Exploring the utility of the Pain Attitudes and Beliefs Scale with general practitioners and physiotherapists in the context of osteoarthritis: a cross-sectional observational study

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Daniel William O'Brien dobrien@aut.ac.nz
Auckland University of Technology
Corresponding Author

Valerie Wright St Clair
Auckland University of Technology

Richard Siegert
Auckland University of Technology

Sandra Bassett
The Auckland University of Technology

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Abstract

Background

Conservative treatments for hip and knee joint osteoarthritis are underused despite the known benefits. Adherence to conservative treatments is poor and affected by people’s health, illness and treatment beliefs. Clinicians’ beliefs can also affect the advice and education given to patients. Few studies have explored general practitioners’ (GPs; primary care physicians) and physiotherapists’ osteoarthritis-related health, illness and treatment beliefs. In addition, limited questionnaires are available to explore this phenomenon. This study aimed to identify if GPs and physiotherapists had beliefs about osteoarthritis that fit better with biomedical or biopsychosocial models, and explore the utility of the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) adapted for osteoarthritis.

Methods

This study used a cross-sectional observational design. Data were collected anonymously from GPs and physiotherapists using an online survey. The survey included a study-specific demographic and occupational characteristics questionnaire and the PABS-PT questionnaire adapted for osteoarthritis. All data were analysed using descriptive statistics. PABS-PT data also underwent principal factor analysis.

Results

In total, 295 clinicians (87 GPs, 208 physiotherapists) participated in this study. The principal factor analysis identified two factors or subscales (biomedical and behavioural), with Cronbach’s alphas of 0.84 and 0.44, respectively. Participants scored higher on the behavioural (3.85) than the biomedical (2.78) beliefs subscale.

Conclusions

The results suggest clinicians’ osteoarthritis beliefs are broadly more behavioural
(biopsychosocial) than biomedical in orientation. However, the poor internal consistency of the behavioural subscale suggests the PABS-PT is not suitable for adaptation for osteoarthritis.

Introduction

Osteoarthritis is a chronic musculoskeletal condition that can affect a person’s physical, social and mental well-being (1). Hip and knee joint osteoarthritis are currently ranked the 11th highest contributor to disability worldwide (2). International evidence-based practice guidelines recommend that osteoarthritis treatment options progress from conservative interventions (e.g. dietary changes and exercise) to invasive treatments (e.g. joint replacement surgery) (3–6). Furthermore, treatment of osteoarthritis should be multifaceted and reflect the different ways the disease can affect the individual, including physically, socially and psychologically (7–9). A large component of the conservative management of osteoarthritis occurs in primary care; in New Zealand, this care is typically provided by physiotherapists and general practitioners (GPs), known elsewhere as primary care physicians (10).

Despite conservative treatments being considered the cornerstone of osteoarthritis management, research suggests conservative treatments for hip and knee joint osteoarthritis are underused (3,6,11–13). Additionally, adherence to conservative treatments is poor and known to be affected by people’s health, illness and treatment beliefs (14–16). Research among people with lower limb osteoarthritis linked patients’ beliefs and attitudes to treatment choices and outcomes (17–20). Patients often hold biomechanical or biomedical views of osteoarthritis, driven by a belief that the disease is primarily caused by joint wear and tear (21,22). This can lead to beliefs that conservative treatments lack efficacy and the only solution for osteoarthritis is total joint replacement (23). Clinicians’ beliefs and attitudes are known to affect the advice and education they
offer their patients (24). However, in contrast to patients’ beliefs about osteoarthritis, little is known about clinicians’ beliefs about the disease and its treatment (25–27). Health, illness and treatment belief models are commonly used in research to explore, explain and understand patients’ behaviours (28–30). Although clinician-focused health, illness and treatment belief models are not conventionally used in research, they are primarily used as frameworks to guide clinical practice in Western medicine (31). These frameworks are traditionally medically driven, with the most recognised being the biomedical and biopsychosocial models (32). Osteoarthritis treatment guidelines state that clinicians should use a biopsychosocial approach when treating people with osteoarthritis (9), but the extent to which clinicians’ beliefs about osteoarthritis match a biopsychosocial view of the disease remains unknown. Various studies that explored clinicians’ osteoarthritis treatment behaviours indicated that clinicians’ treatment decisions are generally consistent with best practice recommendations (33–36). However, it appears that no studies have explicitly explored clinicians’ osteoarthritis health, illness and treatment beliefs using a valid and reliable quantitative measure underpinned by a health beliefs model. The Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) is underpinned by the biomedical and biopsychosocial models, and was designed to explore clinicians’ beliefs about low back pain (LBP) (37). The PABS-PT has previously performed well in internal consistency, reliability and validity testing, and the scale has potential to be adapted for application in the osteoarthritis context (37–41). This study had two objectives. First, this study aimed to explore the utility of an adapted version of the PABS-PT in the context of osteoarthritis among GPs and physiotherapists. The second aim was to identify if GPs and physiotherapists had beliefs about osteoarthritis that fit better with either the biomedical or biopsychosocial models.
Methods

Study design

This cross-sectional observational study was part of a larger mixed methods project. Data were collected via online questionnaires. This paper presents data about the utility of the adapted PABS-PT (42) and clarified if clinicians’ views were oriented toward the biomedical or biopsychosocial model.

Participants

Clinicians were eligible to participate if they were registered and practicing in New Zealand as either a physiotherapist or GP, had treated a patient with hip and/or knee osteoarthritis in the past 6 months, were living in New Zealand at the time of data collection and had sufficient English language skills to complete the survey.

Measures/questionnaires

The survey comprised two sections: 1) demographic and occupational characteristics and 2) beliefs about the treatment of hip and/or knee joint osteoarthritis (adapted PABS-PT). Demographic and occupational characteristics data included participants’ sex, age, duration of practice and geographical location of practice. Items covering occupational characteristics also included questions about osteoarthritis-specific practice, such as: ‘In your current job, how many patients do you see in your clinic/department with hip or knee osteoarthritis?’ and ‘What are the criteria that you typically use to decide that a person has osteoarthritis of the hip and/or knee joint?’

The PABS-PT was originally designed to collect physiotherapists’ beliefs about the treatment of LBP (37). Since then, the measure has been adapted for use by both GPs and physiotherapists (38), including to measure beliefs about neck pain (41). The present study used the original version of the questionnaire, which comprises 20 items that are scored on a six-point Likert scale (totally disagree to totally agree) (37). The questionnaire
has a two-factor structure. One factor is labelled biomedical (14 items) and the other behavioural (6 items). For this study, the questionnaire was adapted so that any reference to LBP was replaced with ‘osteoarthritis’. Examples of items are: ‘Pain caused by osteoarthritis indicates the presence of organic injury’ and ‘The cause of osteoarthritic pain is unknown’.

Procedure

Before the survey was administered, all questions were tested for face validity and utility. Three researchers with experience in osteoarthritis research and survey design read the questionnaire and provided feedback about survey length, appropriateness for the New Zealand context and readability. The fully anonymised survey was advertised through several channels: physiotherapy continuing education courses; the Physiotherapy New Zealand Conference; Physiotherapy New Zealand and The Royal New Zealand College of General Practitioners e-newsletters; and the local primary healthcare organisation. Data were collected between 1 September and 1 December 2016 via SurveyMonkey (https://www.surveymonkey.com). Participants were required to read the online participant information sheet and respond to the items in the questionnaire. No identifying information was collected, and participants could not be identified or traced.

Data analysis

All data were analysed using SPSS version 24.0 (IBM, USA), with the alpha level set at $p < 0.05$. Missing data were limited by use of the online platform because participants were directed by automatic prompts to complete any missed item or question. Only complete data sets were analysed. It was not possible to calculate a total return rate for the survey as participants completed the study online, and it was unknown how many potential participants saw the study advertisement but chose not to participate.

Demographic and occupational characteristics
All data describing demographic and occupational characteristics were categorical. For each category, the total number of scores was described using descriptive statistics. Data from GPs and physiotherapists were presented together and separately to allow comparison between the two professions. Categories that represented a small number of participants were collapsed into a single category, called ‘Other’. Group equivalency between the two professions for demographic and occupational characteristics data were assessed with chi-square tests (43). The Yates correction for continuity was reported where data were represented as a two-by-two assessment (43).

Factor structure of the Adapted PABS-PT

Means and standard deviations were calculated to show the response distribution of the data for each item in the Adapted PABS-PT. The correlation matrix was then calculated and screened to ensure the presence of correlations of 0.3 or greater, and determine if the sample was suitable for principal component analysis. The data were subjected to the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett’s test of sphericity, and principal component extraction was performed. Consistent with the findings of Ostelo et al. (37), the criteria were limited to a two-factor solution and the eigenvalues for each factor were plotted. Varimax rotation was applied because it was expected that items would not be completely independent of each other. For clarity, factor loadings of 0.45 or lower were concealed. Next, each subscale (factor) was named, and its internal consistency examined by calculating the Cronbach’s alpha. Where appropriate, the names of subscales matched those proposed by Ostelo et al. (37). The subscale was described as having acceptable internal consistency when the included items made conceptual sense and had a Cronbach’s alpha ≥0.7. Finally, group mean scores and standard deviations were calculated for each subscale.

Ethical considerations
This study was granted ethical consent by the relevant Institutional Ethics Committee on 11 August 2016 (AUTEC: 16/284). Submission of a completed questionnaire was considered provision of consent to use the data for the purpose of this study.

Results

Demographic and occupational characteristics

In total, 295 clinicians (GPs $n = 87$; physiotherapists $n = 208$) participated in this study and completed the demographic and occupational characteristics section of the survey (Table 1). The dropout rate across the survey was 7.8%. Approximately 70% of participants were physiotherapists. More females than males completed the survey, irrespective of profession. The duration of practice ranged from less than 5 years to over 20 years in both professional groups. However, a significantly higher percentage of GPs had more than 20 years in practice compared with physiotherapists, and more physiotherapists than GPs had practiced for less than 5 years. A similar percentage of participants in each profession reported they had hip and/or knee osteoarthritis. Significantly more physiotherapists than GPs had completed some form of postgraduate training, and had completed pre-registration qualifications in New Zealand. Participants from both professions came from a range of geographical and employment settings. Significantly more GPs worked in private practice, whereas more physiotherapists worked in the public system. GPs saw significantly more people with hip and/or knee osteoarthritis more frequently than physiotherapists.

Factor structure

In total, 285 complete data sets were included in the factor analysis. Table 2 shows the individual item group mean and standard deviation scores. The mean score for most questionnaire items was between 2 and 5. The correlation matrix indicated the data were suitable for principal component analysis. The Kaiser-Meyer-Olkin measure of sampling
adequacy was 0.836, which was above the recommended value of 0.6, and Bartlett’s test of sphericity was significant ($c^2 (190) = 1173.26, p < 0.0001$). Principal component analysis supported the previously identified two-factor solution (37), with the rotated factors explaining 32.29% of the total variance. The item loading on the first component and the rotated individual item loadings are shown in Table 2. Two items with a value of 0.45 or greater did not load onto either factor (‘There is no effective treatment to eliminate pain caused by osteoarthritis’ and ‘A patient suffering from severe pain caused by osteoarthritis will benefit from physical exercise’). The Cronbach’s alpha for the entire scale was acceptable (0.75). The subscale mean scores, Cronbach’s alpha scores, eigenvalues and percentage variance explained are shown in Table 3.

**Discussion**

This study showed participants’ osteoarthritis beliefs appeared to be more behavioural (biopsychosocial) than biomedical in orientation. However, the findings indicated that the Adapted PABS-PT was not a reliable and valid measure of clinicians’ beliefs in the context of osteoarthritis. Beyond these two interpretations, some findings merit further discussion in the context of current literature.

The demographic and occupational results indicated the profiles of participating GPs and physiotherapists were similar to the wider population of clinicians currently working in New Zealand (44,45). Participants included clinicians with a range of different experience levels, frequency of treating people with hip or knee osteoarthritis, employment settings and geographical locations. However, considerably more physiotherapists participated in this study than GPs. Previous research has reported challenges in recruiting GPs for studies of this nature, citing causes for low research recruitment rates as survey fatigue and high workloads (46,47).
The Adapted PABS-PT subscale scores indicated that on average, participants had greater levels of agreement with items that related to a behavioural approach to healthcare, supporting the notion that participants tended to hold beliefs that were oriented towards a behavioural (biopsychosocial) approach to care. This finding supports previous research in the context of LBP and neck pain that found clinicians held more behaviourally-orientated than biomedically-orientated beliefs about treatment (38,40,48). Furthermore, the present findings indicated that participants’ beliefs were broadly consistent with current best practice recommendations, which advocate for a behavioural or biopsychosocial approach to the management of osteoarthritis (7,9,11,49,50).

The poor internal consistency of the behavioural subscale raised questions about the utility of the subscale and indicated the measure was unable to reliably assess the construct. This is not a new finding. While reports of the internal consistency (Cronbach’s alpha) of the biomedical subscale have been acceptable (ranging from 0.75–0.84), the behavioural subscale has been found to be less consistent, ranging from 0.54–0.73 (37,41). The poor internal consistency of the behavioural subscale may be attributable to three factors. First, the limited ability of the subscale items to fully explain the complexity of the construct. The subscale has been amended and modified by a number of authors to resolve this problem, but this remains an issue (38,40,51). This issue may be compounded by inconsistent interpretation of the behavioural items. Ip et al. (52) indicated that such problems could relate to differences in the belief anchors that link a belief to either the biomedical or biopsychosocial belief systems. Those authors explored health and illness beliefs among people with diabetes and found that biomedically-located anchors were reported more consistently than other anchors (52).

Second, continued issues with the internal consistency may relate to the complex nature of the behavioural (biopsychosocial) construct. When first proposed, the biopsychosocial
model of health comprised four components that were equally important for a person’s well-being: biological, psychological, social and cultural (32). The PABS-PT places biomedical beliefs in one subscale and behavioural beliefs (comprising psychological, social and cultural statements) in another subscale (37,38). It is argued that these three behavioural belief components represent very different aspects of a person’s well-being, and therefore cannot necessarily be grouped together as a single construct (53). Furthermore, the PABS-PT behavioural subscale typically comprises a small number of items (41). This limited number of items cannot convincingly explore such diverse and complex notions of well-being.

Third, the biomedical and biopsychosocial models cannot be conceptualised as independent. The biopsychosocial model of healthcare delivery was developed as an extension of the biomedical model, not as an independent model (32). Therefore, attempting to create a scale that places beliefs into one of two categories (biomedical or biopsychosocial) may be conceptually flawed, because the two categories are interdependent. The biomedical approach to healthcare is an important part of the biopsychosocial model. Consequently, attempting to differentiate biopsychosocial beliefs from biomedical beliefs may not be possible. Recently, Duncan et al. (53) used concept mapping to explore clinicians’ conceptualisation of the biopsychosocial approach in the context of musculoskeletal care. Those authors proposed a complex interpretation of the biopsychosocial model that included six primary domains: bio-clinical, therapeutic relationship, individual patient aspects, emotions, social and work (53). Other researchers have explored the complexity of how clinicians conceived their approach to clinical practice (54). Thomson et al. (54) proposed a more intricate conceptualisation of clinical practice than suggested by the biopsychosocial approach. They argued that clinicians’ conceptions of clinical practice are influenced by multiple factors, including their
educational experience, view of health and disease, the epistemology of practice knowledge in which they practice, the theory-practice relationship and their perceived therapeutic role (54). Moreover, clinical practice can be further affected by the therapeutic relationship, and whether the clinician employs a patient- or practitioner-centred approach to care (54).

This study suggested that a new condition-specific questionnaire is needed to assess clinicians’ osteoarthritis-related health, illness and treatment beliefs. However, attempting to explore clinicians’ health, illness and treatment beliefs may be beyond the scope of any questionnaire. This is because of the challenges of differentiating between clinicians’ health, illness and treatment beliefs and the influence of their clinical knowledge and practice environment. Therefore, future research should focus specifically on exploring treatment beliefs. The Treatment beliefs in OsteoArthritis questionnaire (TOA) is a new questionnaire designed to assess patients’ osteoarthritis treatment beliefs, and could easily be adapted for use with clinicians (55). The TOA assesses positive and negative treatment beliefs about five treatment modalities for hip and knee osteoarthritis. The internal consistency (Cronbach’s α 0.72–0.87) and test-retest reliability (intraclass correlation coefficient 0.66–0.88) of the TOA are satisfactory to good (55).

The present study had three strengths. First, the demographic and occupational characteristics indicated that participants were representative of the wider population of GPs and physiotherapists in New Zealand. Second, the sample size allowed for appropriate statistical analysis of the Adapted PABS-PT. Third, the online administration of the survey enabled wide dissemination. However, this study had four limitations. First, twice as many physiotherapists as GPs completed the survey; therefore, the findings may be biased towards physiotherapists’ beliefs. Second, the high survey dropout rate (7.8%) may reflect survey fatigue and indicate that the survey was too long for some participants. Third, the
results may be biased by participants inadvertently reporting socially desirable beliefs; therefore, the reported behaviours may not reflect actual clinical practice. Finally, the use of an online data collection method after broadly advertising the survey meant that a return rate could not be reported.

Conclusions

This study suggests that osteoarthritis beliefs among GPs and physiotherapists in New Zealand are broadly consistent with international best-practice recommendations. However, the Adapted PABS-PT may not be suitable for use with GPs and physiotherapists in the context of osteoarthritis and this finding should be considered with caution. The results highlight the need for development of a new condition-specific questionnaire that better explores clinicians’ beliefs about osteoarthritis.

List Of Abbreviations

GP: general practitioner (primary care physician)

LBP: low back pain

PABS-PT: Pain Attitudes and Beliefs Scale – Physical Therapy

TOA: Treatment beliefs in OsteoArthritis questionnaire

Declarations

Ethics and consent to participate: This study received ethical approval from Auckland University of Technology Ethics Committee (AUTEC#: 16/284).

Consent for publication: N/A.

Availability of data and material: The dataset used in the present study are available from the corresponding author on reasonable request.

Competing interests: The authors have no competing interest to declare.

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**Authors’ contributions:** DOB led study design, data collect, and analysis, and drafting of the manuscript. SB participated in the study design, data analysis and manuscript editing. RS participated in the study design and data analysis. VWSC participated in the study design and manuscript editing.

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Table 1.jpg
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