PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	A Qualitative Study Exploring the Factors Influencing Physical Therapy Management of Early Knee Osteoarthritis in Canada
AUTHORS	MacKay, Crystal; Hawker, Gillian; Jaglal, Susan

VERSION 1 – REVIEW

REVIEWER	Adalberto Loyola-Sanchez University of Calgary, Canada
REVIEW RETURNED	23-Apr-2018

GENERAL COMMENTS	This is a very interesting manuscript on the identification of barriers and facilitators to provide PT to early knee OA patients. The results of this manuscript, importantly contribute to the field of rheumatologic PT in Canada. I have some two minor comments that could facilitate readers' understanding of the findings: 1. Even though the personal characteristics of the interviewer are well described, I think that describing the interviewer's assumptions and interests in the field of study could help the reader understand more about what transpired during the interviews with participants. 2. The methodology described as "descriptive qualitative study design" is not common knowledge in qualitative methods. I recommend briefly describing what is meant by "descriptive" qualitative study design (provide reference if possible) and what is the connection of this with design and the theoretical framework chosen (TDF). Please consider and describe the main world view (i.e. constructivist, positivist, critical, etc.) accepted for the implementation of these methods.

REVIEWER	Axel Schäfer University of Applied Sciences and Arts, Hildesheim, Germany
REVIEW RETURNED	08-Jun-2018

GENERAL COMMENTS	A well written article, the topic is highly relevant. The methodological quality, thoroughness and in depth analysis of the material lead to substantial conclusions that are relevant to improve healthcare for patients with early knee arthrosis. One minor comment and some spelling suggestions can be found in the attached document.

	- The reviewer provided a marked copy with additional comments. Please contact the publisher for full details.

REVIEWER	Helen O'Leary Clinical Specialist Physiotherapist, University Hospital Kerry, Co. Kerry, Ireland
REVIEW RETURNED	10-Jun-2018

GENERAL COMMENTS	Interesting study presenting rich descriptive results and illustrative quotes. Findings are broad and not entirely clear how Results relate specifically to physical therapy management of 'early OA'. 1.While the authors acknowledge that there is no universally accepted definition it would be good to have more clarity around what the authors understand by 'early OA'. Does 'early' relate solely to patient symptoms and is evidence of OA on x-ray necessary? Where does this fit with middle aged patients presenting with degenerative meniscal tears +/- evidence of x-ray changes (degenerative knee disease). 2. There is an emphasis in the Introduction on quality indicators of OA management in the community/primary care setting, where early OA should be managed. Is recruitment though a physiotherapy orthopaedic association less likely to recruit primary care clinicians and more likely to include people with a specialist interest in osteoarthritis working in secondary care? Is is not clear what proportion are community/primary care physiotherapists? This info should be included in Table 1. Arguably more relevant for an international readership than geographical location 3. Methods-The authors refer to the Theoretical Domains Framework as a theory guiding this research. If the aim was to understand factors influencing clinician behaviour/management then the framework should be to analyse the data using the TDF and reflect some of the domains within the framework i.e. therapists knowledge, skills, belief about capabilities (the authors reference studies which adopt this approach). On the other hand if the focus is not on clinician behaviour and more concerned with contextual factors it is questionable if the TDF is relevant for this study? 5. Using patient vignettes participants were asked about their management of patient scenarios but this is not reflected in the findings. Is the management approach for early OA different to other knee OA patients'? If so how? (Refer to 'No' for No. 9 above checklist) 4. While the Results are wide ranging and broad, presenting a large amount of information, however as a consequence depth of analysis may be lacking. Giving the factors more context by using the TDF may have helped provide more focused Results. Furthermore much of the data presented in the Results applies to all OA presentations. Following on from this the Discussion is focused on generic OA management . From this Discussion and referenced literature it is not clear if early OA management needs any special consideration versus general OA. Could the authors highlight more clearly what insights this research brings to physical therapy management of early OA. (refers to 'No' for No. 9 on checklist)

	6. Discussion- The Discussion refers to misconceptions about OA and its prognosis. Large cohort studies indicate that OA has a persistent rather than progressive clinical course (Collins et al, 2014) and a significant proportion of people can have a mild non-progressive symptom trajectory (Nichollas et al, 2014). This evidence may be relevant to the paragraph of the Discussion and clients/clinicians beliefs about prognosis

VERSION 1 – AUTHOR RESPONSE

Reviewer 1 Comments.
Reviewer Name: Adalberto Loyola-Sanchez
Institution and Country: University of Calgary, Canada
Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below: This is a very interesting manuscript on the identification of barriers and facilitators to provide PT to early knee OA patients. The results of this manuscript, importantly contribute to the field of rheumatologic PT in Canada. I have some two minor comments that could facilitate readers' understanding of the findings:

1. Even though the personal characteristics of the interviewer are well described, I think that describing the interviewer's assumptions and interests in the field of study could help the reader understand more about what transpired during the interviews with participants.

Author Response:
To provide more context about the interviewer, a statement was added to the methods stating: "The interviewer was a PT who had worked in the field of arthritis research for several years and had a particular interest in OA".

Throughout the research process, the interviewer recognized her role as a co-producer of participants' accounts including how the questions and probes used in the interviews influenced what participants chose to speak about, what they avoided and how they presented themselves. She was aware that her clinical experience as a physical therapist and years of work in arthritis research sensitized her to recognize certain aspects of participants' accounts. To promote reflexivity, she wrote memos about developing themes and concepts and included reflections on the interviews in the field notes. To highlight this reflexivity, a statement was added in the analysis stating: "The documentation of reflections and thoughts related to interviews, interpretations of the data and developing concepts helped to promote reflexivity."

2. The methodology described as "descriptive qualitative study design" is not common knowledge in qualitative methods. I recommend briefly describing what is meant by "descriptive" qualitative study design (provide reference if possible) and what is the connection of this with design and the theoretical framework chosen (TDF). Please consider and describe the main world view (i.e. constructivist, positivist, critical, etc.) accepted for the implementation of these methods.

Author Response: *In response to the comments related to the study design and use of theory from yourself and Dr O'Leary, we have revised this section. To address your question related to study design, the paragraph now reads: "We conducted a qualitative descriptive study. Qualitative description is a qualitative method, which produces a comprehensive summary of a phenomenon in everyday terms, with analysis and interpretation of the findings remaining closer to the data. It draws on the tenets of naturalistic inquiry in which researchers study a phenomenon in a manner as free of artifice as possible, without any intervention or alteration by the researcher (Sandelowski 2000)."*

The Theoretical Domains Framework (TDF) was used in this study as it provides a theoretical lens to view possible influences on health professional behaviour (Atkins 2017). Since we were interested in the factors influencing management, including the perceived contextual factors (e.g. health system

factors), we used the TDF specifically to guide the interview questions/probes. The TDF helped us to tap into a comprehensive range of factors known to influence behaviour. In light of this, we removed the statements related to the TDF in the Study Design section and refer to the TDF under data collection since the primary role of the TDF was helping to develop interview questions/probes (see further details in response below).

Reviewer: 2
Reviewer Name: Axel Schäfer

Institution and Country: University of Applied Sciences and Arts, Hildesheim

Germany

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below A well written article, the topic is highly relevant. The methodological quality, thoroughness and in depth analysis of the material lead to substantial conclusions that are relevant to improve healthcare for patients with early knee arthrosis.

One minor comment and some spelling suggestions can be found in the attached document.

***Author Response**: All minor edits suggested in the PDF have been incorporated into the manuscript.*

Thank you for your comment asking for clarification on how the factor "access to other health care providers" was perceived to be a barrier. The comment prompted us to add a statement to clarify in which context this was perceived to be a barrier: "Access to other health care providers was only identified as a barrier if they were unable to help clients access support and services they perceived to be necessary. For example, some participants identified lack of access to physicians with expertise in OA as a barrier."

Reviewer: 3
Reviewer Name: Helen O'Leary

Institution and Country: Clinical Specialist Physiotherapist, University Hospital Kerry, Co. Kerry, Ireland

Please state any competing interests or state 'None declared': none declared

Please leave your comments for the authors below Interesting study presenting rich descriptive results and illustrative quotes. Findings are broad and not entirely clear how Results relate specifically to physical therapy management of 'early OA'.

1.While the authors acknowledge that there is no universally accepted definition it would be good to have more clarity around what the authors understand by 'early OA'. Does 'early' relate solely to patient symptoms and is evidence of OA on x-ray necessary? Where does this fit with middle aged patients presenting with degenerative meniscal tears +/- evidence of x-ray changes (degenerative knee disease).

***Author Response:** Thank you for the question. Given the lack of consensus on the definition of early OA, the intent of the authors was not to impose a specific definition on participants. Rather, early in the interview participants could describe their perception of early knee OA (though the focus of this manuscript is to describe the barriers and facilitators to management). Moreover, we included client vignettes in the interview (see supplementary file). The vignettes focused on client symptoms. The vignettes were developed using scientific literature, data from a qualitative study of people with mild-moderate knee symptoms and clinical input from PTs.*

2. There is an emphasis in the Introduction on quality indicators of OA management in the community/primary care setting, where early OA should be managed. Is recruitment though a physiotherapy orthopaedic association less likely to recruit primary care clinicians and more

likely to include people with a specialist interest in osteoarthritis working in secondary care? Is is not clear what proportion are community/primary care physiotherapists? This info should be included in Table 1. Arguably more relevant for an international readership than geographical location

Author Response: *All participants had to be working in community-based or outpatient settings in order to participate in the study. This was done to target participants working in primary health care. The final rows of the table give the number of participants in private practice versus publicly-funded settings. Twenty-four participants worked in private practice (private physiotherapy clinics in the community); clients can access these clinics directly from the community without referral or be referred by a physician, typically their primary care physician. The nine participants in publicly-funded settings worked in a mix of primary health care team settings or hospital outpatient departments. Only three participants who worked in hospital departments worked in teams that included specialists. More details have been added to the text to clarify the setting for an international audience: "Twenty-four participants worked in private practice in the community (clients were self-referred to their services or were referred by a physician, typically a primary care physician); nine participants worked in publicly funded settings, including primary health care teams and hospital outpatient departments."*

We would like to address your comment about who is more likely to be recruited through the Orthopaedic Division, Canadian Physiotherapy Association. The division focuses on advancing orthopaedic physiotherapy, including professional development. As such, we have revised the limitations section to indicate that the sample may not reflect the views of all PTs. The revision states: "Since participants were mainly recruited through a professional association specializing in orthopaedic physiotherapy and were an experienced sample, working an average of 21 years, it is possible that their perceptions may not reflect the perspectives of all PTs, particularly those in their early career."

3. Methods-The authors refer to the Theoretical Domains Framework as a theory guiding this research. If the aim was to understand factors influencing clinician behaviour/management then the framework should be to analyse the data using the TDF and reflect some of the domains within the framework i.e. therapists knowledge, skills, belief about capabilities (the authors reference studies which adopt this approach). On the other hand if the focus is not on clinician behaviour and more concerned with contextual factors it is questionable if the TDF is relevant for this study?

Author Response: *Thank you for the opportunity to clarify our use of the Theoretical Domains Framework (TDF). As mentioned in a prior response, we used the TDF specifically to guide the interview questions/probes. The TDF helped us to tap into a comprehensive range of factors known to influence behaviour. We inductively analyzed the data into themes to allow themes to emerge from the data. According to Atkins et al., studies using the TDF can analyse data deductively (e.g. generate a framework for a content analysis) and inductively, generating themes that can then be considered in relation to domains. In order to clarify how the TDF was used in this study, we removed the statements related to the TDF in the Study Design and added details about the TDF in the data collection section after stating the "The Theoretical Domains Framework (TDF) helped guide development of interview questions and probes."*

5. Using patient vignettes participants were asked about their management of patient scenarios but this is not reflected in the findings. Is the management approach for early OA different to other knee OA patients'? If so how? (Refer to 'No' for No. 9 above checklist)

Author Response: *You are correct that the participant's approach to management was part of the interview. However, there is too much information to report in one manuscript and the results of the analysis related to their approach to management is beyond the scope of this manuscript. Another manuscript is being prepared which focuses specifically on this question. Each of the manuscripts provides a unique contribution to the literature, with this manuscript focusing on the barriers and facilitators to management.*

4. While the Results are wide ranging and broad, presenting a large amount of information, however as a consequence depth of analysis may be lacking. Giving the factors more context by using the TDF may have helped provide more focused Results. Furthermore much of the

data presented in the Results applies to all OA presentations. Following on from this the Discussion is focused on generic OA management . From this Discussion and referenced literature it is not clear if early OA management needs any special consideration versus general OA. Could the authors highlight more clearly what insights this research brings to physical therapy management of early OA. (refers to 'No' for No. 9 on checklist)

Author Response: *Thank you for your comments. We agree that many of the factors that the participants indicated influenced management of early knee OA may be relevant to all OA (although understanding factors influencing management of all OA was beyond the scope of this study). However, we suggest that there are some factors that are particularly relevant for supporting management of early OA and these factors are the focus of the discussion. Revisions were made to state this more clearly in the manuscript and explain what insights we have learned from the study. For instance at the end of the first paragraph in the discussion, a statement was added: "While it is possible factors identified by participants may not only apply to early knee OA (i.e. apply to all OA), some of the factors are particularly relevant if we are to optimize PTs' management of early knee OA. These include timely access to physical therapy, physician messaging about OA and timeliness of referrals, physical therapists' beliefs about the consequences of OA, client beliefs and client engagement in management. As such, these factors are the focus of the discussion." Revisions were made to the subsequent paragraphs to emphasize the insights learned from this study that are critical to management of early knee OA. Since the body of literature on early OA is in its infancy, most of the research discussed in the manuscript relates to all OA. Where possible, studies related to early knee OA are highlighted.*

6. Discussion- The Discussion refers to misconceptions about OA and its prognosis. Large cohort studies indicate that OA has a persistent rather than progressive clinical course (Collins et al, 2014) and a significant proportion of people can have a mild non-progressive symptom trajectory (Nichollas et al, 2014). This evidence may be relevant to the paragraph of the Discussion and clients/clinicians beliefs about prognosis

Author Response: *Thank you for the suggestion. We have integrated this work into the discussion: "It is important to note that while participants believed management could improve symptoms of early knee OA, they often indicated that OA would progress with no treatment. Cohort studies have begun to challenge the assumption that OA is slowly progressive by showing that pain changes little over time in the majority of individuals (Collins 2014, Nicholls 2014). As evidence related to our understanding of early OA and the trajectory of OA accumulates, effective knowledge translation of the evidence to health care providers will be necessary."*

References:

Atkins A, Francis J, Islam R et al. A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science* 2017; 12:77

Collins JE, Katz JN, Dervan EE, Losina E. Trajectories and risk profiles of pain in persons with radiographic, symptomatic knee osteoarthritis: data from the osteoarthritis initiative. *Osteoarthritis Cartilage* 2014; 22(5):622-630.

Nicholls E, Thomas E, van der Windt DA, Croft PR, Peat G. Pain trajectory groups in persons with, or at high risk of, knee osteoarthritis: findings from the Knee Clinical Assessment Study and the Osteoarthritis Initiative. *Osteoarthritis Cartilage* 2014; 22(12):2041-2050.

Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health* 2000; 23(4):334-340.

VERSION 2 – REVIEW

REVIEWER	Adalberto Loyola Sanchez

	University of Alberta, Canada
REVIEW RETURNED	09-Aug-2018

GENERAL COMMENTS	I think the authors did a great job answering to reviewers' comments and suggestions. The quality of the manuscript has further improved. I am satisfied with the answers the authors' provided to my comments and suggestions.

REVIEWER	Axel Schäfer University of Applied Sciences and Arts, Hildesheim, Germany
REVIEW RETURNED	02-Aug-2018

GENERAL COMMENTS	In my view all relevant points were adressed adequately by the authors.