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Title:

A qualitative study exploring individuals with knee osteoarthritis' views on the role of physiotherapists in weight management: a complex issue requiring a sophisticated skill set

Running Title:

Weight loss in physiotherapy OA management

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Title:

A qualitative study exploring individuals with knee osteoarthritis' views on the role of physiotherapists in weight management: a complex issue requiring a sophisticated skill set

Abstract:

Objectives: To explore individuals with knee osteoarthritis (OA) attitudes towards the role of physiotherapists in weight management in knee OA.

Methods: A qualitative semi-structured telephone interview study. Participants included 13 purposively-sampled, individuals with symptomatic knee OA who were overweight or obese by body mass index. Each participated in a semi-structured telephone interview exploring their perspectives regarding the potential role of physiotherapists in weight management in knee OA. Data were transcribed and analyzed using a thematic approach.

Results: Three main themes were identified which highlighted that individuals with knee OA recognize that (1) weight management is complex, and subsequently (2) a special skill set is required by clinicians for weight management and expressed (3) ambivalence towards physiotherapists' role in weight management, with a focus on the role of exercise prescription.

Conclusions: Although participants were open to physiotherapists taking on a weight management role within a multidisciplinary team, they were uncertain about physiotherapists' skills and scope of practice to address this complex issue. The findings highlight the importance of physiotherapists' engaging in meaningful dialogues with patients to better understand their experiences, expectations and preferences to establish if, when and how patients to integrate weight management discussions in the treatment plan for their knee OA.

Key words:

Physiotherapy; weight management; scope of practice; qualitative; knee osteoarthritis

Introduction

Knee osteoarthritis (OA) is a leading cause of musculoskeletal pain and disability globally, for which there is currently no cure (Cross et al., 2014). Based on a growing body of evidence, international guidelines for OA advocate conservative treatment with exercise and, if relevant, weight-loss, as two key pillars of conservative management (McAlindon et al., 2014; Nelson, Allen, Golightly, Goode, & Jordan, 2014). However, achieving sustainable weight loss is highly difficult and complex at an individual level (Haynes, Kersbergen, Sutin, Daly, & Robinson, 2018; Morden, Jinks, & Ong, 2014), as is the provision of meaningful and appropriate weight loss support in contemporary healthcare practice (Allison, Setchell, Egerton, Delany, & Bennell, 2018). Weight loss support in knee OA extends beyond the simplicity of diet or exercise advice (Norris et al., 2005; Shaw, Gennat, O'Rourke, & Del Mar, 2006). It requires a biopsychosocial approach incorporating health behavior change skills (Brauer et al., 2015; Teixeira et al., 2015) and may involve input from many health disciplines.

Both physiotherapists and general practitioners (GPs) are heavily involved in knee OA management as primary contact practitioners due to their expertise in musculoskeletal disease. Physiotherapists spend more time with patients and have been at the forefront of the development of conservative interventions for knee OA (Bennell & Hinman, 2011). As a result, they are arguably well placed to communicate with, gain trust and support patients about the often complex issue of weight (Allison et al., 2018; Rea, Marshak, Neish, & Davis, 2004). A vital component of weight management, when included in healthcare therapy, is the

strength of the therapeutic relationship. How patients perceive (RM Puhl, Gold, Luedicke, & DePierre, 2013), and the extent to which they trust, their health care practitioner influences the degree to which patients adopt suggested healthy lifestyle behaviors (Berry et al., 2008; Jones, Carson, Bleich, & Cooper, 2012), and engage in weight loss attempts (Berry et al., 2008). In the broad sense, physiotherapists are seen to be trustworthy professionals (Bernhardsson, Larsson, Johansson, & Öberg, 2017), however there is little research exploring patient perceptions, or trust in the authority of, physiotherapists involvement in weight management. A single cross-sectional study reported that the majority of patients surveyed in outpatient clinics in the United States of America believed it appropriate for physiotherapists to incorporate weight management discussions in their treatment (Black, Ingman, & Janes, 2016). However, whether these attitudes are applicable to other sociocultural environments and injury states is not known. Qualitative research may provide additional rich data to help understand patient's attitudes, beliefs and perceptions.

Understanding patient perspectives regarding the role of weight loss in their OA management, and the role of physiotherapists in this possible component of their care is needed to create and deliver treatment paradigms that are acceptable to patients with knee OA and thus, more likely to be successful in managing the condition. This research aimed to explore patient perspectives regarding the role of physiotherapists in weight management in knee OA.

Methods

Design

As we were interested in the perspectives of people with knee OA, qualitative methodology was employed drawing from the paradigm of interpretivism. Interpretivism starts from the position that knowledge of reality and human action is a social construction, interpreted by the individual (Bunniss & Kelly, 2010). It encourages the researcher to develop empathic understanding and to see the world through the eyes of the participants to understand their perspectives. This theory was helpful to guide the methods of data collection and to focus on patients' perspectives regarding the role of physiotherapists in weight management. The study was formally approved by the institutional ethics board and all participants provided informed consent to participate.

Participants

Thirteen individuals with symptomatic knee OA were purposively recruited for diversity in age, gender and geographical location recruited through advertisements on the Research Centre's Facebook page and advertising flyers across the University, over a nine-week period. Inclusion criteria for diagnosis of knee OA were based on the National Institute for Health and Care Excellence (NICE) diagnostic criteria for clinical OA (Excellence, 2014) and included: (1) aged ≥ 45 years, (2) experiencing activity related knee joint pain, and (3) experiencing no morning knee-joint related stiffness or stiffness lasting < 30 minutes. Participants were blinded to the inclusion criterion of a body mass index (BMI) in the overweight or obese categories ($> 25 \text{ kg/m}^2$). Participants completed an online screening tool which included the NICE criteria (age, pain and stiffness symptoms), height and weight

(from which BMI was calculated). Twenty-nine completed the online screen, of which nine did not meet the inclusion criteria and seven did not return calls. The final sample size (n=13) was determined by iterative data analysis employing the principle of *relative* thematic saturation, where recruitment ended when there was sufficient repetition and richness of emergent themes relevant to the research topic, and no new topics arising (Bowen, 2008; Malterud, Siersma, & Guassora, 2016).

Interview Procedure

In accordance with an interpretivist paradigm, semi-structured interview guides were developed with open ended questions to explore participants' experiences of their knee OA and perspectives regarding the role of physiotherapists in knee OA and weight management (Appendix 1). Telephone interviews were used for convenience to enable recruitment from a broader geographic area, for patient comfort and to minimize any potential effect on data collection by the interviewer's weight (Wigginton & Setchell, 2016). Interviews were conducted by KA (a physiotherapist trained in conducting interviews) between August and October 2018 and lasted between 30 and 60 minutes. All interviews were audio-recorded and transcribed.

Data Analysis

Qualitative inductive thematic analysis of the data was performed (Braun & Clarke, 2006). Recruitment, data collection and analysis proceeded concurrently in order to facilitate a constant comparative approach in the thematic analysis and incrementally identify, synthesize and contrast ideas identified from the data (Braun & Clarke, 2006). Shortly after the

interview, transcripts were read by the interviewer (XX) and concurrently by a second researcher who had no contact with participants (TE). Both took notes regarding initial thematic impressions, after which themes were reviewed relative to the research questions. On second reading, topics relevant to the research question were categorized as subthemes and these subthemes grouped into preliminary themes (Morse & Field, 1995). XX and XX then met to discuss impressions for thematic coding until a first version of the themes were agreed. To enhance credibility and trustworthiness of the work, all subthemes and themes were reviewed and refined by two experienced qualitative researchers (XX and XX) an ethics professor, and a physiotherapist with a PhD in psychology, who confirmed the analysis was credible and themes rooted in the data. The researchers performing the analysis were cognisant of their own diverse personal professional viewpoints and experiences, some which would be considered as insider status with the physiotherapy community. Although these opinions and experiences could impact the analysis (Hiller & Vears, 2016), the authors were cognisant of the need to set aside their own views and focus on the exploration pertaining to the study aims. Any discrepancies or additional ideas were discussed to agreement and/or included in the findings. Final reviews were performed by two physiotherapists outside of XXXXX (XX,XX) and XX (a senior researcher in OA) who confirmed the findings.

Results

Participant characteristics are shown in **Table 1**. The age range was 54-71 years and the mean BMI 34.3kg/m². The sample comprised of slightly more women (60%) reflective of the increased incidence of knee OA in women (Heidari, 2011).

The analysis identified three major themes: (1) complexity of weight in knee OA; (2) special skill set required by clinicians for weight management and (3) ambivalence towards physiotherapist's role in weight management. Taken together, these themes suggest that patients had a sophisticated appreciation of the complex nature of weight and consequently expected health care practitioners to have a specialized skill that extended beyond those of a single practitioner. Physiotherapists were positioned within a hierarchical team for weight loss support, in which patients framed their expertise as primarily within exercise prescription. Themes are discussed below and summarized in **Table 2** with supporting subthemes and quotations (pseudonyms used).

Theme 1: Complexity of weight in knee OA

This theme emerged based on participants' discussion about the nature of weight loss in knee OA. There were two subthemes; 'weight management is complex' and 'influence of weight on knee OA'.

Weight management is complex

We use 'weight management is complex' to reflect how participants spoke about the personal and highly complex nature of weight loss, influenced by many factors including psychological, motivational and behavioral elements. Carla said, "For me it's emotional eating. I personally find that very challenging I guess because losing weight is so much up to the individual." and Paul, "People really need to be supported when they try to lose weight because the inner demon is probably the biggest saboteur of all". Meg commented: "You get

less fit [because I can do less], and then it gets harder. I'm in this vicious cycle. I can't get out of it to get more fit.”

Influence of weight on knee OA

Nearly all participants spoke about their understanding that weight was relevant to their knee OA. Some saw causal links, including Jack: “Well, logically it seems to me that if you are carrying a lot of weight you’re putting more pressure on all your joints, especially your knees”. Others recognized it might not be so simple, such as Susan: “I’m assuming I’m correct, that wear and tear on the joints by being overweight is going to make the situation worse. So, it’s one component of managing your arthritis. It’s not the whole box and dice, but it’s one element that needs to be looked at.” Adrian presented an alternative view: “I didn’t see a correlation between me losing weight and you know my limbs and joints, I didn’t see [that].”

Theme 2: Special skill set is required by clinicians for weight management

Related to the complexity of weight loss, another key theme was identified: the need for a healthcare practitioner with highly developed expertise to support weight loss. There were three associated subthemes: ‘additional expertise’, ‘personal rapport’ and ‘broad whole person treatment’

Additional expertise

This first subtheme ‘*additional expertise*’ emerged from the data representing participants’ views that for a physiotherapist to be involved in weight management, they would require additional knowledge or counseling skills. For example, Meg said “I’d [feel comfortable

discussing weight with a physiotherapist] if I thought it was somebody who had some experience - if they said, 'I do have some experience in this field, I've studied something'". Nearly all participants spoke of the need for counseling expertise, including Susan "The physio is going to spend half an hour to actually help that person, that one-to-one discussion – how did you get to this point? – that's a much more personal, much more emotional treatment".

Personal rapport

We use the term 'personal rapport' to reflect how participants emphasized the importance of the personal aspect of the therapeutic relationship, to form a foundation for engaging in weight management. For example, Carla said, "Having rapport with a therapist, that level of empathy and trust in the person, trust these are the big things". Some participants described their own experiences such as Rowena, "I've been to a physio once that I had no connection with. There was no sort of consultation, and I think you have to have a connection to have confidence in your practitioner." and Paul: "There's emotional support [my physiotherapist] seemed to give too. He connected with me a little bit, like treating me not just as a patient, like as a partner which I felt like [he was] trying to understand".

Broad whole person treatment

This third subtheme was frequent in the data. Almost all participants said they felt that for practitioners to be effective in addressing weight, they had to deliver patient-centered care that focused on the whole health profile unique to each individual and their beliefs, not centered on body weight. Tania offered "It's more about managing the [whole] body I think

with a lot of people, rather than talking about ‘you have to lose weight’ because weight will be difficult’. Rowena discussed “It should be a holistic approach. Some people would feel confident to go to their GP and discuss things, others perhaps would have a physio and go and discuss it with them. It’s a holistic approach to a person’s wellbeing”. The importance of actively engaging patients in their management was also discussed, such as Jack “If it was me I’d say “John, I’ve noticed the scales are going a bit higher now, what do you think has led to it? Can I help you?” Not “you need to lose weight””

Theme 3: Ambivalence towards physiotherapists’ role in weight management

There was a dominant theme in the data that patients were ambivalent about physiotherapists as sole providers of weight management treatment with four subthemes. Patients situated physiotherapists within a hierarchy of authority, whereby their role in weight management was ‘*part of a GP-led team*’, with a predominant ‘*exercise prescription role*’. This positioning was related in part to being ‘*unaware of physiotherapy scope of practice*’ and expressing ‘*uncertainty in the knowledge and skill set of physiotherapists*’.

Physiotherapists are part of a GP-led team

This first sub-theme represents comments about physiotherapists being part of a GP-led multidisciplinary team. For example, Louise discussed “I reckon the first person [to discuss weight] is your GP, cos he is the guy that can then refer you [to physiotherapy] or give you the advice of what to do about it”, and Belinda “I think working out that weight management is a team effort and putting together a support team for people who are really serious about managing their weight.” The limitations of GPs working alone were also highlighted. Meg

said, “I suppose in the first case, you always think the GP but they can't do it in the 10 minutes that they see you.”.

Physiotherapists have an exercise prescription role

This subtheme '*exercise prescription role*' emerged as a strong perception of the role of physiotherapists as exercise experts, with this being an opportunity for a role in weight management. Carla discussed “I would trust the physio implicitly [to prescribe exercise for weight loss], that they would have a much better understanding of what I could and couldn't achieve, what would be safe for me to do.” Similarly, Darren said “Maybe they would have a lot of insight and knowledge about how to avoid further damaging a joint that's under threat, or just exercising safely.” There was an appreciation of a broader role for physiotherapists by some participants such as Paul “I think you could talk to a physio [about weight] because they have a holistic approach.” While nearly all participants were open to physiotherapy involvement in exercise prescription for weight management, there was a counter-narrative from Louise, “Would I want to go to the physio every month even to talk about my weight? No, I wouldn't. Because I don't see the physio as being the prime support person for losing weight”.

Unaware of physiotherapy scope of practice

This third subtheme '*unaware of scope of practice*' represents participants' comments about their understanding of physiotherapy. For example, Rowena remarked “I've never thought of [physiotherapists] in any other regard than just like musculoskeletal, that's all I've ever thought of them to be there for. I don't know if that's derogatory or not, what other role

would they have within the general scope of health?” Similarly, Meg described: “This is where I struggle with physiotherapists. I really don’t know what they do. I mean if you have a bad back, you go along, and they do what they have to do - move things around.”

Uncertain confidence in the knowledge and skill set of physiotherapists

This third subtheme ‘*uncertain confidence in the knowledge and skill set of physiotherapists*’ reflects the uncertain and variable confidence in the competency of physiotherapists in weight management in OA. This was apparent in the comments of some participants regarding overall competence such as Meg “If you’ve got osteoarthritis in your knee, whether [physiotherapists] actually know what that means, I don’t know”. However, low confidence was more apparent in the perception of physiotherapists in weight management. For example, Darren said “I think physios aren’t seen as the same as doctors. If a doctor says to me “dude, you’re fat, you have to lose weight, you’re going to croak tomorrow”, “okay, I get it, I will”, but if a physio says it I probably might think “yeah, you’ve got a point but, he’s only a physio””. And Carla, “I’m open to [discussing weight with a physiotherapist], but [aside from them saying] “the weight is contributing here, have you thought about losing weight?, what have you done about it?” what else can they say to me?” One counter-narrative was offered by Belinda: “I see [physiotherapists] as far more qualified - their knowledge of the functions of body are much more profound and very clinical.”

Discussion

This qualitative study explored patient perspectives about the role of physiotherapists in the management of knee OA, and in particular, in weight management. Participants had a

sophisticated understanding of the complexity inherent in weight loss. They consequently believed that a specialized skill set, and strong therapeutic rapport was required to support weight management. As a result, there was some ambiguity and uncertainty about trusting one practitioner to address this complex issue and the perceived skills of physiotherapists in weight management. Although open to physiotherapists addressing weight, participants recognized the need for a skilled multidisciplinary team approach and situated physiotherapists within a treatment domain of exercise prescription. These findings provide important insights into patients' understanding of weight management associated with knee OA. They also suggest that if physiotherapists are to be involved in the complex area of weight management in a manner which is acceptable to patients, they must develop a strong therapeutic rapport; engage in patient centered dialogues to understand their patient's belief system and be prepared to discuss with patients any extended role a physiotherapist might wish to undertake.

Consistent with empirical evidence regarding the difficult and complex nature of sustainable weight loss (Norris et al., 2005; Shaw et al., 2006), this study highlighted patients' own personal appreciation of the complexity of weight loss. Such sophisticated perspectives of the multidimensional complexity surrounding weight have similarly have been widely described by women with rheumatoid arthritis who are overweight (Colligan, Galloway, & Lempp, 2017), and patients within the United Kingdom (UK) (Henderson, 2015) and the United States of America health care systems who are overweight or obese (Owen-Smith, Donovan, & Coast, 2014; R. M. Puhl, Himmelstein, Gorin, & Suh, 2017). Findings from a sample of patients with knee pain in the UK, highlight pain and life-long eating habits as particularly

relevant to the complexity of weight management (Morden et al., 2014). Consequently, and aligned with the perspectives of patients in this study, individuals who self-identify with overweight emphasize the need for psychological and emotional support from health care providers (Henderson, 2015; Rand et al., 2017) that extends beyond lifestyle advice. However, participants in this study were uncertain how this complex support would fit within the treatment paradigm for knee OA. The way they resolved this was to suggest that health care practitioners required highly developed communication skills and expertise, and that a multidisciplinary team approach was necessary to adequately address the multidimensional aspects of weight.

This study highlights the importance of communication skills and therapist investment in development of the therapeutic alliance, so patients feel comfortable contributing their own perspectives to the therapeutic encounter and engage in their OA management. Patients described the strength of therapeutic rapport as fundamental to their confidence to engage with a practitioner for weight loss support. It is well established that the strength of the therapeutic alliance is a predictor of health outcomes (Graves et al., 2017). In general, physiotherapists are viewed as having a good rapport with patients (Cooper, Delany, & Jenkins, 2016), however, weight is a particularly sensitive and complex issue and is not value neutral (Casazza et al., 2015). The attitudes, knowledge and language used by healthcare practitioners can inadvertently stigmatize patients (Rebecca M. Puhl & Heuer, 2010; Setchell, Watson, Gard, & Jones, 2016) at the detriment of the therapeutic alliance (Rebecca M. Puhl & Heuer, 2010). Research from the UK (Room, Worsley, Toye, & Barker) and Australia

(Allison et al., 2018) indicates some physiotherapists are cautious of addressing weight in knee OA due to fear of threatening rapport. Certainly in Australia, there is evidence of some physiotherapists exhibiting weight stigma (negative attitudes to people who are overweight) (Setchell, Watson, Jones, Gard, & Briffa, 2014) and of concern, patients have reported receiving such attitudes from physiotherapists (Setchell, Watson, Jones, & Gard, 2015) with implications for rapport. It is critical that for there to be an opportunity for physiotherapists to address weight in clinical practice, they must develop the skills to be able to address weight in a sensitive and constructive manner that strengthens the therapeutic rapport (Setchell et al., 2016), given that rapport influences motivation (R. Puhl, Peterson, & Luedicke, 2013), adherence to lifestyle change (Babatunde, MacDermid, & MacIntyre, 2017) and exercise (Wright, Galtieri, & Fell, 2014), which have been shown to predict short- (Alhassan, Kim, Bersamin, King, & Gardner, 2008) and long-term outcomes for weight loss (Del Corral, Bryan, Garvey, Gower, & Hunter, 2011). The core themes underpinning a strong therapeutic rapport are thought to include congruence (agreement on goals), connectedness (friendliness), communication, expectation and individualized therapy (Babatunde et al., 2017; McPherson, 2011), which mirror that of those identified by participants in the present study.

Relatedly, patients viewed the physiotherapists' role in knee OA management being situated within a GP-led healthcare team. GPs are often the first point of contact for people with musculoskeletal disease, however data from Australia shows that GPs give advice regarding weight loss in only 15% of knee OA patients (Brand et al., 2014), consistent with the low levels of obesity advice given by physicians internationally (Sturgiss, Elmitt, Haelser, van

Weel, & Douglas, 2018). In contrast, GP-referral to other health practitioners is the most frequent mode of nonpharmacological management (Brand et al., 2014). However, with respect to patient expectations of physiotherapy, there was a lack of awareness of the scope of physiotherapy practice. This affirms concerns of some Australian physiotherapists that patients with knee OA would not expect them to address weight which may influence their receptiveness (Allison et al., 2018). Nonetheless, the scope of healthcare has never been stagnant and evolves with society's public health needs. Over the past decade, leading physiotherapy bodies have advocated for physiotherapists to align with the World Health Organization's health priorities to address obesity (Dean, 2009; Dean et al., 2014; Dean et al., 2016). This study provides some insight to the nature in which physiotherapists can be involved in weight management in an acceptable manner to patients and highlights some of the potential barriers including patient perceptions of professional scope of practice and expertise. Undertaking additional weight management communication training may improve patient confidence in the authority of physiotherapists addressing weight management in their management of knee OA.

Several methodological factors should be considered when interpreting this study. Participants were from across Australia with exposure to the Australian health care system, therefore the findings may not be completely generalizable to other sociocultural environments. However, there are international similarities amongst the physiotherapy the profession (Higgs, 2001), as are patient experiences of overweight in healthcare settings (Setchell et al., 2015). Although we sought to sample purposively for diversity of age, gender

and geographical location, it is possible that we did not capture a sufficiently broad or rich variation in attitudes with respect to our research questions. We did not collect data on socioeconomic background or educational level which influences the generalizability of the results. With respect to credibility of the work, we developed a research team with a diverse and complimentary range of professional backgrounds and expertise (ethics, psychology, weight stigma, physiotherapy, OA) and included multiple reviewers at each stage of the data analysis, which was performed iteratively.

This research adds to a significant contemporary conversation about the role of weight management and physiotherapists (Dean, 2009; Dean et al., 2011; Dean et al., 2014; Dean et al., 2016) in knee OA, critically from the perspectives of individuals with knee OA. The complex nature of weight and the need for highly developed skills and rapport for a healthcare practitioner to provide optimal weight management support was emphasized. Although patients were open to physiotherapists taking on such a role, many viewed this role as being bounded to exercise prescription within a multidisciplinary team and were uncertain about physiotherapists' skills and scope of practice. The findings highlight the importance of physiotherapists' engaging in meaningful dialogues and therapeutic relationships with patients to better understand their experiences, expectations and preferences to establish if, when and how patients may be receptive to weight management discussions in the treatment plan for their knee OA.

References

- Alhassan, S., Kim, S., Bersamin, A., King, A. C., & Gardner, C. D. (2008). Dietary adherence and weight loss success among overweight women: results from the A TO Z weight loss study. *Int J Obes (Lond)*, *32*(6), 985-991. doi:10.1038/ijo.2008.8
- Allison, K., Setchell, J., Egerton, T., Delany, C., & Bennell, K. (2018). In theory yes, in practice uncertain: physical therapists' attitudes to their role in weight management for people with knee osteoarthritis. *Physical therapy*.
- Babatunde, F., MacDermid, J., & MacIntyre, N. (2017). Characteristics of therapeutic alliance in musculoskeletal physiotherapy and occupational therapy practice: a scoping review of the literature. *BMC health services research*, *17*(1), 375.
- Bennell, K. L., & Hinman, R. S. (2011). A review of the clinical evidence for exercise in osteoarthritis of the hip and knee. *Journal of Science and Medicine in Sport*, *14*(1), 4-9.
- Bernhardsson, S., Larsson, M. E. H., Johansson, K., & Öberg, B. (2017). "In the physio we trust": A qualitative study on patients' preferences for physiotherapy. *Physiotherapy Theory and Practice*, *33*(7), 535-549. doi:10.1080/09593985.2017.1328720
- Berry, L. L., Parish, J. T., Janakiraman, R., Ogburn-Russell, L., Couchman, G. R., Rayburn, W. L., & Grisel, J. (2008). Patients' Commitment to Their Primary Physician and Why It Matters. *Annals of Family Medicine*, *6*(1), 6-13. doi:10.1370/afm.757
- Black, B., Ingman, M., & Janes, J. (2016). Physical Therapists' Role in Health Promotion as Perceived by the Patient: A Descriptive Survey. *Physical therapy*, *96*(10), 1588.
- Bowen, G. (2008). Naturalistic inquiry and the saturation concept: a research note *Qualitative Research*, *8*(1), 137-152.
- Brand, C. A., Harrison, C., Tropea, J., Hinman, R. S., Britt, H., & Bennell, K. (2014). Management of osteoarthritis in general practice in Australia. *Arthritis care & research*, *66*(4), 551-558.
- Brauer, P., Connor Gorber, S., Shaw, E., Singh, H., Bell, N., Shane, A. R., . . . Tonelli, M. (2015). Recommendations for prevention of weight gain and use of behavioural and pharmacologic interventions to manage overweight and obesity in adults in primary care. *Cmaj*, *187*(3), 184-195. doi:10.1503/cmaj.140887
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101.
- Bunniss, S., & Kelly, D. R. (2010). Research paradigms in medical education research. *Medical education*, *44*(4), 358-366.
- Casazza, K., Brown, A., Astrup, A., Bertz, F., Baum, C., Brown, M. B., . . . Allison, D. B. (2015). Weighing the Evidence of Common Beliefs in Obesity Research. *Critical reviews in food science and nutrition*, *55*(14), 2014-2053. doi:10.1080/10408398.2014.922044
- Colligan, G., Galloway, J., & Lempp, H. (2017). Recipients' and providers' perspectives of obesity and potential barriers to weight management programmes in patients with Rheumatoid Arthritis (RA): a qualitative study. *BMC obesity*, *4*, 33. doi:10.1186/s40608-017-0169-x

- Cooper, I., Delany, C., & Jenkins, S. (2016). Comparing patients' and physiotherapists' views of professionalism and professional standing: an Australian perspective. *Physical Therapy Reviews*, 21(1), 38-73.
- Cross, M., Smith, E., Hoy, D., Nolte, S., Ackerman, I., Fransen, M., . . . Hill, C. L. (2014). The global burden of hip and knee osteoarthritis: estimates from the global burden of disease 2010 study. *Annals of the rheumatic diseases*, annrheumdis-2013-204763.
- Dean, E. (2009). Physical therapy in the 21st century (Part II): Evidence-based practice within the context of evidence-informed practice. *Physiotherapy Theory and Practice*, 25(5-6), 354-368.
- Dean, E., Al-Obaidi, S., De Andrade, A. D., Gosselink, R., Umerah, G., Al-Abdelwahab, S., . . . Butcher, S. (2011). The first physical therapy summit on global health: implications and recommendations for the 21st century. *Physiotherapy Theory and Practice*, 27(8), 531-547.
- Dean, E., Dornelas de Andrade, A., O'Donoghue, G., Skinner, M., Umereh, G., Beenen, P., . . . Footer, C. (2014). The Second Physical Therapy Summit on Global Health: developing an action plan to promote health in daily practice and reduce the burden of non-communicable diseases. *Physiotherapy Theory and Practice*, 30(4), 261-275.
- Dean, E., Greig, A., Murphy, S., Roots, R., Nembhard, N., Rankin, A., . . . Garland, S. J. (2016). Raising the priority of lifestyle-related noncommunicable diseases in physical therapy curricula. *Physical therapy*, 96(7), 940-948.
- Del Corral, P., Bryan, D. R., Garvey, W. T., Gower, B. A., & Hunter, G. R. (2011). Dietary adherence during weight loss predicts weight regain. *Obesity (Silver Spring)*, 19(6), 1177-1181. doi:10.1038/oby.2010.298
- Excellence, N. I. f. C. (2014). *Osteoarthritis - Care and Management in Adults, Clinical Guidelines CG177*. London.
- Graves, T. A., Tabri, N., Thompson-Brenner, H., Franko, D. L., Eddy, K. T., Bourion-Bedes, S., . . . Forsberg, S. (2017). A meta-analysis of the relation between therapeutic alliance and treatment outcome in eating disorders. *International Journal of Eating Disorders*.
- Haynes, A., Kersbergen, I., Sutin, A., Daly, M., & Robinson, E. (2018). A systematic review of the relationship between weight status perceptions and weight loss attempts, strategies, behaviours and outcomes. *Obes Rev*, 19(3), 347-363. doi:10.1111/obr.12634
- Heidari, B. (2011). Knee osteoarthritis prevalence, risk factors, pathogenesis and features: Part I. *Caspian Journal of Internal Medicine*, 2(2), 205-212.
- Henderson, E. (2015). Obesity in primary care: a qualitative synthesis of patient and practitioner perspectives on roles and responsibilities. *The British Journal of General Practice*, 65(633), e240-e247. doi:10.3399/bjgp15X684397
- Higgs, K. R., Elizabeth Ellis, Joy. (2001). Portrait of the physiotherapy profession. *J Interprof Care*, 15(1), 79-89.

- Hiller, A. J., & Vears, D. F. (2016). Reflexivity and the clinician-researcher: managing participant misconceptions. *Qualitative Research Journal*, *16*(1), 13-25.
- Jones, D. E., Carson, K. A., Bleich, S. N., & Cooper, L. A. (2012). Patient Trust in Physicians and Adoption of Lifestyle Behaviors to Control High Blood Pressure. *Patient Educ Couns*, *89*(1), 57-62. doi:10.1016/j.pec.2012.06.003
- Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: guided by information power. *Qualitative health research*, *26*(13), 1753-1760.
- McAlindon, T. E., Bannuru, R. R., Sullivan, M., Arden, N., Berenbaum, F., Bierma-Zeinstra, S., . . . Kawaguchi, H. (2014). OARSI guidelines for the non-surgical management of knee osteoarthritis. *Osteoarthritis and cartilage*, *22*(3), 363-388.
- McPherson, K. M. (2011). Assessing therapeutic relationships in physiotherapy: literature review. *New Zealand Journal of Physiotherapy*, *39*(2), 81.
- Morden, A., Jinks, C., & Ong, B. N. (2014). '... I've Found Once the Weight Had Gone Off, I've Had a Few Twinges, But Nothing Like Before'. Exploring Weight and Self-Management of Knee Pain. *Musculoskeletal care*, *12*(2), 63-73.
- Morse, J., & Field, P. (1995). *Qualitative research methods for health professionals* (2nd edition ed.). California: Sage Publications.
- Nelson, A. E., Allen, K. D., Golightly, Y. M., Goode, A. P., & Jordan, J. M. (2014). A systematic review of recommendations and guidelines for the management of osteoarthritis: The Chronic Osteoarthritis Management Initiative of the US Bone and Joint Initiative. *Semin Arthritis Rheum*, *43*(6), 701-712.
- Norris, S. L., Zhang, X., Avenell, A., Gregg, E., Schmid, C. H., & Lau, J. (2005). Long-term non-pharmacological weight loss interventions for adults with prediabetes. *The Cochrane Library*.
- Owen-Smith, A., Donovan, J., & Coast, J. (2014). "Vicious Circles": The Development of Morbid Obesity. *Qualitative health research*, *24*(9), 1212-1220. doi:10.1177/1049732314544908
- Puhl, R., Gold, J., Luedicke, J., & DePierre, J. (2013). The effect of physicians' body weight on patient attitudes: implications for physician selection, trust and adherence to medical advice. *International journal of obesity*, *37*(11), 1415.
- Puhl, R., Peterson, J. L., & Luedicke, J. (2013). Motivating or stigmatizing? Public perceptions of weight-related language used by health providers. *Int J Obes (Lond)*, *37*(4), 612-619. doi:10.1038/ijo.2012.110
- Puhl, R. M., & Heuer, C. A. (2010). Obesity Stigma: Important Considerations for Public Health. *American Journal of Public Health*, *100*(6), 1019-1028. doi:10.2105/AJPH.2009.159491
- Puhl, R. M., Himmelstein, M. S., Gorin, A. A., & Suh, Y. J. (2017). Missing the target: including perspectives of women with overweight and obesity to inform stigma-reduction strategies. *Obesity Science & Practice*, *3*(1), 25-35. doi:10.1002/osp4.101

- Rand, K., Vallis, M., Aston, M., Price, S., Piccinini-Vallis, H., Rehman, L., & Kirk, S. F. L. (2017). "It is not the diet; it is the mental part we need help with." A multilevel analysis of psychological, emotional, and social well-being in obesity. *International Journal of Qualitative Studies on Health and Well-being*, *12*(1), 1306421. doi:10.1080/17482631.2017.1306421
- Rea, B. L., Marshak, H. H., Neish, C., & Davis, N. (2004). The role of health promotion in physical therapy in California, New York, and Tennessee. *Physical therapy*, *84*(6), 510-523.
- Room, J., Worsley, P., Toye, F., & Barker, K. What are the perceived barriers and facilitators to physiotherapists providing lifestyle advice for obesity during treatment for knee osteoarthritis? *Physiotherapy*, *102*, e75-e76. doi:10.1016/j.physio.2016.10.071
- Setchell, J., Watson, B., Jones, L., & Gard, M. (2015). Weight stigma in physiotherapy practice: patient perceptions of interactions with physiotherapists. *Manual therapy*, *20*(6), 835-841.
- Setchell, J., Watson, B., Jones, L., Gard, M., & Briffa, K. (2014). Physiotherapists demonstrate weight stigma: a cross-sectional survey of Australian physiotherapists. *Journal of physiotherapy*, *60*(3), 157-162.
- Setchell, J., Watson, B. M., Gard, M., & Jones, L. (2016). Physical Therapists' Ways of Talking About Overweight and Obesity: Clinical Implications. *Physical therapy*, *96*(6), 865-875.
- Shaw, K. A., Gennat, H. C., O'Rourke, P., & Del Mar, C. (2006). Exercise for overweight or obesity. *The Cochrane Library*.
- Sturgiss, E. A., Elmitt, N., Haelser, E., van Weel, C., & Douglas, K. A. (2018). Role of the family doctor in the management of adults with obesity: a scoping review. *BMJ Open*, *8*(2), e019367. doi:10.1136/bmjopen-2017-019367
- Teixeira, P. J., Carraca, E. V., Marques, M. M., Rutter, H., Oppert, J. M., De Bourdeaudhuij, I., . . . Brug, J. (2015). Successful behavior change in obesity interventions in adults: a systematic review of self-regulation mediators. *BMC Med*, *13*, 84. doi:10.1186/s12916-015-0323-6
- Wigginton, B., & Setchell, J. (2016). Researching stigma as an outsider: considerations for qualitative outsider research. *Qualitative Research in Psychology*, *13*(3), 246-263. doi:10.1080/14780887.2016.1183065
- Wright, B. J., Galtieri, N. J., & Fell, M. (2014). Non-adherence to prescribed home rehabilitation exercises for musculoskeletal injuries: the role of the patient-practitioner relationship. *Journal of rehabilitation medicine*, *46*(2), 153-158.

Table 1. Participant pseudonyms

Participant pseudonym	Age	Sex	Body Mass Index (kg/m²)	Location	Previous experience with physiotherapy
Meg	62	Female	43.0	Metropolitan	Private practice for clinical pilates for knee OA
Jack	52	Male	44.9	Metropolitan	Hospital inpatient
Susan	50	Female	39.7	Regional	Sports team physiotherapist
Rose	61	Female	29.2	Metropolitan	Never been to a physiotherapist
Darren	54	Male	28.8	Metropolitan	Private practice for knee OA
Tania	76	Female	39.8	Regional	Never been to a physiotherapist
Belinda	55	Female	29.4	Regional	Private practice for knee OA
Paul	60	Male	35.3	Regional	Private practice for shoulder pain
Ben	57	Male	30.2	Metropolitan	Private practice for low back pain
Carla	71	Female	37.1	Metropolitan	Private practice for knee OA
Rowena	71	Female	33.9	Regional	Hospital inpatient and private practice post-surgery (TKR)
Louise	52	Female	27.8	Regional	Never been to a physiotherapist (daughter currently studying)
Adrian	65	Male	26.8	Metropolitan	Hospital inpatient and private practice post-surgery (THR)

TKR = total knee replacement; THR = total hip replacement

Table 2. Themes and associated subthemes (codes) with representative participant quotes (pseudonyms used).

Themes	Associated subthemes	Example supporting quotations
1. Complexity of weight in knee OA	Complex nature of weight Influence of weight on knee OA	Belinda [#] “I mean if we didn’t have psychological issues and all those sorts of things we’d all be perfect. You know we’d all be eating well, we’d all be exercising and sleeping and doing all those things absolutely perfectly. So, the fact that we aren’t means there’s other things going on” Paul “A relationship between weight [and knee OA] just makes sense, I’m a technician now, it just makes sense the less stress on any part you have less weight. They do it in cars, have less weight, they can go fast but on your body, the less weight, the less pressure.”
2. Special skill set required by clinicians for weight management	Additional expertise Personal rapport Broad whole person treatment	Meg “If I thought it was somebody who had some experience - if that person said ‘I do have some experience in this field, I’ve studied something’. But the general one [health care practitioner], I just don’t know.” Rowena “I think it’s all of the above [human connection or knowledge]. I mean you can go to a person who’s absolutely awful, who’s got the knowledge but you don’t feel comfortable talking to them. And so I think their knowledge and your connection it’s all part of the same thing.” Meg “I think for me, it’s more about trying to find somebody who can help me live a normal life. The weight loss may come with that.”
3. Ambivalence towards physiotherapist’s role in weight	Physiotherapists are part of a GP-led team Physiotherapists have an exercise role	Susan “Well, see, after you’ve seen the GP [¥] and been told we need to diagnose this, yes, you’ve got osteoarthritis, if you’re lucky enough to get on the healthcare plan, your next person is the person that’s going to give you an option of exercise or treatment, aren’t they, so that next referral, the physio*, should be backing up the GP.” Carla “So I would trust the physio implicitly [to prescribe exercise for weight loss], that they would have a much better understanding of what I could achieve and what I couldn’t achieve, what would be safe for me to do.”

management	Unaware of physiotherapy scope of practice	Rowena “I’ve never thought of them [physiotherapists] in any other regard than just like musculoskeletal, that’s all I’ve ever thought of them to be there for. I don’t know if that’s derogatory or not, but that’s just... What other role would they have within the general scope of health?”
	Uncertain confidence in the knowledge and skill set of physiotherapists	Jack “I think physios* aren’t seen as the same as doctors. I know that sounds really lame, but if a doctor says to me “dude, you’re fat, you have to lose weight, you’re going to croak tomorrow”, “oh yeah, okay, I get it, I will”, but if a physio says it I probably might think “yeah, you’ve got a point but, he’s only a physio”.”

[#]All names used here are pseudonyms. [¥] GP = general practitioner. Primary care physicians are referred to as general practitioners in the Australian health care setting. ^{*} Physiotherapists are referred to as physiotherapists, or colloquially “physios”, in the Australian health care set

Appendix 1. Semi-structured interview Guide (provided here for ease of review but is supplementary material)

Introduction/preparation for participant

Thank you very much for your time and helping us with this research project. Our discussion is going to be audio-recorded today. We are running this study to ensure that patients with osteoarthritis receive the best health care management from physiotherapists. We know from evidence that in some people weight loss may be effective in reducing symptoms in osteoarthritis. We are aware that some of the topics we are discussing today may be sensitive for some people so if at any stage you aren't comfortable or don't want to answer any of the questions please just let me know and it is not a problem, because anything you can discuss with us today will help us better understand how physiotherapists can be more effective managing patients with osteoarthritis.

Openers

1. Have you ever been to a physiotherapist before for your knee osteoarthritis?

(If yes), Can you describe your experience attending physiotherapy?

What did they focus on in your treatment?

Additional questions to explore:

What did your physiotherapy treatment involve?

How long did you see the physiotherapist for?

(If no), can you tell me a little a bit about how you manage your knee pain?

Can you tell me a little bit about your understanding of what a physiotherapist does or can do to help people with knee OA?

Do you think that physiotherapists have a role in any other aspects of your health?

In your understanding, what do you think are the factors or the reasons why people develop knee OA?

What do you feel are the factors that are particularly relevant to you and your knee OA?

Introduction and exploration of weight management

We are discussing some of the potential areas as treatment options for osteoarthritis.

2. In your experience or opinion, how relevant or important do you think that weight loss is in the management of osteoarthritis?

3. There is some research that shows that in some people losing 5% of body weight can reduce pain and symptoms in those with osteoarthritis. Whether this is your own experience or your opinion, what do you think might be some of the barriers that could make it difficult for patients with knee osteoarthritis to lose weight?
4. What do you think could potentially make it easier for someone with osteoarthritis to lose weight?

Exploration of preferences for health care practitioner roles

Next we would like to talk about health care practitioners and their role in discussing weight in their consultations and giving weight loss advice.

5. Whose responsibility (or which health care practitioner) do you think it is to discuss weight management with patients with knee osteoarthritis?
- Who, out of all of your health care practitioners, would you feel most comfortable discussing weight with?
 - Weight can be a difficult topic to discuss, are there any ways that a health care practitioner could have a discussion about weight that would make this easier?

We are interested in discussing health care practitioners not just how they discuss weight with patients but how they can actively support patients to lose weight by delivering programs and intervention.

6. Whose responsibility (or which health care practitioner) do you think it is to work with and help patients with osteoarthritis lose weight?

Exploration of attitudes and barriers and facilitators to physiotherapists being involved in weight management in osteoarthritis

We are particularly interested in the role of physiotherapists in weight management for osteoarthritis.

7. How would you feel about discussing weight with a physiotherapist?
8. Can you see any advantages or disadvantages of receiving support from a physiotherapist to help you lose weight by working with you on dietary advice as well as exercise?
- If you were involved in a physiotherapy program to lose weight, what are your thoughts on doing this in a group situation? Or in a one-on-one situation?
9. If physiotherapists had programs to work with patients to support them to lose weight, what do you think some of the barriers might be to people with osteoarthritis going to a physiotherapist for weight management?

10. What do you think might help people with osteoarthritis engage with physiotherapy programs for weight loss?

11. Have you had any experience with weight being addressed in your physiotherapy management for your knee osteoarthritis?

Additional questions to explore:

How did the physiotherapist address weight with you?

Were you comfortable with the physiotherapist therapist discussing weight in your management?

What was most helpful or conducive about the way the physiotherapist discussed weight with you? *or* What was it about the way that the physiotherapist discussed weight with you that was not helpful?

Wrap up

12. Is there anything else you can think of or would like to add that you feel that the health care system could offer that would help patients with osteoarthritis who are overweight lose weight?

13. After everything we have talked about what do you think are the three most important things you told me today?

