



Observational study

The Swedish version of the Insomnia Severity Index: Factor structure analysis and psychometric properties in chronic pain patients

Elena Dragiotti^{a,*}, Tobias Wiklund^{a,b}, Peter Alfvöldi^{a,b}, Björn Gerdle^{a,b}^a Rehabilitation Medicine, Department of Medicine and Health Sciences (IMH), Faculty of Health Sciences, University of Linköping, SE-581 85 Linköping, Sweden^b Pain and Rehabilitation Centre, UHL, County Council, SE-581 85 Linköping, Sweden

H I G H L I G H T S

- The feasibility of the Insomnia Severity Index (ISI) was examined.
- 836 patients from the Swedish registry for pain rehabilitation were recruited.
- We report a shorter version for evaluation of insomnia in chronic pain patients.

A R T I C L E I N F O

Article history:

Received 2 April 2015

Received in revised form 1 June 2015

Accepted 6 June 2015

Available online 10 July 2015

Keywords:

Insomnia

Insomnia Severity Index

ISI

Chronic pain

Validation

A B S T R A C T

Objective: Insomnia is the most commonly diagnosed comorbidity disorder among patients with chronic pain. This circumstance requests brief and valid instruments for screening insomnia in epidemiological studies. The main object of this study was to assess the psychometric properties and factor structure of the Swedish version of the Insomnia Severity Index (ISI). The ISI is a short instrument designed to measure clinical insomnia and one of the most common used scales both in clinical and research practice. However there is no study in Sweden that guarantees neither its factor structure nor its feasibility in chronic pain patients. We further examined the measurement invariance property of the ISI across the two sexes.

Methods: The ISI was administered to 836 (269 men and 567 women) chronic pain patients from the Swedish Quality Registry for Pain Rehabilitation. This study used demographic data, the Hospital Anxiety and Depression Scale (HADS), the Mental Summary Component (MSC) of the Health Survey (SF-36) and the item 7 from Multidimensional Pain Inventory (MPI). The sample was divided into two random halves: exploratory factor analysis (EFA) was performed in the first sample (N1 = 334, 40%) and confirmatory factor analysis (CFA) in the second half of the sample (N2 = 502, 60%). The measurement and structural invariance of the proposed structure (4-item version) between the two sexes as well as reliability and validity indexes were further assessed.

Results: Exploratory factor analysis using the principal axis factoring method generated one global factor structure for the ISI, explaining 63.1% of the total variance. The one factor solution was stable between the two sexes. Principal component analysis was also applied and indicated almost identical results. The structure was further assessed by CFA, resulting in an adequate fit only after omitting three items. The difference on structural and measurement invariance in the loadings by participants' sex was not significant ($\Delta\chi^2 = 10.6$; $df = 3$; $p = .69$ and $\Delta\chi^2 = 2.86$, $df = 3$, $p = .41$ respectively). The shorter version four-item Insomnia Severity Index (ISI-4) was analysed further. The Chronbach's alpha for the global ISI-4 score was 0.88. The construct validity of the ISI-4 was also supported by the, Hospital Anxiety and Depression Scale, the Mental Summary Component of quality of life and quality of sleep data. Pain intensity was significantly associated with the ISI-4 score ($\beta = .29$, $p < .001$) whereas no significant correlation between four-item Insomnia Severity Index score and age was observed ($p > .05$).

DOI of refers to article: <http://dx.doi.org/10.1016/j.sjpain.2015.07.001>.

Abbreviations: ISI, Insomnia Severity Index; PSG, polysomnography; PSQI, Pittsburgh Sleep Quality Index; HADS, Hospital Anxiety and Depression Scale; MSC, Mental Summary Component; MPI, Multidimensional Pain Inventory; EFA, exploratory factor analysis; PCA, principal component analysis; CFA, confirmatory factor analysis; ISI-4, four-item Insomnia Severity Index; SQR, Swedish Quality Registry for Pain Rehabilitation.

* Corresponding author. Tel.: +46 76 325 13 61.

E-mail address: elendrag@yahoo.com (E. Dragiotti).<http://dx.doi.org/10.1016/j.sjpain.2015.06.001>

1877-8860/© 2015 Scandinavian Association for the Study of Pain. Published by Elsevier B.V. All rights reserved.

Conclusions and implications: Although short, the four-item Insomnia Severity Index (ISI-4) version seemed to effectively assess insomnia in chronic pain patients. An important clinical implication is that the four-item Swedish Insomnia Severity Index can be used in chronic pain cohorts when screening for insomnia problems. Its measurement and structural invariance property across the two sexes shows that the ISI-4 is a valid measure of the insomnia across groups of chronic patients. Our results also suggest its utility both in pain clinical practice and research purposes.

© 2015 Scandinavian Association for the Study of Pain. Published by Elsevier B.V. All rights reserved.

1. Introduction

Insomnia is the most commonly diagnosed comorbidity disorder among patients with chronic pain [1]: 50% of individuals with insomnia disorders suffer from chronic pain and 50–80% of chronic pain patients develop insomnia symptoms [1–7]. In Sweden, the comorbidity between clinically significant insomnia and pain is almost 65% [8]. A longitudinal study on an adult female population in Norway found that insomnia preceded 2/3 of the incident cases of fibromyalgia [9]. As these data indicate, it is important to evaluate insomnia severity among chronic pain disorders.

Indeed, there is several assessment tools for assessing insomnia of which polysomnography (PSG) is considered the gold standard [10]. Regarding sleep questionnaires, the Insomnia Severity Index (ISI) and the Pittsburgh Sleep Quality Index (PSQI), are the two commonly used instruments for measuring insomnia [11,12]. However, considering the poor availability of PSG in daily routine and time consuming accomplishment of PSQI among pain patients, there is a need of short and valid self-instruments. Therefore the ISI is the one of the most frequently used scale to distinguish clinically significant insomnia [10–14].

The ISI consists of only seven items and estimates patient's perception of insomnia as well as identifies both daytime symptoms and night-time severity of insomnia [11]. Thus, the ISI's diagnostic criteria for insomnia are in accordance with the Diagnostic and Statistical Manual of Mental Disorders and the International Classification of Sleep Disorders [15,16]. Additionally, the ISI items are related with polysomnography variables [17]. The ISI has been translated into several languages and its psychometric properties have been examined in a variety of versions [13,14,18–20]. However, the results are mixed and inconsistent across different cultures and populations. Bastien et al. [11] reported a three-factor solution in a clinical sample of middle-aged insomniacs and Savard et al. [19] proposed a two-factor solution using two samples of cancer patients. Results from studies that examined the Spanish ISI are also inconsistent: one study found a one-factor solution using factor analysis in a group of older adults [21], and another study found a three-factor solution in the general population using confirmatory factor analysis [14]. None of these studies examined the factor structure of the Insomnia Severity Index in a sample of chronic pain patients. As a result, the proposed psychometric properties and factor solutions for ISI have not been identified in this target group. Additionally the Swedish version of the Insomnia Severity Index has not been evaluated regarding the generability of the factorial structure underlying it. Even if some studies have reported the psychometric properties of the instrument [22] or its clinical feasibility [8,23], the verification of the proposed factor model as well as the invariance property (e.g., between males and females) are lacking. As such, this study tests the validation of the Swedish ISI and evaluates its psychometric properties using both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) in a large sample of chronic pain patients.

2. Material and methods

2.1. Subjects and procedure

This study is based on chronic pain patients referred to Pain and rehabilitation centre, University Hospital, Linköping, Sweden. The patients were recruited from the Swedish Quality Registry for Pain Rehabilitation (SQRP). The SQRP is based on questionnaires completed by chronic pain patients referred to approximately 20 clinical specialist departments, which equates to 80% coverage of the clinical departments of pain rehabilitation at the specialist level in Sweden. From this registry we selected only the patients who were fluent in Swedish. All patients were informed that the reports would be confidential and participation in the study was voluntary. Before the assessment and inclusion in the SQRP, all the patients provided informed consent. The study was granted ethical clearance by the Umeå University Ethics Committee (D-nr: 2013/192-31).

2.2. Measures

The survey collected socio-demographic information from the subjects (gender and age) and pain characteristics such as duration and severity of pain. Pain intensity for the previous seven days was registered using an eleven-graded Numeric Rating Scale (NRS7d) with numbers provided for guidance; the endpoints were defined as: 0 = no pain and 10 = worst imaginable pain. The Swedish version of the ISI was used to assess subjective severity of insomnia [22]. Each item was rated on a five-point Likert scale (0 = no problem and 4 = very severe problem), yielding a total score ranging from 0 to 28 [11]. Patients also completed the Hospital Anxiety and Depression Scale (HADS) [24], the Mental Summary Component scales of the Short Form Health Survey (SF-36) [25] and a single-item (item 7) measuring quality of sleep, derived from the Multidimensional Pain Inventory (MPI) [26].

2.3. Statistical analysis

We used exploratory factor analysis (EFA) to examine the three-factor structure proposed by Bastien et al. [11] in the Swedish version of the Insomnia Severity Index. The whole sample was randomly divided into two subsamples (Sample 1, $n = 334$; 40% and Sample 2, $n = 502$; 60%). EFA using the principal axis factoring method was applied in Sample 1 ($n = 334$). The principal axis extraction method of EFA can be distinguished from principal component analysis (PCA) in terms of the measurement error [27]. Confirmatory factor analysis (CFA) using maximum likelihood methodology was applied to the second subsample (Sample 2, $n = 502$). We used this method in order to avoid recycling the data in the same dataset because exploratory factor analysis and confirmatory factor analysis aimed on different goals and/or outcomes.

Goodness of fit was evaluated using standard reported measures of absolute and relative fit [14,28]. Due to chi square's sensitivity to the sample size, the relative chi square (χ^2/df) is also provided [28].

Download English Version:

<https://daneshyari.com/en/article/8623589>

Download Persian Version:

<https://daneshyari.com/article/8623589>

[Daneshyari.com](https://daneshyari.com)