

ORIGINAL RESEARCH ARTICLE

Development and Assessment of a Coping Scale for Infertile Women in Turkey

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Abstract

Infertile women feel more psychological stress and pressure than their husbands, and the prevalence of anxiety and depression among them are higher. This study aimed to develop a culture-specific measurement tool to identify the strategies of infertile women in dealing with infertility-related problems. This was a scale development study. This study was carried out in three different fertility centers in the three largest cities in Turkey. The data were collected using personal information form and through the application of a Coping Scale for Infertile Women (CSIW) protocol. Ways of Coping with Stress Inventory. Cronbach's alpha, Intraclass Correlation Coefficient and Spearman's Rank correlation analyses were used to determine the reliability of the scale. The results of explanatory factor analysis and a factor structure of the Coping Scale for Infertile Women, comprising 50 items, were examined, and the data were determined to be suitable to perform factor analysis. The internal consistency of the scale was found to be 0.880. The number of factors in the scale was 10, and the internal consistency of the factors was 0.720. The results showed that the CSIW had good reliability and validity. (*Afr J Reprod Health 2018; 22[3]: 13-23*).

Keywords: Infertility, Women, Coping, Scale development

Résumé

Les femmes infertiles ressentent plus de stress psychologique et de pression que leurs maris et la prévalence de l'anxiété et de la dépression est plus élevée chez elles. Cette étude visait à développer un outil de mesure spécifique à la culture pour identifier les stratégies des femmes infertiles face aux problèmes liés à la stérilité. C'était une étude de développement à grande échelle. Cette étude a été réalisée dans trois centres de fertilité différents dans les trois plus grandes villes de Turquie. Les données ont été recueillies à l'aide du formulaire des renseignements personnels et de l'application d'un protocole d'échelle d'adaptation pour les femmes stériles (EAPFS). Nous nous sommes servis des moyens de faire face à l'inventaire du stress, les analyses de corrélation alpha de Cronbach, le coefficient de corrélation intra classe et le rang de Spearman pour déterminer la fiabilité de l'échelle. Les résultats de l'analyse factorielle explicative et d'une structure factorielle de l'échelle d'adaptation pour les femmes infertiles, qui comprennent 50 items, ont été examinés et les données ont été jugées appropriées pour effectuer une analyse factorielle. La cohérence interne de l'échelle s'est avérée être de 0,880. Le nombre de facteurs de l'échelle était de 10 et la cohérence interne des facteurs était de 0,720. Les résultats ont montré que le CSIW avait une bonne fiabilité et validité. (*Afr J Reprod Health 2018; 22[3]: 13-23*).

Mots-clés: infertilité, femmes, adaptation, développement d'échelles

Introduction

The World Health Organization defines infertility as the inability to have a child. In a wider sense, it

is defined as the failure to achieve clinical pregnancy after a year of regular sexual intercourse without the use of contraceptive agents¹. In several studies, findings show that infertility affects more

than 80 million people in the world, although at different rates in different countries, with infertility rates reported varying between 5% and 30%¹. In Turkey, the infertility rate is reported to be 10–15%, with one out of every six couples affected¹.

Infertility is often seen as a physically and psychologically challenging experience. According to Covington and Adamson, infertile women often experience feelings of imperfection, inadequacy, abasement, worthlessness, shame and guilt⁶. Infertility mostly manifests as a sudden and unexpected life crisis for couples. Infertility is an oversteering condition that spreads over time, enforces compliance mechanisms and distorts feelings of integrity. Many couples define infertility as the greatest crisis in their lives^{3, 4}, and half of the women and 15% of the men polled in a fertility clinic defined this situation as the most upsetting experience in their lives³. In previous studies, findings showed that infertile women feel more stress and pressure than men, as well as anxiety and depression^{5, 6}.

According to Folkman and Lazarus⁷ coping is a cognitive, emotional and behavioral “effort” of an individual aimed to solve internal or external problems that cause him or her stress. Infertility affects all areas of women’s lives and disrupts their usual coping mechanisms. Although the role of biological treatments in infertility is undisputable, the prominence of psychological support systems that accompany this treatment has been increasing in recent years, and such applications have started to be frequently used as part of infertility treatment⁸. In previous studies of infertility and coping, women have been reported to cope through challenging, accepting responsibility, social support, avoiding or escaping. It is also reported that women use emotion-focused coping more often than men, who tend to turn to problem-solving methods^{9, 10}. Infertile women use emotion-focused coping methods, such as crying, praying, and trusting in God¹¹⁻¹³. Atwood and Dobkin divided the process of coping with infertility into four main stages as follows: lack of belief and denial; anxiety and loss of control; isolation and feelings of guilt; and restructuring. Studies of infertility and coping have focused on spiritual coping strategies in recent years¹⁴⁻¹⁶ and

even in different religions, women often use spiritual coping methods and that these methods can have positive effects on their general well-being¹¹.

The cognitive, emotional and behavioral responses of women to the problem of infertility have situation-specific features¹⁷. Thus, there is a need to use specific measurement instruments that are sensitive to cultural characteristics to determine coping strategies for women, which is difficult to adapt. Based on this need, this study developed a sensitive, acceptable, valid and reliable measurement tool to determine the coping strategies of infertile women in Turkey. It is believed that this scale will help fill the gap in the relevant literature, being both culture-specific and directly focused on the problem. The most significant benefit of the development of this scale is that it can be used as a guide for the identification of infertility-specific coping problems and in the determination of counseling and psychotherapeutic interventions and cases with compliance problems. An examination of previous scale studies related to infertility revealed that limited infertility specific coping scales were used. Literature contains two such scales: the Coping with Infertility Questionnaire (CIQ), which consists of 14 factors developed in Israel for the Israeli context¹⁸, and the Coping Scale for Infertile Couples, consisting of four factors, which was developed in Taiwan for the Taiwanese culture¹⁹. To our knowledge, in Turkey, no infertility-specific coping scale has been developed to date. This study aimed to establish a culturally acceptable, valid and reliable scale that determines the strategies of infertile women in coping with infertility-based psychosocial problems.

Methods

Design

This was a scale development study. In this study, the prevalence of infertility in Turkey is accepted as 15%, the sample was calculated at a confidence interval of 2% and 80% and while it was planned to reach at least 600 infertile women, a total of 751 women were included in the study sample.

Scale development steps

Creating an Item Pool: In the first stage of the research, an item pool, which consisted of 85 items was created, based on statements obtained during individual interviews carried out by the researcher with 24 infertile women about coping with infertility²⁰, the concept of coping⁷, and information from the literature on coping with infertility. In the designation of items, the aim was to ensure clarity understandability, and attention was paid to ensure that no item included more than one judgment or expression. The item pool comprised the coping methods used by infertile women, such as denial, acceptance, hope, emotional problems, spiritual and/or social support, and avoidance.

Receiving Expert Opinion (Content Validity): In this stage, opinions were garnered from 12 experts (three infertility specialist and gynecologists, two psychiatrists, two psychiatric nurses, two psychologists, two psychometricians and one infertile woman) to evaluate the necessity, clarity and specificity of the items. In the expert evaluation, items were said to be either “appropriate”, “item should be slightly revised”, “item to be substantially revised” and “item is not appropriate”, according to the Davis technique^{21,22}. The “content validity index” of the item was found to be 0.80, calculated by dividing the number of experts who indicated that an item was “appropriate” and “the item should be slightly revised” by the total number of experts. This value is within acceptable limits²². Based on the evaluation results, the items were arranged, and a draft scale that incorporated 65 items was developed.

Pilot Application Phase: In a preliminary study, the clarity of the 65-item draft scale was tested. For this purpose, a draft scale was applied to 30 infertile women, during which the participants were expected to express their perceptions of each item through a 5-point Likert-type scale, including “Strongly agree”, “Agree”, “Don’t Know”, “Disagree” and “Strongly disagree”. The participants were asked to identify any items that were not clear, and items classified as “cannot be

understood” and “its expression should be changed” were altered, after which the scale of 50 items was finalized.

Concurrent Validity: The Ways of Coping with Stress Inventory (WCSI) developed by Lazarus and Folkman in 1980 and adapted into Turkey by Şahin and Durak in 1995, was applied simultaneously with the scale developed by the authors^{23,24}. The correlation coefficient between the scales and the concurrent validity of the newly developed scale (coping scale for infertile women) were determined.

Data collection

Data were collected from three different *in vitro* fertilization (IVF) clinics in three different regions of Turkey (Ankara, Antalya and Istanbul). The population density of the region, the rate of preference as an *in vitro* fertilization center, and the ability to reflect the socio-cultural characteristics of the country were considered in the city selection. Ankara, Istanbul and Antalya are the most populous and heterogeneous cities in Turkey (Istanbul ranks first, followed by Ankara in second place and Antalya in fifth place in terms of population density). These cities, all of which have seen significant migration from other regions in the country and host people from all walks of life, are the most popular cities for IVF treatment.

A total of 751 infertile women were approached; 201 from the center in Ankara, 200 from the center in Antalya and 350 from the center in Istanbul. Infertile women who applied to these centers for adjuvant treatment between May and December 2016, and who could read and write in Turkish participated in this study. Data were collected through face-to-face interviews conducted by nurses employed in the IVF centers. A total of three nurses, one from each IVF center, were informed about the application of the scale to ensure consistency between applications, which took about 15–20 minutes to apply the scales.

Data collection tools

For the collection of the data, a “Personal Information Form” and a “Coping Scale for

Infertile Women” were used, while a “The Ways of Coping with Stress Scale” was used to test the concurrent validity of the scale.

Personal Information Form: This form consists of a total of 18 questions, including 12 questions relating to the socio-demographic characteristics of the participants, and six questions related to the duration of infertility, the reason for infertility and the treatment undertaken.

Coping Scale for Infertile Women (CSIW): This scale, developed by the authors, consisted of items to assess the strategies used by women to cope with the problems of infertility. The scale is a 5-point Likert-type self-assessment scale (Strongly agree, agree, don't know, disagree, strongly disagree), and comprised of 50 items and 10 subscales/factors. The psychometric properties of the scale are given in detail in the findings section. The scale's direction was written as follows: Fertility problems can create different reactions in every human being, and in this process, people use different ways of coping. A list of possible coping reactions is given below. Please rate your coping response to the fertility problem for each item (1- Strongly agree, 2- Agree, 3- Don't know, 4- Disagree, 5- Strongly disagree). A low score indicates that the person uses more of that way of coping. Items 25 and 29 of the scale are encoded in reverse.

Ways of Coping with Stress Inventory (WCSI): This scale, developed by Lazarus and Folkman in 1980, is a short and validated scale of stressful situations²³. The scale addresses coping mechanisms related to symptoms, such as psychosomatic issues, depression and loneliness. The original version of the test was converted from a 66-item form to a 30-item form with a 4-point Likert-type scale and was adapted for the Turkish context by Şahin and Durak in 1995. For this scale, two main ways of coping with stress are determined: “Problem-oriented/Active”, and “Emotion-oriented/Passive”, and there are a total of five sub-dimensions to the scale, in which the “Social support seeking (SSS)”, “Optimistic approach (OA)”, and “Self-confident approach (SCA)” subscales are active methods, while

“Desperate approach (DA)” and “Submissive Approach (SA)” are passive methods. The findings showed that individuals who can cope with stress effectively tend to use “Self-confident” and “Optimistic” approaches, while individuals who cannot cope with stress use “Submissive” and “Desperate” approach more. A high score indicates that the person uses more of that way of coping²⁴. The scale is evaluated from a score of 0 to 3, with 0% = 0 points, 30% = 1 point, 70% = 2 points and 100% = 3 points. Items 1 and 9 are scored in reverse. Each sub-item in the scale is scored separately, and the total score is not considered.

Data analysis

An exploratory factor analysis was performed on the 50 questions included in the scale. In this analysis, a Kaiser-Meyer-Olkin test was used to determine whether the factor analysis was appropriate for the data structure, while a Bartlett's test was used to determine correlations between questions. In the determination of the appropriate number of factors, it was considered that there were at least two questions in the factors, and that the eigenvalues of the factor (Kaiser Criterion) were greater than 1. In obtaining the factor loadings, the Basic Components method was used, while the Varimax rotation method was used for significant factor loadings. The internal consistency between questions was examined from the Cronbach's alpha coefficient. The relationship between the sociodemographic characteristics and the scale overall mean score were examined by one-way ANOVA model or a Pearson correlation analysis. The statistical significance level was 5% and the SPSS (version 18) program was used for the calculations.

Results

Participants

Of the participants, 57.3% were 26–34 years old, 26% were 35–43 years old, 14.8% were 17–25 years old and only 1.9% were 44 years and older. Of the participants, 85.1% had been followed for one to eight years with a diagnosis of infertility. Considering the employment status of the

Table 1: The results of the suitability of data for structure detection

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.881
Bartlett's Test of Sphericity	14,925.326
Df	1225
Sig.	.000

participants, 51.7% of them were employed and 6.5% of had left their job due to infertility treatments. Most participants (44.8%) were middle school and high school graduates, while 36.5% were university graduates. When the causes of infertility are examined, 28.3% were female infertility, 18.3% were male infertility, 14.3% were both female and male infertility, and 38.6% were unexplained infertility. 5.1 percent of participants had systemic disease.

Factor analysis results

Factor analysis is one of the most effective methods of reducing variables. In a factor analysis, similar variables are grouped into smaller variable sets (factors) based on the power of the linear relations between variables²⁵. A Kaiser-Meyer-Olkin test gave a result of 0.881 (Table 1) after the factor analysis was applied to the 50 questions in the scale, and given that this is much higher than 0.50, the factor analysis was deemed appropriate for the application of the scale. The Bartlett's test showed that the factor analysis to be recommended suitable ($p < 0.0001$). These results indicate that the correlation between the scale questions is significant, meaning that the scale questions are suitable for factor analysis. Furthermore, it was concluded that it was not necessary to remove any items from the scale as the diagonal elements in the anti-image matrix were higher than the value of 0.50, and most of the coefficients were found to be > 0.80 . After the factor loadings were obtained, the Varimax rotation method was applied, and 10 significant factors were found to be higher than the eigenvalue of 1. The factors obtained, questions and loadings are given in Table 2, in which the factors are referred to in accordance with the meaning of the materials they contain after

examining which factors are included in which factor.

The distribution of the questions by factor is as follows: There are seven questions in the first factor, seven questions in the second factor, six questions in the third factor, six questions in the fourth factor, six questions in the fifth factor, three questions in the sixth factor, four questions in the seventh factor, five questions in the eighth factor, three questions in the ninth factor, and three questions in the 10th factor (Table 3).

Cronbach's alpha coefficient results

The additivity feature, or the internal consistency of the 50-question scale (Cronbach's alpha coefficient) was found to be 0.880, which is very high. This outcome suggests that the items included in the scale have the characteristic of additivity and that overall scale score can be obtained by being added up. The internal consistency level of the 10 factors was determined to be 0.720, which indicates that the overall average scale score can be calculated by taking the average of the factor scores. The internal consistency coefficients of each of the 10 factors are summarized in Table 2. The WCSI comprised 30 items, and the internal consistency coefficient (Cronbach's alpha) was found to be 0.752, which shows that there is an internal consistency and that the total score can be calculated. Descriptive statistics of the subscales and total score of WCSI and the subscales and average overall score of CSIW are summarized in Table 4.

CSIW and WCSI correlations

A simultaneous WCSI was used to evaluate the validity of the CSIW. As can be understood from Table 5, most of correlations are statistically significant, and this result shows that CSIW gives concurrent valid results. A significant negative correlation was identified between the average overall score of the CSIW and the total overall score of the WCSI ($r = -0.222$, $p = 0.001$). Since the sample size is large, many of the correlations are significant, although their rate is not very high.

Table 2: Coping scale for infertile women, factors, questions and loadings

Factors and Included Questions	Loading
Preoccupation with thoughts	
I want to be alone because of my thoughts 1 *	0,757
I think that my thoughts on children become an obsession for me 2 *	0,788
Infertility always occupies my mind 3 *	0,749
I have physical problems like insomnia and loss of appetite because of my thoughts 4 *	0,686
I always feel nervous and angry 5 *	0,705
I feel as if I am alone in the world 6 *	0,526
I can no longer resist and fight 7 *	0,541
Spiritual Coping	
I pray more compared to the past 21 *	0,743
I began to question the justice of the world/God because I cannot have children 25 *	-0,668
I believe that God will reward me to deal with this problem 26 *	0,650
I attribute my infertility to fate 27 *	0,575
I try to take refuge in my religious belief 30 *	0,846
I believe that the difficulties we are experiencing have a meaning 39 *	0,372
I trust in God for the solution of this problem 44 *	0,843
Denial	
I refuse to believe that I am in this situation 15 *	0,424
I pretend as there is no such thing 22 *	0,311
I do not want other people to know my problem 23 *	0,835
I prefer to talk about this problem 28 *	0,848
I share this problem with almost everyone around me 29 *	-0,414
I do not want my family and friends to intervene in this problem 40 *	0,370
Social Withdrawal	
I stay away from the environments where people can ask questions about children 9 *	0,519
I prefer to contact with my relatives less often 11 *	0,613
I keep to myself; avoid from talking with women who have children or who are pregnant 13 *	0,678
I keep myself avoid from social activities like baby shower/baby's mawlid 16 *	0,732
When I see other couples who have children, I feel anger against them 19 *	0,564
I avoid to love children 35 *	0,665
Negative Self-Perception	
I feel weak and incomplete 8 *	0,492
I cannot express my feelings when I am with other people because I concern about that they will have pity on me (e.g. I cannot cry) 10 *	0,500
I think that people blame me for not having a child 12 *	0,604
I see my own body defective and blame myself 14 *	0,578
I think I am unfair to my partner because we cannot have children 17 *	0,655
I think my partner puts the blame on me 18 *	0,705
Hope	
I am dreaming about children 31 *	0,843
I am planning to have children 36 *	0,878
I am hopeful that I will have children 49 *	0,802
Social support seeking	
I only share my emotions with people who are suffering from the same problem with me 20 *	0,518
I try to spend time with women who have similar problems with me or had this experience in the past 24 *	0,819
I ask people, who have experienced similar problems, what they have done 38 *	0,773
I ask a relative or a friend, who I respect or trust, for advice regarding this problem 41 *	0,713
Accept	
I think about the next steps in case the possibility of failure of treatment 32 *	0,354
I am searching different sources regarding this problem (books, internet, information content 34 *	0,631
I get used to the fact that I cannot have children or the treatment does not work 37 *	0,805
I learn to live with this problem 46 *	0,828
I am trying to think about the positive aspects of this situation 50 *	0,661
Investing in Self	
I keep myself busy with relaxing activities (such as massage, reading books, listening to music) 42 *	0,793
I care about improving myself in various ways (courses, hobby, workshop) 45 *	0,754

I pay more attention to my appearance compared to the past 48*	
Spousal relations	
I am trying to involve my partner in each step of the problem/treatment 33*	0,769
I think that this problem has brought us closer as a couple with my partner 43*	0,742
I trust my partner's support for treatment and appointments 47*	0,825

*: numbers at the end of the questions indicate the numbers in the scale

Table 3: Internal consistency coefficients and item numbers of the factors

Factors	Cronbach's Alfa coefficient	Number of Items
Preoccupation with thoughts	0,875	7
Spiritual coping	0,750	7
Denial	0,625	6
Social withdrawal	0,797	6
Negative self-perception	0,804	6
Hope	0,866	3
Social support seeking	0,748	4
Accepting	0,731	5
Investing in self	0,700	3
Spousal relations	0,514	3

Discussion

This study aimed to establish a culturally acceptable, valid and reliable scale that can be applied to understand the coping strategies adopted by infertile women. At the end of the analysis, the internal consistency of the 50 items in the scale was found to be high, and no items were eliminated. This result could be attributable to the careful gathering of qualitative data and literature knowledge when developing the items.

The additivity feature, or the internal consistency between the items of the CSIW (Cronbach's alpha coefficient), was found to be 0.880, which was very high, and suggests that the questions included in the scale are additive and that the overall scale score can be obtained through addition. The internal consistency level of the 10 factors was determined to be 0.720. The findings suggest that the CSIW scale has good reliability and validity, which can contribute to the clarification of coping strategies used by infertile women, and which can help in the planning of effective interventions. The scale, which was developed with great care, had a study population that was within acceptance limits ($n=751$) and was

found to have a clear and easily interpretable structure.

It is worth noting that WCSI, which is commonly used in the literature, has been used to test the reliability of the scale developed in this study. WCSI, developed by Lazarus and Folkman in 1980, is a short and validated scale for the assessment of stressful situations. The internal consistency of the WCSI, the Turkish version of which was used in this research, was found to be 0.752, and a significant negative correlation was identified between the average overall score of the CSIW and the total overall score of the WCSI ($r=-0.222$, $p=0.001$). The significant correlation between WCSI and CSIW provided evidence of the concurrent validity of the CSIW. The reason for the significant negative correlation between the two scales can be attributed to that the high scores in the WCSI indicate that the person uses that style more often, whereas the low scores in the CSIW indicate that the person is using that style more often. As most of the correlations between CSIW and WCSI subscales/factors were found to be significant, the reliability of the CSIW is indicated.

In Turkey, there is no other scale with similar content, while the global body of literature includes scales developed specifically to address the issue of coping in infertile women, including the Coping Scale for Infertile Couples (CSIC), developed for the Taiwanese context by Lee *et al.*¹⁹. This scale comprises 15 items, while its four factors are named "Increasing space", "Regaining control", "Being the best" and "Sharing the burden". The content of the "increasing space" factor is similar to that of the "social withdrawal" factor of the CSIW, in that the items in both factors are related to avoiding social environments that bring the issue of children to mind. Avoidance has been reported to be the most common method of coping with infertility (particularly among women)^{20,26}. The other factor names and the content of the CSIC are not compatible with the

Table 4: Subscales and total scores of WCSI and CSIW

		N	Mean	SD	Minimum	Maximum	
Ways of Coping with Stress Scale (WCSI)	SCA	587	3.12	.50	1.00	4.00	
	OA	603	2.99	.55	1.00	4.00	
	DA	568	2.39	.55	1.00	4.00	
	SA	590	2.39	.50	1.00	4.00	
	SSS	620	2.81	.51	1.00	4.00	
	WCSI total score		505	2.71	.30	1.00	4.00
Coping Scale for Infertile Women (CSIW)	Preoccupation with thoughts	720	3.24	1.14	1.00	5.00	
	Spiritual coping	720	1.81	.81	1.00	5.00	
	Denial	721	2.85	.92	1.00	5.00	
	Social withdrawal	721	3.73	1.03	1.00	5.00	
	Negative self-perception	720	3.81	1.02	1.00	5.00	
	Hope	726	1.61	.93	1.00	5.00	
	Social support seeking	738	2.32	1.07	1.00	5.00	
	Accept	727	2.09	.92	1.00	5.00	
	Investing in self	734	2.66	1.13	1.00	5.00	
	Spousal relations	729	1.91	.94	1.00	5.00	
	Mean CSIW score		667	2.72	.55	1.00	5.00

WCSI. Another coping scale related specifically to infertility is CIQ, which comprises 14 factors developed for the Israeli context¹⁸. CIQ is a coping scale that comprises 51 items and 14 factors. Regarding the number of items, it is like CSIW, which has 50 items, and it can be said to be like the scale developed within this study regarding the factor names and contents. The contents of factors, such as “social withdrawal”, “acceptance”, “spiritual coping”, “seeking social support” and “denial” resemble the items within the factors with the same name in CSIW. This similarity may be because Lazarus and Folkman⁷, which is a model commonly used in coping with stressful situations, has been influential in both scales. Israel and Turkey are close to each other geographically, and the meanings attributed to children and coping styles are similar, considering the closeness of the two cultures. This may be another factor that influences the similarity.

The sample size should be large enough to ensure that the relationships can be reliably estimated. Different definitions are made regarding this number, but as a rule, the sample size should be five, or even ten, times the minimum number of the observed variable²⁷. When the sample sizes of the scales were examined, CSIC was seen to have been applied to 138 infertile Taiwanese couples (N: 276), while CIQ (Coping with Infertility

questionnaire) was applied to 652 Israeli women, although 60% of the 652 women in the CIQ sample were reported to have no biological children. The sample size of the CSIW can be considered as an acceptable number for scale development, as the sample of the scale comprised 751 primary infertile women, applied to women who had never had children (in terms of number - more than 10-times’ than the item number).

The factor with the highest number of items (seven items) in CSIW is “preoccupation with thoughts”. Based on item contents of this factor, it would seem to be related to difficulties in coping with the negative thoughts about one’s inability to have children. Negative thoughts that cannot be coped with are linked to depressive tendencies²⁸. It can be said that this factor includes items that support studies in which the level of depression in infertile women was reported to be high^{3,29}. Another factor with seven items is “spiritual coping”, which is also included in CIQ. Spiritual coping is often used as a strategy for the reduction of stress among infertile women, regardless of their culture or religion¹². The factors of hope, social support seeking and acceptance in CSIW are all coping behaviors that focus on problem solving, as stated by Lazarus and Folkman⁷. The negative self-perception, social withdrawal and denial factors follow the “emotion-

Table 5: Relationships between the subscales and general scores of WCSI and CSIW

	SCA			OA			DA			SA			SSS			Total								
	r	p	N	R	P	N	r	p	N	r	p	N	r	p	N	r	p	N						
Preoccupation with thoughts	,293	,000	574	,278	,000	587	-,470	,000	551	-	,000	575	-	,338	598	-,158	,000	493						
Spiritual coping	-,125	,003	574	-	,030	587	-,083	,050	554	-	,000	577	-	,039	598	-,021	,021	601	-,244	,000	496			
Denial	,064	,124	570	,068	,101	587	-,190	,000	554	-	,115	577	-	,094	599	-,001	,001	599	-,139	,002	494			
Social withdrawal	,211	,000	571	,191	,000	587	-,318	,000	551	-	,000	574	-	,136	593	-,006	,893	600	-,111	,014	491			
Negative self-perception	,347	,000	572	,311	,000	589	-,451	,000	551	-	,000	577	-	,186	535	,025	,535	602	-,090	,046	493			
Hope	-,189	,000	574	-	,001	591	,095	,026	554	-	,173	578	-	,108	603	-,025	,025	603	-,044	,324	495			
Social support seeking	,082	,050	582	,006	,881	599	-,164	,000	562	-	,091	585	-	,139	614	-,077	,077	614	-,133	,003	501			
Accept	-,087	,037	573	-	,464	590	,070	,099	557	-	,172	578	-	,172	604	-,018	,665	578	-	,607	604	-,069	,128	496
Investing in self	-,144	,001	578	-	,030	595	,105	,013	562	-	,021	582	-	,053	609	,203	,842	609	-,008	,842	609	-,022	,622	500
Spousal relations	-,082	,050	577	-	,810	595	,086	,041	558	-	,156	581	-	,072	607	,084	,114	607	-	,114	607	-,011	,810	498
Mean new scale score	,158	,000	537	,166	,000	549	-,354	,000	519	-	,064	541	-	,199	554	-,018	,018	554	-,222	,000	468			

focused coping” strategies, and all three factors can be linked to escaping from the problem and appointing self-blame⁷.

Conclusion

The internal consistency (Cronbach’s alpha coefficient) of the CSIW is 0.880, while the internal consistency level among the 10 factors obtained through the factor analysis is 0.720. These factors have been identified as preoccupation with thoughts, spiritual coping, denial, social withdrawal, negative self-perception, hope, social support seeking, acceptance, investing in self and spousal relations. A negative significant correlation was identified between the CSIW and the WCSI ($r=-0.222$, $p=0.001$), and according to the findings of this study, CSIW can be considered as a scale with good reliability and validity that can contribute to the clarification of coping strategies used by infertile women, and which can help in the planning of effective interventions.

Infertile women have been found to experience stress and psychosocial problems when faced with the inability to have children. Among these problems, the inability to respond to social expectations, stigmatism, negative self-perception, invisible multiple losses and the psychological effects of adjunctive therapies are more common. Each stage of infertility treatments occurs in the female body. Thus, coping with stress levels of women who undergo this treatment, and developing appropriate interventions will allow women to overcome this period better and increase the success levels of treatment. CSIW can be used as a standard data collection tool by health care providers to ascertain coping strategies in infertility clinics and can serve as a useful database for the planning effective interventions in cases of infertility-specific psychosocial problems.

Study Limitations

This scale has been developed by the researchers to address a shortfall in literature. Data were collected from three large cities in Turkey in which different cultures are represented. This can be given as an example of the strengths of this scale. Ankara,

Istanbul and Antalya all see significant migration from other regions in Turkey, and the most popular IVF centers can be found in these provinces. The strength of the CSIW regarding data diversity is that its data were collected in these cities, although it is recommended that CSIW should be applied to women from different cultures and different regions in the country to improve the scale. Additionally, further studies are recommended to be carried out to include more diverse demographic samples and cultures, aside from Turkey, as this would result in a universal tool for the testing of coping strategies among infertile women.

Ethical Considerations

The study was approved (approval number: 86/2015) by the ethical committee of the Istanbul Zeynep Kamil Women’s and Children’s Disease Training and Research Hospital. Both oral and written information was given to the participants to explain the objective of the research before the application of scale, and the participants were informed that they had the right to withdraw at any time, without explanation. Written informed consent was subsequently obtained from all the participants.

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Contributions

Study design: AK, GÜ; data collection: İK, EA, YDM; data analysis HA; article drafting: AK, HA, GÜ and data interpretation and revision and final approval of the article: all authors

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Conflict of Interest

No conflict of interest is declared by the author.

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