ORIGINAL ARTICLE

Somatic symptoms scale: Psychometric properties in clinical and normal sample

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Abstract

Objective: To develop a Somatic Symptoms Scale based on the criteria of standard symptoms, and to examine its psychometric properties through exploratory factor analysis.

Method: The study was conducted from January, 2010 to May, 2011 at two teaching hospitals in Lahore city and comprised female adolescents with somatic symptoms diagnosed by a psychiatrist, and an equal number of adolescents with minor physical disability. All patients were recruited from psychiatric out-door units of different hospitals. All subjects were unmarried. Translated Urdu version of the Somatic Symptoms Scale was administered to each participant individually. They were instructed to read the scale carefully and select the response that was most appropriate. The assessment procedure was done in a separate room on the hospital premises.

Results: There were 150 female adolescents with somatic symptoms and equal number of females with minor disability. The overall mean age was 15.50+/-1.67 years (range: 14-17 years).Exploratory factor analysis showed that the two groups were significantly different on conversion motor symptoms ($p<0.001$), conversion sensory symptoms ($p<0.001$), pain symptoms ($p<0.001$), hypochondriacal symptoms ($p<0.001$) and body dysmorphic symptoms ($p<0.001$).

Conclusion: The Somatic Symptoms Scale was found to be a valid and reliable measure which can be used as screening instrument for non-clinical population and as a diagnostic measure in clinical population.

Keywords: Somatic symptoms disorder, Exploratory factor analysis, Criterion validity. (JPMA 66: 8; 2016)

Introduction

Somatic complaints are unexplained by organic reasons[1,2] and almost 10 percent of general population pay consequent visits to general health physicians without finding any organic reasons for these somatic complaints.[3] Research has identified that 20 percent of these patients are soaring users of healthcare services persistently with bad to worse health outcomes.[4] It is, therefore, the need of the hour that efficient managing and effective treatment plans should be in place that are helpful to manage and reduce somatic symptoms and enable the individual to be a useful member of society. Consequently, managing these patients requires a comprehensive screening and diagnostic tool that permits assessing different features of the somatic symptoms disorders. However, an adequate tool which measure somatic symptoms disorder is lacking.[5] Although, some assessment tools claim to measure some specific aspects of somatic symptoms e.g., Screening for Somatoform Symptoms Scale (SOMS-7),[5] World Health Organisation (WHO) Screening Scales,[6] Somatisation Scale of the Symptoms Checklist (SCL-90-R) and the Hypochondriasis scale of the Minnesota Multiphasic Personality Inventory (MMPI).[7] But all of these scales exclude either many of the somatic symptoms are outmoded and their suitability for assessing different somatic symptoms disorder is questionable. SCL-90-R[8] and MMPI exclude the majority of these symptoms of somatisation disorder as described in International Classification of Disease version 10 (ICD-10) and Diagnostic and Statistical Manual of Mental Disordersversion IV (revised text) (DSM-IV-TR)5.SOMS-7 measures only somatisation symptoms and excludes the other somatic symptoms. So, the need for a comprehensive self-report questionnaire, including all of the symptoms described in DSM-classification, was obvious and led to the development of Somatic Symptoms Scale (SSS). It contains all somatic symptoms of conversion symptoms, physical pain symptoms, body dysmorphic symptoms, hypochondriacal symptoms, as described in the symptoms criteria in DSM-IV-TR.[1]

The current study was planned to develop and validate the SSS, and to examine its psychometric properties through exploratory factor analysis (EFA).

Subjects and Methods

The study was conducted from January, 2010 to May, 2011 at two teaching hospitals in Lahore city and comprised female adolescents with somatic symptoms diagnosed by a psychiatrist, and an equal number of adolescents with minor physical disability. Those with somatic symptoms disorders were recruited from psychiatric outdoor units of different hospitals. Similarly, 150 normal female adolescents with minor medical problems were approached from the general outdoor units of the same hospitals. In recruitment of adolescents with somatic symptoms disorder, only those females were included who were diagnosed by a psychiatrist, were unmarried and did not have any physical disability. In

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recruitment of adolescents with minor medical problems, only those adolescents were included who did not have any diagnosed psychological problem, were unmarried and did not have any physical disability.

After obtaining permission from medical superintendents of the participating hospitals, the subjects were assured of the confidentiality and anonymity of their responses, and that the responses would be used only for the purpose of this study.

Translated Urdu version of SSS was administered to each participant individually. They were instructed to read the scale carefully and select the response that was most appropriate. The assessment procedure was done in a separate room on the hospital premises. Parents/relatives of the girls were not allowed to accompany them during the assessment procedure.

All the symptoms were also translated in Urdu language. Somatic symptoms related to sexual activities and pregnancy were excluded as the sample contained Pakistani unmarried female adolescents and because of social, cultural and religious prohibitions, it is assumed that Pakistani female unmarried adolescents would be having no experience of sexual activities before marriage.

Given the prospective importance of SSS, psychometric properties i.e., factorial validity (construct validity), discriminant validity, Cronbach's alpha, inter-correlations and item-analysis were also explored.

The study was conducted in two parts. In the first part, somatic symptoms according to DSM-IV-TR/DSM-V[1,2] were identified and translated into Urdu. To translate the symptoms, guidelines by Mapi[9] research institute were followed. Forward translation was done by three bilingual experts. After getting the translated Urdu version, backward translation was done by three other bilingual experts. After getting backward translation, a consensus version was obtained by a committee of three bilingual members to assess the clarity of terms, to get appropriate words in Urdu, and to get a precise, intelligible and cultural relevance of the consensus version.

The second part comprised trying out the scale on the sample and then determining its psychometric properties. All the symptoms were enlisted and the scale was given a severity index on five-point Likert-type scale by giving the options of 'not at all' (0) to 'very much' (5). The newly constructed scale was employed on clinical as well as non-clinical sample to examine its validity.

Subsequently, EFA was done to determine the factor structure of the newly-established SSS. EFA was employed on 42 items. Factors were extracted using principal component analysis (PCA) using Kaiser's criterion of extraction of factors with eigenvalues greater than 1 explaining the amount of variance. The second criterion of Cattell was to examine a graph known as scree plot.[10]

The items were considered if they loaded above 0.35 on each factor which was indicator of significant contribution to the factor.[11] Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity for correlation between the items of factor analysis were also checked.[12]

The discriminant validity of SSS was assessed by comparing the scores of the two groups using independent-t-test.

Results

There were 150 female adolescents with somatic

Table-1: Demographic Characteristics (N=300).

Characteristics	Adolescents with Somatic Symptoms (n=150)		Adolescents with minor medical problems (n=150)	
Education	F	%	F	%
6th Grade to 8th Grade	111	73	89	59.4
9th - 10th Grade	39	26.0	59	39.3
11th -12th Grade	0	0.0	2	1.3
Education Status				
Discontinued	120	77.7	40	25.3
Continued	30	20.3	108	72.7
Family System				
Joint Family System	115	76.3	114	79.3
Separate Family System	35	23.7	36	20.7
Birth Order				
First	32	21.3	40	26.7
Middle	107	71.4	109	72.7
Last	11	7.3	1	.7
No. of Siblings				
1	6	4.0	3	2
2	14	9.3	17	11.3
3-6	92	61.0	120	79.9
7-10	30	19.9	10	6.8
11-12	8	5.8	0	0.0
Fathers' education				
No education	33	22.0	5	3.3
5th Grade	33	22.0	7	4.7
6-8th Grade	31	20.0	23	15.4
9-10th Grade	44	30.0	66	44
College education	9	6.0	45	40
University education	0	0	4	2.7
Mothers' education				
No education	41	27.3	5	3.3
5th Grade	42	28.0	13	8.7
6-8th Grade	19	12.7	25	16.6
9-10th Grade	39	26	67	44.7
College education	9	6	22	14.7
University education	0	0	18	12

Table-2: Factor Analysis (N=300).

S.No.	Conversion Symptoms Factor 1	Physical Pain Symptom Factor 2	Body Dysmorphic Symptoms Factor 3	Hypochondriasis Factor 4	Item-total correlation
1	0.71				0.37
2	0.44				0.26
3	0.85				0.38
4	0.81				0.30
5	0.39				0.30
6	0.80				0.38
7	0.68				0.43
8	0.80				0.49
9	0.82				0.52
10	0.77				0.59
11	0.69				0.52
12	0.54				0.36
13	0.56				0.24
14	0.75				0.48
15	0.66				0.40
16		0.60			0.30
17		0.64			0.26
18		0.51			0.48
19		0.50			0.28
20		0.62			0.34
21		0.69			0.22
22		0.35			0.18
23		0.44			0.12
24		0.49			0.25
25		0.47			0.31
26		0.42			0.18
32			0.64		0.30
33			0.69		0.37
34			0.81		0.38
35			0.74		0.29
36			0.66		0.34
37			0.82		0.36
38			0.88		0.37
39			0.90		0.49
40			0.88		0.40
41			0.72		0.23
42			0.48		0.23
27				0.66	0.46
28				0.81	0.40
29				0.81	0.41
30				0.67	0.28
31				0.67	0.31
Eigenvalues	8.24	3.68	6.88	2.41	
% of variance	19.62	8.75	16.39	5.71	
α	0.87	0.72	0.92	0.73	
M (SD)	22.61 (22.43)	10.35 (11.53)	7.60 (8.73)	15.60 (20.85)	

Note. Factor loadings <0.34 are suppressed. α: Cronbach's alpha.

M(SD): Mean (Standard Deviation).

Table-3: Inter-correlations of four-factors of SSS and SOMS-7.

	Measures	1	2	3	4	5
1	SOMS-7	-	0.46**	0.30**	0.48**	0.15*
2	Conversion symptoms	0.28**	-	0.24*	0.32**	0.15*
3	Pain symptoms	0.22*	0.17*	-	0.41**	0.16*
4	Hypochondriacal symptoms	0.24*	0.18*	0.20*	-	0.20*
5	Body dysmorphic symptoms	0.24*	0.26*	0.23*	0.26**	-

Note: inter-correlations of females with somatic symptom disorders (n=150) are presented above the diagonal and inter-correlations of women with minor medical problems are presented below diagnal.
SOMS: Screening for Somatoform Symptoms Scale.
SSS: Somatic Symptoms Scale
*p<.05.**p<.01.

symptoms and equal number of females with minor disability. The overall mean age was 15.50±1.67 years (range: 14-17 years). Demographic characteristics of all subjects in the two groups were noted (Table-1).

Eigen values and screen plot identified four meaningful factors: conversion symptoms, physical pain symptoms, hypochondriacal symptoms, and body dysmorphic symptoms. The factor structure emerged as much better interpretably, including 42 symptoms with loadings>0.35 on the four factors, explaining approximately 50.47%variance (Table-2).

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.81, above the recommended value of 0.6, and Bartlett's test of sphericity indicated a significantly large correlation between the items of factor analysis ($p<0.05$).

Inter-correlations between SOMS-7 and SSS were determined, using the four identified factors (Table-3).

The discriminant validity of SSS, revealed that the two groups were significantly different on conversion motor symptoms ($t=15.51$; $p<0.001$), conversion sensory symptoms ($t=6.51$; $p<0.001$), pain symptoms ($t= 5.22$; $p<0.001$), hypochondriacal symptoms ($t=10.85$; $p<0.001$) and body dysmorphic symptoms ($t=2.7$; $p<0.001$). Mean scores of girls with somatic symptoms were higher on somatic symptoms than mean scores of girls with minor medical problems ($p<0.05$).

Discussion

Somatic symptom disorder is a recurrent and exorbitant disorder which, if diagnosed earlier, can be addressed with the help of experts/trainers who will help to reduce cost and time to any healthcare system. But suitable assessment measures which evaluate somatic symptoms are scarce, especially in Urdu language, which is easily comprehensible for Pakistani samples. Consequently, we tried to develop a reliable and valid measure which may assess all of somatic symptoms cited in DSM-IV and ICD-10.[13] The SSS reveals the intensity of the symptoms by severity index. The reliability of SSS is established by high internal consistency (0.16-0.48; $p<0.05$ &0.01) and reasonable values of Cronbach's alpha. The criterion validity was established through high correlations with SOMS-7. Moreover, SSS can discriminate well between patients with somatic symptoms and without somatic symptoms revealing sufficient discriminant validity.

One of the limitations of the study was that we could access only female adolescents in our investigation. In future studies, researchers should also include boys and samples with different age groups.

Conclusion

SSS appeared to be a reliable and valid measure to assess severity of somatic symptoms in clinical sample of adolescent females.

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