 ± 5.47	50.25 ± 6.24
Trait anxity[b]	45.41 ± 4.29	43.33 ± 4.04
BDI[b]	30.87 ± 7.18	38.00 ± 5.03

[a] Values are means ± SEM.
[b] Values not significant.

It may be expected that infertile couples will impose a considerable psychological burden on themselves and anecdotal evidence supports this view (5). Although evidence in this respect seems conflicting and as yet the mechanisms remain unclear (6), such psychological stress influences fertility in females (7). In contrast to Harlow's (6) study, our studies showed that anxiety and depression of infertile women were higher than the fertile women and the stress levels of IVF-successful women were significantly lower than those of IVF-failed women.

The first stage of STAI and BDI scales by duration of infertility was higher than the second and third stages. These results were well within accordance with the descriptive reports of women's experiences regarding infertility, many of which describe not only surprise, shock, denial, anger, isolation, guilt, grief, and depression, but subsequently reported decreased symptoms as a results of adjustment, sharing of the problems with professionals, and hope for a successful resolution. The results are consistent with a model of psychological strain that reflects an acute stress reaction to the initial diagnosis and treatment. On the other hand, persons in prolonged contact with distress can become desensitized to the distress, perceiving less distress as a means of coping with prolonged exposure to emotionally charged situations. Kopitzke et al. (8) called this process as a "desensitization model."

Not surprisingly, in the case of infertile women's age, trait anxiety and depression were similar for ages below 30 years and over 35 years, suggesting that these symptoms may not be strongly related to the infertility.

Newton et al. (9) observed that 25.4% of women could be characterized as experiencing some form of depression after an IVF failure compared with 11.6% before the treatment. Among these women, 17.9% were experiencing "mild" depression and a further subgroup (7.5%) were dealing with more serious or "moderate" levels of depression (9). The stress associated with IVF, however, is less salient when examined in the context of reactions in other areas of functioning. The findings suggest that the emotional impact of IVF might be less pronounced during the actual treatment process than is generally assumed from studies focusing on the impact of treatment failure. Boivin and Takefman (10) observed this process and concluded it was due to feelings of optimism about the IVF treatment. Not surprisingly, the husbands' support of infertile women did not decrease the psychological stress significantly. We need larger numbers to find a statistical difference.

In conclusion, infertile women may experience psychological distress, in particular at the time when they are attending the infertility clinic or they are not successful with the IVF treatment. We also recommend a psychological support and counseling for women who experienced a severe stress.

ACKNOWLEDGMENTS

This research was supported by the Chung-Ang University Special Research Grants in 1996.

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