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Research report

Reference values for the Body Image Concern Inventory (BICI), the Whitely Index (WI), and the Checklist Individual Strength (CIS-20R): The Leiden Routine Outcome Monitoring Study

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ABSTRACT

Background: The Body Image Concern Inventory (BICI), the Whitely Index (WI), and the Checklist Individual Strength (CIS-20R) are three questionnaires often incorporated in routine outcome monitoring (ROM). Respectively, they assess symptom severity in patients with body dysmorphic disorder, hypochondriasis, and chronic fatigue syndrome. We aimed to generate reference values for a healthy population and for a population of patients fulfilling diagnostic criteria for at least one of BDD, hypochondriasis, and CFS, treated in specialized mental health care.

Methods: The healthy ROM reference-group ($n=648$) was recruited through general practitioners. These subjects were matched for age and sex with the ROM patient-group ($n=823$). To define limits (i.e., cut-off-values) for one-sided reference intervals (5th percentile [P_5] for ROM patient-group and 95th percentile [P_{95}] for ROM reference-group) the outermost 5% of observations were used. Discriminative powers were evaluated by receiver operating characteristics (ROC) analyses

Results: Cut-off-values (P_{95} ROM reference-group) were 55 for the BICI, 6 for the WI, and 92 for the CIS-20R. These values differed for men and women, being mostly higher for women. The discriminative power of all three somatoform questionnaires was very high.

Limitations: Substantial non-response and limited generalizability.

Conclusions: For the BICI, WI, and CIS-20R a comprehensive set of reference values was obtained. The reference values may support clinical decisions regarding adjusting or terminating therapy, and possible referral.

1. Introduction

Somatoform disorders are a group of psychiatric disorders in which the patient experiences physical symptoms that are inconsistent with, or cannot be fully explained by, any underlying general medical or neurological condition. The diagnostic and statistical manual of mental disorders (DSM-IV-TR) includes the following specific somatoform disorders: somatization disorder, undifferentiated somatoform disorder, conversion disorder, pain disorder, hypochondriasis, and body dysmorphic disorder (BDD) (American Psychiatric Association, 1994). In DSM-5 (American Psychiatric Association, 2013) the 'somatic symptom and related disorders' section consists of somatic symptom disorder, health anxiety, and conversion disorder (functional neurological symptom disorder). Related disorders falling in the same section are psychological factors affecting other medical conditions, factitious disorder, other specified somatic symptom and related disorder, and unspecified somatic symptom and related disorder. Body dysmorphic disorder has been moved to the new DSM-5 chapter 'obsessive–compulsive and related disorders'. Hypochondriasis (DSM-IV) is redefined and now named health anxiety. Chronic fatigue syndrome now falls in the category of the somatic symptom disorders, which encompasses the DSM-IV categories somatization disorder, undifferentiated somatoform disorder and pain disorder. Patients with somatoform disorders or somatic symptom disorders tend to frequently consult general practitioners (GPs) or medical specialists rather than mental healthcare specialists (Hiller and Rief, 2005). In order to refer patients to more appropriate specialist care, screening questionnaires with clear cut-off scores are necessary.

Routine outcome monitoring (ROM) is a system of routine psychometric assessments at baseline (i.e., pre-treatment) and at regular intervals to monitor patients' progress during treatment. DSM-IV-TR Axis I diagnoses are established using the Mini-International

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Table 1
Somatoform questionnaires used in routine outcome monitoring.

Questionnaire	Abbreviation	Domain	Total and/or Sub scales (number of items)	Rating	Range for score	Our sample sizes: Reference-group / Patient-group	Range for sample sizes in previous studies: Reference-group / Patient-group	References
Body Image Concern Inventory	BICI	Body dysmorphic disorder	BICI Total (19)	1 = never; 5 = always	19-95 (sum score)	645 / 130*	184-1043/71	(17;21;22;48)
Whitely Index	WI	Hypochondriasis	WI Total (14)	0 = no; 1 = yes	0-14 (sum score)	644 / 226+	15-204 / 100-149	(18;23;29)
Checklist Individual Strength	CIS-20R	Chronic fatigue	Subjective fatigue (8) Concentration (5) Motivation (4) Activity (3) Total (20)	1 = yes, completely right; 7 = no, completely wrong	8-56 5-35 4-28 3-21 20-140 (sum score)	643 / 481‡	43-53 / 758	(19;49)

* Patients diagnosed with body dysmorphic disorder (BDD)
\+ Patients diagnosed with hypochondriasis
‡ Patients diagnosed with chronic fatigue syndrome (CFS)

Neuropsychiatric Interview-Plus (MINI-Plus) (Sheehan et al., 1998). Together with generic questionnaires, which are completed by all patients, disorder-specific questionnaires are administered to patients who meet the MINI-Plus criteria for a particular disorder (De Beurs et al., 2011; Schulte-van Maaren et al., 2012a). These disorder-specific questionnaires assess the *severity of symptoms*, in order to facilitate the evaluation of treatment effect and to support clinical decisions about treatment termination. When symptom severity is equivalent to levels found in the general population, specialized mental health care treatment can be terminated and referral back to primary care may be indicated.

ROM instruments used to assess symptom severity for a specific disorder need to have good psychometric properties. Preferably, they are also widely used both in research and clinical settings. The availability of the questionnaires in the public domain is also required, given that they are offered to large numbers of patients on numerous occasions. Questionnaires, used in the Leiden Routine Outcome Monitoring Study' (Schulte-van Maaren et al., 2012a, 2012b, 2012c), which fulfill these criteria are available for the assessment of BDD, hypochondriasis, and CFS. Respectively, the questionnaires are the Body Image Concern Inventory (BICI) (Littleton et al., 2005), the Whitely Index (WI) (Pilowsky, 1967), and the Checklist Individual Strength (CIS-20R) (Vercoulen et al., 1999).

Reliable ratings from reference populations are required if the ROM results are used to support clinical decisions about continuing, altering or terminating treatment (Kazdin, 2008). The aim of the present study was to establish reference values for the BICI, the WI, and the CIS-20R. This set of questionnaires is particularly relevant because it is not easy to ascertain the severity of BDD, CFS and hypochondriasis, and BDD is not easily diagnosed (Phillips, 2004). Some descriptive statistics (means and standard deviations [SDs]) have been published for healthy controls (see Table 1) (Littleton and Breitkopf, 2008; Littleton et al., 2005; Luca et al., 2011; Pilowsky, 1967; Speckens et al., 1996b; Vercoulen et al., 1999), but we are not aware of studies reporting clinically useful reference values for these scales when administered in the general population. Additionally, we aimed to study a possible gender effect in the reference values since gender differences are commonly described in literature for well-defined patient groups (Angst et al., 2002; Kinrys and Wygant, 2005; Nolen-Hoeksema, 2012; Pigott, 1999; Seeman, 1997).

2. Methods

2.1. Participants

The reference values were based on two study samples, namely: (1) the ROM reference-group, a sample from the general population; and (2) the ROM patient-group, a sample of psychiatric outpatients diagnosed with BDD (n=130), hypochondriasis (n=226), or CFS (n=481). The ROM patient-group included participants (n=14) with two or more somatoform disorders.

The ROM reference-group is the reference group included in the 'Leiden Routine Outcome Monitoring Study' (De Beurs et al., 2011; Schulte-van Maaren et al., 2012a). Participants in the 'Leiden Routine Outcome Monitoring Study' were randomly selected from the registration systems of eight GPs in the Leiden region, with the aim of recruiting a representative general population sample.[1] Sufficient mastery of the Dutch language and the ability to complete computerized and written questionnaires were required. The response rate was 37.1%, as described previously (Schulte-van Maaren et al., 2012a, 2012b, 2012c). In all, 1295 participants were included in the 'Leiden

[1] In the Netherlands, 99.9% of the general population is registered with a GP (14).