Assessing medically unexplained symptoms: evaluation of a shortened version of the SOMS for use in primary care

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Abstract

Background: To investigate the validity and stability of a Portuguese version for the Screening for Somatoform Symptoms-2 (SOMS-2) in primary care (PC) settings.

Methods: An adapted version of the SOMS-2 was filled in by persons attending a PC unit. All medically unexplained symptoms were further ascertained in a clinical interview and by contacting the patient’s physicians and examining medical records, attaining a final clinical symptom evaluation (FCSE). An interview yielded the diagnosis of Clinical Somatization (CS) and the diagnosis of current depressive and anxiety disorders.

Results: From the eligible subjects, 167 agreed to participate and 34.1% of them were diagnosed with somatization. The correlation between the number of self-reported and FCSE symptoms was 0.63. After excluding symptoms with low frequency, low discriminative power and not correlated with the overall scale, 29 were retained in the final version. A cut-off of 4 symptoms gave a sensitivity of 86.0% and a specificity of 95.5% on the FCSE and 56.1% and 93.6% at self-report. Stability in the number of symptoms after 6 months was good ($k = 0.57$).

Conclusions: The 29 symptoms version of the SOMS-2 with a cut-off of 4 showed a high specificity and sensitivity, being reliable as a referral tool for further specialized diagnosis.

Background

As the DSM (III-R and IV) Somatization Disorder was extremely rare in PC settings, and many patients presented medically unexplained symptoms (MUS), the need for an abridged somatization definition became evident. The Somatic Symptom Index (SSI 6/4) [1] and the Multisomatoform Disorder (MSD) [2] were proposed and validated. Several studies reported high prevalence estimates for Somatoform Disorders (SFD) in a PC context, notwithstanding the problems raised by different criteria and classification systems. Using ICD-10 criteria, values of 35.9% (current) and 39.4% (lifetime) were obtained [3]; with the DSM-IV criteria, 16.1% (current) [4] and 28.8% [5]; 19.7% with the SSI 6/4 criteria [6] and 8% with other abridged criteria [2,7].

Some researchers claim that screening for each symptom requires a clinical analysis as a sound basis for excluding organic disease or known “pathophysiological mechanisms” [8-10]. Other studies do not support the need for differentiation between explained and unexplained symptoms during the screening process [11,12].

Another dimension faced when screening Somatization is the heterogeneity of its clinical forms [13] and the attributional style [13]. The SOMS-2 [14,15] is a list of 53 physical complaints designed as a screener for SFD and "resembles a questionnaire version of the criteria for SFD according to the current classification systems” [16]. However an inconsistent recall of symptoms [17] has made SFD diagnoses according to current classification systems questionable. Evidence from GP evaluation and medical records is relevant in addressing a further challenge for the ascertainment of SFD patients according to current time criteria: the persistence over time of the tendency to present several somatoform symptoms.
Until now three studies have proposed screening tools for SFD in Portuguese. One used the ICD-10 Somatoform Disorders Symptom Checklist [18]; the second used the Questionnaire for physical manifestations of discomfort (Questionário de Manifestações Físicas de Mal Estar (QMFME)), based on the Psychosomatic Symptom Checklist (SUNYA) (Attanasio et al, 1984) to assess somatoform symptoms [19]. The QMFME included 19 items related to Nervous, Muscular, Digestive and Respiratory Systems and showed a satisfactory internal consistency within the four dimensions and as a whole. However the validation study used a reduced list of symptoms, and it is possible that symptoms with good discriminative power were left aside. The construct validity was not verified against Depression and Anxiety Disorders and no attempt was made to validate criteria for clinical diagnosis [20]. A third study [21] explored Portuguese translations of the PILLE (Pennebaker Inventory of Limbic Languidness, 1982), an inventory with 54 items, and the somatization subscale of the SCL-90-R. The last two tools presented good psychometric properties but were not validated against results of an interview and ask for physical symptoms in general, not for medically unexplained ones. Again the validation did not explore specificity in relation to anxiety or depressive disorders.

The Somatoform Dissociation Questionnaire-20 (SDQ-20) [22] was also validated in Portuguese. However it was designed to measure somatoform dissociation and dissociative disorders and not somatization in general.

This study was designed to validate the Portuguese version of the SOMS-2 for use in PC settings. The performance of the screening tool was also tested in the presence of specific comorbidity patterns.

**Methods**

**Subjects and data collection**

A PC unit with eight general practitioners (GPs) who provide care for a population of about 11,000 inhabitants was selected for this study. During a 10-day period alternating mornings and afternoons (August-September, 2007) all registered persons aged 18 years and older, able to read Portuguese, with no dementia, acute psychosis or mental retardation attending this unit were invited to participate. All willing persons had to fill in a socio-demographic questionnaire and the adapted Portuguese version of SOMS-2 [23,24], helped whenever necessary by psychology students. Within a short-time period participants were interviewed at the PC unit by a psychiatrist (CF), to ensure the somatoform nature of the symptoms reported and standardization of the severity/disability criteria. At the same time persons reporting no symptoms were again asked about SOMS-2 symptoms using a randomized order, for disclosure of false negatives at self-report. The same interviewer conducted the Portuguese validated version (5.0.0) of the MINI (1999, unpublished data displayed by Levy, P). A trained assistant present at the interview, selected participants that, throughout the interview definitely did not accept medically unexplained causes for their symptoms: they were labeled probable "true somatizers" [13]. During a following two-month period all symptoms for which a medical explanation was in doubt were further discussed with the participant’s GP. The history of somatoform complaints was made for each subject. As a standard procedure, medical records were always consulted, as well as other sources of medical information (if necessary) available on-line (hospital inpatient and outpatient contacts). Data from post-surgery diagnoses were obtained by contacting the surgeon in charge. Based on all information collected a final consensus about the symptom was reached (explained or unexplained), yielding the Final Clinical Symptom Evaluation (FCSE). Whenever information was insufficient for a decision on a reported "borderline" symptom, it was considered explained. Unexplained symptoms grafted onto medical conditions were also admissible. Participants were considered to have a somatoform symptom at FCSE even when they had an effective treatment for a SFD, provided the diagnosis was made in the previous two years.

After a period of six months stability of CS was tested in a random sample of approximately 15% participants who filled in the SOMS-2 and were interviewed by another psychiatrist using the same procedure, blind to first observation.

All participants received a description of the study and signed written informed consent, according to the Code of Medical Ethics of the World Medical Association Declaration of Helsinki. The study was approved by the Regional Primary Care Authority (Northern Region Health Administration).

**Measures**

In the first section of the original SOMS-2 participants are asked to report physical symptoms they have suffered, either temporarily or continuously in the previous two years, that significantly disturbed their well-being or their personal lifestyle and for which doctors had not found a clear cause. A list of 53 somatoform symptoms, 5 only for women and 1 for men, are described. These are the physical symptoms listed for the diagnosis of SFD according to DSM-IV-TR criteria and Somatoform Autonomic Dysfunction according to the ICD-10 criteria. The second section has 15 questions to assess disability, the number of consultations resulting from the symptoms, and inclusion/exclusion criteria for all SFD. The original version showed scores for sensitivity between 86% and 100% and a 85% specificity for SFD according to DSM-IV criteria, as well as a good test-retest reliability and correlation of...
the number of self-reported symptoms with the number of symptoms yielded by a structured interview [14]. In this study an adapted Portuguese version of the SOMS-2 is used including a list of 46 symptoms, 45 for women and 42 for men [23]. The symptoms excluded because they were seldom stated by primary care users (<5%) were: frequent diarrhea, anal leakage, frequent bowel movements, loss of tactile and pain sensation, blindness, seizures and continuous or frequent vomiting during pregnancy.

Data collected from clinical interviews, GP longitudinal assessment of the case and all data from medical records were evaluated to form a diagnosis of Clinical Somatizers (CS), taking into account the number of validated unexplained symptoms (usually 5 or more at FCSE) and resulting disability, recurrence and lifetime persistence and age of onset (criteria available from the authors on request). Seven out of the 8 GPs and the 2 psychiatrists who collected and discussed the data had more than 20 years of clinical experience. The CS diagnosis was the “gold standard” to estimate the discriminative power of each symptom in the SOMS-2 list as well as its cut-off point.

Current depression and current anxiety disorders were diagnosed using the MINI, a fully structured interview, yielding 17 Axis I diagnoses according to DSM-III-R/IV and ICD-10 criteria, whose validation studies yielded good psychometric properties [25]. From the Portuguese version (5.0.0), which generates DSM-IV diagnoses, questions for the following conditions were selected: major depression with or without melancholic characteristics, dysthymia, hypomania, mania, suicidal attempts history, generalized anxiety disorder, simple phobia, social phobia, agoraphobia with or without panic attacks, panic disorder, posttraumatic stress disorder, obsessive compulsive disorder, substance abuse and dependence disorders (alcohol, cannabis, etc).

Statistics
The overall prevalence and the prevalence ratio (PR) for specific sample strata were calculated and the respective 95% confidence intervals are reported. For obtaining a congruent overall inventory, the 46-symptoms adapted SOMS-2 was validated using 3 cumulative criteria applied to the FCSE. Only symptoms present in more than 2.5% of participants, with good discriminative power, that is, the 95% confidence interval for the positive likelihood ratio (LR+) not including 1 (the symptom should be more common in somatizers than in non-somatizers - sensitivity/(1-specificity) and correlated with the overall scale (r ≥ 0.20), were included in the final version. The McNemar test or binomial distribution was used to compare the "prevalence" of symptoms at self-report and after clinical validation. The cut-off point for the SOMS-2 was studied using the ROC curve and the overall test characteristics were calculated (sensitivity and specificity) at self-report and after clinical validation, as well as for specific sub-samples. The positive and negative predictive values were calculated assuming the prevalence of somatization in the sample. The number of symptoms reported was used to measure stability rather than the specific symptoms reported. The statistic k was calculated for a series of two by two cross-tabulation according to the number of symptoms reported at baseline and 6 months after (0, ≥1), (<2, ≥2), (<3, ≥3), ..., until (<8, ≥8). The SPSS version 16 was used for statistical analyses and a probability value of 0.05 was used as the limit for Type I error (wrongly rejecting the null hypothesis).

Results
Of the 928 eligible subjects, 18% agreed to participate in the whole evaluation (questionnaires and structured interview). The response rate almost doubled for women (20.5% vs. 13.0%) and declined gradually with age, from 28.0% for persons aged 18 to 44 years to 7.5% for those 65 or over. The age distribution of men or women in the sample is not significantly different from that of persons registered in the PC unit, though more women than expected were enrolled (chi-square = 26.5, df = 1, p < 0.001). Actually participants were mainly women (74.3%) and age ranged from 18 to 78 years, on average 43.7 (sd = 14.9), slightly higher for men (46.9 vs. 41.8 years). Most participants were married (65.3%), 65.8% had 9 or more years of full time education, 60.5% were employed and 62.3% lived in households inhabited by two or more generations (Table 1). The distribution of socio-demographic characteristics was not significantly different among somatizers and non-somatizers. The number of symptoms reported by participants on the SOMS-2 ranged from 0 to 20; 37.1% yielded no symptoms, 25% of women from 0 to 2; 74.4% persons with CAD also had at least one CDD and the same number had CAD or CS. Twenty nine (19.8%) CS was comorbid with a depressive or anxiety DSM-IV Disorder. Twenty-two cases (13.2%) of CS had current anxiety disorders, while a current anxiety disorder (CAD) was present in 21.6% of participants, and 19.2% had major depression, while a current anxiety disorder (CAD) was present in 39 (23.4%) participants; they overlap in 18 (10.8%) participants and 110 (65.9%) were free from depression and anxiety. Overall 48.5% of participants had CS, anxiety or depressive disorders. In 33 participants (19.8%) CS was comorbid with a depressive or anxiety DSM-IV Disorder. Twenty-two cases (13.2%) of CS had CDD and the same number had CAD. Twenty nine (80.6%) persons with CDD also had CAD or CS. Twenty nine (74.4%) persons with CAD also had at least one CDD or CS and 33 (57.9%) with CS also had a current depressive or anxiety disorder.

The prevalence of CS was higher in women than men (PR = 1.63) and in those with 4-8 years of education com-
Table 1: Sample characteristics and prevalence ratio for somatization

| Characteristics                                      | Somatizers (n = 57) | Non somatizers (n = 110) | All (n = 167) | Prevalence ratio | 95% CI  |
|------------------------------------------------------|---------------------|---------------------------|---------------|------------------|--------|
| **Gender**                                           |                     |                           |               |                  |        |
| Women                                                | 82.5                | 70.0                      | 74.3          | 1.63             | 0.91-2.93 |
| Men                                                  | 17.5                | 30.0                      | 25.7          |                  |        |
| **Age (years)†**                                     | 44.0 (12.4)         | 43.6 (16.0)               | 43.7 (14.9)   |                  |        |
| <45                                                  | 47.4                | 53.6                      | 51.5          |                  |        |
| ≥45                                                  | 52.6                | 46.4                      | 48.5          | 1.18             | 0.77-1.80 |
| **Marital status**                                   |                     |                           |               |                  |        |
| Single                                               | 14.0                | 21.8                      | 19.2          |                  |        |
| Married                                              | 70.2                | 62.7                      | 65.3          | 1.47             | 0.77-2.81 |
| Divorced                                             | 14.0                | 10.9                      | 12.0          | 1.60             | 0.72-3.58 |
| Widowed                                              | 1.8                 | 4.5                       | 3.6           | 0.67             | 0.10-4.40 |
| **Years of full time education**                     |                     |                           |               |                  |        |
| <4                                                   | 5.3                 | 9.1                       | 7.8           | 0.90             | 0.30-2.75 |
| 4-8                                                  | 33.3                | 22.7                      | 26.3          | 1.69             | 0.92-3.11 |
| 9-12                                                 | 42.1                | 39.1                      | 40.1          | 1.40             | 0.77-2.56 |
| >12                                                  | 19.3                | 29.1                      | 25.7          |                  |        |
| **Occupational status**                              |                     |                           |               |                  |        |
| Employed                                             | 66.7                | 57.3                      | 60.5          |                  |        |
| Unemployed                                           | 17.5                | 14.5                      | 15.6          | 1.02             | 0.59-1.77 |
| Retired                                              | 14.0                | 19.1                      | 17.4          | 0.73             | 0.39-1.39 |
| Others                                               | 1.8                 | 9.1                       | 6.6           | 0.24             | 0.04-1.59 |
| **Household composition**                            |                     |                           |               |                  |        |
| Single                                               | 5.3                 | 8.2                       | 7.2           |                  |        |
| Couple                                               | 14.0                | 23.6                      | 20.4          | 0.94             | 0.30-2.98 |
| Couple with sons/parents                             | 70.2                | 58.2                      | 62.3          | 1.54             | 0.56-4.22 |
| Others                                               | 10.5                | 10.0                      | 10.2          | 1.41             | 0.44-4.56 |
| **Income (minimum wage)‡**                           |                     |                           |               |                  |        |
| <1                                                   | 8.9                 | 10.2                      | 9.8           | 1.06             | 0.43-2.60 |
| 1-3                                                  | 73.2                | 67.6                      | 69.5          | 1.22             | 0.69-2.17 |
| >3                                                   | 17.9                | 22.2                      | 20.7          |                  |        |
| **Comorbidity**                                      |                     |                           |               |                  |        |
| Depression (current)                                 | 38.6                | 12.7                      | 21.6          | 2.28             | 1.56-3.36 |
| Anxiety (current)                                    | 38.6                | 15.5                      | 23.4          | 2.06             | 1.39-3.06 |
| Any current depression/ anxiety                      | 57.9                | 21.8                      | 34.1          | 2.65             | 1.75-4.03 |
| Personality disorder                                 | 24.6                | 9.1                       | 14.4          | 1.94             | 1.27-2.95 |
| Hypochondria                                         | 6.0                 | 3.0                       | 4.0           | 1.53             | 0.67-3.53 |
| Medicated psychoses                                  | 1.8                 | 1.8                       | 1.8           |                  |        |
| **SOMS-2**                                           |                     |                           |               |                  |        |
| No of symptoms§                                       |                     |                           |               |                  |        |
| women                                                | 5 [2-7]             | 1 [0-3]                   | 2 [0-4]       |                  |        |
| men                                                  | 2 [0-11]            | 0 [0-2]                   | 1 [0-3]       |                  |        |
| Wellbeing affected§                                   | 83.0                | 50.0                      | 64.8          | 2.65             | 1.39-5.06 |
| ADL affected§                                         | 72.3                | 48.3                      | 59.0          | 1.81             | 1.09-3.01 |

Prevalence ratio: prevalence in category indicated against category with no values shown; CI: confidence interval; †mean (standard deviation); ‡for 164 participants; ‡median [1st and 3rd quartiles]; ‡for those reporting symptoms (n = 105) and prevalence ratio for (yes vs. no)
pared to those with 12 years or more, more than doubling in participants with any current depression/anxiety (PR = 2.65). The prevalence of CS is also higher in persons reporting that symptoms affected their well being or activities of daily living (Table 1).

The number of SOMS-2 symptoms emerging from the final clinical symptom evaluation (FCSE) ranged from 0 to 18 and 44 (21.4%) participants yielded no symptoms. The Spearman's rank correlation between the number of self-reported and FCSE symptoms was 0.63, higher in non somatizers (r = 0.58) than in somatizers (r = 0.42), these having on average 3 more symptoms at the FCSE (Figure 1).

Soms-2 validation

1. Frequency, discriminative power and internal consistency of symptoms

From the overall 46 symptoms evaluated at the FCSE in the 167 participants, 17 were excluded from the final inventory because they were stated by less than 2.5% of participants (7, 9, 38, 39, F52 and M53). Symptoms 16, 17, 18, 19, 33, 42, 44, F48, F49 and F50 were also excluded, since their discriminative power was low and symptom 3 was excluded since the correlation with the overall inventory was low (Table 2). Two symptoms were only present in somatizers, painful breathing and paralysis/weakness, indicating a high discriminative power, followed by nausea (30.8), difficulty in swallowing (28.9), bringing swallowed food up again (27.1), vomiting (21.2), sexual indifference (10.8), strong heart pounding (9.6), and amnesia (9.6). Correlation with the global scale was low for some "pain symptoms" (4, 5, 8) and high for strong heart pounding (0.54), sexual indifference (0.48), bloating or sweating (0.45) and burning sensations in chest or stomach (0.43). Most symptoms were underreported by participants, and 13 symptoms were more "prevalent" at the FCSE than when self-reported (1, 2, 6, 10, 12, 13, 15, 24, 25, 28, 29, 36, 46). Considering the reduced list of 29 symptoms, R-SOMS-2, the Spearman's rank correlation between self-report and FCSE was 0.63 for women and 0.67 for men, while the corresponding values for the 46 symptoms list was 0.62 both for men and women. The internal consistency evaluated by Cronbach's alpha was 0.83 for both FCSE and SOMS-2 at self report, while for the original 46 symptoms list the corresponding values were 0.82 and 0.85.

2. Sensitivity and specificity (cut-off)

Figure 2 shows the "apparent" cut-off point of 4 symptoms in the SOMS-2 with 29 symptoms, calculated by the ROC curve. Table 3 shows the sensitivity and specificity for this cut-off on the 29 symptoms list as well as for the full list. The ROC curve for the FCSE yielded the cut-offs of 6 symptoms for women and 4 for men, but different cut-off for self-report, 4 and 5, respectively. An overall sensitivity of 86.0% and specificity of 95.5% was attained both for SOMS-2 and R-SOMS-2 at FCSE, and the corresponding values at self-report are 57.9% and 88.2% for the former, decreasing slightly the sensitivity and increasing the specificity for the R-SOMS-2 symptoms list, 56.1% and 93.6%. The positive and negative predictive values are PPV = 90.7% and NPV = 92.9% for FCSE and the corresponding values for the self-report are PPV = 71.7% and NPV = 80.2% for the SOMS-2 and PPV = 82.1% and NPV = 80.5% for the R-SOMS-2.

Considering the frequency of comorbid conditions in the sample, CS with concomitant anxiety and/or depression, the test characteristics were also calculated considering four different groups: "pure" somatizers (somatization without any depression/anxiety), somatizers with any depression or anxiety and corresponding groups for non-somatizers (Figure 3). Sensitivity reaches 90.9% whenever somatizers have some depression and/or anxiety, though attaining a lower value, 79.2%, in "pure" somatizers. Specificity keeps an almost constant value of 95% for persons with some depression and/or anxiety or for non somatizers free from any depression/anxiety. At self-report it discloses only 33.3% of "pure somatizers" increasing its sensitivity whenever somatizers have some depression and/or anxiety (72.7%). The self-report R-SOMS-2 performs equally well as FCSE for somatizers without any depression or anxiety (95.3%).

3. Stability (intra-subject variation)

The correlation between the number of symptoms reported at base-line on the full list of symptoms and after a 6-month period for a sample of 24 persons was r = 0.67, increasing to 0.69 in the R-SOMS-2. Considering the series of cut-off points from 1 to 8, the values of agreement (k) were respectively 0.63, 0.50, 0.52, 0.33, 0.28, 0.24, 0.20, and 0.16.
### Table 2: Frequency of SOMS-2 symptoms (%), discriminative power (LR+) and correlation with SOMS-2 full scale

| Symptoms                                      | SOMS-2 self reported (%) | Positive Likelihood ratio (95% CI) | SOMS-2 FCSE (%) | Positive Likelihood ratio (95% CI) | \( r_{pbi} \) |
|-----------------------------------------------|--------------------------|-----------------------------------|----------------|-------------------------------------|------------|
| 1 Headaches                                   | 21.6                     | 1.54 (0.8-2.7)                    | 31.7           | 2.72 (1.7-4.2)                      | 0.31       |
| 2 Pain in the stomach                         | 6.6                      | 2.30 (0.7-7.3)                    | 18.6           | 4.70 (2.3-9.6)                      | 0.37       |
| 4 Joint Pain                                  | 6.0                      | 2.90 (0.8-9.8)                    | 9.6            | 3.21 (1.2-8.4)                      | 0.24       |
| 5 Pain in the legs and/or arms                | 11.4                     | 2.65 (1.1-6.2)                    | 12.0           | 2.36 (1.0-5.4)                      | 0.21       |
| 6 Chest Pain                                  | 7.2                      | 3.86 (1.2-12)                     | 13.2           | 5.15 (2.1-12)                       | 0.33       |
| 8 Pain during sexual intercourse              | 4.8                      | 5.79 (1.2-28)                     | 7.2            | 5.79 (1.6-20)                       | 0.22       |
| 10 Nausea                                     | 5.4                      | 2.41 (0.7-8.6)                    | 10.2           | 30.80 (4.2-227)                     | 0.23       |
| 11 Bloating                                   | 15.6                     | 4.34 (2.0-9.4)                    | 14.4           | 5.79 (2.4-14)                       | 0.45       |
| 12 Discomfort in the area around the heart    | 5.4                      | 6.75 (1.5-31)                     | 10.2           | 6.27 (2.1-18)                       | 0.36       |
| 13 Vomiting (pregnancy excluded)              | 3.0                      | 5.57                           | 7.2            | 21.20 (2.8-160)                     | 0.32       |
| 14 Bringing swallowed food up again           | 5.4                      | 15.40 (1.9-120)                  | 9.0            | 27.10 (3.6-200)                     | 0.37       |
| 15 Hiccough, or burning sensations in chest or stomach | 6.6                      | 5.15 (1.4-19)                    | 12.0           | 5.79 (2.2-15)                       | 0.43       |
| 22 Frequent urination                         | 7.20                     | 5.79 (1.6-20)                    | 6.6            | 5.15 (1.4-18)                       | 0.28       |
| 24 Strong heart pounding                      | 8.4                      | 11.58 (2.7-50)                   | 18.0           | 9.65 (3.9-24)                       | 0.54       |
| 25 Stomach discomfort or churning feeling in the stomach | 13.8                     | 2.51 (1.2-5.4)                   | 23.4           | 3.86 (2.2-6.9)                      | 0.39       |
| 26 Sweating (hot or cold)                     | 12.0                     | 4.50 (1.8-11)                    | 14.4           | 7.33 (2.9-18)                       | 0.45       |
| 27 Flushing or blushing                       | 6.6                      | 8.68 (1.9-39)                    | 4.8            | 5.79 (1.2-27)                       | 0.28       |
| 28 Breathlessness (without exertion)          | 3.6                      | 9.65 (1.2-80)                    | 11.4           | 7.24 (2.5-21)                       | 0.33       |
| 29 Painful breathing or hyperventilation      | 2.4                      | 5.79 (0.6-54)                    | 6.0            | 10.57                           | 0.38       |
| 30 Excessive tiredness or mild exertion       | 17.4                     | 4.29 (2.1-8.8)                   | 19.8           | 5.15 (2.5-10)                       | 0.40       |
| 31 Blotchiness or discoloration of the skin   | 4.8                      | 3.21 (0.8-13)                    | 4.2            | 11.58 (1.4-93)                      | 0.26       |
| 32 Sexual indifference (loss of libido)       | 7.8                      | 23.20 (3.1-174)                  | 10.8           | 15.43 (3.7-65)                      | 0.48       |
| 34 Impaired coordination or balance           | 5.4                      | 3.86 (1.0-15)                    | 7.8            | 6.43 (1.8-22)                       | 0.38       |
| 35 Paralysis or localized weakness            | 2.4                      | 4.57                           | 4.2            | 7.57                             | 0.42       |
| 36 Difficulty swallowing or lump in the throat | 6.0                      | 17.4 (2.3-134)                   | 9.6            | 28.95 (3.9-213)                     | 0.39       |
| 37 Aphonua                                    | 6.0                      | 4.50 (1.2-17)                    | 7.2            | 5.79 (1.6-21)                       | 0.25       |
| 41 Unpleasant numbness or tingling sensations | 12.6                     | 3.86 (1.7-9.0)                   | 11.4           | 7.24 (2.5-21)                       | 0.32       |
| 46 Amnesia (loss of memory)                   | 10.2                     | 3.54 (1.4-9.1)                   | 14.4           | 9.65 (3.5-27)                       | 0.40       |
| 47 Loss of consciousness                      | 1.8                      | 3.57                           | 4.8            | 8.57                             | 0.35       |

Excluded (no discriminative power in FCSE)

| Symptoms                                      | SOMS-2 self reported (%) | Positive Likelihood ratio (95% CI) | SOMS-2 FCSE (%) | Positive Likelihood ratio (95% CI) | \( r_{pbi} \) |
|-----------------------------------------------|--------------------------|-----------------------------------|----------------|-------------------------------------|------------|
| 3 Back Pain                                   | 11.4                     | 1.74 (0.7-4.0)                    | 16.2           | 2.81 (1.4-5.6)                      | 0.12       |
| 7 Pain in the anus                            | 1.8                      | 3.86 (0.4-41)                     | 0.6            | 1.57                             | 0.13       |
| 9 Pain during urination                       | 1.2                      | 2.57                           | 1.2            | 2.57                             | 0.23       |
| 16 Food intolerance                           | 0.6                      | 1.57                           | 1.8            | 3.86 (0.4-41)                      | 0.19       |
| 17 Loss of appetite                           | 7.2                      | 3.86 (1.2-12)                    | 9.6            | 2.48 (0.9-6.3)                      | 0.20       |
0.33, 0.41, 0.47 and 0.65. Using the 29 symptoms list the values obtained were 0.55, 0.52, 0.52, 0.57, 0.48, 0.48, 0.43 and 0.50, respectively. Thus the cut-off of 4 symptoms has the best agreement in terms of the number of symptoms reported.

**Discussion**

Both the SOMS-2 and the 29 items reduced version, R-SOMS-2, showed good characteristics in detecting CS, though dependent on target population and the presence of concomitant psychiatric diagnoses. As a screening tool for primary care settings, the R-SOMS-2 with a cut-off of four symptoms both at self-report and after clinical validation of symptoms reported, showed a high specificity (93.6%) and satisfactory sensitivity (56.1%). Whenever concomitant disorders such as anxiety and/or depression are present the sensitivity increases (72.7%) and specificity still keeps a high value (87.5%). Moreover the R-SOMS-2 showed a relatively high stability in the number of self-reported symptoms over a 6-month period (k = 0.57). According to the actual prevalence found in this study (34.1%) it showed also high positive and negative predictive values, 82.1% and 80.5%, respectively. On the other hand the adapted SOMS-2 Portuguese version showed both a high internal consistency (0.85) and a slightly higher sensitivity (57.9%) at self-report. After clinical validation sensitivity and specificity were equal for the two SOMS-2 versions, 86.0% and 95.5%, respectively.

It is possible that by strictly instructing the participants to be aware of severity criteria, the common underestimation of somatoform symptoms [10] has been reinforced in our study. Although stability of single symptoms or disorders is not satisfactory [17,26], stability of somatization seems to be less problematic when symptoms are grouped into syndromes [26,27]. Correlation between self-reported symptoms and symptoms assessed by doctors (with regard to the previous two years) was 0.63, lower than the 0.75 reported by Rief and colleagues [18]. The R-SOMS-2 includes not just the most frequent symptoms in PC, but rather those more frequently positive among somatizers in comparison to non-somatizers,

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**Table 2: Frequency of SOMS-2 symptoms (%), discriminative power (LR+) and correlation with SOMS-2 full scale**

| symptom                                                                 | frequency | discriminative power | correlation with SOMS-2 full scale |
|-------------------------------------------------------------------------|-----------|----------------------|-----------------------------------|
| Bad taste in mouth, or excessive coated tongue                          | 6.6       | 3.38 (1.0-11)        | 4.2                               |
| Dry mouth                                                              | 11.4      | 2.65 (1.1-6.2)       | 7.2                               |
| Unpleasant sensations in or around the genitals                        | 1.8       | 3.86 (0.4-42)        | 3.6                               |
| Urinary retention                                                       | 0.0       | 0.0                  | 0.0                               |
| Hallucinations                                                          | 1.8       | 3.57                 | 2.0                               |
| Double vision                                                           | 3.0       | 1.29 (0.2-7.5)       | 3.6                               |
| Deafness                                                                | 1.8       | 3.57                 | 2.0                               |
| Painful menstruation                                                    | 8.1       | 1.09 (0.3-3.7)       | 12.1                              |
| Irregular menstruation                                                  | 2.4       | 0.82 (0.1-8.8)       | 3.2                               |
| Excessive menstrual bleeding                                            | 4.0       | 2.46 (0.4-14)        | 8.1                               |
| Unusual or copious vaginal discharge                                    | 0.0       | 0.0                  | 0.0                               |
| Erectile or ejaculatory dysfunction                                     | 2.3       | 1.10                 | 2.3                               |

CI: confidence interval; rpb: point-biserial correlation coefficient with the overall sum of symptoms; F48 to F52: symptoms only for women; M53: symptom only for men; for these groups of symptoms frequencies, positive likelihood and correlations were calculated for the respective groups (124 women and 43 men); whenever the Positive Likelihood ratio (sensitivity/(1-specificity)) was not defined the number of somatizers with that symptom is indicated (sensitivity) since non-somatizers did not have the symptom (specificity = 1)

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![Figure 2: No. of symptoms (out of 29) in women and men showing the "natural" 4 symptoms cut-off point](image-url)
that is, with high discriminative power and with a reason-
able high correlation with the total scale. It may seem unreason-
able excluding symptoms with relatively high
frequency, such as "dry mouth" or "painful menstruation",
but they are not "characteristic" of CS, they are as well
important in other patients, therefore not adequate for
discriminating CS. On the other hand a quite frequent
symptom like "back pain" was also excluded because the
correlation with the overall scale was low, meaning that
its pattern of variation did not follow the overall scale
pattern. The three cumulative criteria for including
symptoms in this revised version resulted in a shorter
scale with properties similar to the SOMS-2, therefore
better suited to PC settings.

The ROC curve analysis for the FCSE yielded the same
cut-off of the SSI (4 symptoms for men and 6 symptoms
for women) reported by Escobar and colleagues [1],
although the SOMS-2 asks for symptoms occurring only
during the previous two years and not for lifetime symp-
toms. The cut-off of 4 symptoms is near the proposed 3
symptoms for Multisomatoform Disorder (MSD) [2],
given these are current symptoms. At self-report, the R-
SOMS-2 displayed seven false-positive cases and FCSE
five. At interview those subjects stated that symptoms did
not interfere at all with daily routines, this way loosing
the severity threshold and becoming "negatives" when
facing the interviewer. Using R-SOMS-2, we found 25
false-negatives, at self-report, seven of them overlapping
with the 8 false-negatives at FCSE. Most of those 25 false-
negatives used a medical disease they actually had as a
kind of umbrella for other (unexplained) symptoms. At
FCSE those symptoms turned to unexplained. As
reported for false-positives, the clinical interview setting
also seemed to interfere in the opposite way, leading
some participants to enhance their complaints. This
problem seems to be not exclusively explained by the rel-
ative instability of the individual system of causal attribu-
tions, since the observer presence affects the degree of
severity of the complaints reported. Ten cases were con-
sidered probable "true" somatizers within the CS group,
and among the false-negatives there were six cases con-
sidered as probable "true" somatizers. We think these
patients will seldom screen positive using self-report
measures of somatoform disorders or symptoms, since
they need a thorough investigation involving their doc-
tors in order to decide the nature of symptoms. This
group of somatizers blurs the distinction between MUS
and medically explained symptoms (MES). Along with
the fact that MUS frequently prolong or are grafted on
physical symptoms, they can add an explanation for the
non relevance in distinguishing between MUS and MES
when screening somatoform symptoms or disorders
using self-report measures, as advocated by some authors
[12,28]. In spite of that, the R-SOMS-2 presents a satis-
factory sensitivity and good specificity for moderate som-
atization, being an adequate screening tool for referring
primary care users for further specialized diagnosis. It is
now possible to use in the PC Portuguese settings the
adapted SOMS-2 as a checklist of DSM-IV and ICD-10
somatoform symptoms and the R-SOMS-2 as a shorter
screener of possible cases. R-SOMS-2 is longer than two
other screeners assessed in PC settings: the PHQ-15
(Patient Health Questionnaire) with 15 physical
(explained or unexplained) symptoms [28], and the Oth-
mer and DeSouza test with seven symptoms [16]. The
first is considered to be a measure of severity of physical
symptoms not yielding scores of self-report unexplained
symptoms. The second, in a Spanish validation study,
assessing its validity as a screener for Somatization Disor-
der [29] disclosed values of sensibility and specificity near
those we obtained for moderate somatization (CS) with a
cut-off of 4 symptoms: 88% and 78%, respectively, for a 3
symptom threshold.

The estimated prevalence of CS found in this study,
34.1%, is higher than the 14.0% for MSD, in Spanish PC
units [5] and the median prevalence of 16.6% for the

| Cut-off points/No symptoms | SOMS-2 FCSE | SOMS-2 self-report |
|----------------------------|-------------|--------------------|
|                            | Sensitivity | Specificity | PPV | NPV | Sensitivity | Specificity | PPV | NPV |
| Women (≥6/45)              | 87.2        | 98.7        | 97.6 | 92.7  | 61.7        | 87.0        | 74.4 | 78.8 |
| Men (≥4/42)                | 80.0        | 87.9        | 66.7 | 93.5  | 40.0        | 90.9        | 57.1 | 83.8 |
| All                       | 86.0        | 95.5        | 90.7 | 92.9  | 57.9        | 88.2        | 71.7 | 80.2 |
| Women (≥4/29)              | 89.4        | 94.8        | 91.3 | 93.6  | 59.6        | 94.8        | 87.5 | 79.3 |
| Men (≥4/29)                | 70.0        | 97.0        | 87.5 | 91.4  | 40.0        | 90.9        | 57.1 | 83.3 |
| All                       | 86.0        | 95.5        | 90.7 | 92.9  | 56.1        | 93.6        | 82.1 | 80.5 |

FCSE: Final Clinical Symptoms Evaluation; PPV: positive predictive value; NPV: negative predictive value
The 29 items reduced version of the SOMS-2 showed to be a valid tool for detecting CS in primary care settings, specially whenever concomitant disorders such as anxiety and/or depression are present. Thus the R-SOMS-2 is a reliable referral tool for further specialized diagnosis.
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