



## Review article

# Systematic review of measurement properties of questionnaires measuring somatization in primary care patients



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## ABSTRACT

**Objective:** The aim of this review is to critically appraise the evidence on measurement properties of self-report questionnaires measuring somatization in adult primary care patients and to provide recommendations about which questionnaires are most useful for this purpose.

**Methods:** We assessed the methodological quality of included studies using the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) checklist. To draw overall conclusions about the quality of the questionnaires, we conducted an evidence synthesis using predefined criteria for judging the measurement properties.

**Results:** We found 24 articles on 9 questionnaires. Studies on the Patient Health Questionnaire-15 (PHQ-15) and the Four-Dimensional Symptom Questionnaire (4DSQ) somatization subscale prevailed and covered the broadest range of measurement properties. These questionnaires had the best internal consistency, test-retest reliability, structural validity, and construct validity. The PHQ-15 also had good criterion validity, whereas the 4DSQ somatization subscale was validated in several languages. The Bodily Distress Syndrome (BDS) checklist had good internal consistency and structural validity. Some evidence was found for good construct validity and criterion validity of the Physical Symptom Checklist (PSC-51) and good construct validity of the Symptom Check-List (SCL-90-R) somatization subscale. However, these three questionnaires were only studied in a small number of primary care studies.

**Conclusion:** Based on our findings, we recommend the use of either the PHQ-15 or 4DSQ somatization subscale for somatization in primary care. Other questionnaires, such as the BDS checklist, PSC-51 and the SCL-90-R somatization subscale show promising results but have not been studied extensively in primary care.

## 1. Introduction

Experiencing one or several medically unexplained symptoms without a known underlying somatic explanation is common for all people, especially in stressful situations. However, experiencing many medically unexplained symptoms from various organ systems may imply somatization [1]. A widely accepted definition of somatization is: “a tendency to experience and communicate somatic distress and

symptoms unaccounted for by pathological findings, to attribute them to physical illness, and to seek medical help for them” [2]. If symptoms persist, patients may seek medical help. Due to its generalist nature, primary care is the first port-of-call for people who are worried about such physical experiences, but in all health care settings a substantial number of patients have medically unexplained symptoms [3,4].

Physical symptoms in primary care can be aligned across a spectrum of the number, severity and functional impairment of symptoms, with

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having just one or a few transient symptoms at one end of the spectrum, and having multiple severe symptoms for a long period of time and therefore meeting diagnostic criteria for a somatoform disorder according to the Diagnostic and Statistical Manual of mental disorders 4th, (DSM-IV) [5] or a somatic symptom disorder according to the 5th edition (DSM-5) [6], at the other end [7]. In primary care, mostly patients with physical symptoms at the milder end of the spectrum are seen. However, patients with multiple severe symptoms also frequently end up in primary care, usually when after referral to specialized settings further examinations yielded no results and patients are referred back to primary care practice.

The sooner high levels of somatization are signalled and discussed, the sooner patients can learn to make sense of them and the sooner appropriate care can be provided. As a result, otherwise potentially unnecessary, costly, medical procedures with possible side-effects can be avoided. Considering the general practitioners' (GP) and nurse practitioners' time-restrictions, self-report questionnaires can be a useful, quick, non-invasive tool to assist GPs in detecting symptoms of somatization directly from the patient's point of view.

Somatization is a complicated concept to measure, as in addition to the dimension of experienced physical symptoms, it also has cognitive and behavioural dimensions [8,9]. It is particularly difficult to operationalize cognitions, attributions, worries and behavioural aspects, such as seeking medical help, and incorporate these dimensions in one measurement instrument with the experienced physical symptoms [10]. As previous research found that the number of symptoms predicts the course of the medically unexplained symptoms and health status [11,12], we use the experienced physical symptoms, or the symptom count, as a proxy for somatization in this review, which is also common in other studies [13–16]. Therefore, we restrict our definition of 'somatization' to having multiple physical symptoms at the same time and look into questionnaires that quantify these symptoms, their severity and impairment caused by the symptoms as a proxy for somatization. We acknowledge the various possible explanatory factors and consequences that somatization can have, but do not focus on these in the current study.

Research comparing the quality of various available questionnaires to measure somatization in primary care has not yet been done. Therefore, to date, it remains unclear which questionnaire can be used best for this purpose.

Two previous articles [17,18] provided overviews of measurement instruments, one for common somatic symptoms [17] and the other for somatoform disorders [18]. However, neither was specifically focussed on use in primary care and neither used the state-of-the-art COSMIN-based Standards for the selection of health Measurement Instruments (COSMIN) methodology [19,20] for conducting systematic reviews on measurement instruments.

The aim of this review is to critically appraise the evidence on the measurement properties of (subscales of) self-report questionnaires measuring somatization in adult primary care patients and to provide recommendations about which questionnaires are most useful for this purpose.

## 2. Methods

This review is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [21].

### 2.1. Literature search

A search was performed on August 13, 2015 in PubMed/Medline, Embase, Psycinfo and Cinahl from inception. No time period restrictions were used. In all databases search terms for construct, population, measurement properties and setting were combined using the Boolean operator 'AND'. In PubMed a validated search filter was used for finding articles investigating measurement properties [22]. In the other

databases, adapted versions of this search filter were used. The adaptations were performed by a scientific information specialist. The full search strategies for each database can be found in Appendix A. A second updated search was performed on October 31, 2016 following the same procedure, in order to include articles published after our initial search. Reference lists of the included articles and reviews found during the searches, were searched to identify additional relevant articles. Authors of articles were contacted in case manuscripts were not available online.

### 2.2. Inclusion and exclusion criteria

Inclusion criteria were:

1. The questionnaire or subscale aims to measure somatization defined as having multiple physical symptoms.
2. The study population is adults (age 18 and above) who are patients in primary care.
3. The instrument of study is developed as a paper or online self-report questionnaire.
4. The aim of the study is the development of a questionnaire or the evaluation of one or more of its measurement properties.
5. The article is published as a full text original article.

Exclusion criteria were:

1. The article is published in languages other than English or Dutch.
2. The study measures somatization as a personality or character trait.
3. The study investigates a specific functional syndrome (e.g. fibromyalgia, irritable bowel syndrome, chronic pain syndrome).
4. The questionnaire includes items on somatization among other items, but without a separate subscore for somatization.

### 2.3. Selection procedure

The selection of articles based on titles and abstracts was independently performed by two reviewers (KS and SDK). Afterwards, these two reviewers separately checked whether the full text articles met the inclusion criteria. In case of disagreement or doubt, a third reviewer (JW/BT) was consulted in order to make the decision regarding inclusion of the article.

### 2.4. Data extraction

Two reviewers (KS and SDK) independently extracted and evaluated the general characteristics of the questionnaires, the characteristics of the studies, and information on generalizability and interpretability, using a structured form. When not enough information could be obtained from the included articles, original development articles were consulted. Disagreement between reviewers was discussed until consensus was reached. In case of disagreement or doubt, a third reviewer (JW) was consulted.

### 2.5. Assessment of the methodological quality of the included studies

The methodological quality of the studies was assessed using the COSMIN checklist [19]. The COSMIN checklist has been developed in an international Delphi Study and can be used to evaluate the methodological quality of studies on measurement properties. The COSMIN checklist consists of 12 boxes. Nine boxes contain standards for quality of the methodological properties reliability, measurement error, content validity, structural validity, hypotheses testing, cross-cultural validity, criterion validity and responsiveness. One box contains standards for studies on interpretability. One box contains general requirements for articles using item response theory (IRT), and one box contains general requirements for the generalizability of results.

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