



Contents lists available at ScienceDirect

Heart & Lung

journal homepage: www.heartandlung.org

Selecting symptom instruments for cardiovascular populations

Lani Zimmerman, PhD^{a,*}, Bunny Pozehl, PhD^a, Karen Vuckovic, PhD^b,
Susan Barnason, PhD^a, Paula Schulz, PhD^a, Yaewon Seo, PhD^a, Catherine J. Ryan, PhD^b,
Julie J. Zerwic, PhD^b, Holli A. DeVon, PhD^b

^a University of Nebraska, College of Nursing, Lincoln, NE, 68588, USA

^b University of Illinois at Chicago, College of Nursing, Chicago, IL, 60612, USA

ARTICLE INFO

Article history:

Received 22 April 2016

Received in revised form

24 August 2016

Accepted 31 August 2016

Available online xxx

Keywords:

Symptom

Instruments

Cardiovascular populations

Psychometric properties

Defining characteristics

ABSTRACT

The purpose of this review is to provide a guide for researchers and clinicians in selecting an instrument to measure four commonly occurring symptoms (dyspnea, chest pain, palpitations, and fatigue) in cardiac populations (acute coronary syndrome, heart failure, arrhythmia/atrial fibrillation, and angina, or patients undergoing cardiac interventions). An integrative review of the literature was conducted. A total of 102 studies summarizing information on 36 different instruments are reported in this integrative review. The majority of the instruments measured multiple symptoms and were used for one population. A majority of the symptom measures were disease-specific and were multi-dimensional. This review summarizes the psychometrics and defining characteristics of instruments to measure the four commonly occurring symptoms in cardiac populations. Simple, psychometrically strong instruments do exist and should be considered for use; however, there is less evidence of responsiveness to change over time for the majority of instruments.

© 2016 Elsevier Inc. All rights reserved.

Abbreviations: ACS, Acute Coronary Syndrome; AF, Arrhythmia/Atrial Fibrillation; AFEQT, Atrial Fibrillation Effect on Quality of Life; AFSS, Atrial Fibrillation Severity Scale; ASTA, Arrhythmia-Specific Questionnaire in Tachycardia and Arrhythmia; CABG, Coronary Artery Bypass Surgery; CAD, Coronary Artery Disease; CCSA, Canadian Cardiovascular Society Angina; CCS-SAF, Canadian Cardiovascular Society-Severity of Atrial Fibrillation; CDEs, Common Data Elements; CV, Cardiovascular; CSS, Cardiac Symptom Survey; CTT, Classical Test Theory; DEFS, Dutch Exertion Fatigue Scale; DUFS, Dutch Fatigue Scale; FAS, Fatigue Assessment Scale; FSI, Fatigue Symptom Inventory; HF, Heart Failure; HFSAS, Heart Failure Somatic Awareness Scale; HFSPS, Heart Failure Somatic Perception Scale; IRT, Item Response Theory; KCCQ, Kansas City Cardiomyopathy Questionnaire; MAFSI, Mayo-AF Specific Symptom Inventory; MAPMISS, McSweeney Acute and Prodromal Myocardial Infarction Symptom Survey; MDAIS-HF, MD Anderson Symptom Inventory; MDASI-HF, Memorial Symptom Assessment Scale-Heart Failure; MDP, Multidimensional Dyspnea Profile; MFI-20, Multi-dimensional Fatigue inventory-20; MI, Myocardial Infarction; MIVE, Maastricht Interview for Vital Exhaustion; MQ, Maastricht Vital Exhaustion Questionnaire; MRC, Medical Research Council; MSAS, Memorial Symptom Assessment Scale; NIH, National Institutes of Health; NINR, National Institute of Nursing Research; PCI, Percutaneous Coronary Intervention; POMS-F, Profile of Mood States-Fatigue; PROMIS, Patient-Reported Outcomes Measurement Information System; SACS, Symptoms of Acute Coronary Syndrome Inventory; SAQ, Seattle Angina Questionnaire; SSQ-HF, Symptom Status Questionnaire-Heart Failure; Toronto-SCL, Toronto Symptoms Checklist

* Corresponding author. University of Nebraska Medical Center, College of Nursing, 1231 O Street Office 114, Lincoln, NE, 68588-0220, USA.

E-mail address: lzimmerm@unmc.edu (L. Zimmerman).

Introduction

Symptoms are subjective evidence of disease or illness, often the first indicator of cardiovascular (CV) conditions, and used as a marker of improving or worsening disease. In a program announcement for Centers of Excellence in Symptom Science, the National Institute of Nursing Research describes “Symptoms are the result of a complex interaction of biological, cognitive, behavioral, sociocultural, spiritual, and environmental factors.”¹ Assessing and measuring symptoms is the basis for triage, diagnostic testing, and treatment and so is a priority for patients, clinicians, and researchers.² Despite their importance, symptoms are difficult to measure because of the lack of common metrics or a gold standard, hindering the provision of care and the advancement of symptom science.³

CV symptom profiles often overlap for patients with acute coronary syndrome (ACS), heart failure (HF), atrial fibrillation (AF), and chronic stable angina (CSA). Though cardiac patients experience co-existing conditions (e.g., depression, insomnia) or signs (e.g., edema, elevated blood pressure), we purposefully studied four of the most frequently occurring symptoms: dyspnea (shortness of breath), chest pain, palpitations, and fatigue.^{4–7} The purpose of this paper was to develop a reference that would include the defining

characteristics and psychometric properties of selected instruments used in research studies to measure one or more of these four symptoms. Our goal was to provide a resource for researchers (Table 1) choosing instruments to measure CV symptoms, as well as to identify limitations in instruments that can be addressed in designing future studies.

Defining characteristics of instruments

Selection of an instrument requires that investigators consider its original intent and conceptualization; advantages of generic versus disease-specific instruments, single or multi-symptom measures; uni- or multidimensional; and evidence for psychometric properties. Often, the original intent of the instrument is solely to measure symptoms; in other instruments, symptoms are one domain of a broadly conceptualized construct, such as quality of life (QoL) or functional status.⁸ Consideration of the intent and conceptualization of an instrument is especially salient because the National Institutes of Health (NIH) is developing common data elements (CDEs) to facilitate research on the growing population of individuals with multiple comorbid conditions and to facilitate systematic reviews and meta-analyses.⁹ CDEs use standardized terminologies and can facilitate the use of data collection and enhance data transfer between health care systems, including registries and electronic health records.^{9,10} The NIH has developed the Patient-Reported Outcomes Measurement Information System (PROMIS) to standardize the measure of common concepts and has developed a toolkit (www.nihpromis.org) to facilitate adoption of the instruments.

Generic instruments are broadly applicable across types and severity of disease, medical treatments or health interventions, and demographic and cultural subgroups. Disease-specific instruments are designed to assess symptoms of specific diagnostic groups or patient populations, often with the goal of measuring responsiveness or “clinically important” changes.¹¹ They may focus on signs or symptoms that reflect the status of a certain condition. Not all specific instruments are disease-related. They may be specific to given conditions or symptoms (e.g., back pain or dyspnea).^{12,13}

Instruments to measure CV symptoms range from assessing a single symptom to multiple symptoms. A multi-symptom instrument is particularly useful to provide a more comprehensive view of symptoms that patients experience. Symptoms are usually not experienced in isolation; multi-symptom instruments may more accurately represent patients’ experiences.¹⁴ They also allow researchers to use techniques such as cluster analysis to describe symptoms that co-occur and may represent a common pathologic mechanism and/or target for intervention.

Single-symptom instruments tend to allow for greater exploration of all aspects of that symptom. For example, the Fatigue Symptom Inventory (FSI) measures different dimensions of fatigue, such as intensity, duration, and interference with activities of daily living, from both the emotional and physical angle.^{15,16} Respondent burden could be quite high if each symptom was explored to that same level of detail.

Psychometric properties

Evaluating the psychometric properties of an instrument is critical for investigators selecting instruments and those interpreting the results of a study. Reliability is the extent to which a measure is repeatable or stable (consistency).^{17,18} Validity refers to the degree to which an instrument actually captures or measures what it is intended to measure.¹⁹ Content validity and criterion validity are types of evidence informing the concept of construct validity.^{17,19}

Item Response Theory (IRT) and Classical Test Theory are two measurement models used to examine the psychometric properties of an instrument.^{20,21} CTT focuses on the total score of the instrument and the concepts of reliability and validity. CTT differentiates types of validity (i.e., face, content, criterion, and construct) and emphasizes construct validity as the central form. In contrast, IRT places items and people on a common continuum from low to high levels of the measured construct or trait and improves measurement accuracy and reliability while reducing assessment time and effort, especially via computerized adaptive testing.^{17,20,22} The development of the PROMIS instruments is an example of a tool developed based on IRT. Responsiveness is the ability of an instrument to accurately detect change when it has occurred.²³ Ideally, concepts of reliability and validity should be addressed in every study, and responsiveness is important if the measure is being used to examine change over time or as a result of an intervention.

Methods

Because most instruments measuring symptoms have been developed and tested using CTT, concepts relevant to CTT will be the focus of this paper. This literature review was completed using an integrative review approach. Integrative reviews allow for both experimental and non-experimental research to be analyzed and may combine data from both theoretical and empirical literature to gain a better understanding of the phenomenon of interest.²⁴ The literature search stage was conducted using the methodology recommended by Ganong²⁵ (e.g., purpose, inclusion criteria, literature search, sampling decisions, analyzing findings, and interpreting results) and Whittemore and Knafl²⁴ (e.g., defined literature search strategies) to identify and examine published studies that used instruments to measure dyspnea, chest pain, palpitations and fatigue across ACS, HF, AF, and CSA, or for patients undergoing cardiac intervention (coronary artery bypass grafting [CABS] and percutaneous coronary [PCI]). The review process included examining titles, abstracts, and full-text articles using the following inclusion criteria: (1) reported on a research study (experimental or non-experimental, such as case studies, observational studies, and meta-analyses used in our defined cardiac populations); (2) measured one or more of the cardiac symptoms (dyspnea, chest pain, palpitations, or fatigue); (3) used an instrument with a quantitative metric to measure one or more of the four targeted symptoms (excluded symptom diaries); (4) published within 2000–2015; and (5) written in English. We excluded articles if: (1) the instrument was only supported by a single publication that did not include psychometric properties and (2) instruments measured concepts such as QoL or functional status related to a cardiac symptom, but did not have a symptom subscale (e.g., Minnesota Living with Heart Failure Questionnaire).

We searched MEDLINE, CINAHL, PubMed, PsychINFO, Cochrane Controlled Trials Register, and Google Scholar. Key search terms for dyspnea, chest pain, palpitations, and fatigue were combined with the CV population terms of ACS, HF, AF, CSA, and cardiac intervention (CABS and PCI). Additional key words and combinations included: symptom instruments, symptom measures, and psychometrics. Some instruments used the term “dyspnea” and some used “shortness of breath” or “breathlessness.” For this review, we included studies using either term. Articles were also identified from reference lists of relevant articles. Consensus of the authors was reached on the inclusion of all articles.

The final search included 102 studies and 36 instruments. Data essential to summarizing and classifying the key characteristics of the instruments were collected, which included author(s); sample characteristics (e.g., cardiac condition, gender, age); instrument(s)

Download English Version:

<https://daneshyari.com/en/article/5568074>

Download Persian Version:

<https://daneshyari.com/article/5568074>

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