Applied Nursing Research 27 (2014) 206–212

Contents lists available at ScienceDirect

Applied Nursing Research

journal homepage: www.elsevier.com/locate/apnr

Original Articles

Predictors of self-management for chronic low back pain

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ARTICLE INFO

Article history:
Received 16 November 2013
Revised 23 January 2014
Accepted 3 February 2014

Keywords:
Self-management
Chronic low back pain
Predictors

ABSTRACT

Aims: (a) Identify variables that predict self-management (SM) of chronic low back pain (CLBP), and (b) evaluate differences in these variables between participants in specialty pain centers (SPCs) and primary care clinics (PCCs).

Background: Chronic low back pain is highly prevalent in various healthcare settings. Self-management strategies are recommended in pain care guidelines to help address CLBP. However, the evidence of SM effectiveness in CLBP remains unclear. Self-management may be effective for only certain patients. Hence, identifying the predictors to SM of CLBP is essential to help recognize the best responders to SM programs.

Method: Secondary analysis was conducted on data collected from two CLBP primary research studies in SPCs ($N = 110$) and PCCs ($N = 120$). General linear modeling was utilized for the combined sample of 230 participants and for each practice setting.

Results: Overall, in SPCs and PCCs combined, five variables were found to be predictors of SM: age, SM support, education, overall health, and helpfulness of pain management. In SPCs, SM support, support received from other than healthcare providers, religion or spirituality, and overall health were identified as significant predictors to SM. In PCCs, both SM support and overall health were also significant predictors. In addition, those with higher income scored better in SM.

Conclusions: Findings provide essential information to healthcare providers in intervening appropriately toward engaging CLBP patients in SM. Other strategies need to be identified for those who do not respond effectively to SM strategies.

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1. Introduction

Chronic low back pain (CLBP) is the most common chronic pain complaint in the United States, afflicting 28.4% of people 18 years of age or over (National Center for Health Statistics, 2012). With the prevalence of CLBP and associated high healthcare costs, the Institute of Medicine, 2011 strongly emphasized the importance of self-management (SM) strategies to help reduce pain suffering and costs. Self-management encourages active patient participation so that patients are engaged in managing and improving their own health. Self-management has been shown to significantly improve outcomes and reduce healthcare costs (National Council on Aging, 2012). However, evidence of SM effectiveness for CLBP remains unclear (Oliveira et al., 2012). Self-management may be therapeutic for only a subset of patients. Therefore, to help alleviate the physical, psychological, and financial burden of CLBP, evaluating patient-related variables to predict those who are the best responders to SM is critical to the goals of the IOM and the healthcare system related to CLBP.

2. Background

Chronic low back pain is a discomfort of varying degree and character that continuously or intermittently persists for at least 3 months (National Institute of Arthritis and Musculoskeletal and Skin Diseases, 2009). The pervasiveness of CLBP is responsible for total healthcare costs of $100–200 billion annually in the United States, of which two-thirds account for indirect costs such as decreased wages and lost productivity (Freburger et al., 2009). Direct costs to the healthcare system include primary pain care, specialty care, inpatient services, rehabilitation, and pharmaceuticals (Freburger et al., 2009). Specifically in relation to pharmaceuticals, the widespread use of opioids in the management of CLBP adds to the healthcare challenges. Opioid abuse, misuse, and its diversion are common problems (Centers for Disease Control, Prevention, 2011). In 2010, the number of prescriptions and resulting sale of opioids would have supplied every American adult with 5 mg of hydrocodone every 4 hours for 1 month (CDC, 2011). In addition, almost 15,000 deaths were attributed to prescription painkillers during that same year (CDC, 2011). While the appropriate use of opioids can decrease CLBP, adequate SM can potentially reduce misuse of opioids through patient engagement in health-directed behaviors, thereby encouraging appropriate use and reducing dependence on external sources (IOM, 2011).

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http://dx.doi.org/10.1016/j.apnr.2014.02.003
0897-1897/Published by Elsevier Inc.

The theoretical foundation for this research was based on Lorig and Holman's (2003) concept of SM. Self-management is described as the performance of tasks and skills with self-efficacy so that patients are activated to make appropriate decisions and engage in health-directed behaviors (Lorig & Holman, 2003). The emphasis on improved strategies and support for SM are identified as essential in several CLBP research studies (Cooper, Smith, & Hancock, 2009; Crowe, Whitehead, Gagan, Baxter, & Panckhurst, 2010; Liddle, Baxter, & Gracey, 2007). Other studies have shown the effectiveness of SM in reducing pain intensity and disability of CLBP and improving overall function (Coudeyre et al., 2006; May, 2010; Schulz, Rubinell, & Hartung, 2007; Sokunbi, Cross, Watt, & Moore, 2010). Consequently, clinical practice guidelines have endorsed the importance of SM in CLBP (Arnstein & Marie, 2010; Institute for Clinical Systems Improvement, 2011; IOM, 2011; Toward Optimized Practice, 2009).

However, a CLBP systematic review conducted by Oliveira et al. (2012) reported only modest effects of SM on pain and disability, although with an impact that was similar to more costly and intensive interventions. Interventions like back surgery and injections are invasive and expensive while SM has been shown to be cost-effective (IOM, 2011; National Council on Aging, 2012). Nevertheless, it is likely that individuals vary in their response to SM. This suggests the need to identify variables that can best predict which patients will respond more to SM. Evaluating these variables can allow healthcare providers to identify patients who will likely respond more to SM strategies in order to maximize its effectiveness in both the primary care and specialty pain settings while tailoring to individual needs and investigating more appropriate strategies to non-responders.

3. Purpose

The primary aim of this research was to identify variables that predict SM of CLBP (aim 1). This study also evaluated the differences in these variables between participants in specialty pain centers (SPCs) and those in primary care clinics (PCCs; aim 2).

4. Methods

This research study was designed conducting secondary data analysis using general linear modeling to identify variables that could predict which patients would respond best to SM of CLBP. The variables analyzed were: perceived SM support (support received from healthcare providers), pain intensity, functional ability, mental health state, and various demographic variables. Sources of the data were from two previous CLBP primary studies (Kawi, 2012; Kawi, in press). The first study was conducted in two SPCs, the second in four PCCs, both in the western United States. Both primary studies used correlational and mediation analysis, plus qualitative content analysis to describe several pain- and patient-related variables. Identifying variables that could predict SM was not addressed in the original analyses of either primary study. Additionally, this current research compared the predictive variables of SM of CLBP between participants in SPCs and participants in PCCs.

4.1. Sample

The inclusion criteria for the two primary studies (Kawi, 2012; Kawi, in press) were adults over 18 years of age with at least 3 months of doctor-diagnosed, nonmalignant CLBP, recruited through convenience sampling. Since all collected data were deidentified, this research was deemed exempt from review by the site's institutional review board.

4.2. Measures

Data were collected using a demographic survey and four self-report measures. All of the following measures were used in both primary studies analyzed for this current research.

4.2.1. Patient Activation Measure (PAM)

The PAM evaluates the knowledge, skills, and behaviors in SM of chronic illnesses (Hibbard, Stockard, Mahoney, & Tusler, 2004). Using a 4-point Likert scale, the PAM is converted to scores indicating the patient's activation or engagement in SM and categorized according to four specified cut-off points. These points represent a progressive hierarchical order: level 1, individuals are starting to take a role in SM; level 2, individuals are gaining confidence and knowledge about self-care; level 3, individuals are actively practicing SM; and level 4, individuals are working to maintain their health even under stressful conditions (Hibbard et al., 2004). The PAM was conceptually validated with an original 22-item measure, and reliability was stable (.9 to .91) across various chronic conditions (Hibbard et al., 2004). It was reduced to 13 items for ease of completion with infit values ranging from .92 to 1.05 and outfit values from .85 to 1.11 indicating conformity of all items in the measure (Hibbard, Mahoney, Stockard, & Tusler, 2005).

4.2.2. Patient Assessment of Chronic Illness Care

This measure evaluates patient perspectives on their chronic illness care examining SM support or support received from healthcare providers using a 5-point Likert scale. Items include questions on patient engagement, decision making, goal-setting, problem-solving, and follow-up (Glasgow et al., 2005). It is a validated 20-item measure, correlating moderately with measures of primary care and patient activation, with an overall internal consistency of .93 (Glasgow et al., 2005).

4.2.3. Oswestry Disability Index

This is a specific measure for low back pain evaluating pain-related function (Fairbank & Pynsent, 2000). Version 2.1a contains items on pain intensity, personal care, lifting, walking, sitting, standing, sleeping, sex life, social life, and traveling. This instrument was validated with the Short Form 36 and the visual analogue pain scale with correlations at $r = .62$, and concurrent validity with the Roland-Morris Questionnaire, another common disability measure, at $r = .77$ (Fairbank & Pynsent, 2000). A test–retest reliability of $r = .83$ was reported with internal consistency ranging from .71 to .87 (Fairbank & Pynsent, 2000).

4.2.4. Mental Health Inventory

This measure was derived from the RAND Medical Outcomes Study: 36-Item Short Form Survey evaluating positive and negative aspects of mental health state from psychological well-being to distress (Veit & Ware, 1983). It is a 5-item questionnaire with a 6-point Likert scale. Berwick et al. (1991) validated this measure with three common mental health screening questionnaires with moderate to strong correlations and an overall reliability of .82 (Berwick et al., 1991).

4.3. Data Analysis

Data were entered into a secured computer using the Statistical Package for the Social Sciences, version 20. Prior to scoring, missing cells for the PAM and the Patient Assessment of Chronic Illness Care measures were replaced with the most frequent response category so that all patients could be scored to prevent problems in analyzing data especially during regression analysis. Missing values comprised less than 5% of the data.