Manual Therapy 20 (2015) 10–17

Contents lists available at ScienceDirect

Manual Therapy

journal homepage: www.elsevier.com/math

Systematic review

Clinimetric properties of illness perception questionnaire revised (IPQ-R) and brief illness perception questionnaire (Brief IPQ) in patients with musculoskeletal disorders: A systematic review

Marijke Leysen [a,b], Jo Nijs [b,c,e], Mira Meeus [a,b,g], C. Paul van Wilgen [b,d], Filip Struyf [a,b,c], Alexandra Vermandel [a,f], Kevin Kuppens [a,b,c], Nathalie A. Roussel [a,b,c,*]

[a] Rehabilitation Sciences and Physiotherapy (REVAKI), Faculty of Medicine and Health Sciences, University of Antwerp, Antwerp, Belgium
[b] Pain in Motion Research Group, Department of Physiotherapy, Faculty of Physical Education, Vrije Universiteit Brussel, Belgium[1]
[c] Department of Human Physiology, Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel, Belgium
[d] Transcare, Transdisciplinary Pain Management Centre, The Netherlands
[e] Department of Physical Medicine and Physiotherapy, University Hospital Brussels, Belgium
[f] Department of Urology, University Hospital Antwerp, Belgium
[g] Ghent University Hospital (6K3) (REVAKI), Faculty of Medicine, Ghent University, Belgium

ARTICLE INFO

Article history:
Received 19 December 2013
Received in revised form
4 April 2014
Accepted 6 May 2014

Keywords:
Musculoskeletal pain
Epidemiologic methods
Questionnaires
Perception

ABSTRACT

Several questionnaires are available to evaluate illness perceptions in patients, such as the illness perception questionnaire revised (IPQ-R) and the brief version (Brief IPQ). This study aims to systematically review the literature concerning the clinimetric properties of the IPQ-R and the Brief IPQ in patients with musculoskeletal pain. The electronic databases Web of Sciences and PubMed were searched. Studies were included when the clinimetric properties of the IPQ-R or Brief IPQ were assessed in adults with musculoskeletal pain. Methodological quality was determined using the COSMIN checklist. Eight articles were included and evaluated. The methodological quality was good for 3 COSMIN boxes, fair for 11 and poor for 3 boxes. None of the articles obtained an excellent methodological score. The results of this review suggest that the IPQ-R is a reliable questionnaire, except for illness coherence. Internal consistency is good, except for the causal domain. The IPQ-R has good construct validity, but the factor structure is unstable. Hence, the IPQ-R appears to be a useful instrument for assessing illness perceptions, but care must be taken when generalizing the results of adapted versions of the questionnaires. The Brief IPQ shows moderate overall test-retest reliability. No articles examining the validity of the Brief IPQ were found. Further research should therefore focus on the content and criterion validity of the IPQ-R and the clinimetric properties of the Brief IPQ.

1. Introduction

Recent guidelines advise health care personal to evaluate and treat patients with musculoskeletal pain from a biopsychosocial perspective (Airaksinen et al., 2006; Tulder et al., 2006). In both medical and psychological literature, Leventhal's Common Sense Model (CSM) is often used as a theoretical framework for the evaluation and treatment of patients (Leventhal et al., 2003). According to this model, patients develop cognitions about their illness, based on former experiences, interpretation of symptoms and provided information. These cognitions are often referred to as illness perceptions.

These illness perceptions have been studied in several pathologies such as cardiovascular disorders (Schoormans et al., 2014), respiratory disorders (Kaptein et al., 2011) and musculoskeletal disorders e.g. fibromyalgia (van Wilgen et al., 2008), sports injuries (van Wilgen et al., 2010; Larmer et al., 2011), low back pain (Foster et al., 2008; van Wilgen et al., 2012), chronic fatigue syndrome and rheumatoid arthritis (Moss-Morris and Chalder, 2003). Especially when there is no clear diagnosis (e.g. no bodily cause of pain or medically unexplained symptoms), patients form their own interpretation of symptoms to explain the disorder. Illness perceptions will determine the patient's coping strategy (Sumathipala et al.,

* Corresponding author. Universiteit Antwerpen, Campus Drie Eiken D.S.121, Universiteitsplein 1, 2610 Wilrijk, Belgium. Tel.: +32 32652859.
E-mail address: Nathalie.Roussel@uantwerpen.be (N.A. Roussel).
[1] www.paininmotion.be.

http://dx.doi.org/10.1016/j.math.2014.05.001
1356-689X/

2008). Some patients will typically develop negative beliefs about their illness (Stenner et al., 2000). These negative illness perceptions can include believing that the problem will last long, relating all symptoms to their illness or having weak beliefs about self-control and low confidence in performing activities despite their pain (Foster et al., 2008). In a large prospective study with acute, sub-acute and chronic low back pain patients, negative illness perceptions were better predictors of disability at 6 months than fear avoidance, catastrophizing or depression (Foster et al., 2008, 2010). In chronic pain patients, negative illness perceptions are associated with maladaptive illness behaviour, dysfunction, poor treatment adherence and treatment outcome (Spinhoven et al., 2004; Edwards et al., 2006).

In order to evaluate illness perceptions, the Illness Perceptions Questionnaire (IPQ) (Weinman et al., 1996) was developed. Subsequent to publication of the IPQ, further evolvement of the tool was undertaken, leading to the creation of the IPQ-Revised (IPQ-R) (Moss-Morris et al., 2002). The IPQ-R measures 9 dimensions of illness perceptions and consists of 3 domains. In the first domain, called illness identity, the perceived symptoms and their possible relation to the illness are evaluated. The second domain, the beliefs domain, covers 7 dimensions: the acute/chronic timeline as well as the cyclical character of the illness represent the first and second dimension. Consequences, as the third dimension, include perceived short- and long-term effects on physical, psychological and social functioning. Controllability and curability refers to the extent to which a condition is perceived to be controllable or curable, while emotional representations, the sixth dimension, represent the emotions experienced as a result of their illness. Finally, illness coherence reflects an individual's understanding of their condition. For each dimension, responders rate their level of agreement on a five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. The third domain lists 18 possible causes to which individuals attribute their condition, the degree to which individuals perceive themselves as responsible for the illness, as well as the responsibility individuals take for curing themselves. Again, patients rate their level of agreement on a five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree' (Hill et al., 2007).

In 2006 Broadbent et al. constructed a briefer version from the IPQ-R, which is referred to as the Brief IPQ (Broadbent et al., 2006). The aim was to construct a very short and simple measure of illness perceptions for clinical use and to provide an alternative for the 5-point Likert scale approach. The Brief IPQ is an eight-item instrument that measures the cognitive perceptions with respect to an illness on an ordinal scale (0–10). Eight areas are examined: consequences (item 1), timeline (item 2), personal control (item 3), treatment control (item 4), identity for describing the condition and symptoms (item 5), coherence (item 7), and concern and emotions (items 6 and 8). The maximal score on the Brief IPQ is 80, where higher scores reflect more negative perceptions.

Since the IPQ, IPQ-R and Brief IPQ are general questionnaires, researchers are allowed to substitute the term 'illness' with the name of the condition they are investigating (Weinman et al., 1996; Hill et al., 2007). Moreover, researchers should feel free to modify the causal and identity scales in order to suit particular illnesses, cultural settings or populations (Moss-Morris et al., 2002).

Because illness perceptions are measured in a variety of disorders, the questionnaires can be adapted in function of each condition, such as fibromyalgia (van Wilgen et al., 2008) and hand injury (Chan et al., 2009). However, information regarding the clinimetric properties of the (adapted versions of the) IPQ-R and Brief IPQ is lacking. The clinimetric approach is directed at the development of instruments to measure multiple constructs with a single index (Fayers and Hand, 2002), which is often the case in clinical practice (Vet et al., 2003). It is associated with rating scales that are used to describe or measure symptoms, physical signs and other distinctly clinical phenomena (Feinstein, 1983, 1987). A summary of the quality of the studies that have investigated IPQ-R or Brief IPQ will give perspective on how these articles can assist in directing approaches in clinical practice. Therefore, the aim of the present literature overview was to systematically review the clinimetric properties of the IPQ-R and the Brief IPQ in patients with musculoskeletal disorders.

2. Methods

2.1. Search strategy

Full details of the search strategy can be found in the addendum. In brief, alongside adherence to the PRISMA guidelines, the PICOS model was used to list three groups of keywords: (P) patients with musculoskeletal pain, (I) IPQ-R or Brief IPQ and (O) clinimetric properties. No limits were added.

2.2. Methodological quality of the included articles

The methodological quality of the included articles was reviewed using the COSMIN checklist with 4-point rating scale, representing excellent, good, fair and poor methodological quality (Mokkink et al., 2010a). The COSMIN checklist is a standardized tool for assessing the methodological quality of studies on measurement properties. It contains a generalizability box and 9 separate boxes, each dealing with one measurement property, with 5–18 items per box about the design and statistical methods. This incorporates potential bias of individual studies. Two researchers independently scored the selected studies. After reviewing the articles, the results of both researchers were compared and differences were discussed until consensus was obtained. Subsequently, a methodological quality score per box is obtained by taking the lowest rating of any item in a box (Terwee et al., 2012). The results were evaluated using the quality criteria for measurement properties of health status questionnaires described by Terwee et al. (2007).

2.3. Outcome measurements

For the purpose of this study reliability was analysed in terms of internal consistency and test-retest reliability (Lohr et al., 1996). ***Internal consistency*** is a measure of the extent to which items in a subscale are correlated, thus measuring the same concept (Terwee et al., 2007). To express the internal consistency of the different items in the domains of the IPQ-R, Cronbach's alphas can be calculated. A Cronbach's alpha above 0.80 is considered to be acceptable (Dijkers et al., 2002). ***Reproducibility or test–retest reliability*** over a period of time can be calculated using an intra-class correlation coefficient (ICC), a weighted kappa or Pearson correlation. To interpret the kappa statistics, values above 0.60 are considered substantial agreement (Landis and Koch, 1977). For ICC, the threshold value of 0.75 for good reliability was used (Portney and Watkins, 2000). For Pearson's correlations, critical values are subject to the number of correlated items (Fisher and Yates, 1974; Portney and Watkins, 2000).

Validity will be presented as construct-, content- and criterion-related validity (Lohr et al., 1996; Mokkink et al., 2010b). Construct validity refers to the ability of an instrument to measure a concept or construct. Convergence, discrimination, factor analysis, hypothesis testing and known groups method are procedures to gather information about the construct (Portney and Watkins, 2000). According to the COSMIN taxonomy, ***construct validity*** is divided into