

# Validation of Self-Assessed Form of Diagnostic Criteria for Psychosomatic Research Adapted from Diagnostic Criteria for Psychosomatic Research - Structured Interview

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**Background:** As the diagnostic criteria for psychosomatic research-structured interview (DCPR-SI) is a rater-assessed questionnaire, it has not been used vastly in community-based studies and clinics. Describing and investigating self-assessed form of DCPR are an attempt to apply it easier and more worthwhile for medical settings. The aim of this study was to describe and present self-assessed form of DCPR self-assessed (DCPR-SA) and test its validity and reliability. **Materials and Methods:** The DCPR-SI was translated to Persian according to the best practice methodology and the guideline for adaptation of self-report measures. In this cross-sectional study, 540 patients and healthy individuals were recruited and answered DCPR-SA and some related questionnaires. Inter-rater (test-interview) and test-retest reliability were determined. Construct, concurrent, discriminant, and known-group validity were tested. **Results:** The kappa coefficients were expressed substantial and almost perfect agreement (0.617–0.784,  $P \leq 0.05$ ). In addition, phi correlation coefficients were indicated adequate test-retest reliability for each cluster (0.548–0.754,  $P \leq 0.05$ ). Three domains (anxiety-related symptoms, functional symptoms, and dysfunctional traits and emotional patterns) were confirmed by factor analysis. The results of the discriminate validity analysis were promising. **Conclusion:** The findings show that the DCPR-SA is valid and reliable and can be used by medical professionals as a psychosomatic screening tool and can be used properly in Persian-speaking population.

**Key words:** Diagnostic criteria for psychosomatic research, psychosomatic, reliability, validity

**How to cite this article:** Goli F, Roohafza H, Khani A, Afshar H. Validation of Self-Assessed Form of Diagnostic Criteria for Psychosomatic Research Adapted from Diagnostic Criteria for Psychosomatic Research - Structured Interview. *J Res Med Sci* 2022;27:11.

## INTRODUCTION

Maladaptive personality traits, weak coping strategies, and their related symptoms are very common thematic problems in all clinical settings.<sup>[1,2]</sup> These problems are very prevalent and influential in the severity, chronicity, and burden of illness with or without organic disorders.<sup>[3]</sup>

In different fields of medicine, including clinical psychology and psychosomatic medicine, the

effectiveness of the diagnostic process increases to the extent that it achieves three interrelated purposes. First, providing a meaningful framework that recognizes the underlying clinical condition beyond the presentation of symptoms for clinicians, facilitation of communication among clinicians, and finally, enhancement of decision-making skills to improve the patient's health status.<sup>[4]</sup>

A wide array of somatic symptoms cannot be fully or even partially explained by the biomedical or psychiatric

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	DOI: <a href="https://doi.org/10.4103/jrms.JRMS_938_20">10.4103/jrms.JRMS_938_20</a>

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**Submitted:** 05-Sep-2020; **Revised:** 02-May-2021; **Accepted:** 21-Aug-2021; **Published:** 18-Feb-2022

diagnostic models.<sup>[5]</sup> However, early detection and timely management of these psychosomatic problems is not so common in various clinical and nonclinical settings.<sup>[6]</sup> For screening these factors and related symptoms, we need appropriate tools to assess the main problems and clarify a costly psychosomatic management.

Increasingly, the DSM-IV classification of somatoform disorders has been criticized because of its failure to cover adequately the clinical phenomenon of somatization,<sup>[7]</sup> conceived as the tendency to experience and communicate psychological concerns in the form of physical symptoms and to seek medical help for them.<sup>[8]</sup>

A basic criticism can be expressed with regard to one of the core concepts of somatoform disorders, implying that somatic symptoms should not be secondary to other psychiatric disorders (mainly anxiety and depression).<sup>[9]</sup>

Various alternatives have been suggested for the DSM-V,<sup>[10]</sup> including adding categories such as health anxiety, somatic symptom disorder, and various functional disorders and also a radical suggestion to entirely abolish the category of somatoform disorders.<sup>[10,11]</sup>

Diagnostic criteria for psychosomatic research (DCPR) are one of the assessment tools which is used for both research and clinical purposes.<sup>[12]</sup> The DCPR were introduced in 1995 and tested in various clinical settings. Further, the DCPR provides a classification for illness behavior, as the ways in which individuals experience, perceive, evaluate, and respond to their health status.. The DCPR allows a far more sophisticated qualitative assessment of patients than the one-dimensional DSM checklist of psychological symptoms. The aim of the DCPR was to translate psychosocial variables derived from dimensional instruments that were used in the psychosomatic literature into operational categories whereby individual patient groups could be identified.<sup>[10,11]</sup>

DCPR as a multidimensional questionnaire is feasible for screening 12 psychosomatic syndromes; four of them were conceived to provide a better specification of the DSM-IV rubric of psychological factors affecting medical conditions (i.e., alexithymia, Type A behavior, irritable mood, and demoralization). The other eight diagnostic criteria were concerned with clinical phenomena related to the process of somatization and were developed as substitutes for or supplementary to the DSM categories of somatoform disorders. These new diagnostic criteria encompassed disease phobia, thanatophobia, health anxiety, illness denial, functional somatic symptoms secondary to a psychiatric disorder, persistent somatization, conversion symptoms, and anniversary reaction.<sup>[10]</sup>

Studies showed that psychosomatic syndromes detected by DCPR-SI were more prevalent than those identified by DSM-IV criteria in medical population.<sup>[13,14]</sup> As the DCPR-SI are a rater-assessed questionnaire, we believe that it has not used vastly in community-based studies, general hospitals, and clinics.

Describing and investigating self-assessed form of DCPR are an attempt to apply it easier and more worthwhile for psychiatric and consultation services as well as other medical settings. We assume that if DCPR self-assessed (DCPR-SA) can be reliable and valid as DCPR-SI, it can be a step forward, making it more feasible and generalized.

## MATERIALS AND METHODS

DCPR-SI are a 12-cluster psychosomatic conceptual framework that evaluates the psychosomatic dimensions of patients with medical illnesses. The DCPR-SI have undergone extensive validation during the past 10 years, and these studies have been summarized in a monograph that also included a structured interview for their assessment.<sup>[4]</sup> The interview has shown good-to-excellent psychometric characteristics of reliability and validity.<sup>[12,15,16]</sup> In this paper, at first, we describe Persian translation and cross-cultural linguistic adaptation process and then investigate the validity and the reliability of the DCPR-SA questionnaire that is adapted from DCPR-SI.

### Translation and linguistic adaptation process

The translation and adaptation of DCPR-SI were done in agreement with the best practice methodology,<sup>[17]</sup> according to the guidelines for adaptation of self-report measures by Sousa and Rojjanasirat.<sup>[18]</sup> The guideline consists of five steps: (1) forward translation, (2) backward translation, (3) evaluation and adaptation by an expert committee, (4) testing of the penultimate version, and (5) final expert committee appraisal.

#### Step 1: Forward translation

An English version of DCPR-SI was translated into Persian by two individual Iranian translators who were fluent in English language. The translation was performed with special attention to equivalence.

#### Step 2: Backward translation

The resulted Persian questionnaires were back-translated into English by two independent English-native translators who were fluent in Farsi Language. This backward translation was compared with the original text to detect translation errors or unexpected interpretations of ambiguous items.

**Step 3: Evaluation and adaptation by an expert committee**

A synthesis of the two obtained Persian questionnaires was performed by an expert committee. The expert committee consisted of psychiatrist, health psychologist, clinical psychologist, psychometric expert, information science expert, biostatistician, and internist.

The members of expert committee were not involved in forward translation and were able to provide impartial advice regarding observed discrepancies. To translate questionnaire for using in community-based surveys, we changed its mode of admin to an easier and more convenient form. The resulted self-administered questionnaire has no need to interview evaluation (content validity).

The first draft was obtained by consensus. This committee examined the semantic, conceptual equivalence, expressions, and linguistic adaptation of this version. In addition, the expert committee considered compatibility between the content of questionnaire and the purposes that were designed for collected data.

The members of expert committee considered the clarity, relevance, and simplicity of questions. A few linguistic changes based on connotations of the word were done, and finally, the penultimate version of DCPR-SA was prepared.

**Step 4: Testing of the penultimate version**

Finally, the Persian-translated questionnaire obtained was pretested on 20 individuals to ensure that the questionnaire was perfectly understandable and clear. All individuals reported that the questions were understandable and there were no ambiguities, so no changes to the questionnaire were necessary (face validity).

**Step 5: Expert committee approval**

In this last stage, the expert committee appraised and approved the final version of the DCPR-SA.

**Reliability and validity****Study design**

In this cross-sectional study, 540 outpatients and healthy individuals were recruited from different medical settings in a multicenter effort that shared uniform methodology in the psychological assessment. The inclusion criteria were being interested in participating in the study, the ability to read and write, and patients who have been diagnosed with a disease for at least 1 year.

The participants were consecutive patients who diagnosed with endocrine disorder from clinic of Isfahan Endocrine and Metabolism Research Center, cardiac patients from clinic of Cardiovascular Research Institute, patients who had received diagnosis of skin diseases from Referral

Dermatology Clinic of Alzahra Hospital, patients with functional gastrointestinal disorders from gastroenterology clinic, cancer patients from outpatients clinic of Omid Hospital, psychiatric outpatients from psychiatric clinic of Khorshid Hospital, and outpatients who referred to primary care clinics. All places that patients recruited from affiliated to Isfahan University of Medical Sciences. In addition, healthy participants were randomly selected among the sample of Isfahan Cohort study<sup>[19]</sup> which has been conducting for 10 years and had not any disease history during these years. They were contacted by telephone and invited to Cardiovascular Research Institute for completing the questionnaire [Table 1]. This study was approved by the National Institute for Medical Research Development Ethical Committee (grant number 964708), and informed consent was obtained from all participants included in the study.

Trained questioners who had settled in these clinics interviewed the participants. All participants from various centers with a definitive diagnosis of the disease as well as healthy participants answered DCPR-SA and the following questionnaires. DCPR-SA consists of 12 clusters with 58 items that is classified into three domains. Four clusters are related to patients' ways of perceiving, experiencing, evaluating, and responding to their health status that are subsumed into the construct of abnormal illness behavior (disease phobia, thanatophobia, health anxiety, and illness denial). Four clusters are related to the concept of somatization (functional somatic symptoms secondary to a psychiatric disorder, persistent somatization, conversion symptoms, and anniversary reaction). The last four clusters are related to psychological dimensions that have been frequently and consistently found in medical patients (alexithymia, Type A behavior, irritable mood, and demoralization). Finally, answering these questions indicated whether the participants had any of these clusters. Type A personality questionnaire encompassed 25 yes/no items. More than 20 yes responses indicate the presence of a Type A behavior pattern.<sup>[20]</sup> Hospital Anxiety and Depression Scale (HADS) consists of seven items for anxiety and seven items for depression. Scores >7 in both domains indicate that participants are likely to be depressed or suffer from anxiety. Cronbach's alpha coefficient has been found to be 0.78 for the anxiety subscale and 0.86 for depression subscale.<sup>[21]</sup> Defense styles questionnaire (DSQ) with 40 items provided scores for the 20 individual defenses. Four defenses are related to the mature factor (sublimation, humor, anticipation, and suppression); four are related to the neurotic factor (undoing, pseudoaltruism, idealization, and reaction formation), and 12 are related to the immature factor (projection, passive aggression, acting-out, solation, devaluation, "autistic fantasy," denial, displacement, dissociation, splitting, rationalization,

**Table 1: Demographic and clinical characteristics of study population**

Clinical setting	Frequency	Age	Gender (female) (%)	Any DCPR (%)
Endocrinology	60	52.06±14.87	40 (66.7)	45 (75.0)
Cardiovascular	60	47.51±8.47	6 (10.0)	46 (76.7)
Dermatology	60	40.34±12.80	49 (81.6)	26 (43.3)
Gastrointestinal	60	41.14±9.40	31 (51.6)	51 (85.0)
Oncology	60	48.02±10.71	29 (48.3)	48 (80.0)
Psychiatry	60	49.95±11.03	37 (61.7)	54 (90.0)
Rheumatology	60	47.05±15.61	31 (51.6)	53 (88.3)
Primary care	60	50.60±14.32	36 (60.0)	51 (85.0)
Community sample	60	47.85±7.47	30 (50.0)	39 (65.0)
Total	540	47.16±9.67	289 (53.5)	413 (76.5)

DCPR: Diagnostic criteria for psychosomatic research

and somatization). The individual defense scores are calculated by the average of the two items for each given defense mechanism. Cronbach's alpha for all items was 0.72.<sup>[22]</sup> Screening for somatoform symptoms-2 (SOMS-2), a screening questionnaire, includes all somatic symptoms relevant for somatization disorder according to DSM-IV and ICD-10. Moreover, it lists 53 bodily symptoms which respondents had to indicate as having been present or absent during the past 2 years. Only symptoms that physicians had not been able to find clear organic causes were asked for. Scores of more than 4 indicated somatizations. The internal consistency was Cronbach's  $\alpha = 0.87$ .<sup>[23]</sup> Further, demographic characteristics including sex, age, educational level, and marital status were recorded.

### Reliability

To determine inter-rater (test-interview) and test-retest reliability, a random sample of 20% of participants were invited 1 month after completion of their questionnaire.

Ten percent of respondents were selected for inter-rater (test-interview) reliability analysis. They were interviewed by psychosomatic expert. Findings of psychosomatic expert evaluation and DCPR-SI questionnaire were recorded. Test-retest (test-interview) reliability measures the instrument's ability to produce data that are consistent or stable over time. It is normally determined using Cohen's kappa.<sup>[24]</sup> The Kappa 0.01–0.20 (slight agreement), 0.21–0.40 (fair agreement), 0.41–0.60 (moderate agreement), 0.61–0.80 (substantial agreement), >0.80 (almost perfect agreement).<sup>[24]</sup> Other 10% were completed DCPR-SA for test-retest reliability. The estimation of test-retest reliability for a scale with dichotomous items can be improved by using phi coefficient.

### Validity

Confirmatory factor analysis was completed on the 12 clusters originally meant to describe the constructs of DCPR-SA questionnaire. All clusters were subjected to a principal components analysis with varimax rotation. Statistical criteria guiding the decision of a final component structure were the scree plot, eigenvalues >1.0, percent of

variance explained, and component loadings >0.30.<sup>[25]</sup>

Concurrent validity is determined by comparing a new test with one that has already been demonstrated to be valid or acknowledged to be the "gold standard." Concurrent criterion validity of the DCPR-SA questionnaire, which is one of factor analysis methods, was computed and confirmed by correlating the total scores of each cluster with Type A personality questionnaire, HADS, DSQ, and SOMS-2 by phi coefficient.

Discriminant validity was analyzed by assessing DCPR-SA clusters to confirm that they were not correlated with each other. In other words, we would like to ensure that the nonoverlapping clusters do not overlap. Phi coefficients showed there was low correlation between different clusters of the questionnaire.

Known-groups validity of the different clusters was examined by comparing the DCPR-SA clusters scores among groups based on whether the patients were HADS-depressed, HADS-anxious and had somatization (SOMS-2). These clusters are distinguishing health conditions for psychosomatic problems. The Chi-square test was used for the comparison of depression, anxiety, and somatization levels between depressed/nondepressed, anxious/nonanxious, and with/without somatization groups. Data were analyzed using the Statistical Package for the Social Sciences (version 25.0 for Windows, SPSS Inc., Chicago, IL, USA).

## RESULTS

Of all 540 individuals who participated in this study, 289 (53.5%) were female, and 71.9% were married. The mean age of the participants was  $47.16 \pm 9.67$  years. About 26.4%, 35.7%, and 37.9% of the participants, respectively, had  $\geq 12$ , 6–12, and 0–5 years of education. In addition, 413 (76.5%) participants had at least one DCPR cluster. Other demographic and clinical characteristics of the participants in clinical settings are presented in Table 1.

In Table 2, the overall inter-rater (test-interview) and test-retest reliability for the DCPR-SA has been illustrated. The range of kappa coefficients was between 0.617 and 0.784 that was expressed substantial and almost perfect agreement. In addition, phi correlation coefficients were 0.548–0.754, indicating adequate test-retest reliability for each cluster. Further, Table 2 shows the correlation between DCPR-SA clusters. There was very low correlation between some of DCPR-SA clusters. This means that different clusters of DCPR-SA can evaluate different subjects, and it confirmed discriminant validity.

Table 3 shows the factor analysis of the 12 clusters in defined groups which accounted for 45.7% of the variance in measured variable. According to the content of clusters, we named each derived factor that adjusted to our presumptions. It confirmed construct validity. As a result, the DCPR-SA questionnaire was finalized with a total of 12 clusters under the three domains. Health anxiety, disease phobia, thanatophobia, and illness denial were under the anxiety-related symptoms domain; functional somatic symptoms secondary to a psychiatric disorder, persistent somatization, conversion symptom, and anniversary reaction were under the functional symptoms domain; and Type A behavior, irritable mood, demoralization, and alexithymia were under the dysfunctional traits and emotional patterns domain.

According to the findings, health anxiety, disease phobia, thanatophobia, functional somatic symptom, Type A behavior, irritable mood, and demoralization clusters correlated with depression and anxiety symptoms. Functional somatic symptom and persistent somatization clusters correlated with somatization as a defense mechanism of DSQ. Respectively, illness denial and alexithymia clusters directly and irritable mood cluster inversely were related to denial, isolation, and humor as defense mechanisms. Since other defense mechanisms had low correlations (<0.3), they have not been reported.

Finally, Type A behavior clusters were related to Type A personality questionnaire. It has been carried out for concurrent validity [Table 4].

Based on Table 5, all clusters of DCPR-SA significantly differ in the depressed and nondepressed groups except functional somatic symptom and conversion symptom clusters as well as disease phobia-in anxious participants compared to nonanxious ones. In addition, comparison of DCPR-SA clusters in participants with/without somatization has been indicated.

## DISCUSSION

The DCPR-SI version, developed in 1995, is available for screening psychosomatic syndromes. The interviewing

**Table 2: Inter-rater (test-interview) and test-retest correlation for diagnostic criteria for psychosomatic research-self assessed clusters and correlation between diagnostic criteria for psychosomatic research-self assessed clusters**

	Kappa	Phi's correlation	Disease phobia	Tanatophobia	Illness denial	Functional somatic symptom	Persistent somatization	Conversion symptom	Anniversary reaction	Type A behavior	Irritable mood	Demoralization	Alexithymia
Health anxiety	0.779*	0.695*	0.278*	0.341*	-0.006	0.170*	0.125	0.067	0.225*	0.284*	0.279*	0.259*	-0.065
Disease phobia	0.723*	0.577*		0.276*	0.047	0.028	0.064	-0.049	0.131*	0.137*	0.159*	0.162*	-0.154*
Thanatophobia	0.683*	0.641*			0.074	0.161*	0.184*	0.013	0.221*	0.274*	0.170*	0.181*	-0.181*
Illness denial	0.699*	0.548*				0.079	0.068	0.044	0.123*	0.066	0.047	0.176*	-0.033
Functional somatic symptom	0.617*	0.651*					0.133*	0.065	0.332*	0.149*	0.160*	0.078	-0.076
Persistent somatization	0.689*	0.591*						0.074	0.254*	0.163*	0.177*	0.225*	-0.101
Conversion symptom	0.717*	0.615*							0.153*	0.186*	0.030	0.171*	-0.086
Anniversary reaction	0.684*	0.670*								0.180*	0.202*	0.222*	-0.144*
Type A behavior	0.751*	0.624*									0.337*	0.286*	-0.298*
Irritable mood	0.784*	0.754*										0.309*	-0.236*
Demoralization	0.735*	0.723*											-0.179*
Alexithymia	0.655*	0.631*											

\*P<0.05

structure of DCPR-SI has some limitations as a screening tool, especially in medical settings which usually there is no access to a psychologist or other mental health providers for interviewing. In this study, a standardized English version of DCPR-SA was translated to Persian and validated through stringent procedures to ensure that the quality of this version would be equivalent to that of the original version.

The DCPR-SA showed acceptable screening tools for the most prevalent psychosomatic syndromes. The 12 factors of DCPR can be classified into three domains, including dysfunctional traits and emotional patterns domain consists of Type A behavior (10 questions), alexithymia (6 questions), irritable

mood (4 questions), and demoralization (5 questions) cluster; anxiety-related symptoms domain with health anxiety (4 questions), disease phobia (3 questions), thanatophobia (3 questions), and illness denial (3 questions) clusters; and finally, functional symptoms domain that covers persistent somatization (5 questions), functional somatic symptom (4 questions), conversion symptom (8 questions), and anniversary reaction (4 questions) clusters. The answers showed whether the participants had any of these clusters.<sup>[26]</sup>

Although DCPR-SI are an efficient tool for research and clinical purposes in both community and clinical settings to establishing a self-administrative form of DCPR can make it more applicable, user-friendly, and generalizable for all purposes.

**Table 3: Factor analysis of diagnostic criteria for psychosomatic research-self assessed questionnaire**

Clusters	Loading factor
Dysfunctional traits and emotional patterns (eigenvalue=3.04, accounted for 25.29% of variance)	
Type A behavior	0.793
Demoralization	0.609
Alexithymia	0.592
Irritable mood	0.472
Anxiety-related symptoms (eigenvalue=1.27, accounted for 10.60% of variance)	
Disease phobia	0.849
Health anxiety	0.618
Illness denial	0.396
Thanatophobia	0.302
Functional symptoms (eigenvalue=1.18, accounted for 9.79% of variance)	
Functional somatic symptoms secondary to a psychiatric disorder	0.723
Anniversary reaction	0.676
Persistent somatization	0.518
Conversion symptom	0.509

The results of this study approved the reliability and validity of DCPR-SA. The questionnaires based on inter-rater (test-interview) and test-retest correlation that rely on kappa agreement and phi correlation, respectively, is reliable. The inter-rater reliability of this questionnaire was substantial agreement (Cohen’s kappa 0.61–0.80). Further, phi correlation coefficients indicated adequate test-retest reliability for each cluster.<sup>[27]</sup> The validity of DCPR-SA in comparison with gold standard (DCPR-SI) and other related questionnaires is acceptable.<sup>[10,11]</sup>

The DCPR-SA can be used easily in all clinical settings for screening psychosomatic problems, and it is also appropriate for psychosocial interventions in different groups of patients from subclinical to chronic patients. The self-rating structure of the questionnaire can be facilitating and encouraging for both clients and therapists.

Such a psychosomatic screening tool not only helps recognizing psychosomatics symptoms but also makes

**Table 4: Correlation of diagnostic criteria for psychosomatic research-self assessed clusters and hospital anxiety and depression scale-depressed, hospital anxiety and depression scale-anxious, Toronto alexithymia scale-20, and some domains of defense styles questionnaire**

Items	Defense mechanisms				Type A Behavior	Depression	Anxiety
	Denial	Somatization	Isolation	Humor			
Health anxiety	-0.141*	0.158*	0.072	-0.182*	0.226*	0.539*	0.556*
Disease phobia	-0.065	0.132*	-0.011	-0.112	0.136*	0.423*	0.405*
Thanatophobia	-0.070	0.136*	0.055	-0.118	0.114	0.373*	0.466*
Illness denial	0.551*	-0.066	0.051	-0.061	0.043	0.175*	0.162*
Functional somatic symptom	-0.136*	0.413*	0.033	-0.102	0.010	0.105	0.410*
Persistent somatization	-0.132	0.554*	0.017	-0.062	0.206*	0.224*	0.253*
Conversion symptom	0.038	0.014	0.079	0.024	0.134*	0.073	0.111
Anniversary reaction	-0.157*	0.103	0.045	-0.084	0.168*	0.215*	0.272*
Type A behavior	0.009	0.238*	0.054	-0.032	0.563*	0.317*	0.324*
Irritable mood	-0.154*	0.234*	0.077	-0.307*	0.380*	0.509*	0.530*
Demoralization	-0.009	0.267*	0.141*	-0.182*	0.317*	0.699*	0.619*
Alexithymia	0.016	-0.173*	0.508*	0.146*	-0.155*	-0.114	-0.272*

\*P≤0.05

**Table 5: Comparison of diagnostic criteria for psychosomatic research-self assessed clusters in those with and without depression, anxiety and somatization\***

	Depressed (n=205)	Nondepressed (n=262)	P	Anxious (n=247)	Nonanxious (n=223)	P	With somatization (n=402)	Without somatization (n=78)	P
Health anxiety	78 (40.8)	43 (19.0)	<0.001	103 (45.2)	26 (12.7)	<0.001	131 (35.2)	10 (13.7)	0.004
Disease phobia	11 (5.4)	3 (1.3)	0.04	13 (5.3)	3 (1.4)	0.08	19 (4.8)	0 (0.0)	0.12
Thanatophobia	29 (14.2)	11 (4.3)	0.004	42 (17.3)	3 (1.4)	<0.001	47 (11.9)	2 (2.5)	0.04
Illness denial	82 (41.5)	63 (25.0)	0.003	91 (38.2)	50 (23.1)	0.007	132 (34.2)	14 (18.0)	0.04
Functional somatic symptom	35 (17.5)	28 (10.7)	0.08	52 (21.3)	15 (6.7)	<0.001	61 (15.4)	5 (6.4)	0.09
Persistent somatization	36 (27.5)	32 (15.5)	0.04	55 (32.3)	15 (8.7)	<0.001	68 (25.2)	7 (9.8)	0.02
Conversion symptom	18 (9.4)	10 (4.0)	0.07	23 (10.2)	6 (2.8)	0.02	29 (7.9)	2 (2.5)	0.15
Anniversary reaction	53 (28.8)	39 (16.8)	0.02	73 (33.9)	23 (11.3)	<0.001	92 (26.0)	5 (6.7)	0.004
Type A behavior	94 (46.5)	66 (25.5)	<0.001	121 (49.8)	42 (19.0)	<0.001	155 (39.3)	18 (23.0)	0.03
Irritable mood	89 (46.6)	42 (17.9)	<0.001	100 (44.6)	29 (14.2)	<0.001	124 (34.4)	13 (17.8)	0.03
Demoralization	100 (64.5)	34 (15.9)	<0.001	108 (54.8)	26 (14.8)	<0.001	142 (44.0)	6 (9.5)	<0.001
Alexithymia	71 (37.8)	131 (53.7)	0.01	77 (34.1)	128 (59.8)	<0.001	160 (42.9)	41 (56.1)	0.12

\*Based on Chi-square test

the doctor–patient communication more effective which enhances the decision-making related to patient’s health states.<sup>[26]</sup>

The direct significant correlations between persistent somatization and functional somatic symptoms secondary to a psychiatric disorder with somatization score of DSQ, illness denial and alexithymia and the inverse significant correlations of irritable mood with denial, isolation, and humor scores of DSQ show that the DCPR-SA can detect some of the most important predisposing factors and manifestations of psychosomatic problems.

Anxiety and depression symptoms, assessed by HADS, correlate with Type A behavior and functional somatic symptoms secondary to a psychiatric disorder as well as irritable mood, demoralization, health anxiety, disease phobia, and thanatophobia. Furthermore, all of the DCPR-SA clusters show very good discrimination between patients with and without depression, anxiety, and somatization.<sup>[28]</sup> Anxiety as an underlying disorder of most psychosomatic problems and depression as predisposing factor and comorbid psychosomatic symptoms and somatization as the main mechanism of most psychosomatic problems are used as distinguishing conditions.

The limitation of this study, based on plenty of recent evidence, was that some accurate factors of the psychosomatic problems are not mentioned in DCPR-SA/SI. Type D personality, trauma, especially in early childhood, and rage/hostility are some of the predictor parameters that need to be considered and discussed in DCPR-SA/SI. Adding these clusters to the questionnaire could make it more efficient for psychosomatic assessments.

This study provides a standard, valid, and reliable Persian version of DCPR-SA that can be used by medical

professionals for psychosomatic screening in native Persian-speaking population.

### Acknowledgments

We are thankful to the patients and physicians who participated to this study. Furthermore, the authors thank the staff of Cardiac Rehabilitation Research Center, Psychosomatic Research Center, Danesh-e Tandorosti Institute, and for reviewing the disease-specific questionnaire. Further, we acknowledged Prof. Bijan Iraj, Prof. Masoumeh Sadeghi, Dr. Neda Adibi, Dr. Hamed Daghaghzadeh, Dr. Mohammad Sharbafchi, Dr. Mohsen Bakhti, and Sepideh Motamedi for their great cooperation. This study was approved by the ethical committee of the National Institute for Medical Research Development with the IR.NIMAD.REC.1397.295 number.

### Financial support and sponsorship

This study was financially supported by the National Institute for Medical Research Development (grant number 964708). The sponsor had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; nor in the preparation, review, or approval of the manuscript.

### Conflicts of interest

There are no conflicts of interest.

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