PSYCHOLOGICAL DISTRESS IN INFERTILE AND FERTILE WOMEN
Masoumeh Golestan Jahromi¹, Leili Mosalanejad²*, Fatemeh Ghavi³

¹Research and clinical center for infertility, Shahid Sadoghi University of Medical Sciences, Yazd, Iran.
²Assistant professor, mental health department, Research center for social determinants of health, Jahrom University of Medical Sciences, Jahrom, Iran.
³MSc of midwifery, Research center for social determinants of health, Jahrom University of Medical Sciences, Jahrom, Iran.

*Corresponding author: Email: saedparsa2012@gmail.com.

Design: Descriptive cross sectional study.
Methods: This study was carried on 349 fertile and 241 infertile women who referred to Yazd Infertility Center between 2013-2014. These participants were selected by purposive sampling method. Data collection instruments consisted of three questionnaires: a demographic questionnaire and the Depression, Anxiety, Stress Scale (DASS). Analytical tests were used for comparing the differences between the means based on the demographic factors.
Results: A comparison between the groups reveals that there were no significant differences between their demographic characteristics. There are significant differences between fertile and infertile women's means of stress, anxiety and depression: the values of the means are higher in case of the infertile group. age correlates with stress, depression, and anxiety (P<0.05), and employment correlates with anxiety in infertile women and with depression in fertile women.
Conclusion: study show that infertility and the ensuing psychological-social consequences can cause psychological disorders and threaten one's individual, social, and married life. Therefore, necessary study infertile couples' psychological problems and provide appropriate psychological and social therapies, along side the present treatments.

Keywords: Infertility, Stress, Depression, Anxiety.

INTRODUCTION
In most countries and cultures across the world, infertility is held to be a stressful and critical experience that can threaten the welfare of individuals, couples, families and societies (1). Infertility is associated with a whole range of psychological disorders, including decline in quality of life and self-esteem, sexual, emotional and social dissatisfaction, conflict, anxiety, depression, and sexual dysfunctions (2).Various studies in the U.S. show that
rate of infertility can vary from 8% to 33% (3). The overall prevalence of infertility was 8% (95% CI: 3.2-15.0) in iranian couples (4).

Willson mentions that just as psychological factors can contribute to infertility, infertility can lead to psychological disorders (5).

Donald and Morse call the twentieth century the age of anxiety, and define anxiety as a painful feeling accompanied by mental fear of an expected threat (6). By increasing cortisol and prolactin, anxiety aggravates infertility (7).

It has been proved that lower levels of stress improve fertility in men and women (8). Smeenak et al. associate emotional factors and the psychological conditions of individuals, e.g. anxiety and depression, with the results of their infertility treatments (9). The results of a study by Yang et al. show that anxiety can be an important mental factor in the results of infertility treatments (10).

Stress (negative life events) consists in conditions or happenings that an individual encounters in life, but do not fit into his/her present capacity, and consequently cause conflicts and psychological agitation (11). The relationship between stress and infertility is a vicious cycle, with one aggravating the other: the wives or husbands who blame themselves for the infertility in their lives rebuke themselves, which results in greater stress and worsens the situation (12).

One of the commonest psychological disorders, depression is accompanied by feelings of despair, incompetence, guilt, fear, and worth lessness. Depression symptoms range from minor signs to serious disorders. Sociological studies show that depression symptoms vary from 8% to 20%. Also, 20% to 25% of women and 2% to 12% of men are affected by serious disorders. Due to the diversity of contributory factors in depression, its incidence varies from country to country (13).

According to Ramezanzadeh et al., infertility has a significant influence on such psychological factors as depression, anxiety, emotional stress, inter-personal conflicts, decline in psychological functions and maladjustment (14). Studies show that infertile women experience higher levels of depression and anxiety than fertile women (15).

The results of a study of infertile women in Japan showed that anxiety and depression in the subjects had a significant relationship with their not being supported by their husbands and stress (16). Klerk et al. report higher levels of stress, depression and anxiety in women who are being treated for infertility (17).

Many studies have addressed the relationship between infertility and different aspects of psychological distress, including stress, depression and anxiety, with specific intervening variables, such as causes of infertility, length of infertility, length of marriage, age, occupation, and education. It is important to note that depending on the populations, conditions, and locations of the studies, the results differ considerably. Thus, this study aims to explore the relationship between different aspects of psychological distress and several demographic factors in an Iranian community.

MATERIALS AND APPROACHES

This is a cross-sectional study which aims to comprehensively explore distress in fertile and infertile women, and its relationship with demographic factors in 590 women who were receiving infertility service at the Infertility Center of Yazd. The study population consisted of 349 fertile and 241 infertile women. Data collection
instruments consisted of three questionnaires: a demographic questionnaire and the Depression, Anxiety, Stress Scale (DASS). DASS is a shorter version of DASS-21. The 21 items on DASS-21 are intended to assess depression, anxiety, and stress in respondents. The depression scale measures dysphoria, hopelessness, devaluation of life, self-deprecation, indifference, anhedonia, and inertia. The anxiety scale measures autonomic arousal, situational anxiety, and subjective experience of anxious affect. The stress scale measures inability to relax, nervous arousal, agitation, irritability, over-reactiveness and impatience (18). The cutoff scores recommended by Lovibond and Lovibond are used in this study (19-20). The psychometric properties of DASS have been tested rigorously and there is proof of the convergent and discriminant validity of the data as collected by the instrument (21-22).

The control group consisted of a homogeneous population of fertile women who accompanied patients to the medical centers of Jahrom; these women were not suffering from physical or mental disorders and were not taking antihypertensive or antidepressant medications. The women in the experiment group were undergoing treatment at the Infertility Center of Yazd; these women were suffering from infertility only and were not taking any medications except infertility medications.

Descriptive statistics, such as mean and standard deviation, were used to analyze the data; correlation coefficient was used to analyze the distribution of stress scores; and analytical tests were used for comparing the differences between the means based on the demographic factors.

The research proposal was approved by the Ethics Committee at the University of Medical Sciences of Jahrom. Though the participants had been encouraged to participate in the study, they did it of their own free will and could quit at any point.

Table 1: Demographic data of the two groups

<table>
<thead>
<tr>
<th></th>
<th>Fertile(349)</th>
<th>Infertile(241)</th>
<th>p-value</th>
<th>df</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under 25</td>
<td>188(53.9)</td>
<td>117(49)</td>
<td>0.26</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>26-35</td>
<td>151(43.3)</td>
<td>101(42.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36-45</td>
<td>10(2.9)</td>
<td>21(8.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Length of marriage</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5 year</td>
<td>181(46.6)</td>
<td>119(46.1)</td>
<td>2.72</td>
<td>0.27</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>140(36.1)</td>
<td>81(31.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td>52(13.4)</td>
<td>43(16.7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 16</td>
<td>15(3.9)</td>
<td>15(5.8)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td>98(27.8)</td>
<td>66(29.7)</td>
<td>0.28</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Household</td>
<td>255(72.2)</td>
<td>65(29.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other work</td>
<td>353(100)</td>
<td>91(41)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>84(23.6)</td>
<td>50(22.4)</td>
<td>0.10</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>Diploma</td>
<td>135(37.9)</td>
<td>89(39.9)</td>
<td></td>
<td></td>
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<tr>
<td>Higher education</td>
<td>137(38.5)</td>
<td>84(37.7)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

A comparison between the groups reveals that there were no significant differences between their demographic characteristics (Table 1).
Table 2: means of variables in the two groups (fertile & infertile)

<table>
<thead>
<tr>
<th>DASS</th>
<th>Mean</th>
<th>SD</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Fertile</td>
<td>5.25(4.17)</td>
<td>0.28</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>In fertile</td>
<td>12.76 (4.47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>Fertile</td>
<td>5.40(4.40)</td>
<td>0.45</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>In fertile</td>
<td>12.06(4.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>Fertile</td>
<td>7.36(4.43)</td>
<td>1.30</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>In fertile</td>
<td>14.97(4.75)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tables 1 and 2 show that there are significant differences between fertile and infertile women's means of stress, anxiety and depression: the values of the means are higher in case of the infertile group.

![Figure 1: Mean Score of DASS Subscale In two Groups](VAR00001)
Table 3 shows that age correlates with stress, depression, and anxiety (P<0.05), and employment correlates with anxiety in infertile women and with depression in fertile women.

The results of the MANOVA test show that, in the absence of demographic factors, there are significant differences between the groups' mean scores related to the three disorders.
DISCUSSION

The results of the study show that there are significant differences between the two groups' stress, depression, and anxiety mean scores: the values of the infertile group's mean scores were higher. The results of the MANOVA test show that, in the absence of demographic factors, there are significant differences between the groups' mean scores related to the three disorders.

In the study of Guliz et al., infertile women's stress, depression, and anxiety scores were higher than fertile women's (23). According to the study of Gludice et al., though the conditions that reveal an individual's stress, depression, and anxiety differ from person to person, these psychological disorders affect infertile women twice as much as fertile women (24).

Many studies confirm that anxiety and depression in infertile couples are significantly higher than in fertile couples (25-26). Likewise, the results of many studies show that infertile women experience higher levels of stress, anxiety, and depression, which is in agreement with the findings of the present study (27-30).

Herbert et al. concluded that depression is more prevalent in infertile women than fertile women, which agrees with the findings of the present study. Similarly, Bahrami et al. used Beck Depression Inventory to find infertile and fertile women's depression mean scores to be 8.31 and 5.10 respectively (31-32).

The study of Arab-shyebani shows that, compared to fertile women, infertile women experience higher levels of stress and anxiety (33). Kazemian's study, similarly, reports higher levels of stress in infertile women than fertile women (34). In contrast to studies that confirm the correlation between infertility and psychological disorders, Burns & Covington conclude that the psychological consequences of infertility are infrequent (35).

Moreover, though many studies show that infertile women suffer from more psychological disorders than fertile women, some studies reject the presence of psychological distress in infertile women (36). Boivin does not correlate the psychological distress women experience prior to infertility treatments with the results of the treatments (37).

The present study shows that ageing correlates with stress, depression, and anxiety; it was also found that employment correlates with anxiety in infertile women and with depression in fertile women. According to the study of Ogawa et al., as infertile women get older, their anxiety and depression scores increase. Ogawa does not find a difference between the anxiety scores of employed and unemployed infertile women, but finds that the depression scores of unemployed infertile women are higher than the employed; however, the difference is insignificant (38-39).

On the other hand, a study by Guzh Ozkun in Kuwait shows that increase in age and length of infertility results in less depression and anxiety; it can be assumed that old age and prolonged infertility induce one to come to terms with the conditions (40).

With regard to the correlation between ageing and higher levels of depression, anxiety, and stress, many studies claim that since ageing reduces women's chances of fertility, it can increase the incidence of psychological disorders in them (41-43). Ramezan-zadeh reports that anxiety and depression are more common in infertile housewives than infertile working women (44). The fact that infertile working women experience less depression can be attributed to their higher social status, financial independence, occupational identity, non-isolation, and skills in coping with stress. Kousalya considers employment as an influential factor in the psychological conditions of infertile women (45). Similarly, Abbey mentions that the psychological adjustment of infertile women is influenced by their social-economic status (46).
Regarding the psychological-social consequences of infertility, Dyer states that despite differences among countries' cultures, in most developing countries the negative consequences of infertility are related to the very low social and economic status of women in these countries, where women's primary function is considered to be reproduction (47).

One of the limitations of this study is the fact that the sample was selected from an infertility center: women who go to infertility centers are subject to greater distress and are more concerned about the results of their treatments. Therefore, there is need for more research on women who visit gynecologists for treatment, so that the frequency of disorders can be determined more accurately and better measures can be taken. It is also suggested that studies compare psychological disorders between the two groups.

CONCLUSION

The results show that infertility and the ensuing psychological-social consequences can cause psychological disorders and threaten one's individual, social, and married life. As with the present study, many studies have confirmed the high incidence of psychological disorders in infertile women. Therefore, it seems necessary that medical centers should study infertile couples' psychological problems and provide appropriate psychological and social therapies, alongside the present treatments. Such holistic care will enable couples to face the challenge of expensive and lengthy treatments and acquire better results.

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