



The four week time frame for somatic symptom questionnaires reflects subjective symptom burden best

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ABSTRACT

Objective: Various questionnaires are available to assess somatic symptom burden, however their assessment time frames vary largely. The aim of this study was to investigate the most relevant assessment time frame for somatic symptoms by relating somatic symptom burden, with varying time frames, to quality of life (QoL) and health anxiety as indicators for clinical relevance of symptoms.

Methods: This study was performed in data derived from a convenience sample of 3477 participants (age: 48.0 (SD 14.1), 66.4% female) of the Dutch research platform HowNutsAreTheDutch. Symptom burden was assessed using all items from the Patient Health Questionnaire-15 (PHQ-15) and 6 items of the Symptom Checklist-90 SOM (SCL-90 SOM). Five versions of the questionnaire were constructed, which evaluated symptom burden during the past 24 h, 1 week, 2 weeks, 4 weeks, and 3 months.

Results: Symptom burden significantly increased with each step increase in time frame until 4 weeks, with no further increase when comparing 4 weeks and 3 months. The time frame of 4 weeks provided the strongest associations between somatic symptom burden and health anxiety ($B = 1.635$; 95%CI: 1.368 to 1.938; $p \leq 0.001$). This was also true when analysing the association between QoL and the symptom groups of musculoskeletal ($B = -1.54$; 95%CI: -1.93 to -1.16; $p \leq 0.001$) and gastrointestinal symptoms ($B = -0.71$; 95%CI: -0.96 to -0.47; $p \leq 0.001$).

Conclusion: An assessment time frame of 4 weeks for somatic symptom questionnaires reflects clinically relevant somatic symptom burden in terms of QoL and health anxiety best, followed by the 3 months' time frame.

1. Introduction

A considerable proportion of the consultations in both primary and secondary care is due to the experience of somatic symptoms [1,2]. High levels of somatic symptoms are associated with a reduced quality of life (QoL), an increase of functional limitations [3], health care service use [4], prolonged sickness absence, and health-related job loss [5]. Therefore, the assessment, recognition, and evaluation of somatic symptom burden are essential in both patient care and research. Physicians, researchers, and other healthcare professionals must rely on patients' reports for the recognition and evaluation of somatic symptom burden. Self-report questionnaires are useful tools to assess symptom burden. They provide a predictor of health care use and health status over and above the effects of general medical illnesses, anxiety and depression [6].

Self-report questionnaires have been used in research for a long time, and their use in clinical practice is increasing. This is partly due to requirements of health insurance companies that want to evaluate the

quality of care delivered, especially in mental health care settings. It has also been argued that the use of systematic instruments might improve clinical care for somatic symptoms, comparable to the use of biomarkers to monitor clinical outcomes of recognized diseases [7]. A systematic review indicated that there are many different self-reported questionnaires available for the assessment of somatic symptoms [8,9]. The use of these symptom questionnaires differs, and the content of the questionnaires varies considerably. This applies not only to characteristics of the symptoms included, but also to their answering scales and time frames of assessment [8,9]. Some validated questionnaires are based on life-time symptoms, while others address time frames of a week or less. For example, the Patient-Reported Outcomes Measurement Information System (PROMIS), an initiative that established a resource for efficient and precise measurement of patient-reported symptoms, functioning, and health-related quality of life, opted for the 7-day recall period [10]. They argue that the 7-day recall period provides a sufficiently long interval to capture a clinically relevant window of time and experience with minimal bias.

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Both short and long recall time frames for assessing somatic symptom burden have associated problems. On the one hand, recall of life-time somatic symptoms seems unreliable and inconsistent [11]. Patients frequently have forgotten previously reported somatic symptoms, and therefore underreport [12]. Recall of somatic symptoms diminishes largely over time, up to 100% over a period of 11 years [11]. However, retrospective assessment of somatic symptoms over shorter time frames may also overestimate somatic symptom burden [13]. At the same time, detection of daily fluctuations in somatic symptom burden by making use of a shorter time frame may not be meaningful for the evaluation of the somatic symptom burden of patients, since short recall time frames only reflect a momentary period that might not be representative for symptom burden in general [14]. The balance between the risk of unreliable recall of life-time somatic symptoms and the detection of meaningful fluctuations in somatic symptoms remains to be examined.

This balance might differ between types of somatic symptoms. Somatic symptoms that are episodic in nature, such as headaches or palpitations, might require a longer time frame than symptoms typically present more or less continuously, such as fatigue or musculoskeletal pain. Somatic symptoms can be clustered into cardiopulmonary, gastrointestinal, musculoskeletal, and general symptom clusters [15,16]. The most suitable time frame for specific symptom clusters may thus differ in comparison with the overall somatic symptom burden.

The question arises what the most clinically relevant time frame of assessment would be for somatic symptom questionnaires. We define clinical relevance as the time frame that reflects subjective symptom burden in daily life, in terms of QoL and health anxiety, best among participants. This is different from the time frame that gives the most realistic estimate of symptom occurrence. Both QoL and health anxiety have been shown to be associated with symptom burden in patients [3,6,17,18]. To the best of our knowledge, there are no studies that examine the clinical relevance of different time frames in one large cohort. Existing studies have used symptom questionnaires that differed in time frames, but these questionnaires also differed in other aspects such as the specific somatic symptoms included [8,9]. This precludes any conclusions on the assessment time frame specifically.

The aim of the current paper was to identify the time frame of assessment for somatic symptom questionnaires that reflects clinically relevant subjective somatic symptom burden best. The following research questions were examined. First, how does somatic symptom burden vary over the different time frames used to assess symptoms? It is hypothesized that somatic symptom burden increases with longer assessments windows, until the point that the increase in captured symptoms is counterbalanced by decreases in reported symptoms due to recall bias. Second, what is the clinically most relevant time frame, as indicated by the highest association between symptom burden and QoL and health anxiety of the participants? Third, does the clinically most relevant time frame vary between different symptom clusters? To study these questions, a somatic symptom questionnaire was composed, based on all symptoms included in the two questionnaires that are most widely used and recommended: the Patient Health Questionnaire-15 (PHQ-15) [19,20], and the 12-item Symptom Checklist-90 SOM (SCL-90 SOM) [21]. Five versions of this somatic symptom questionnaire were constructed, which only differed in time frame of somatic symptom assessment. These five versions were sequentially added to an online survey, together with assessments of QoL and health anxiety.

2. Method

2.1. The sample/participants

This study is part of the HowNutsAreTheDutch (Dutch: HoeGekIsNL) crowdsourcing study [22]. HowNutsAreTheDutch (henceforth HND) is a national study in the Netherlands, examining multiple

mental health dimensions in a sample from the general population. An open call was launched to residents of the Netherlands to join our research, and they were invited to visit the Dutch website www.HoeGekIsNL.nl (also www.HowNutsAreTheDutch.com). The open call was announced on both local and national radio broadcasts, television, in newspapers, in magazines, and during local podium discussions. The news about the HND project was picked up and further disseminated via online blogs, twitter, and other social media. To join the project, participants had to register online and create an account. HND collects self-report data on mental health by making use of an internet platform. On this internet platform participants can compare themselves to other participants via cross-sectional questionnaires. The primary aim of HND is to investigate the associations and dynamic interactions between mental strengths and vulnerabilities. HND is specifically designed to reduce mental health stigma and discrete categorization of mental health. Data were available of 3477 participants, which were included during the period 13 December 2013 until 16 June 2015, with a mean age of 48.0 (SD 14.1) years and 66.4% female.

2.2. Measures

2.2.1. Somatic symptoms

The somatic symptom questionnaire was based on a combination of all the 15 PHQ-15 items and 6 items from the SCL-90 SOM. The PHQ-15 is a frequently used self-reported questionnaire to assess somatic symptom burden [19,20]. This questionnaire assesses the symptom burden of 15 symptoms that account for > 90% of the somatic complaints observed in primary care. The PHQ-15 is a well validated questionnaire for monitoring symptom burden in research and clinical practice [19,20]. The 12-item somatization scale (SOM) of the SCL-90 was used to investigate the presence of common somatic symptoms not covered by the PHQ-15 [21]: hot or cold spells, numbness or tingling in parts of your body, a lump in your throat, feeling weak in parts of your body, heavy feelings in your arms or legs, soreness of your muscles. Participants were asked to indicate how much they have been bothered by these 21 (15 PHQ and 6 SCL) somatic complaints. The PHQ-15 is originally rated on a three-point scale, while the SCL-90 SOM is rated on a five-point scale. In order to obtain consistent results, all somatic complaints were rated on a three-point scale in the current study, i.e. (0) “not bothered at all”, (1) “bothered a little” or (2) “bothered a lot”. The total symptom burden, calculated as the sum of all 21 answers, thus could theoretically range between 0 and 42 points.

Five versions of the questionnaire were assessed during different time periods. We initially aimed to obtain groups of about equal sizes, replacing the questionnaire by a new variant with a different time frame after a sufficient number of respondents had completed it. However, inclusion rates were highly variable, mainly related to media attention for the HND project. Therefore, length of the time periods during which the versions were administered was also highly variable: version 1 was administered during the period 21 January until 3 April 2014 and evaluated somatic complaints during the past 4 weeks, version 2 was administered during the period 4 April until 22 April 2014 and evaluated somatic complaints during the past 24 h, version 3 was administered during the period 22 April until 12 May 2014 and evaluated somatic complaints during the past week, version 4 was administered during the period 13 May until 18 November 2014 and evaluated somatic complaints during the past 2 weeks, and version 5 was administered during the period 19 November 2014 until 16 June 2015 and evaluated somatic complaints during the past 3 months.

The somatic symptoms assessed by the PHQ and SCL were, in line with previous studies [15,16], divided into the following symptom clusters: cardiopulmonary (chest pain; feeling your heart pound or race; shortness of breath; hot or cold spells), gastrointestinal (stomach pain; constipation, loose bowels, or diarrhoea; nausea, gas, or indigestion), musculoskeletal (back pain; pain in your arms, legs, or joints [knees, hips, etc.]); numbness or tingling in parts of your body; feeling weak in

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