

## ORIGINAL PAPER

### Developing the Scale for Assessing Psychosocial Problems Experienced by Women during their Infertility

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#### Abstract

**Aim:** The purpose of this study is to develop a measurement tool for retrospectively assessing the psychosocial problems experienced by women during their infertility.

**Materials and methods:** This study has a retrospective methodology. 204 women residing in Antalya, who accepted to participate in the study, had undergone infertility treatment in the same city and had been successfully treated, and in consequence of the infertility treatment, have at least one living child between 0-6 years old. Personal information form and the Scale for Assessing the Problems Experienced during Infertility were applied through face-to-face interview method to the women who accepted to participate in the study. The interviews were conducted in approximately 20 minutes at their workplaces for the working women, and at their home for the remaining participants.

**Results:** Cronbach's alpha value of the items of the scale was found to be 0.92. Adjusted Item-Total Score correlations of the items ranged between 0.32 and 0.72, and they are statistically significant  $p < 0.05$ . Exploratory factor analysis revealed 10 sub-factors in the scale. It was found that all of these factors explain 63.32% of the total variance.

**Conclusions:** The study shows that the "Scale for Assessing Psychosocial Experienced During Infertility" is applicable and reliable, and that it can be used to identify the psychosocial problems experienced by women during their treatment, who were treated for infertility and became a mother.

**Key words:** Infertility, psychosocial problems, scale for assessing psychosocial experienced during infertility, develop

#### Introduction

Infertility is defined as the inability to conceive after one year of unprotected sexual intercourse on a regular basis. Infertility affects 10-15% of the couples who are at reproductive age (Taşkin, 2011; Ricci, 2007; Jose Miller, 2007; Chura, 2007; Gibbs, 2008). However, this ratio has increased recently. This increase is caused by factors such as the change in the traditional roles of women, late marriage of couples, their unwillingness to have a child, use of substances including alcohol and tobacco, change of

nutritional habits, and increase in sexually transmitted diseases. Some anomalies in the reproductive system of men and women may also cause infertility (Gibbs, 2008; Callahan, 2007; London, 2006; Devine, 2003; Lowdermilk, 2004; Wong, 2005; Cahil, 2002). 40% of all infertility cases are due to the female partner, 40% to the male partner, and 20% to joint or unexplained problems (Callahan, 2007; Devine, 2003, Whitman-Elia, 2001).

Infertility is a crisis which adversely affects the social lives, moods, marital relationships, sexual

lives, future plans, self-respect, body images and life quality of the partners (Saydam, 2003). Numerous international and national studies have shown the physical, psychological, social, emotional and financial impacts of infertility. They are stress, anxiety, depression, economic hardships, guiltiness, fear, loss of social status, desperation, social stigma and, in some cases, violence (Cousineau, 2007; Araoye, 2003; Özçelik, 2007).

Infertility has been receiving more attention as a problem of reproductive health for the last twenty years. World Health Organization (WHO) estimates that there are 60-80 million infertile couples in the world (Rutstein et al., 2004). Incidence of infertility varies from country to country and from region to region. Approximately 8-10% of the couples in developed countries are infertile, whereas this percentage is 15-20% in developing countries. This difference is due to the fact that sexually transmitted diseases, including particularly gonorrhoea and chlamydia, are more widespread in developing countries and cause damages leading to infertility if not treated effectively or at all (Denson, 2006).

According to the world infertility study, the rate of childless women at the age group of 40-49 is the lowest in South Korea (1.3%), Jordan (2.2%) and Syria (2.9%). On the other hand, far higher rates of infertility can be observed particularly in some tribes and communities in Africa (Rutstein et al., 2004). For instance, 65% of women of the age group 45-49 in Mbalo, Zaire do not have any child. Health care practitioners in the U.S. report that incidence of infertility is 15%, which means that it affects one of 6 couples, or 4.8 million women. Clear data relating to infertility are not available in Turkey. However, it is estimated to be 10-15% (Taşkın, 2011; Atasü, 2001).

Infertility manifests itself as a sudden and unexpected life crisis in the period when the desire of partners to have a child is at maximum, and takes hold of the spouses mentally, physically and socially. One of its impacts on the lives of the partners is on their marital relationships (Lemmes; 2004; Holter, 2006). Infertile couples may avoid seeing their families, social circles or friends, considering that they will exert pressure on, or ask questions to, or blame, them with respect to having a child. This avoidance may cause the couples to suffer social isolation and feel themselves lonelier after some

time (Türkoğlu et al., 1997). In an attempt to fulfil their dreams of having a child, couples neglect all other aspects of life and focus on the resolution of their infertility problem. While on one side they get involved in a troubled diagnosis and treatment process, they also struggle against the psychosocial effects of this process. Thus, they face with many problems they need to cope with in addition to the diagnosis of infertility.

Psychosocial problems experienced during the diagnosis and treatment process should be known to facilitate the adaptation of couples to infertility treatment. Thus, there is need for tools to identify the psychosocial effects of infertility on women.

When the literature on this subject is examined, it is observed that past studies aiming to identify the psychosocial effects of infertility on women used scales assessing anxiety, depression and effects of infertility (Faramarzi, 2008; Matsubayashi, 2004; Cousineau, 2006; Beutel, 1999; Akyüz, 2008). However, a measurement tool for retrospectively assessing the psychosocial problems experienced by individuals during infertility is not available.

Due to the stress experienced during infertility, women may tend to exaggerate what they have been through. Thus, true answers may not be received. As they will be able to see their psychosocial problems with a more realistic approach and express themselves more comfortably after being successfully treated (after becoming a mother), it is more appropriate to conduct a retrospective assessment.

The purpose of this study is to develop a measurement tool for retrospectively assessing the psychosocial problems experienced by women during their infertility.

## Materials and methods

### Participants

The research was conducted on women residing in Antalya, who had undergone infertility treatment in the same city and had been successfully treated, and in consequence of the infertility treatment, have at least one living child between 0-6 years old. After obtaining the required permissions from Akdeniz University IVF Unit, the participants were called by phone. Among non-probability sampling methods, snowball sampling method was employed, and 204 women who were called and accepted to participate were included in the study. The

sample size was calculated to be 72, with a power of 80% and a significance level of 5%.

### Means of Data Collection

The data of the study were collected by researchers employing face-to-face interview method, by means of two different forms prepared making use of the studies of Devran et al. (Devran et al., 2009) and Newton et al. (Newton et al., 1999). Interviews were conducted in approximately 20 minutes at the workplaces of those who were working and at homes of the remaining participants.

### Personal Information Form

The personal information form prepared by the researchers consists of 14 questions regarding the socio-demographic and infertility characteristics of the women.

### Scale for Assessing Psychosocial Problems Experienced by Women During Their Infertility

The scale consists of 38 items answered as “yes”, “no” or “sometimes”. Among the answers given, “yes” is scored as 3 points, “sometimes” as 2 points and “no” as 1 point. Answers given to the items 8, 9, 38 and 39 are scored inversely. The lowest and highest scores that can be obtained from the scale are 38 and 114. As the points increase, the problem measured increases as well. Cronbach’s alpha value relating to the internal consistency of the scale was found to be 0.92. Adjusted Item-Total Score correlations of the items ranged between 0.32 and 0.72. Exploratory factor analysis revealed 10 sub-factors in the scale, namely: 1. Feeling uncomfortable (7 items), 2. Sexual problems (5 items), 3. Relations with the spouse (3 items), 4. Desire to be a mother (4 items), 5. Negative evaluation of the self (5 items), 6. Self-disclosure (4 items), 7. Treatment expenses (4 items), 8. Reaction to the test results (2 items), 9. Perceiving the support of others (2 items), 10. Perceiving the spouse (2 items). It was found that all of these factors explain 63.32% of the total variance.

### Data Analysis

In the evaluation of the data of this study, seven different statistical analyses given below were conducted by using SPSS for Windows 16.0 statistical software package.

1. Cronbach’s alpha coefficient
2. Correlation analysis
3. Student’s t-test

4. KMO (Kaiser-Meyer Olkin) measure of sampling adequacy analysis
5. Barlett’s Sampling size test
6. Principal Component as exploratory factor analysis
7. Varimax rotation

### Ethical permissions

In order to be able to conduct the research, the approval of Ethics Board of Health Sciences Institute in Atatürk University was obtained. The participants were told the objective of the research, and they were included in the study voluntarily.

### Results

This section contains the findings obtained in consequence of the statistical analyses conducted on the data, and the comments made in relation to them.

### Making up the pool of items and item selection process

After the examination of the relevant literature and interviews conducted with the participants, a pool of 50 items defining the problems experienced or to be experienced was made up. While writing down the items, they were included in certain areas, namely, psychosocial problems, marital relationships, sexual relations and economic area. The psychosocial problems area contains 34 questions, marital relationships area 8 questions, sexual relations area 5 questions and economic area 3 questions. These items are marked as “yes”, “sometimes” or “no”. Item-Total Score correlations of four items were found to be insignificant at the significance level of  $p > 0.05$ , whereas Item-Total Score correlations of all remaining items were found to be significant at the significance level of  $p < 0.05$ . Adjusted Item-Total Score correlations of six items of the scale were below 0.30, and Cronbach’s alpha coefficient increased in the section of such items “Cronbach’s alpha coefficient of the scale if the item is deleted”. After such 10 items were deleted from the scale and following the factor analysis of the scale consisting of the remaining 40 items, an 11-factor structure was obtained, which explained 65% of the total variance and had an eigen value above 1.00. When the loadings of the items were examined, it was found that 2 items were included in more than one factor, and such 2 items were deleted from the scale as they did not have any relation with other items that were

included the same factor. The remaining 38 items were found to include no debatable item.

### ***Reliability Analysis of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility***

As an indicator of internal consistency and homogeneity of the items of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility, which is composed of the remaining 38 articles, Cronbach's alpha coefficient was calculated, and it was noted that Adjusted Item-Total Score correlations were higher than 0.30, and Cronbach's alpha coefficient of the scale was 0.92. In an attempt to find the influence of the scale items on the total score of the scale, Item-Total Score correlations were calculated and found to be ranging between 0.33 and 0.73. Additionally, Item-Total Score correlations of all items of the scale were found to be significant at the significance level of  $p < 0.05$ . All these findings show that internal consistency of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility is ensured.

### ***3.4. Exploratory Factor Analysis***

As mentioned in the foregoing sections of the study, the reason for employing exploratory factor analyses in the studies where confirmatory factor analysis and structural equation modelling are used is to understand whether or not the factors composed of theoretically determined scales, i.e., factors composed of observed variables, are factored independently from each other. Kaiser-Meyer-Olkin (KMO) test was applied with a view to see whether the factor analysis of the data could be conducted or not, and Bartlett's test was applied with a view to understand whether the relations between the variables to be analyzed were significant and different from zero. KMO coefficient was found to be 0.83. This value is expected to be equal to or higher than 0.70 (Hair et al., 1998). This finding suggests that the sample size is appropriate for the factor analysis. The table also shows that Chi-square value obtained from Bartlett's test is 2900.695, which is significant at  $p < 0.05$ . This finding also suggests that factor analysis is applicable.

As exploratory factor analysis for the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility, principal components method and varimax rotation method were used to conduct factor analysis, and a 10-

factor structure was obtained, which explained 63% of the total variance and had an eigen value above 1.00. In factor analysis, the percentage of the factor loadings explaining the total variance is acceptable at 0.40 and above. Distribution of the items into 10 factors following the varimax rotation method is given in Table 1.

In factor analysis, factor loadings at or above 0.30 are acceptable (Büyüköztürk, 2002). The table shows that factor loadings of all items are above 0.30. The number of iterations is 8. These findings suggest that the structural validity of the scale is appropriate (Kline, 1994). The table demonstrates that the 8.27% of the total variance is explained by the 1<sup>st</sup> factor, 16.15% by the 2<sup>nd</sup> factor, 23.27% by the 3<sup>rd</sup> factor, 30.35% by the 4<sup>th</sup> factor, 37.26% by the 5<sup>th</sup> factor, 43.97% by the 6<sup>th</sup> factor, 49.56% by the 7<sup>th</sup> factor, 54.55% by the 8<sup>th</sup> factor, 59.18% by the 9<sup>th</sup> factor and 63.32% by the 10<sup>th</sup> factor. After examining the components making up the 10-factor structure of the 38-item scale, the following names were suggested for the factors.

Correlations of the sub-dimensions of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility with each other and with the entire scale were calculated along with their arithmetic averages, standard deviations and ranges. These findings are given in Table 3.

The table shows that all correlations with the sub-dimensions of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility are significant at  $p < 0.05$ . These findings suggest that the sub-dimensions of the scale can be used singly as well.

Total scores obtained from the scale in examining the distinctive validity of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility are put in ascending order. After this ordering, slices corresponding to 27% were taken from the lower group and upper group. T-test was employed to see whether each item distinguished such two groups. All of the t-tests conducted on each item, sub-dimensions and total score of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility were found to be significant at  $p < 0.05$ . These findings show that the items and sub-dimensions of the scale distinguish the women that experience high and low levels of psychosocial problems from each other.

**Table 1.** Factor loadings matrix obtained through varimax rotation method

Item No.	Component									
	1	2	3	4	5	6	7	8	9	10
3	.749									
18	.718									
17	.599									
14	.520									
2	.517									
6	.495									
1	.327									
44		.779								
43		.736								
47		.682								
45		.615								
46		.612								
36			.819							
37			.784							
35			.739							
25				.830						
26				.799						
21				.624						
29				.394						
28					.712					
30					.624					
33					.609					
15					.475					
16					.380					
12						.733				
10						.731				
5						.589				
11						.487				
49							.848			
48							.552			
23							.350			
4							.341			
19								.808		
20								.711		
8*									.774	
9*									.614	
39*										.832
38*										.482
<b>Explained variance</b>	8.265	16.145	23.268	30.353	37.263	43.966	49.557	54.554	59.188	63.324

\* Inversely-scored items

**Table 2.** Distribution of the items of the scale for assessing psychosocial problems experienced during infertility into the factors

<p><b><i>DIMENSION I (FEELING UNCOMFORTABLE) 7 items (1, 2, 3, 6, 14, 17, 18)</i></b></p> <ol style="list-style-type: none"> <li>1. I was uncomfortable with being in places with children.</li> <li>2. I was affected by conversations on children.</li> <li>3. I was annoyed by people asking questions about having a child.</li> <li>6. I was annoyed by conversations on pregnancy.</li> <li>14. I was annoyed to hear people's conversations on their children.</li> <li>17. I was annoyed to hear the question "Do you have a child?"</li> <li>18. I was infuriated by the misbeliefs of people around me regarding in vitro fertilization.</li> </ol>
<p><b><i>DIMENSION II (SEXUAL PROBLEMS) 5 items (43, 44, 45, 46, 47)</i></b></p> <ol style="list-style-type: none"> <li>43. I was uncomfortable with the scheduling of the sexual intercourse by the health personnel.</li> <li>44. Our sexual desire changed during the treatment process.</li> <li>45. I avoided sexual intercourse deliberately.</li> <li>46. I thought that the drugs used in the treatment affected my sexuality.</li> <li>47. I perceived sexual intercourse as a duty.</li> </ol>
<p><b><i>DIMENSION III (RELATIONS WITH THE SPOUSE) 3 items (35, 36, 37)</i></b></p> <ol style="list-style-type: none"> <li>35. I was able to talk to my husband about the treatment process without quarrelling.</li> <li>36. My husband always stood by me during the treatment process.</li> <li>37. My relationship with my husband did not change.</li> </ol>
<p><b><i>DIMENSION IV (DESIRE TO BE A MOTHER) 4 items (21, 25, 26, 29)</i></b></p> <ol style="list-style-type: none"> <li>21. Having a child was the most important thing in my life.</li> <li>25. I frequently asked myself "Will I ever be able to get pregnant?"</li> <li>26. I frequently asked myself "Will I ever be able to become a mother?"</li> <li>29. I got furious with myself when I had menstruation.</li> </ol>
<p><b><i>DIMENSION V (NEGATIVE EVALUATION OF THE SELF) 5 items (15, 16, 28, 30, 33)</i></b></p> <ol style="list-style-type: none"> <li>15. I was feeling myself worthless.</li> <li>16. I did not want to embrace a baby when I saw one.</li> <li>28. I was not feeling myself healthy.</li> <li>30. I considered my womanhood insufficient because I did not have a child.</li> <li>33. I thought of getting divorced from my husband when I could not get pregnant.</li> </ol>
<p><b><i>DIMENSION VI (SELF-DISCLOSURE) 4 items (5, 10, 11, 12)</i></b></p> <ol style="list-style-type: none"> <li>5. I did not say that I did not have a child among people.</li> <li>10. I did not tell my close relatives and friends that I was receiving treatment.</li> <li>11. I was uncomfortable with being in the same place with others receiving treatment.</li> <li>12. I did not want to share my worries with other people.</li> </ol>
<p><b><i>DIMENSION VII (TREATMENT EXPENSES) 4 items (4, 23, 48, 49)</i></b></p> <ol style="list-style-type: none"> <li>4. I spent less time with other people.</li> <li>23. I got very furious when I saw a pregnant woman.</li> <li>48. I had difficulty in paying the treatment expenses.</li> <li>49. My family supported me to pay the treatment expenses.</li> </ol>
<p><b><i>DIMENSION VIII (REACTION TO TEST RESULTS) 2 items (19, 20)</i></b></p> <ol style="list-style-type: none"> <li>19. I sank into despair when I learnt from the test results that I could not conceive.</li> <li>20. I was disappointed when I learnt from the test results that I could not conceive.</li> </ol>
<p><b><i>DIMENSION IX (PERCEIVING THE SUPPORT OF OTHERS) 2 items (8, 9)</i></b></p> <ol style="list-style-type: none"> <li>9. My husband's family gave me support.</li> <li>8. My close acquaintances and relatives gave me support.</li> </ol>
<p><b><i>DIMENSION X (PERCEIVING THE SPOUSE) 2 items (38, 39)</i></b></p> <ol style="list-style-type: none"> <li>38. My husband was not as eager as me for the treatment.</li> <li>39. I expected from my husband to understand my feelings.</li> </ol>

**Table 3.** Correlation matrix of the scale for assessing psychosocial problems experienced during infertility and its sub-dimensions

Scale and Sub-dimensions	1	2	3	4	5	6	7	8	9	10
1. Feeling uncomfortable	1									
2. Sexual problems	.328*	1								
3. Relations with the spouse	.319*	.309*	1							
4. Desire to be a mother	.474*	.297*	.213*	1						
5. Negative evaluation of the self	.573*	.471*	.286*	.451*	1					
6. Self-disclosure	.506*	.317*	.254*	.226*	.487*	1				
7. Treatment expenses	.608*	.425*	.364*	.436*	.613*	.430*	1			
8. Reaction to test results	.367*	.305*	.181*	.496*	.404*	.328*	.316*	1		
9. Perceiving the support of others	.363*	.215*	.360*	.176*	.253*	.181*	.330*	.150*	1	
10. Perceiving the spouse	.282*	.291*	.357*	.144	.405*	.239*	.422*	.132	.236*	1
<b>Total</b>	<b>.795*</b>	<b>.685*</b>	<b>.527*</b>	<b>.585*</b>	<b>.801*</b>	<b>.646*</b>	<b>.757*</b>	<b>.529*</b>	<b>.456*</b>	<b>.496*</b>
<b>Arithmetic average</b>	<b>16.01</b>	<b>10.58</b>	<b>4.28</b>	<b>10.79</b>	<b>9.38</b>	<b>7.58</b>	<b>7.95</b>	<b>5.32</b>	<b>3.11</b>	<b>4.55</b>
<b>Standard deviation</b>	<b>3.78</b>	<b>3.13</b>	<b>1.75</b>	<b>1.68</b>	<b>2.99</b>	<b>2.37</b>	<b>2.56</b>	<b>1.18</b>	<b>1.23</b>	<b>1.18</b>

(\*) P&lt;0 0.01

### Discussion

The objective of this study is to develop a measurement tool for retrospectively assessing the psychosocial problems experienced by women during their infertility. As infertility is a crisis which adversely affects the social lives, moods, marital relationships, sexual lives, future plans, self-respect, body images and life quality of the partners, it is necessary to determine the extent to which women successfully treated for infertility are affected by the psychosocial problems during the treatment process.

In this framework, the identification of the psychosocial problems experienced by women during the diagnosis and treatment process may facilitate their adaptation to infertility and its treatment, and the necessity of diagnosis or scanning tools that will contribute to the professionals working in this field is undisputable. Since such a measuring tool is not available in our country, this study aims to develop the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility (SAPPEWDI) and to test its reliability and validity.

Cronbach's alpha values relating to the internal consistency of the SAPPEWDI are high, and the Item-Total Score correlations range between 0.33

and 0.73. These findings show that reliability of the SAPPEWDI is high. High reliability of a measuring tool also affects the validity of the scale (Büyüköztürk, 2008).

Taking into account that items with item distinctiveness index values equal to or above 0.40 are considered to be "highly distinctive" items, it may be said that distinctiveness/validity of the sub-dimension items of the SAPPEWDI is high (Büyüköztürk, 2008; Aiken, 2000; Erkuş, 2003; Hovardaoğlu, 2007; Şencan, 2005). Item analysis is employed to determine the power of items to estimate the total score of the items and gives an idea about the structural validity of a scale (Hovardaoğlu, 2007) as well as being an evidence for its reliability (Şencan, 2005). In this case, in addition to the appropriateness of the structural validity of the SAPPEWDI and high level of distinctiveness of the items, it may be said that their reliability are high as well.

Validity of the SAPPEWDI is examined based on the structural validity and validity of the criteria. Structural validity of the SAPPEWDI is examined by the use of exploratory factor analysis. The findings of the Exploratory Factor Analysis suggest that the results of Kaiser-Meyer-Olkin and Bartlett's Test calculated prior to the analysis are appropriate for the data

analysis of the sample. In Exploratory Factor Analysis, factor loadings of the items in the factors are equal to or above 0.40. In the case that factor loadings of the items are 0.40 or above, such items are considered “very good”, and if they are 0.70 or above, they are considered “perfect” (Tabachnick, 2001; Kline, 2005). These findings demonstrate that the items have quite strong relations with their relevant factors.

In consequence of the Exploratory Factor Analysis, we obtained a 10-factor structure that explains 63% of the variance and has an eigen value above 1.00. These sub-factors are as follows: 1. Feeling uncomfortable, 2. Sexual problems, 3. Relations with the spouse, 4. Desire to be a mother, 5. Negative evaluation of the self, 6. Self-disclosure, 7. Treatment expenses, 8. Reaction to the test results, 9. Perceiving the support of others, 10. Perceiving the spouse. In the relevant literature, these characteristics are accepted to be the basic characteristics related to the infertile women (Saydam, 2003; Cousineau, 2007; Araoye, 2003; Özçelik, 2007; Rutstein, 2004; Denson, 2006; Atasü, 2001; Lemmes, 2004; Holter, 2006; Türkoğlu, 1997).

The fact that all items of the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility distinguish the lower and upper groups well gives the impression that it is suitable to be used as an identification tool in clinical applications. In conclusion, it is found that the “Scale for Assessing Psychosocial Problems Experienced by Women During Infertility”, consisting of 10 sub-dimensions and 38 items, is valid and reliable, and can be used to identify the psychosocial problems experienced by women during the treatment process, who were successfully treated for infertility and became a mother. For further research, it is recommended to apply the Scale for Assessing Psychosocial Problems Experienced by Women During Infertility among women with different sociodemographic characteristics and to examine its validity and reliability in such groups.

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