

Original Article

Investigation of Psychometric Properties of Psychosomatic Complaints Scale among Individuals with Somatic Symptom Disorder

Sara Farahi¹, Ghasem Naziri^{1*}, Azam Davodi¹, Najmeh Fath¹

¹Department of Psychology, Faculty of Economics and Management, Shiraz branch, Islamic Azad University, Shiraz, Iran

Received: 24 Apr, 2023; Revised: 18 May, 2023; Accepted: 19 Jun, 2023

Abstract

Background and Aim: Given the prevalence of somatic symptoms disorder among Iranians, the aim of this research is to evaluate and verify the psychometric characteristics of Takata and Sakata psychosomatic complaints scale among psychosomatic patients.

Materials and Methods: In this study 360 people who referred to the psychosomatics department of Taleghani Hospital in Tehran in 2022, as well as the patients referred by the physicians, psychiatrists and psychologists of medical centers were selected through convenience sampling method. Internal consistency method (Cronbach's alpha) was used to determine the reliability of the questionnaire. Also, exploratory factor analysis and confirmatory factor analysis were used to determine the factor structure. To ensure convergent validity, Goldberg general health scale (GHQ-28) was used and SPSS and Lisrel software were applied for analyzing data.

Results: The results of the Cronbach's alpha indicated the appropriate internal consistency of the whole questionnaire and its components. Cronbach's alpha for the whole questionnaire was 0.957. In the exploratory factor analysis, a "hyper stimulation" factor was extracted. According to confirmatory factor analysis, the goodness of fit indicators of proposed model were confirmed (Chi-Square/df: 1.297, RMSEA: 0.029, SRMR: 0.031, CFI: 0.976, IFI: 0.976) and all paths were significant. Regarding the convergent validity, somatic symptoms component, anxiety, dysfunction in social action and function, and depression have a direct and significant relationship with psychosomatic problems.

Conclusion: The Persian version of the takata and sakata psychosomatic complaints scale, is a reliable and valid tool for assessing of the severity of psychosomatic symptoms in Iranian psychosomatic patients.

Keywords: Psychosomatic complaints scale, Psychometric properties, Somatic symptom disorder

*Corresponding Author: Ghasem Naziri, PhD, Department of Psychology, Faculty of Economics and Management, Shiraz branch, Islamic Azad University, Shiraz, Iran. Email: naziryy@yahoo.com.

ORCID: 0000-0003-6696-5470

Please cite this article as: Farahi S, Naziri Gh, Davodi A, Fath N. Investigation of Psychometric Properties of Psychosomatic Complaints Scale among Individuals with Somatic Symptom Disorder. Int. J. Appl. Behav. Sci. 2023;10(2):27-35.

Introduction

According to the World Health Organization (WHO), chronic diseases prevalence are increasing in all countries, especially in developing ones. Nowadays, adjustment and living with chronic diseases and promoting mental and social health of these patient is one of the main challenges of health systems (1). Patients at all levels of health care frequently suffer from bodily complaints, such as pain in different locations of the body, from fatigue, or from perceived disturbances of the cardiovascular, gastrointestinal, or other organ functions. Suffering is not confined to the experience of bodily complaints; it also entails psychological and behavioral aspects like high health anxiety and checking behavior (2).

The several recent decades have witnessed the emergence of new types of diseases titled the 'psychosomatic diseases' in which the psychological, cognitive and emotional factors are greatly involved in the development, kicking off and intensifying them (3). Somatization associated with significant disability, which increases with the number of somatic symptoms, duration of illness and is associated depressive and anxiety symptoms (4)

According to the criteria of the DSM-5, somatic symptom disorder is characterized by the presence of one or more somatic symptoms that are distressing, leading to significant disruption of daily life; extreme thoughts, feelings, or behaviors related to these symptoms are characterized by persistent and disproportionate thoughts about the importance of such symptoms, or intense persistent anxiety about the symptoms or health issues, or spending a lot of time and energy on health checks; also, the condition of the symptoms is stable, often lasting more than 6 months (5).

While many symptoms are self-resolved and mild, but some of them are severely disabling for the patient. Complaints such as headache, dizziness, fatigue, musculoskeletal pain, and gastrointestinal discomfort are prevalent in the general population; so that it is estimated that 80% of individuals experience one or more psychosomatic symptoms in a period of their life (6).

Psychosomatic diseases have a very high prevalence and often start before the age of 35, mostly prevalent in the 20 to 40 years old age group (7).

The prevalence estimation of somatic disorder accounts for 11% to 21% in youth, 10% to 20% in adults and 1.5% to 13% in elderly people (8). One study reported a 6-month prevalence of the disorder in the population referred to the general medical clinics as 4%-6%, but the actual value may be much higher than that (up to 15%) (5).

Costs in healthcare related to medically unexplained symptoms are comparable to mental health problems such as depression or anxiety disorder (9). It may be associated with other disorders such as depression, anxiety or personality disorders. Also, this disorder should be differentiated from transient somatic symptoms, fear with somatic symptoms caused by anxiety disorders, psychotic disorders, and withdrawal symptoms (10). Symptoms may be referred to any part or system of the body. The course of the disorder is chronic and fluctuating, and is often associated with disruption of social, interpersonal, and family behavior (11).

In Iran, somatic symptom disorder(SSD) and anxiety disorders are among the most common psychiatric disorders. Somatic symptoms are one of the most common reasons that lead patients to consult in primary care settings (12). Somatic complaints strongly would affect people's quality of life. Therefore, detailed diagnosis and evaluations are important for referral and intervention (13). Although some studies have been undertaken in connection with psychosomatic problems in Iran, there is still a significant gap in our knowledge on the psychological complaints. Part of the reason for this gap arises from the lack of appropriate research tools for measuring psychosomatic complaints. To diagnose and determine the severity of somatic symptoms, standard questionnaires such as Cornell medical index, Minnesota Multiphasic Personality Inventory(MMPI), and SCL-90 are available (14); but seldom are used owing to containing large number of questions and difficulty in completing.

Chronic pain and the experience of living with it are unique. Individual's perception of pain is affected by physical, psychological, and social variable (15).

Therefore, experts are dissatisfied with the classification and diagnosis of this disorder, as most of the relevant patients are generally classified in undifferentiated groups (especially ICD-10 group). One of the problems in this field relates to the diagnostic criteria of such disorders only focusing on the symptoms, while the psychological and psychophysiological processes are ignored (16). Thus, an operational psychosomatic assessment needs to focus on symptoms related to two common psychosomatic phenomena: 1: somatic symptoms associated with psychological distress, and, 2: common psychological symptoms contributing to somatic complaints (17). Presently, two main obstacles need to be overcome. First, various scales differ greatly in number and type of somatic symptoms, but there is no consensus for what bodily symptoms should be considered "psychosomatic".

Therefore, somatic symptoms correlated with psychological distress need to be clarified. Second, Psychological factors should be included in psychosomatic assessments (18). Depression and anxiety is an extremely important comorbidity in medical diseases and were frequently demonstrated to overlap with multiple somatic symptoms. Also, anger or hostility is a common psychological factor that can trigger stress-related psychological and physical responses. These psychological symptoms have been demonstrated to contribute to somatic complaints in adolescents and adults, to associate with somatic symptom counts, to increase the risk of developing a physical disease, and to predict the adverse outcomes of physical diseases (19).

Takata and Sakata (20) explain that psychosomatic symptoms can be divided into four parts that expose different complaints. The first is symptoms relating to concentration and attentiveness, followed by symptoms relating to depression. The third part relates to impulsiveness and irritability. The fourth and last part covers pain in different parts of the body as well as fatigue.

This dictates the need for a suitable tool applicable for the screening and evaluation of this disorder. In other words, the requirement of devising a questionnaire with the necessary validity and reliability in which all the disorder aspects are seen seems obvious. Therefore, a comprehensive

instrument could facilitate screening and measuring psychosomatic symptoms for any type of physicians and therefore may lead to better psychosomatic practices in general hospitals. Therefore, a high count of self-reported somatic symptoms can be used as an indicator for a patient's health condition and functional impairment. In order to comprehend the diversifying health problems of people, a questionnaire that can be used ordinarily and easily in the general infirmary is convenient to understand problems. Currently, an applicable instrument for measuring psychological and somatic symptoms simultaneously and comprehensively in general hospitals is still to be found (19).

One of the short scales that diagnoses psychosomatic complaints in primary stages within a short period of time was developed and validated by Takata and Sakata (20) in Japan. The scale was built within three years with few parts, aimed at diagnosing the Japanese youth psychosomatic complaints in primary stages to prevent from further development of the disease. The main advantage of the scale is that it assesses multiple dimensions of psychosomatic complaints. Thus a significant practical use of this scale could be anticipated. Most of the scales used at the world level to measure psychosomatic complaints have been validated on non-clinical people or the adolescent age group. In fact, there is no valid scale for easy and quick diagnosis of psychosomatic problems and their severity on affected people. Accordingly, considering the prevalence of psychosomatic disorders, especially somatic symptoms disorder in Iran and the need for screening and identifying such disorders in primary care centers as well as in general population, designing or validating appropriate tools is of utmost importance. Given the above explanations, the present study was planned to validate a relatively short scale for diagnosing psychosomatic complaints of the patients in a short period of time, applicable in the health centers for screening the people in terms of psychosomatic problems. The present study, then was conducted aiming at determining the psychometric properties (validity, reliability and factor structure) of the Takata and Sakata psychosomatic complaints scale in patients with psychosomatic symptoms disorder.

Methods

This study was carried out by using the descriptive-correlation method with the aim of determining the psychometric properties of the Takata and Sakata psychosomatic complaints scale in clinical subjects. For this purpose, from among the people referring to the psychosomatics department of Taleghani Hospital in Tehran in 2021, as well as the patients referred by the physicians, psychiatrists and psychologists of medical centers, 360 people were finally selected through convenience sampling method and were studied. 264 (73/3%) of the participants were female, and 96 (26.7%) were male. The age range of the people under study was 18 to 60 years old, and the age range of 20 to 40 constituted the largest number of participants among the entire sample society. participants with diploma's degrees constituted the largest number of participants. The demographic features of the participants are shown in

Table 1: Different samples used in this study.

demographic characteristics	F (%)	
Sex	Female	264 (73.3)
	Male	96 (26.7)
Age	10-20	32 (8.9)
	20-30	104 (28.9)
	30-40	104 (28.9)
	40-50	76 (21.1)
	50-60	36 (10)
	Missing	8 (2.2)
Marital status	Single	172 (47.8)
	Married	162 (45.0)
	Divorced	26 (7.2)
Education status	Diploma	147 (40.8)
	Bachelor	111 (30.8)
	Master	71 (19.8)
	Ph.D.	31 (8.6)
Employment status	Employed	196 (54.4)
	Unemployed	164 (45.5)

Table 1.

Materials

The following two scales were used for the data collection:

Tanaka and Sakata Psychosomatic Scale

The Takata and Sakata scale is a 30-items questionnaire to measure psychosomatic complaints of Japanese teenagers. The respondents could answer each question by selecting one of the options ranging from "never" (score 0) to "frequently" (score 3). The score range of the scale varies from 0 and 90. The compilers of this scale proved its concurrent validation in two separate studies by calculating its correlation with the Goldberg's mental health scale as equal to 0.64 and 0.65. Also, to check the validity of the scale structure they used factor analysis in two separate studies, and it was found that in the first study, conducted in 1997, about 34.1% and in the second study in 1999, about 31.1% of the parts' variance is explained by one factor. The reliability of the scale was obtained through Cronbach's alpha method to be as equal to 0.93, 0.91, and 0.92 for the years 1997, 1998 and 1999 respectively. The correlation between the scale parts was also reported to be as equal to 0.50 or higher in three different execution of test by the scale compilers (20, 21).

Goldberg general health scale (GHQ-28)

GHQ is a 28-Item self-report instrument for screening healthy subjects, developed by Goldberg and Hillier in 1979. GHQ-28 investigates measures mental health in four dimensions: depression, anxiety and sleep problems, physical complaints and impairment in social functioning; It also provides a total score as an indicator of mental health. The items are rated on a 4-point Likert-type scale. The lowest and highest scores are 0 and 84. It has good internal consistency (Cronbach $\alpha=0.79$) and reliability (0.91). The correlation of the scale with Symptom Checklist-90-R (SCL-90-R) psychometric instrument was calculated and 0.78 validity was reported (22). In Iranian psychiatric population criterion validity Cronbach's alpha and split reliability co-efficient were found to be 0.78, 0.97 and 0.90 respectively (23).

In the present study, firstly, the English form of the Takata and Sakata Psychosomatic Complaints Scale

was separately translated into Farsi by two psychology experts and turned into a single form. Then, the translated form was translated into English by an English language expert using the reverse translation method and the relevance of the translation was verified. Then, the translated version of the questionnaire was presented to ten people who did not participate in the research in order to check the fluency and comprehensibility of the questions. After ensuring the correctness and fluency of the translation, the questionnaire so produced was distributed among all the sample group members and completed.

Results

To determine reliability, the Cronbach's alpha coefficient was used. Also, exploratory factor analysis and confirmatory factor analysis were used to determine the factor structure. To determine the concurrent validity of the psychosomatic complaints scale, the Z test was used to define the significance of the correlation coefficient between the scale of psychosomatic complaints and the scale of general health. All statistical analyses were performed using SPSS software version 26.

Examining the structure of the questions of the Takata and Sakata 30-items scale was performed through exploratory factor analysis (EFA) using the principal components method and Varimax rotation. In this study, the KMO statistic was equal to 0.974. Bartlett's statistic with a value of 5337.071, degree of freedom of 435 and a significance level of 0.001 showed that the assumption was true and the minimum condition for factor analysis was established. Examining the factor loadings in relation to the structure of the Takata and Sakata psychosomatic complaints scale, one factor was extracted (hyper stimulation), which represented the highest factor loading of the questions. The factor obtained from exploratory factor analysis could explain 54.741% of the total variance of the scale.

Out of 30 questions input for the factor analysis, all the questions had more loading on one factor. Table 2 shows the questions loaded in each of the factors in order of significance. Also, in the last column, the degree of extraction of each question to the

Table 2: The questions loaded in each of the factors in order of significance in the Takata and Sakata psychosomatic complaints scale.

Extraction	First Factor	Questions	Question No.
0.529	0.727	I feel like shouting.	24
0.499	0.707	I get irritated without any reason.	23
0.493	0.702	I feel difficulty in putting my thoughts together.	21
0.491	0.701	I have numbness or trembling in the arms or legs.	18
0.487	0.698	I somehow feel sick.	27
0.479	0.692	I have a stomachache.	3
0.475	0.689	I feel gloomy.	28
0.473	0.688	I get in no mood to do anything.	20
0.468	0.684	I suddenly feel difficulty in breathing.	17
0.456	0.675	I have palpitation without any reasons.	16
0.456	0.675	I have a poor appetite in the morning.	6
0.455	0.675	I have lumbago.	8
0.453	0.673	I get tired easily.	11
0.447	0.668	I have a tic.	15
0.445	0.667	I have a headache.	1
0.443	0.666	I feel like lying.	19
0.436	0.660	I have diarrhea.	4
0.435	0.659	I feel I sleep badly.	29
0.434	0.659	I have eyestrain.	14
0.434	0.659	I catch a cold easily.	10
0.432	0.657	I feel heavy in the head.	2
0.427	0.654	I feel heavy in the stomach or I do have nausea.	5
0.426	0.653	I get tired of talking with other people.	22
0.424	0.651	I get distracted.	25
0.423	0.650	I have a dizziness when I stand up.	9
0.421	0.649	I lack tenacity.	26
0.420	0.648	I have stiffness in the shoulder.	7
0.405	0.637	The relationship between myself and my friends gets bad.	30
0.385	0.620	I get eczema.	13
0.369	0.607	I have ear ringing.	12

corresponding factor is reported, showing that the initial questions have more extraction to their factor while the last questions have less extraction to the corresponding factor.

For the confirmatory factor analysis, the distribution indices of each question were examined. Data distribution indices (skewness and kurtosis) showed that the obtained value is not outside the normal limit of ± 1.96 . Hence, the distribution of questions is normal. The results are contained in the Table 3.

After examining the data distribution indices, the measurement model of the Takata and Sakata psychosomatic complaints' scale was tested through confirmatory factor analysis. The results of model fit indices are shown in Table 4. The obtained indices including CFI, RAMSEA, NFI, IFI and AGFI confirms the model fit with the model. Given the optimal value for the model fit indices, the chi square index is also desirable.

Figure 1 shows the measurement model of each question on the Takata and Sakata psychosomatic complaints' scale. Standard coefficient for all the questions were above 0.55. Also the questions 3, 18, 23 and 24 were the best questions.

The reliability of the questions was measured using Cronbach's alpha test. shows the average, standard deviation, detection coefficient and Cronbach's alpha of the Takata and Sakata psychosomatic complaints' scale separately for each question (Table 5). The total Cronbach's alpha for the 30 items (questions) of Takata and Sakata's psychosomatic complaints scale was equal to 0.957, which indicates good reliability of the scale. The results show that the diagnosis by the questions 19, 24, 25 and 28 is better than the rest of the questions.

Convergent validity of psychosomatic symptoms severity scale was investigated using Goldberg Health Questionnaire (GHQ-28). The correlation results indicate that there is a positive and significant correlation between psychosomatic problems and somatic symptoms component ($P=0.001$, $\rho=0.614$), anxiety ($P=0.001$, $\rho=0.691$), dysfunction in social action and function ($P=0.001$, $\rho=0.678$), and depression ($P=0.001$, $\rho=0.684$). Also, there was a significant and positive relationship between psychosomatic symptoms and general health total score ($P=0.001$, $\rho=0.893$) (Table 6). According to

Table 3: Distribution indices of the Takata and Sakata psychosomatic complaints scale.

Question No.	M	SD	SK	KU
1	1.51	0.532	-1.199	0.061
2	1.48	0.532	-1.180	0.093
3	1.46	0.599	-0.344	0.164
4	1.50	0.558	-0.772	-0.255
5	1.52	0.562	-0.712	-0.059
6	1.53	0.586	-0.449	-0.164
7	1.50	0.558	-0.781	-0.032
8	1.52	0.591	-0.447	-0.010
9	1.49	0.543	-1.002	0.038
10	1.47	0.547	-0.857	0.288
11	1.48	0.557	-0.763	0.129
12	1.51	0.543	-1.002	-0.038
13	1.50	0.548	-0.924	-0.034
14	1.52	0.547	-0.919	-0.042
15	1.49	0.567	-0.646	0.185
16	1.47	0.567	-0.644	0.090
17	1.46	0.561	-0.710	0.053
18	1.50	0.538	-1.095	-0.037
19	1.47	0.547	-0.955	-0.149
20	1.52	0.572	-0.574	-0.258
21	1.55	0.580	-0.578	0.152
22	1.55	0.561	-0.669	-0.179
23	1.50	0.568	-0.663	0.221
24	1.52	0.557	-0.775	-0.044
25	1.51	0.567	-0.656	-0.083
26	1.52	0.558	-0.790	0.084
27	1.53	0.572	-0.626	0.075
28	1.52	0.586	-0.475	-0.050
29	1.54	0.546	-0.901	-0.108
30	1.50	0.558	-0.777	-0.244

Table 4: Fitness index of the Takata and Sakata psychosomatic complaints scale.

Chi-Square	525.400
df	405
χ^2/df	1.297
GFI	0.916
AGFI	0.904
CFI	0.976
RMSEA	0.029
NFI	0.905
IFI	0.976
SRMR	0.031

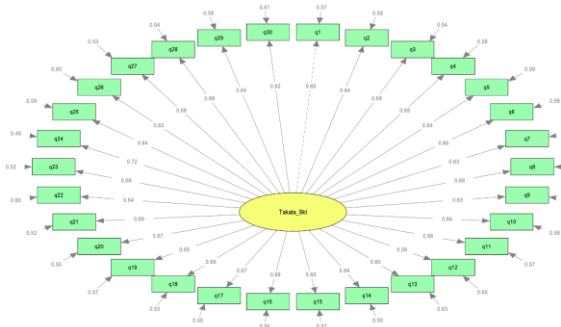


Figure 1. Standardized coefficients of each question on the subscales of the Takata and Sakata psychosomatic complaints scale.

Table 5: The average, standard deviation, detection coefficient and Cronbach's alpha of the Takata and Sakata psychosomatic complaints' scale.

Question No.	M	SD	d	α
1	1.51	0.532	0.638	0.956
2	1.48	0.532	0.627	0.956
3	1.46	0.599	0.664	0.956
4	1.50	0.558	0.631	0.956
5	1.52	0.562	0.624	0.956
6	1.53	0.586	0.646	0.956
7	1.50	0.558	0.619	0.956
8	1.52	0.591	0.646	0.956
9	1.49	0.543	0.621	0.956
10	1.47	0.547	0.629	0.956
11	1.48	0.557	0.644	0.956
12	1.51	0.543	0.577	0.956
13	1.50	0.548	0.591	0.956
14	1.52	0.547	0.630	0.956
15	1.49	0.567	0.640	0.956
16	1.47	0.567	0.640	0.956
17	1.46	0.561	0.647	0.956
18	1.50	0.538	0.655	0.956
19	1.47	0.547	0.672	0.956
20	1.52	0.572	0.637	0.956
21	1.55	0.580	0.659	0.956
22	1.55	0.561	0.674	0.956
23	1.50	0.568	0.624	0.956
24	1.52	0.557	0.678	0.956
25	1.51	0.567	0.700	0.956
26	1.52	0.558	0.622	0.956
27	1.53	0.572	0.620	0.956
28	1.52	0.586	0.670	0.956
29	1.54	0.546	0.661	0.956
30	1.50	0.558	0.630	0.956

the results, it can be said that the psychosomatic

Table 6: The correlation between Takata and Sakata psychosomatic complaints' scale with component of Goldberg health questionnaire (GHQ-28).

	Takata - Sakata	GHQ	Depression	Dysfunction in Social Action	Anxiety
Somatic Symptoms	0.614	0.640	0.290	0.322	0.345
Anxiety	0.691	0.778	0.451	0.485	--
Dysfunction in Social Action	0.678	0.794	0.564	--	--
Depression	0.684	0.772	--	--	--
GHQ	0.893	--	--	--	--

symptoms severity scale has good convergent validity with the Goldberg health questionnaire.

Discussion

Scientific research around the world and experiences accumulated in Iran have shown that the frequency of psychosomatic symptoms disorder in the health system is highly prevalent, so that 1 out of every 5 patients is diagnosed with psychosomatic symptoms disorder. Literature has shown that the psychosomatic symptoms disorders are seen in all cultures, races and different social and economic classes, while they are different based on the factors recognized in this study (24). Interviewing with mental patients constitutes the cornerstone of psychiatric diagnosis, however, accurate assessment tools are required for screening large populations and determining the effectiveness of therapeutic interventions. Therefore, the need to find specific tools for early detection of psychosomatic disorders to reduce health care costs and family pressure is obvious. There are several scales available to measure the psychosomatic complaints. Psychometric analysis of the dimensions of such tools has revealed their single-factor and multi-factor dimensions. The youth Psychosomatic Complaints Scale, which was designed and validated by Takata and Sakata in Japan, is a relatively short scale that provides psychologists with good information about the nature of the patients' complaints in a short period

of time.

Considering the above-mentioned issues and the lack of a valid Persian questionnaire for screening psychosomatic symptoms, this study was conducted on a sample of the Iranian clinical population. Exploratory factor analysis was used to determine the factor structure and validation of the Takata and Sakata psychosomatic complaints scale. In this study, factor analysis was used to determine the construct validity, and the results showed that the best array of factors is obtained through single-factor structure. A factor including "hyperstimulation" was found. The factor obtained from exploratory factor analysis could explain 54.741% of the total variance of the scale. This result is consistent with the results obtained by Takata and Sakata (20), the creators of the scale, and Hajlo (20, 21). The coefficient of determination of the first factor in Takata and Sakata study was 34.1% and in Hajlo study was 33.1%. It was therefore found that this scale was appropriate to be understood by this one factor.

Another part of this study addressed checking the questionnaire validity issue. For this purpose, the correlation of Takata and Sakata scale scores with GHQ was calculated. Takata and Sakata subscales were significantly correlated with GHQ subscales, including somatic symptoms, anxiety, impaired social action and functioning, and depression. Also, there was a significant and positive relationship between somatic symptoms and the total score of general health ($\rho=0.893$, $P=0.001$), which can be evaluated as a good validity.

The reliability of the questions was measured using Cronbach's alpha test. Cronbach's alpha coefficient is the most distinguished estimate of the reliability coefficient. It is well recognized that Cronbach's alpha coefficient must be ≥ 0.5 for a scale to be judged as reliable, and ≥ 0.8 for a scale used commonly (25). Cronbach's alpha coefficient of the scale with 30 items in the present investigation was high by 0.957, and its reliability was judged to be sufficient.

Findings of this study represent that the Persian version of Takata and Sakata scale has adequate validity and reliability for screening the clinical population in terms of abnormal complaints of somatic symptoms. Also, the study findings showed

that this tool can be readily used to measure the effect of psychological interventions.

Conclusion

As the final result, it can be said that the Persian version of Takata and Sakata's Psychosomatic Complaint Scale is applicable to clinical people, with its original 30 main parts and without adding or removing any parts.

Acknowledgment

The authors would like to express their gratitude to all the participants.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

- Ghorbaninia F, Monirpour N, and Pezeshki Modares M. "Mediating role of illness perception and coping strategies among individuals with inflammatory bowel disease." *Int. J. Appl. Behav. Sci.* 2019;6(3):31-42
- Henningsen P. "Management of somatic symptom disorder." *Dialogues Clin Neurosci.* 2022;20(1):23-31.
- Hadji-Michael M, McAllister E, Reilly C, Heyman I, and Bennett S. "Alexithymia in children with medically unexplained symptoms: a systematic review." *J Psychosom Res.* 2019;123:109736.
- Sharbafshaaer M. "Influential Role of Anxiety and Depression in Dimensions of Self-Regulation and Somatization." *Int. J. Appl. Behav. Sci.* 2018;5(1):16-23
- Sadock BJ, Sadock VA. *Comprehensive textbook of psychiatry*, 11th edition, translated by farzin Rezaee. Tehran: Arjmand Pub. 2015:27-31.
- Heidari Z, Feizi A, Rezaei S, Roohafza HR, and Adibi P. "Psychosomatic symptoms questionnaire (PSQ-39): a psychometric study among general population of Iranian adults." *BMC psychiatry.* 2021;21(1):1-14.
- Huang WL, Chen TT, Chen IM, Ma HM, Lee MT, Liao SC, Get al. Depression and anxiety among patients with somatoform disorders, panic disorder, and other depressive/anxiety disorders in Taiwan. *Psychiatry Res.* 2016;241:165-71.
- Ebrahimi A, Rief W, Mirshahzadeh P, Afshar Zanjani H, Nasiri Dehsorkhi H, Roohafza HR, et al. Psychometric properties of the Persian version of screening for Somatic Symptom Disorders-7 (SOMS-7). *Iran J Psychiatry.* 2018;13(4): 264-73.
- Tu, Chao-Ying, Wei-Shih Liu, Yen-Fu Chen, Wei-Lieh Huang. Patients who complain of autonomic dysregulation: A cross-sectional study of patients with somatic symptom disorder. *Int J Soc Psychiatry.* 2022;68(7):1373-81.
- Porcelli P, De Carne M, and Leandro G. "Distinct associations of DSM-5 somatic symptom disorder, the diagnostic criteria for

- psychosomatic research-revised (DCPR-R) and symptom severity in patients with irritable bowel syndrome." *Gen Hosp Psychiatry*. 2020;64:56-62.
11. Creed F. The risk factors for self-reported fibromyalgia with and without multiple somatic symptoms: The Lifelines cohort study. *J Psychosom Res*. 2022;155:110745.
12. Abasi I, Ghapanchi A, Toussaint A, Bitarafan M, Zarabi H, Derakhshan FS, Banihashem S, Mohammadi N, Ghasemzadeh MR, and Derakhshan MK. Psychometric properties of the Persian version of the somatic symptom disorder–B Criteria Scale (SSD-12) in community and clinical samples. *Gen Hosp Psychiatry*. 2022;78:1-8.
13. Schwarz J, Rief W, Radkovsky A, Berking M, Kleinstäuber M. Negative affect as mediator between emotion regulation and medically unexplained symptoms. *J Psychosom Res*. 2017;101:114-21.
14. Rief W, Hiller W. A new approach to the assessment of the treatment effects of somatoform disorders. *Psychosomatics*. 2003;44(6):492-8.
15. Gueserse M, Zali A, Hassanzadeh S, Hatami M, Ahadi M. The Effectiveness of Transcranial Direct Current Stimulation (TDCS) on Anxiety, Depression, and Physical Symptoms of People with Chronic Pain. *Int. J. Appl. Behav. Sci*. 2021;8(3):52-62.
16. Rief W, Nanke A, Emmerich J, Bender A, Zech T. Causal illness attributions in somatoform disorders: associations with comorbidity and illness behavior. *J Psychosom Res*. 2004;57(4):367-71.
17. Khan A, Lee EY, Janssen I, Tremblay MS. Associations of passive and active screen time with psychosomatic complaints of adolescents. *Am J Prev Med*. 2022;63(1):24-32.
18. Shah SM, Jahangir M, Xu W, Yuan Y. Reliability and validity of the Urdu version of psychosomatic symptoms scale in Pakistani patients. *Front Psychol*. 2022;13: 861859.
19. Li L, Peng T, Liu R, Jiang R, Liang D, Li X, et al. Development of the psychosomatic symptom scale (PSSS) and assessment of its reliability and validity in general hospital patients in China. *Gen Hosp Psychiatry*. 2020;64 (1):1-8.
20. Takata Y, Sakata Y. Development of a psychosomatic complaints scale for adolescents. *Psychiatry Clin Neurosci*. 2004;58(1):3-7.
21. Hajloo N. Psychometric properties of Takata and Sakata's psychosomatic complaints scale among Iranian university students. *RBS*. 2012;10(3):204-12.
22. Yaghoubi H, karimi M, Omidi A, Barouti E, Abedi M. Validation and factor structure of general health questionnaire in students in students. *Int J Behav Sci*. 1391;6(2):153-60.
23. Ebrahimi A, Molavi H, Moosavi GH, Bornamanesh A, Yaghoubi M. Psychometric properties and factor structure of General Health Questionnaire 28 (GHQ-28) in Iranian psychiatric patients. *Res Behav Sci*. 2007;5(1):5-12.
24. Su Q, Yao D, Jiang M, Liu F, Jiang J, Xu C, et al. Dissociation of regional activity in default mode network in medication-naive, first-episode somatization disorder. *PLoS One*. 2014;9(7):e99273.
25. Dohrenwend BP, Shrout PE, Egri G, Mendelsohn FS. Nonspecific psychological distress and other dimensions of psychopathology: Measures for use in the general population. *Arch Gen Psychiatry*. 1980;37(11):1229-36.

© Sara Farahi, GhasemNaziri, Azam Davodi, Najmeh Fath. Originally published in the International Journal of Applied Behavioral Sciences (<https://journals.sbmu.ac.ir/ijabs/index>), 08.08.2023. This article is an open-access article under the terms of Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>); the license permits unlimited use, distribution, and reproduction in any medium, provided the original work is properly cited in the International Journal of Applied Behavioral Sciences. The complete bibliographic information, a link to the original publication on <https://journals.sbmu.ac.ir/ijabs/index>, as well as this copyright and license information must be included.