Patient Education and Counseling xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

Patient Education and Counseling

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

Healthcare providers' accuracy in assessing patients' pain: A systematic review

Mollie A. Ruben[a,*], Mara van Osch[b], Danielle Blanch-Hartigan[c]

[a] US Department of Veterans Affairs, Center for Healthcare Organization and Implementation Research, Boston, MA, USA
[b] NIVEL (Netherlands Institute for Health Services Research), Utrecht, The Netherlands
[c] Department of Natural and Applied Sciences, Bentley University, Waltham, MA, USA

ARTICLE INFO

Article history:
Received 27 January 2015
Received in revised form 2 July 2015
Accepted 9 July 2015

Keywords:
Pain assessment
Provider accuracy
Clinical experience
Chronic pain
Acute pain

ABSTRACT

Objective: Healthcare providers satisfy an important role in providing appropriate care in the prevention and management of acute and chronic pain, highlighting the importance of providers' abilities to accurately assess patients' pain. We systematically reviewed the literature on healthcare providers' pain assessment accuracy.
Methods: A systematic literature search was conducted in PubMed and PsycINFO to identify studies addressing providers' pain assessment accuracy, or studies that compared patients' self-report of pain with providers' assessment of pain.
Results: 60 studies met the inclusion criteria. Healthcare providers had moderate to good pain assessment accuracy. Physicians and nurses showed similar pain assessment accuracy. Differences in pain assessment accuracy were found according to providers' clinical experience, the timing of the pain assessment, vulnerable patient populations and patients' pain intensity.
Conclusion: Education and training aimed at improving providers with poor pain assessment accuracy is discussed especially in relation to those with limited clinical experience (<4 years) or a great deal of clinical experience (>10 years) and those providing care for vulnerable patient populations.
Practice implications: More research on characteristics that influence providers' pain assessment accuracy and trainings to improve pain assessment accuracy in medical and continuing education may improve pain treatment for patients.

Published by Elsevier Ireland Ltd.

1. Introduction

Uncontrolled acute and chronic pain is a major healthcare challenge and public health problem [1]. Estimates suggest that more than one-third of American adults and one-fifth of European adults suffer from some type of chronic pain [1,2]. Although the majority of pain sufferers seek medical attention for their pain [3], pain is often undertreated. Considerable undertreatment of pain has been documented in patients with cancer [4], AIDS and HIV [5,6], emergency department patients [7], children [8], and older adults and dementia patients [9]. In a recent review, nearly 50% of patients with cancer had pain that was undertreated [4]. Undertreated pain can create physiological, psychological, social, and economic burdens on sufferers, their families, and society at large [2,10,11].

Healthcare providers must be accurate in assessing patients' pain in order to provide appropriate care and avoid undertreating pain. Accurately assessing pain refers specifically to the ability to correctly discriminate a patient's level of pain.

This is a crucial aspect of an effective patient-centered approach to clinical care for pain patients [12]. The Institute of Medicine recommends that healthcare providers complete consistent and comprehensive pain assessments so that patients receive appropriate pain care [1]. Accurate pain assessment is particularly important for those who cannot self-report their pain, such as infants and dementia patients [13]. For these populations, provider and caregivers' assessments of nonverbal indicators of pain inform treatment and medication decision-making [14]. Despite recommendations and the need for accurate assessment of patients' pain, the literature suggests that providers tend to underestimate and undertreat pain [15].

The purpose of the present article is to systematically review the literature on providers' abilities to accurately assess their

* Corresponding author at: US Department of Veterans Affairs, Center for Healthcare Organization and Implementation Research, 150 S, Huntington Ave., Bldg. 9, Boston, MA 02130, USA.
E-mail addresses: Mollie.Ruben@va.gov, mollie.ruben7@gmail.com (M.A. Ruben).

http://dx.doi.org/10.1016/j.pec.2015.07.009
0738-3991/Published by Elsevier Ireland Ltd.

patients' pain by comparing providers' ratings of patients' pain to patients' self-reported pain. More specifically, we aim to answer four main research questions:

RQ1. How accurate are providers at assessing patients' pain?
RQ2. Are some providers more accurate at pain assessment than others (e.g. those with more clinical experience or certain types of providers)?
RQ3. Do patient characteristics (e.g., gender, age, cognitive ability) impact providers' ability to accurately assess pain?
RQ4. Do characteristics of the pain itself (e.g., pain intensity, acute vs chronic) impact providers' abilities to accurately assess pain?

1.1. Assessing pain in clinical contexts

Accurately assessing patients' pain is difficult because the perception of pain for the sufferer is a highly personal and subjective experience. The nociceptive input is influenced by biological and psychosocial aspects of pain (e.g., pathology, cultural background, memories, emotions, and cognitions) most of which are not easily accessible to a provider [11,16,17]. Moreover, the therapeutic context, which encompasses the doctor-patient relationship and the treatment regimen all have influences on patients' pain experience [18–20]. The resultant pain experience and the nonverbal and verbal expression of pain is therefore not solely (or linearly) related to the nociceptive input, but shaped by a variety of aspects. By its nature, the complexity of the subjective experience of pain challenges the accurate assessment of pain by providers.

Although the experience of pain for the sufferer is complex and multidimensional [21,22], in clinical practice and research, the standard method of assessing patients' pain is a unidimensional self-report of pain. Self-report instruments, written or verbal reports describing the sufferers' pain intensity [16,23], are the most widely used way to measure patients' pain [24]. Self-reports of pain are acknowledged as problematic for many reasons including the deliberate control of pain reports and the oversimplification of the multidimensional pain experience [25] and are not always the best reflection of patients' actual pain. However, self-reports of pain are extremely efficient, especially in the clinical setting where time is limited. Therefore, most studies which assess provider accuracy, compare providers' assessment to patients' self-reports of pain.

Although studies have explored biases in pain estimation, less is known about providers' general pain assessment accuracy. It is important to note that providers' pain assessment accuracy is independent from their pain assessment bias, or their overall tendency to underestimate or overestimate pain. The focus on pain assessment accuracy specifically has generated increasing interest within medical consultations. In the current systematic review, we summarize available evidence to provide an overall picture of how accurate providers are at assessing patients' pain. In addition, this review also examines the patient, provider and pain-related characteristics that may influence providers' pain assessment accuracy. Given the subjectivity of patients' self-reports of pain, providers' accuracy may be impacted by characteristics of their patients or characteristics of their patients' pain. With a better understanding of pain assessment and the factors that influence accuracy, we can better target provider training to address the undertreatment of pain.

2. Methods

2.1. Study characteristics

Inclusion and exclusion criteria were determined a priori. In order to be eligible for inclusion in the current review, studies had to report providers' pain assessment accuracy, or the direct comparison between patients' self-report of pain and providers' assessment of pain. Pain assessment accuracy was reported in studies as a Pearson correlation coefficient (r), intraclass correlation coefficient (ICC), or weighted kappa coefficient.

The patient population included any patients who self-reported their pain, including children and older adults with dementia when a self-report was present. The provider population included any healthcare providers (i.e., physicians, nurses, midwives) who viewed patients in pain. Studies were excluded if, (1) they did not directly compare providers' judgment of pain with patients' verbal or written self-report of pain (the criterion), (2) providers had access to patients' self-reported pain prior to inferring patients' pain, or (3) patients were made-up vignettes or scenarios and not actually pain sufferers.

2.2. Search strategy

We performed a broad systematic literature search for peer-reviewed articles that contained the terms 'pain assessment', 'judgments of pain', 'pain detection', 'pain', and 'pain intensity' combined with terms related to providers and patients (including 'provider', 'physician', 'nurse', 'clinician', and 'patient'). The following databases were searched up to January 2015: PubMed (coverage 1946-present) and PsycINFO (coverage 1894-present). The reference lists of relevant studies and systematic reviews were investigated. We also reviewed the reference lists of all articles identified. Although not an exclusion criteria, no non-English language publications satisfied the inclusion criteria.

2.3. Study selection

The first author (MAR) independently reviewed all of the 819 titles and abstracts that met search criteria to determine their eligibility. Of these, 157 full texts versions were obtained and reviewed for inclusion. Ninety-seven studies did not meet the inclusion criteria. A total of 60 studies met all inclusion criteria and were included in the review. Any disagreements about inclusion were resolved by discussion with the third author (DBH).

2.4. Study extraction and management

The first author (MAR) extracted the data from the included studies and a second author (DBH) reviewed data for accuracy and completeness. The following information was extracted for each study:

1 Study reference (author, year of publication, country of study completion)
2 Patient participants (number of participants, age group, gender)
3 Type of patient pain (pain intensity, acute or chronic, timing of pain assessment)
4 Provider participants (number of participants, gender, clinical experience)
5 Provider credentials (physician, nurse, other: midwives, healthcare administrators, physiotherapists)
6 Pain assessment accuracy level (coded as poor, fair, moderate, good, or excellent according to the established guidelines[1])

[1] Cohen's classifications were used to categorize correlational effect sizes [92]. Values less than 0.10 were considered poor, 0.10–0.30 fair, 0.3–0.5 moderate, 0.50–0.75 good, and greater than 0.75 were considered excellent. Intraclass correlations were considered poor under 0.40, fair to good from 0.40 to 0.75, and excellent when greater than 0.75 [93]. In the categorization of the weighted Kappa coefficient, values under 0.20 were considered poor, 0.21–0.40 fair, 0.41–0.60 moderate, 0.61–0.80 good, and greater than 0.81 excellent, based on guidelines from Landis and Koch [94].

Please cite this article in press as: M.A. Ruben, et al., Healthcare providers' accuracy in assessing patients' pain: A systematic review, Patient Educ Couns (2015), http://dx.doi.org/10.1016/j.pec.2015.07.009