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Title: Patient experiences with physiotherapy for knee osteoarthritis in Australia – a qualitative study

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Abstract

Objective: Physiotherapists commonly provide non-surgical care for people with knee osteoarthritis (OA). This study aimed to explore the experiences of people who had recently received physiotherapy care for their knee OA in Australia.

Design: Qualitative study using semi-structured individual telephone interviews and thematic analysis. Questions were informed by seven quality statements of the Australian government's OA of the Knee Clinical Care Standard.

Setting: Participants were recruited from around Australia via Facebook and our research volunteer database.

Participants: Interviews were conducted with a sample of twenty-four people with recent experience (prior six months) receiving physiotherapy care for their knee OA in Australia. They were required to be aged 45 years or above, had activity-related knee pain and any knee-related morning stiffness lasted no longer than 30 minutes. Participants were excluded if they had self-reported inflammatory arthritis and/or had undergone knee replacement surgery for the affected knee.

Results: Six themes emerged. 1) Participants arrived at physiotherapists with a pre-existing OA diagnosis and were comfortable with their established knowledge about OA; 2) Physiotherapy was accessed through various referral pathways, funding models and modes of delivery; 3) Physiotherapy care was sought for various reasons but commonly knee pain and functional impairments; 4) Physiotherapy care focussed on function and exercise and often involved adjunctive treatments but advice about surgery, medications and injections were perceived as beyond physiotherapists' scope of care; 5) Participants were happy and satisfied with their

physiotherapy experiences, describing trust and/or confidence in their physiotherapists and valuing personalised care; 6) Participants believed surgery was inevitable for their knee OA.

Conclusion: These results provide evidence from the patients' perspectives about the important role physiotherapists play in the care of Australians with knee OA. Improved funding models and pathways for accessing physiotherapy care appear to be needed.

Strengths and limitations of this study

- Qualitative research was used to explore the experiences of people receiving physiotherapy care for knee OA in Australia.
- A range of participants was interviewed, including males and females of differing age, occupational status, and geographical location across Australia.
- Participants responded to advertisements and/or email invitations to participate and thus our sample may be biased towards those who had favourable experiences with physiotherapy and/or were successful at accessing physiotherapy.
- Our sample was constrained to participants who could speak English so may not represent the experiences of people from culturally and linguistically diverse backgrounds.
- Physiotherapists are a primary contact health profession in Australia so patient experiences with physiotherapy care for knee OA may be different in other countries where people can only access a physiotherapist on referral.

Knee osteoarthritis (OA) is highly prevalent and a leading cause of pain and disability worldwide. (1) Clinical guidelines advocate non-surgical interventions such as exercise, weight loss (for people who are overweight or obese) and education regarding self-management as first line treatments for knee OA,(1-3) Physiotherapists are important providers of non-surgical care for people with knee OA and receive more OA referrals from general practitioners than other allied health providers.(4) In addition, patients generally perceive physiotherapists to be important to assist them in managing their OA and prescribing exercises.(5, 6)

Currently, very little is known about the experiences of people receiving physiotherapy care for their knee OA. Although two recent qualitative studies were conducted in Canada (7) and Australia (8) to explore physiotherapy management of people with knee OA, both focused on the perspectives of physiotherapists. A small qualitative study in Belgium broadly explored patient experiences with current care received for knee OA,(9) however this study was focussed on barriers and facilitators to clinical guideline adherence and did not specifically explore physiotherapy care. Further, a systematic review of qualitative studies explored the experiences of living with knee OA from patient and carer perspectives.(10) Amongst a range of findings, that review found that people with knee OA described positive and negative interactions with health professionals. Patients who had positive experiences valued being listened to, being provided with hope for the future and being provided with strategies such as weight loss advice and exercise to manage their condition. Conversely, those who had negative experiences described not receiving enough information regarding their conditions or the management options available. They also struggled to understand the information provided to them and felt they were not being listened to or given enough attention during consultations. Although that review provides useful information

about the factors that influence patient experiences with health care providers, it did not explore specifically experiences with physiotherapy care.

Thus, the purpose of this qualitative study was to explore the experiences of people who had recently received physiotherapy care for their knee OA in Australia. Such information will help enhance our understanding of patient expectations about physiotherapy care for their condition and may help inform strategies to improve future care and service delivery.

Method

Design

This qualitative study was based on a constructivist paradigm, where knowledge is built through active experience and interpretation.(11) The Consolidated Criteria for Reporting Qualitative Research checklist was used to ensure explicit and comprehensive reporting of this study.(12)

Patient and public involvement

Patients or the public were not actively involved in the design, conduct, reporting or dissemination plans of our research.

Participants

People who had sought physiotherapy care to manage their knee OA were recruited from around Australia via Facebook and our research volunteer database. Inclusion criteria for participants were: i) met the National Institute for Health and Care Excellence OA clinical criteria (1) (aged 45 years or above, had activity-related knee pain and any knee-related morning stiffness lasted no longer than 30 minutes); and ii) consulted a physiotherapist about their knee OA in the prior 6 months. Participants were excluded if they had self-reported inflammatory arthritis and/or had

undergone knee replacement surgery for the affected knee. The final sample size was determined by the principles of data saturation, this being when no new themes emerged from the data.(13) Participants provided written informed consent and ethical approval was granted by the School of Health Sciences Human Ethics Advisory Group, University of Melbourne.

Interviews

Semi-structured interview guides (Table 1) were developed, informed by the quality statements of the Australian Government's OA of the Knee Clinical Care Standard.(14) It defines seven domains of care that people with knee OA should expect to receive, regardless of where they are treated in Australia, spanning comprehensive assessment, diagnosis, education and self-management, weight loss and exercise, medications, regular review and surgical options for people with knee OA. Participants were reimbursed for their time with a $50 gift card.

Table 1: Semi-structured interview guide.

Topic	Question
Introduction	1) Can you tell me about your experiences attending physiotherapy for your knee osteoarthritis? ○ *What prompted you to seek physiotherapy care?* *2)* Can you tell me, where did you see the physiotherapist(s)? ○ *How did you end up seeing a physiotherapist?*
Comprehensive assessment	3) Can you tell me how the physiotherapist assessed you and your knee problem? ○ *What sort of questions did the physiotherapist ask you?* ○ *What sort of physical examination did the physiotherapist do?* ○ *What other health conditions or social factors that might affect how you manage your knee pain (for example, changing work) did the physiotherapist assess?* ○ *What sort of questionnaire, survey or form did the physiotherapist ask you to complete?* 4) What was the main problem you were seeing the physiotherapist for? ○ *How well did the physiotherapist understand the main problems you were experiencing for your knee?*
Diagnosis	5) How did the physiotherapist decide that you have knee osteoarthritis? ○ *What sort of tests or scans did the physiotherapist order for your knee osteoarthritis?* ○ *How did the physiotherapist explain/help you to understand your diagnosis?*
Education & self-management	6) What sort of treatments did the physiotherapist give you for your knee osteoarthritis? ○ *Can you tell me if the physiotherapist provided you with any hands-on treatment or used any machine/device on your knee?*

	○ *Can you tell me if the physiotherapist advised you on the use of knee brace, walking aid or taping for your knee problem?*
	7) Can you tell me what you remember about any information/advice you received from the physiotherapist for your knee osteoarthritis?
Weight loss & exercise	8) What exercise did the physiotherapist suggest you try? ○ *How did the physiotherapist consider your needs and preferences when deciding on the best exercise program for you?* 9) Could you tell me if weight is an issue for you? If so, what weight loss treatment did the physiotherapist suggest you try? 10) Can you tell me if the physiotherapist discussed with you the importance of maintaining healthy body weight for your knee osteoarthritis?
Medications	11) Can you tell me if you are taking any medications to manage your knee osteoarthritis? ○ *Can you tell me if you asked the physiotherapist ways to manage your medications?* ○ *Is there a reason why you didn't ask the physiotherapist about medications for your knee?* 12) What information/advice did the physiotherapist provide about medicines/drugs for your knee osteoarthritis? ○ *Can you tell me if the physiotherapist spoke about any injection you could get for your knee?*
Patient review	13) Can you tell me how often you saw the physiotherapist for your knee problems? ○ *How many times did you see the physiotherapist for you knee?* ○ *How frequently do you see the physiotherapist now?* ○ *What did the physiotherapist advise you to do if your problems get worse?* 14) Which other health professional did the physiotherapist recommend you see for your knee problem? ○ *How did you go with the recommendation?*
Surgery	15) Can you tell me if you have considered any sort of surgery for your knee osteoarthritis? ○ *Can you tell me if the physiotherapist asked you about your thoughts of having any knee surgery?* 16) What information/advice did the physiotherapist provide about surgical treatments for your knee osteoarthritis?
Concluding remarks	17) Is there any other aspect about your physiotherapy care you would like to discuss? 18) Do you have anything else to add?

Individual interviews were conducted via telephone by PLT, a female graduate research student and physiotherapist trained in qualitative methodologies. Telephone interviews were conducted to facilitate participation of people with knee OA from Australia (irrespective of geographical location) and to promote a perception of anonymity in interviewees.(15) Interviews were audio recorded and transcribed verbatim by an external provider. Pseudonyms were assigned to participants for confidentiality.

Data analysis

An inductive thematic approach was used (16). First, the student researcher (PLT) and another post-doctoral researcher (BJL) with expertise in qualitative methodologies (and who is not a physiotherapist) individually read each transcript. Next, they re-read and inductively coded each transcript to identify topics and initial patterns of emerging ideas. They then compared codes and grouped similar topics/ideas into categories before organising them into broader themes and sub-themes. These were further reviewed and discussed with the broader research team (RSH, KLB, TE). The senior researcher (RSH) read all transcripts prior to discussion to ensure data credibility and confirmability. Analysis was performed using standard word processing software.(17)

Results

Table 2 describes the 24 participants interviewed. Three-quarters were female and the mean (standard deviation) age was 64 (10) years (range 49 to 81). Participants resided in all of Australia's six states and two territories. Most lived in major cities (79%), with some from outer regional (13%) or inner regional areas (8%). Most (67%) people reported less than five sessions of physiotherapy for their knee OA in the prior 6 months, some (25%) between five to nine and two (8%) reported ten or more sessions.

Table 2: Characteristics of the patients (n=24).

PT: Physiotherapist

ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; TAS: Tasmania; Vic: Victoria; WA: Western Australia.

*Classification based on residential postcode, in accordance with Australian Standard Geographical Classification.

† Measured by 11-point numeric rating scale (0 = no pain, 10 = worst pain possible), where patients rated the average amount of their knee pain over the past week.

‡ Measured by Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), where pain scores range from 0 to 20 and physical function scores range from 0 to 68 (higher scores indicate worse pain/poorer function).

§ Number of physiotherapy sessions attended by patient for their knee osteoarthritis over the last six months

|| Number of physiotherapist(s) consulted by patient for their knee osteoarthritis over the last six months

Six themes emerged which are outlined in Table 3 and described below.

Table 3: Themes, subthemes and exemplary quotes from the patient interviews.

Theme 1: Presented with a pre-existing osteoarthritis diagnosis	
History of seeking care for osteoarthritis elsewhere	Harry: "I got my MRI scan and I took it back to the doctor and it showed that I had osteoarthritis, that it was very inflamed, that my cruciate ligament resembled a celery stick and he got me to go to see the physio."
	Dominic: "My knees got really bad about last July and I went to see a surgeon with the possible view of having replacements done. The diagnosis for both knees were bone on bone. He didn't feel that I was severe enough to warrant surgery at that time, so on further discussion, he suggested that I go to physiotherapy to strengthen my legs. So, I went to a local physiotherapist."
	Jade: "I've had the experience with the osteoarthritis for about eight or nine years and first of all, I went to a knee specialist and then I went to a sports medicine specialist and orthopaedic surgeon. I did that for about eight or nine years and recently, I've been to a physiotherapist for the Good Life with osteoarthritis: Denmark (GLA:D) program*."
Perception of adequate OA knowledge	Alice: "I think I have a fairly good understanding of what osteoarthritis is. I understand that I have damage to the articular cartilage of my kneecap and medial femoral condyle. I have very little cartilage at all and that's rubbing. To be honest, I didn't need him [the physiotherapist] to explain all of that."
	Peter: "The physiotherapist saw the x-rays and they have training in interpreting x-rays like that for degenerative bone disease such as osteoarthritis, cartilage wear and things like that. I was well aware that I had osteoarthritis, so I don't think he did anything to explain the osteoarthritis because I was fairly well aware of what it was on about."
	Gordon: "It's just basically wear and tear, and it's really bone on bone. The surgeon explained it to me, too. He sat me down with him at his computer looking at the MRI. It's little fragments of bone and stuff that are rubbing against each other and disintegration of your bone in your patella plus around your knee. Because there's no blood flow in that area, it doesn't heal."
Theme 2: Varying models of physiotherapy care	
Referral pathways	Dylan: "Initially I went to the orthopaedic surgeon and it was deemed that surgery is inappropriate at the moment because of age and probably not severe enough to warrant a replacement. I [was referred by the surgeon to] the osteoarthritis [chronic care program]. The [osteoarthritis] chronic care program† was really an intermediary or, hopefully, a step to prevent requiring a knee replacement as such."
	Abby: "I mentioned to my doctor I'm getting these sore knees, she said, you should try Kieser‡. I knew it was up the road, my friend went there, and my doctor said it could be a good idea."
	Cathy: "I just chose them [the physiotherapy centre] because I knew they did Pilates and exercise rehab, so that's why I went there. And they were close to home."
	Ryan: "My doctor recommendation. I got on this Enhanced Primary Care Plan§ where they recommend a physiotherapist."

Funding models	Bianca: "I had an accident at work a few years ago. I suffered quite a bit of pain and I was referred to a specialist, and he did an arthroscopy. Then I was doing follow-up physiotherapy after the arthroscopy. The surgeon did another arthroscopy and I followed up with more physiotherapy - and started doing hydrotherapy under a physiotherapist. I was doing those sessions on a regular basis. WorkCover then ceased to cover me, and so I was doing them myself out-of-pocket." Reese: "I went to my general practitioner and got the five treatments that you can get from the government for chronic illness. [With] the care plan you only get five treatments, but then I've got private health insurance, so I saw him under that as well." Leanne: "I had ancillary benefits at that stage and I only got about five treatments covered by that ancillary benefits with Medibank Private. I couldn't afford the ancillary benefits anymore so, no, I won't go to a physio now."
Individual vs group sessions	Alice: "The most recent physio visit was with a new physio because I was having a bicycle fit, and as part of the bike fit the physio did a full-on assessment so he talked more about osteoarthritis as well. I've only seen him once." Cathy: "I didn't see an individual physio for individual sessions in the last six months. I was always in group sessions. It's a general fitness class but it's mainly for menopausal age group. So, everyone has their own set of problems. It's not tailored just for one problem; it's tailored for everyone." Dominic: "I went to a local physiotherapist and they did sort of two sessions of assessment. And then I started going to regular weekly classes." Jade: "Recently this year, I've been to a physiotherapist for the GLA:D* program. As part of the GLA:D* program, we had to do an education program and so she [the physiotherapist] showed us a diagram of the knee and explained how different things get worn out and rough. There were six different exercises in the GLA:D* program."
Theme 3: Varied reasons for seeking physiotherapy care	
Knee symptoms	Abby: "My knees were becoming sorer and clicking as I walked, particularly up sets of stairs. And I have a lot of stairs at work. So, I thought I need to go and talk to a physio about it." Kate: "I had an ongoing knee problem and the pain was just killing me. I would be in tears with the pain. I went to the doctor; they were giving me anti-inflammatory tablets, they were not working. So, I said is there anything I can do, will physio help, and the doctor sent a referral to the physio." Cathy: "Well, it was for knee pain that I wanted to go and build-up the strength in my legs to try and avoid surgery. I've lost capacity to squat and things like that; I've lost a lot of strength in my right leg and my legs have become quite bowed."
Functional problems	Leanne: "I think she understood what my concerns were that I couldn't get upstairs. I couldn't drive the car because of the clutch and the knee pain. She looked at all those things and helped me with them." Maggie: "I told her [the physiotherapist] that my foot turns in. I also told her that my knee crunches. I can manage the pain but going up and down stairs is one of the problems that I've got."

	Ryan: "Well I told him [the physiotherapist], I said, look, I just want to get back surfing properly and snowboarding and skiing. I said I realise I'm 72 years old and it's not going to be easy and they said, oh no, no problem we can do it."
Theme 4: Physiotherapist management focussed on function and exercise	
Assessment of function	Dylan: "Timing or just observing, getting in and out of a chair. Walking a set distance, I think it might have been like 100 metres and they time that. And then, there was going up and down stairs and they had some sort of a measurement with that. Then, over time would repeat that and see if there was any improvement." Abby: "He watched me from a seated position to standing. He looked at my movements. We went out the back and I did a lot of walking up and down, and they had a staircase of about three or four steps, and he watched where the pain happened there. He had me practicing, in particular, the way I walk up and down stairs to make sure that through my feet, I was balancing the weight and not throwing to one side." Dominic: "They were measuring how far I could bend my legs laying down and standing up. Squats. Doing steps. They found that I was bending knees. I wasn't walking correctly, but I was doing that to relieve the pain. They got me stepping up correctly with a straight leg. I think she made a record of all of her findings and then set these exercises to hopefully relieve some of the pain and strengthen my leg muscles."
Various types of exercises prescribed	Abby: "He gave me an exercise program, just some gentle swinging of the knee initially, and then I built it up to other types of exercise. He had me practicing the way I walk up and down stairs, then we looked at me doing some kicking, gentle kicking with the board and gentle deep water running as opposed to doing the structured classes." Dominic: "Other than exercise machines that they had in-house, there was elastic stretching band and she told me to do elliptical trainer at home and a cycle machine. I've got a list here. Its straight leg raise, bridging, clams, ball squeezes, sit to stand, lunges, calf raises ballet style, step-ups, go on the bike, and balance exercise." Cathy: "I was doing Pilates, then I was doing Fit-Right classes. We did lots of clams with weights and off-weights. I did a lot of [reformer] where I sat on a spring-loaded box."
Surgery, medications, and injections are for doctors	Dylan: "I think it's the rheumatologist or my general practitioner who would be issuing the drugs so I didn't think that would be physio. I don't think meds ever really was their [the physiotherapists'] jurisdiction." Ryan: "The physio doesn't want to go into the drug side of it because of the risks. Why would he change it as regards something as serious as drugs? I'd had second thoughts and the fact that I thought they'd [a surgeon] done the wrong knee. He didn't go into that because obviously that's not part of his remit." Reese: "The surgeon will know better about how advanced it is and I've got a lot of faith in him. He can give me a better idea of where I should proceed after this. Because I've had it before, I have got a fairly good idea of what the process will be."
Adjunctive treatments	Harry: "I couldn't bend the knee very well; I was in real pain and he gave me a couple of needle sessions both hot and dry needles. He massaged the knee; he did a lot to try and bend the knee."

	Gordon: "It's a little bit of ultrasound, but basically manipulation. I'm always tight in the hamstring. I play lawn bowls, and if it was niggly, I drop in the physio and say listen, could you tape my knee for me, please, and they do it for me straight away."
	Alice: "I did get a bit of massage and a trigger point treatment to help alleviate that. We also tried, I think it's called EMS machine, an electronic stimulation machine, to try and build the muscle at one point because my kneecap was so aggravated."
Theme 5: Happy and satisfied with physiotherapy	
Trust and/or confidence	Harry: "I thought he was excellent. He was one of the best physiotherapists I've ever seen in my life. His approach to everything, his care. Many of them can be in and out, I'm finished with you, I've only got so much time for you. None of that. He was extremely good, and I had complete trust in what he was doing. And when he did hurt me it wasn't because he wanted to hurt me, he said, oh I'm sorry and tell me if that's too hard."
	Leanne: "I thought she was really good. I think she understood what my concerns were that I couldn't get upstairs. I couldn't drive the car because of the clutch and the knee pain. She looked at all those things and helped me with them."
	Reese: "When he gave them to me, they all seemed quite logical because I know nothing, I wouldn't know what was good or bad for me. I trusted him because I had the condition before when my knee was bad. He also knew my background and what I'd been through, so that was good to have that kind of long-term relationship."
Personalized care	Kate: "I had a good say in it because every time she suggested something she would ask. With appointment times, she would always check, 'Is this a good time for you?' Every time she suggested a treatment, she would ask me. She was always checking back with me."
	Alice: "I think he has a very good understanding of my knee problem and I think he understands that better than my doctors, because he's worked side by side with me, he's supported me, it's more intimate. He's been keen to help resolve the problems, rather than doing, what I call a supermarket shelf, one size fits all program. He's really worked hard to try and work out what's best in my circumstance."
	Millie: "My physiotherapist knows me well. I've been seeing him for some time, he seems to know where my problems lie. He spent the time to look at other areas which because of my osteoarthritis in my knee, I was having problems with. So at least he looked at all those areas, so I was happy with that. He came up with a few suggestions on how he would approach it, and then we went from there."
Theme 6: Belief that surgery is inevitable	
	Bianca: "I was told by my surgeon a few years ago that it would be likely I would need a knee replacement. They don't like to do it until it's absolutely necessary. He kept telling me I was too young. They like to wait until you're so old you might die under the knife or you don't get long enough to enjoy the freedom of your new knee."
	Reese: "I am going to go to the orthopaedic specialist in February to have a look and see whether I should have a replacement. Part of me is thinking "Just go and have it done." I should just bite the bullet and do it while I'm young enough, you know?"

	Sandy: "I'm on a waiting list to have a knee replacement. We know that the waiting list is fairly long, so I'll keep myself as healthy and fit as I possibly can, so that I'm able to get through this okay."
	Peter: "Things like osteoarthritis and physiotherapy, there is only so much that physiotherapy can do. If it's bone on bone that doesn't replace the cartilage. All that physiotherapy can do is prescribe activities and exercises to help ameliorate the impact of the osteoarthritis because osteoarthritis doesn't go away. I've had arthroscopies on my knees, so there's no cartilage there. But I'm reluctant to have knee replacements."

*Good Life with Osteoarthritis: Denmark (GLA:D) is an education and exercise program developed in Denmark for people with hip/knee osteoarthritis. The program has been adapted and delivered by physiotherapists in Australia and comprises of an initial assessment, twelve supervised group exercise sessions, two group education sessions and a follow-up assessment.[19]

†The Osteoarthritis Chronic Care Program (OACCP) is a multidisciplinary model of care developed in New South Wales, Australia for people with hip/knee osteoarthritis, specifically those awaiting elective joint replacement surgery. The program is a public-health initiative in tertiary hospitals and offers conservative management, including programs for exercise and weight loss, self-management advice, psychological and pharmacological reviews and disease management education.[18]

‡Kieser is a strength training program using specific equipment and was originally developed in Switzerland. The program was adapted and delivered by physiotherapists in Australia in Kieser training centres.[20]

§The Enhanced Primary Care Plan is a former term for a program now called a Chronic Disease Management Plan, which is a Medicare subsidised program enabling general practitioners to refer patients with a chronic medical condition to a maximum of five allied health services (including physiotherapists) per calendar year.[21]

Theme 1: Presented with a pre-existing OA diagnosis

Participants tended to have a diagnosis of knee OA already made by a doctor prior to their physiotherapy consultation and did not seek physiotherapists to take on a diagnostic role. They often brought knee imaging results with them to the physiotherapy consultation. Some expected physiotherapists to access imaging results from their general practitioners. Participants described a range of other health professionals they had consulted for their knee problems before consulting a physiotherapist, such as a general practitioner, rheumatologist, orthopaedic surgeon and/or sports medicine physician.

Participants generally perceived their pre-existing knowledge and understanding about OA to be adequate. They had typically acquired their knowledge from personal experience and/or from conversations with healthcare professionals prior to them seeking physiotherapy care. Often, knowledge about OA was constructed from imaging (e.g. x-ray) results. Participants often

described their OA with phrases such as ‘wear and tear’, ‘bone on bone’, ‘degenerative’ and/or ‘cartilage wear’. Participants tended not to seek validation or confirmation of their knowledge about OA from their physiotherapist, nor seek further education.

Theme 2: Varying models of physiotherapy care

Participants accessed physiotherapy through a variety of care models, including consultations at private physiotherapy practices, participation in programs specifically developed for OA management delivered in the public (e.g. Osteoarthritis Chronic Care Program(18)) and private (Good Life with Osteoarthritis Denmark (GLA:D(19)) healthcare settings, participation in more generic strengthening-based programs (e.g. Kieser(20)), hydrotherapy and/or generic exercise classes (e.g. Pilates/gym). Most were referred by their general practitioners or other medical specialists but some “self-referred” to a local physiotherapist. Participants chose their physiotherapist by convenience (e.g. physiotherapist located in the same medical practice as their general practitioner or located close to home), by following a recommendation from their friend or doctor, or based on prior experience (e.g. previously consulted the physiotherapist for other musculoskeletal conditions and/or their knee problem).

Participant attendance at physiotherapy services often relied on funding being available to subsidise cost of care. Some participants described accessing physiotherapy in public hospital settings (e.g. Osteoarthritis Chronic Care Program(18)), some received Medicare rebates for physiotherapy services in the private sector (e.g. via Chronic Disease Management Plans(21)), whilst others were subsidised through their private health insurance or other regulatory body (such as worker compensation schemes). A few participants paid out-of-pocket to cover their physiotherapy costs. Participants often ceased their physiotherapy visits because funding ran out.

Participants received physiotherapy care via individual consultations and/or via group sessions. Some participants attended one-on-one consultations several times before transitioning to a group setting. Most described undergoing an individual assessment with the physiotherapist, including those who ultimately participated in group classes. People referred to physiotherapy under the Chronic Disease Management Plan typically attended individual physiotherapy sessions up to five times.

Theme 3: Varied reasons for seeking physiotherapy care

Participants spoke about their knee symptoms as a major driver of seeking care, including ongoing knee pain, swelling, clicking and muscle weakness. They expressed frustration with the pain they experienced, particularly when it made them unable to move the knee or walk properly. Words such as 'click', 'crunch' or 'crack' were commonly used to describe other symptoms. Participants spoke about feeling weak around their knees, which caused their knee to 'give way' or 'collapse'. Participants also sought care because of difficulties with functional activities such as walking, driving, getting in/out of the bed/chair/toilet/shower, negotiating steps and squatting. Some participants avoided doing sports/recreational activities (e.g. cycling, surfing, running, swimming) for fear of exacerbating pain. Many people expected physiotherapists to provide treatments to relieve the pain and assist with building knee strength, as well as helping them to return to activities they previously enjoyed or were now unable to do.

Theme 4: Physiotherapist management focused on function and exercise

The physiotherapist typically assessed functional ability, including walking, squatting, getting in/out of a chair and negotiating stairs. Some participants were timed when performing functional tests, and others were asked to repeat the tests as they progressed through their treatment sessions.

Participants consistently described exercise as a key component of their physiotherapy consultations. They received advice about different types of exercises for their OA, including strengthening, cardiovascular, stretching, balance and functional movement programs. Some participants were instructed to use exercise equipment such as elastic resistance bands and/or weights to progress the intensity of the exercises. For those who were given home exercise programs, exercise handouts or online instructions were provided. Some participants also attended supervised group exercise classes such as gym or fitness-based program, Pilates, hydrotherapy, balance and/or strengthening classes.

Participants tended not to expect information about surgery, medications and knee injections from their physiotherapist, instead considering these domains of care as a doctor's responsibility. Many did not see the need for physiotherapists to cover these options further and some participants felt that physiotherapists should refrain from providing any medication advice because they do not have prescription rights.

Some participants received adjunctive treatments from physiotherapists such as massage, dry needling/acupuncture and manual knee mobilisation techniques to relieve muscle tightness and joint stiffness. Transcutaneous electrical nerve stimulation and electronic muscle stimulator machines were sometimes provided to relieve knee pain and stimulate muscles respectively. Other common adjunctive treatments offered by physiotherapists included ultrasound, heat/cold pack, taping and using a knee brace. These were typically delivered during individual physiotherapy consultations.

Theme 5: Happy and satisfied with physiotherapy

Generally, most participants were happy and satisfied with the physiotherapy care they received. Some described having trust in their physiotherapists, both in their clinical skills and professional knowledge when managing knee OA. Most felt that their physiotherapist understood and appreciated the problems they were experiencing, and some were impressed that the physiotherapist was able to identify what was 'going on' with their knees. Participants were also confident that their physiotherapists could help them by providing practical advice and/or strategies to overcome their specific problems.

Participants valued the highly personalised care they received and felt that physiotherapists generally provided care that was tailored to their needs. They spoke about their physiotherapist as being empathetic and understanding towards their condition/circumstances. Some felt that their physiotherapist 'knew them well', which enabled the physiotherapist to provide the care and support they desired/needed. Others highlighted the value of working collaboratively with their physiotherapist and appreciated having a 'two-way discussion', where the participant was asked for their input in devising a treatment plan for their OA. When care was not personalised, participants expressed a sense of disappointment, describing the treatment received as a 'sausage factory', 'supermarket shelf', or being a 'one size fits all program'

Theme 6: Belief that surgery is inevitable

Participants perceived that joint replacement surgery was inevitable for their knee problems. Many were informed of this by their doctor and some were already on hospital waiting lists for surgery. However, participants were also advised by their doctors/surgeons to delay surgery for as long as possible and some attended the physiotherapist in an effort to achieve this. Participants generally believed that physiotherapists were not able to 'cure' OA but could help in reducing its impact.

Some described the role of physiotherapy as providing them with strategies to strengthen the knees and alleviate their OA symptoms in order to delay surgery. Whilst some participants 'prepared' their knee for surgery by seeing a physiotherapist, others were keen to have surgery as soon as possible.

Discussion

This qualitative study explored experiences of people who had received physiotherapy care for their knee OA in Australia. Participants were generally happy and satisfied with their physiotherapy care and described having a strong sense of trust and/or confidence in their physiotherapist. They felt that physiotherapists understood their problems and they appreciated being offered the personalised care that most physiotherapists tended to provide. These findings are consistent with previous research, which showed that patient satisfaction with physiotherapy care for a range of musculoskeletal conditions was generally high in Australia and other countries such as those in Northern Europe, North America, the United Kingdom and Ireland.(22) Physiotherapists' interpersonal and communication skills are important attributes to high patient satisfaction.(22) Our findings suggest that, generally, Australian physiotherapists work in a patient-centred way to ensure that patients' treatment expectations, needs and preferences are respected.

Participants utilised various referral pathways and a range of different funding models to access physiotherapy care through a diverse array of service delivery options. This suggests that there is not a single 'one size fits all' model of physiotherapy care that will suit the needs and individual circumstances of all Australians living with knee OA. Our findings highlight how important it is for healthcare systems to offer different models of physiotherapy care, in both the public and

private sectors, for example, spanning individual consultations through to group exercise classes. This helps to reduce inequity of access to physiotherapy care for people with knee OA, which may arise from geographical location or socioeconomic status.(23) Indeed, a community-based survey of 1000 people with arthritis in Australia found that over two thirds of respondents felt that they did not cope well with their condition because of the health care they experienced, and felt that they had poor access to medical doctors, specialists and allied health professionals.(24) Allowing patients the flexibility to choose which type of physiotherapy service best suits their needs, preferences and financial situation also aligns with a philosophy of patient-centred care,(25, 26) and permits the patient to have some control over their own health care.

Our findings highlight how reliant people with knee OA are on government-funded health care and/or third-party payers (such as private health insurers) to fund their physiotherapy care. Participants predominantly accessed and received care from physiotherapists in private practice settings and typically ceased physiotherapy when funding ran out and they were required to pay out-of-pocket for services. These findings are consistent with key Australian policy documents, including the National Osteoarthritis Strategy,(27) that have called for expansion of funding to support OA care delivery, including care delivered by physiotherapists.(28) Given the chronicity of knee OA, regular reviews and follow-up are advocated to allow for monitoring of symptoms, permit timely changes to management, and to support effective self-management.(1) However, similar to a previous study in Australia,(29) the costs associated with physiotherapy treatments were identified by our participants as an important barrier to continuing to access physiotherapy care for OA. Our findings highlight the importance of funding mechanisms for physiotherapy services to relieve the financial burden that people experience when accessing necessary care for knee OA.

Although pain was one of the important drivers of care-seeking in our participants, many also desired help from the physiotherapist to maintain or improve muscle strength and physical function. These findings highlight the need for physiotherapists to co-develop (with the patient) a multi-faceted management plan that does not only focus on pain relief strategies but also incorporates interventions that target strength and assist patients to engage in activities that are meaningful to them. It is thus not surprising that participants in our study described the important role that physiotherapists played in prescribing personalised exercise and addressing functional deficits. A systematic review of patients' perceived health service needs for OA also showed that one of the key reasons patients typically consulted physiotherapists was for exercise advice/prescription.(5) Our patient perspectives about the important role that physiotherapists play in prescribing exercise align with the perspectives of general practitioners,(30, 31) who often refer patients with chronic knee pain to physiotherapists for exercise. General practitioners describe lack of time as the most common barrier for them to initiate exercise with their patients, preferring instead to refer their patient to a physiotherapist.(30, 32) Similarly, physiotherapists themselves also perceived exercise and physical activity to be their main role in the management of people with knee OA(7) and are confident to prescribe exercises to improve knee strength and range of movement.(8)

Interestingly, participants believed that they already had adequate knowledge and understanding about their knee OA and did not seek further information from their physiotherapist. This was despite the fact that participants appeared to have different perceptions about knee OA (describing it as 'wear and tear', 'bone on bone', 'degenerative' and/or 'cartilage wear') and their belief that surgery is an inevitable consequence. These perceptions and beliefs about OA are similar to findings from another study exploring reasons why patients resorted to surgical interventions for

knee OA.(33) Once the participants in that study had been "diagnosed" with "bone-on-bone" changes, many disregarded exercise-based interventions (which they believed would damage their joint) in favour of alternative and experimental treatments (which they believed would help regenerate lost cartilage). In order to maximise success with exercise interventions, these findings suggest that physiotherapists could consider reframing their conversations to actively invite the patient to share their pre-existing knowledge about OA so that any perceptions may be subtly corrected, and evidence-based educational resources shared.

Participants also did not expect physiotherapists to provide them with information regarding medications, knee injections and surgery even though these topics are advocated as important responsibilities of all health professionals when managing OA.(1, 34) Instead, participants generally approached their medical doctors for advice in these domains of care. This is likely because, in Australia, physiotherapists can only provide advice about over-the-counter medications and do not have prescribing rights. In terms of surgery, patients are only entitled to rebate under the Government-funded Medicare scheme for any surgical procedure if they are directly referred by their general practitioners.(35)

Some participants received adjunctive treatments from their physiotherapist, such as massage, acupuncture and electrotherapy interventions despite limited evidence to support their use.(1, 3, 36) We do not know if participants specifically requested these treatments and/or if their physiotherapist helped the participant to make an informed treatment decision by discussing their limited treatment efficacy for knee OA. Patients with other musculoskeletal conditions, such as low back pain, often present to physiotherapists with pre-conceived ideas about physiotherapy treatment,(37) and may desire ‘hands-on’ treatment or any intervention that has previously eased

their back symptoms. Physiotherapists may feel obliged to provide treatments with limited efficacy in order to meet the patient's treatment expectation.

A strength of our study was its qualitative design, which allowed us to explore the experiences of people receiving physiotherapy care for knee OA in Australia. In order to explore diversity in experiences, we interviewed a range of participants, including males and females of differing age, occupational status and geographical location across Australia. Our study also has limitations. Participants responded to advertisements (social media) and/or email invitations (research volunteer database) to participate and thus our sample may be biased towards those who had favourable experiences with physiotherapy and/or were successful at accessing physiotherapy. Our sample was constrained to participants who could speak English and given that 21% of Australians speak a language other than English at home,(38) we do not know if our findings reflect the experiences of people from culturally and linguistically diverse backgrounds. Furthermore, physiotherapists are a primary contact health profession in Australia so patient experiences with physiotherapy care for knee OA may be different in other countries where people can only access a physiotherapist on referral. Future research is particularly warranted in low to middle income countries, given that social factors such as education level and income influence patient access to allied health services such as physiotherapy.(39) Our findings may also not be applicable in countries where cultural beliefs differ considerably from the Australian context. The perception of pain, health beliefs and concept of disability and its management often vary from one culture to another(40) and thus may influence patients' experiences managing their conditions.

In conclusion, our findings provide evidence from the patient's perspective about the important role physiotherapists play in the care of Australians with knee OA, reinforcing the need for equitable access to physiotherapy services that are supported by a range of funding models.

Findings highlight the importance of different pathways for accessing care to meet the needs of individuals and ensure that all people with knee OA are adequately supported in managing their condition.

Contributors

PLT, KLB, KSD and RSH contributed to the study conception and design. PLT completed data collection. PLT, LBJ and RSH contributed to the data analysis and interpretation of data. PLT wrote the first draft of the manuscript. All authors revised the paper and provided scientific input. All authors approved the final version of the manuscript.

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Conflict of interest

The authors declare that they have no competing interests.

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Title: Patient experiences with physiotherapy for knee osteoarthritis in Australia – a qualitative study

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Abstract

Objective: Physiotherapists commonly provide non-surgical care for people with knee osteoarthritis (OA). It is unknown if patients are receiving high-quality physiotherapy care for their knee OA. This study aimed to explore the experiences of people who had recently received physiotherapy care for their knee OA in Australia and how these experiences aligned with the national Clinical Care Standard for knee OA.

Design: Qualitative study using semi-structured individual telephone interviews and thematic analysis, where themes/subthemes were inductively derived. Questions were informed by seven quality statements of the OA of the Knee Clinical Care Standard. Interview data were also deductively analysed according to the Standard.

Setting: Participants were recruited from around Australia via Facebook and our research volunteer database.

Participants: Interviews were conducted with twenty-four people with recent experience receiving physiotherapy care for their knee OA. They were required to be aged 45 years or above, had activity-related knee pain and any knee-related morning stiffness lasted no longer than 30 minutes. Participants were excluded if they had self-reported inflammatory arthritis and/or had undergone knee replacement surgery for the affected knee.

Results: Six themes emerged: 1) Presented with a pre-existing osteoarthritis diagnosis (prior OA care from other health professionals; perception of adequate OA knowledge); 2) Wide variation in access and provision of physiotherapy care (referral pathways; funding models; individual vs group sessions); 3) Seeking physiotherapy care for pain and functional limitations (knee symptoms; functional problems); 4) Physiotherapy management focussed on function and exercise

(assessment of function; various types of exercises prescribed; surgery, medications, and injections are for doctors; adjunctive treatments); 5) Professional and personalized care (trust and/or confidence; personalized care); and 6) Physiotherapy to postpone or prepare for surgery.

Conclusion: Patients' experiences with receiving physiotherapy care for their knee OA were partly aligned with the Standard, particularly regarding comprehensive assessment, self-management, and exercise.

Strengths and limitations of this study

- A strength of this study was using a qualitative design to explore how the experiences of people receiving physiotherapy care for knee OA in Australia aligned with the national Clinical Care Standard.
- A range of participants was interviewed, including males and females of differing age, occupational status, and geographical location across Australia.
- Participants responded to advertisements and/or email invitations to participate and thus our sample may be biased towards those who had favourable experiences with physiotherapy and/or were successful at accessing physiotherapy.
- Our sample was constrained to participants who could speak English so may not represent the experiences of people from culturally and linguistically diverse backgrounds.
- Physiotherapists are a primary contact health profession in Australia so patient experiences with physiotherapy care for knee OA may be different in other countries where people can only access a physiotherapist on referral.

Knee osteoarthritis (OA) is highly prevalent and a leading cause of pain and disability worldwide. (1) Clinical guidelines advocate non-surgical interventions such as exercise, weight loss (for people who are overweight or obese) and education regarding self-management as first line treatments for knee OA,(1-3) Physiotherapists are important providers of non-surgical care for people with knee OA and receive more OA referrals from general practitioners than other allied health providers.(4) In addition, patients generally perceive physiotherapists to be important to assist them in managing their OA and prescribing exercises.(5, 6)

To date, there are indications that physiotherapy care provided to people with knee OA may not necessarily align with evidence-based care standards. We recently conducted a qualitative study to explore the experiences of Australian physiotherapists delivering care for people with knee OA and how their experiences aligned with the national Clinical Care Standard.(7) The Clinical Care Standard for knee OA defines seven key aspects of care that people with knee OA should expect to receive in Australia.(8) We found physiotherapists tended to rely on biomedically-oriented assessment and would often provide treatment (such as manual therapy) and self-management strategies that aimed to address the 'mechanical' aspects of knee OA. The primary focus for physiotherapists was to provide goal-orientated personalised exercise. Surgery was perceived as a last resort, and patient comorbidity, adherence, and desire for a 'quick fix' were the main clinical challenges experienced. Physiotherapists also described a mismatch between what they knew and what they did when it came to imaging, weight management and manual therapy. Weight loss, medication and surgical advice were perceived to be outside of their scope of practice. Nevertheless, physiotherapists' reported experiences were mostly consistent with the quality care standard.(7) Findings from this study provide useful information about physiotherapy management

of people with knee OA but it can be argued that a patient's perspective of their physiotherapy care experiences may not necessarily be similar to that of the therapist.

Several qualitative studies have explored patient experiences of receiving care for their knee OA from either a multidisciplinary team which included physiotherapists (9-14) or solely from physiotherapists.(15-19) However, none of these studies have specifically explored patient experiences receiving physiotherapy assessment, diagnosis, treatment options and follow-up appointments for their knee OA. This study is complementary to our previous similar qualitative study with physiotherapists as participants.(7) In the present study, we aim to explore the experiences of Australians who had recently received physiotherapy care for their knee OA and how these experiences aligned with the national Clinical Care Standard for knee OA. Such information will help enhance our understanding of patient experiences with physiotherapy care for their condition and may help inform strategies to improve future care and service delivery.

Method

Design

This qualitative study used semi-structured interviews and was based on a constructivist paradigm, where knowledge is built through active experience and interpretation.(20) Qualitative methods allow for in-depth examination of the attitudes, experiences, and behaviours of individuals in their natural context and can contribute to a broader understanding of medical research.(21-23) The Standards for Reporting Qualitative Research checklist was used to ensure explicit and comprehensive reporting of this study.(24)

Patient and public involvement

Patients or the public were not actively involved in the design, conduct, reporting or dissemination plans of our research.

Participants

A convenience sample of adults who had sought physiotherapy care to manage their knee OA were recruited from around Australia via Facebook and our research volunteer database. Inclusion criteria for participants were: i) met the National Institute for Health and Care Excellence OA clinical criteria (1) (aged 45 years or above, had activity-related knee pain and any knee-related morning stiffness lasted no longer than 30 minutes); and ii) consulted a physiotherapist about their knee OA in the prior 6 months. Participants were excluded if they had self-reported inflammatory arthritis and/or had undergone knee replacement surgery for the affected knee. The final sample size was determined by the principles of data saturation, this being when no new themes emerged from the data.(25) Participants provided written informed consent and ethical approval was granted by the School of Health Sciences Human Ethics Advisory Group, University of Melbourne. Interviews were conducted between December 2019 and January 2020.

Interviews

Semi-structured interview guides (Table 1) were developed, informed by the quality statements of the Australian Government's OA of the Knee Clinical Care Standard.(8) It defines seven domains of care that people with knee OA should expect to receive, regardless of where they are treated in Australia, spanning comprehensive assessment, diagnosis, education and self-management, weight loss and exercise, medications, regular review and surgical options for people with knee OA. Participants were reimbursed for their time with a $50 gift card.

Table 1: Semi-structured interview guide.

Topic	Question
Introduction	1) Can you tell me about your experiences attending physiotherapy for your knee osteoarthritis? o *What prompted you to seek physiotherapy care?* *2)* Can you tell me, where did you see the physiotherapist(s)? o *How did you end up seeing a physiotherapist?*
Comprehensive assessment	3) Can you tell me how the physiotherapist assessed you and your knee problem? o *What sort of questions did the physiotherapist ask you?* o *What sort of physical examination did the physiotherapist do?* o *What other health conditions or social factors that might affect how you manage your knee pain (for example, changing work) did the physiotherapist assess?* o *What sort of questionnaire, survey or form did the physiotherapist ask you to complete?* 4) What was the main problem you were seeing the physiotherapist for? o *How well did the physiotherapist understand the main problems you were experiencing for your knee?*
Diagnosis	5) How did the physiotherapist decide that you have knee osteoarthritis? o *What sort of tests or scans did the physiotherapist order for your knee osteoarthritis?* o *How did the physiotherapist explain/help you to understand your diagnosis?*
Education & self-management	6) What sort of treatments did the physiotherapist give you for your knee osteoarthritis? o *Can you tell me if the physiotherapist provided you with any hands-on treatment or used any machine/device on your knee?* o *Can you tell me if the physiotherapist advised you on the use of knee brace, walking aid or taping for your knee problem?* 7) Can you tell me what you remember about any information/advice you received from the physiotherapist for your knee osteoarthritis?
Weight loss & exercise	8) What exercise did the physiotherapist suggest you try? o *How did the physiotherapist consider your needs and preferences when deciding on the best exercise program for you?* 9) Could you tell me if weight is an issue for you? If so, what weight loss treatment did the physiotherapist suggest you try? 10) Can you tell me if the physiotherapist discussed with you the importance of maintaining healthy body weight for your knee osteoarthritis?
Medications	11) Can you tell me if you are taking any medications to manage your knee osteoarthritis? o *Can you tell me if you asked the physiotherapist ways to manage your medications?* o *Is there a reason why you didn't ask the physiotherapist about medications for your knee?* 12) What information/advice did the physiotherapist provide about medicines/drugs for your knee osteoarthritis? o *Can you tell me if the physiotherapist spoke about any injection you could get for your knee?*
Patient review	13) Can you tell me how often you saw the physiotherapist for your knee problems? o *How many times did you see the physiotherapist for you knee?* o *How frequently do you see the physiotherapist now?* o *What did the physiotherapist advise you to do if your problems get worse?* 14) Which other health professional did the physiotherapist recommend you see for your knee problem? o *How did you go with the recommendation?*
Surgery	15) Can you tell me if you have considered any sort of surgery for your knee osteoarthritis? o *Can you tell me if the physiotherapist asked you about your thoughts of having any knee surgery?* 16) What information/advice did the physiotherapist provide about surgical treatments for your knee osteoarthritis?

Concluding remarks	17) Is there any other aspect about your physiotherapy care you would like to discuss? 18) Do you have anything else to add?

Individual interviews were conducted via telephone by PLT, a female graduate research student and physiotherapist trained in qualitative methodologies. Telephone interviews were conducted to facilitate participation of people with knee OA from Australia (irrespective of geographical location) and to promote a perception of anonymity in interviewees.(26) Interview questions were refined following the first three phone interviews to improve clarity for participants based on experience from the initial interviews. The refinement also helped to enhance/expand the prompts to ensure rich information were collected from the participants. Interviews were audio recorded and transcribed verbatim by an external provider.

Data analysis

An inductive thematic approach was used initially.(27) In order to minimise over-representation, two researchers conducted the data analysis simultaneously. Following Morse et al's approach to inductive thematic analysis (which advocates for four steps: 1) read and re-read interview transcripts; 2) step back and reflect on interviews as a whole; 3) identify ideas of similar nature 4) group ideas into themes),(27) firstly, the student researcher (PLT) and another post-doctoral researcher (BJL) with expertise in qualitative methodologies (and who is not a physiotherapist) individually read each transcript. Next, they re-read and inductively coded each transcript to identify topics and initial patterns of emerging ideas. They then compared codes and grouped similar topics/ideas into categories before organising them into broader themes and sub-themes. The interview data were also deductively analysed according to the national Clinical Care

Standard for knee OA. These were further reviewed and discussed with the broader research team (RSH, KLB, TE). The senior researcher (RSH) read all transcripts prior to discussion to ensure data credibility and confirmability. Analysis was performed using standard word processing software.(17)

Results

Seventy-six participants responded to the interview invitation but only 31 fulfilled the eligibility criteria for this study. Of the 31 eligible participants, 24 completed the interview while the remaining either declined participation or were not contactable. Table 2 describes the 24 participants interviewed. Three-quarters were female, and the mean (standard deviation) age was 64 (10) years (range 49 to 81). Participants resided in all of Australia's six states and two territories. Most lived in major cities (79%), with some from outer regional (13%) or inner regional areas (8%). Most (67%) people reported less than five sessions of physiotherapy for their knee OA in the prior 6 months, some (25%) between five to nine and two (8%) reported ten or more sessions.

Table 2: Characteristics of the patients (n=24).

	Mean (SD) or n (%)
Female	18 (75%)
Age (years)	63.5 (9.8)
State	
-Australian Capital Territory	2 (8%)
-New South Wales	5 (21%)
-Northern Territory	1 (4%)
-Queensland	2 (8%)
-South Australia	2 (8%)
-Tasmania	1 (4%)
-Victoria	8 (33%)

-Western Australia	3 (13%)
Geographical location*	
-Major cities	19 (79%)
-Inner regional	2 (8%)
-Outer regional	3 (13%)
Education level	
-Three years or more of high school	5 (21%)
-Some tertiary training	5 (21%)
-Graduated from university or polytechnic	7 (29%)
-Any post-graduate study	7 (29%)
Work status	
-Work full-time	3 (13%)
-Work part-time	7 (29%)
-Unable to work due to health reasons	3 (13%)
-Retired (not due to health reasons)	11 (46%)
Knee pain severity†	5.7 (1.9)
Pain (WOMAC)‡	6.8 (3.0)
Physical function (WOMAC)‡	22.1 (10.5)
Number of physiotherapy sessions§	
-4 or less	16 (67%)
-5 to 9	6 (25%)
-10 or more	2 (8%)
Number of physiotherapist(s) seen‖	1.1 (0.3)

SD: standard deviation
n: number of participants
*Classification based on residential postcode, in accordance with Australian Standard Geographical Classification.
† Measured by 11-point numeric rating scale (0 = no pain, 10 = worst pain possible), where patients rated the average amount of their knee pain over the past week.
‡ Measured by Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), where pain scores range from 0 to 20 and physical function scores range from 0 to 68 (higher scores indicate worse pain/poorer function).
§ Number of physiotherapy sessions attended by patient for their knee osteoarthritis over the last six months
‖ Number of physiotherapist(s) consulted by patient for their knee osteoarthritis over the last six months

Six themes emerged following the inductive thematic analysis.(27) An audit trail of evidence showing examples of each stage of the data analysis is presented in Supplementary file 1. The six themes identified are outlined in Table 3 and described below.

Table 3: Themes, subthemes and exemplary quotes from the patient interviews.

Theme 1: Presented with a pre-existing osteoarthritis diagnosis	
Prior OA care from other health professionals	Male, 76 years: "I got my MRI scan and I took it back to the doctor and it showed that I had osteoarthritis, that it was very inflamed, that my cruciate ligament resembled a celery stick and he got me to go to see the physio." Male, 75 years: "My knees got really bad about last July and I went to see a surgeon with the possible view of having replacements done. The diagnosis for both knees were bone on bone. He didn't feel that I was severe enough to warrant surgery at that time, so on further discussion, he suggested that I go to physiotherapy to strengthen my legs. So, I went to a local physiotherapist." Female, 76 years: "I've had the experience with the osteoarthritis for about eight or nine years and first of all, I went to a knee specialist and then I went to a sports medicine specialist and orthopaedic surgeon. I did that for about eight or nine years and recently, I've been to a physiotherapist for the Good Life with osteoarthritis: Denmark (GLA:D) program*."
Perception of adequate OA knowledge	Female, 49 years: "I think I have a fairly good understanding of what osteoarthritis is. I understand that I have damage to the articular cartilage of my kneecap and medial femoral condyle. I have very little cartilage at all and that's rubbing. To be honest, I didn't need him [the physiotherapist] to explain all of that." Male, 70 years: "The physiotherapist saw the x-rays and they have training in interpreting x-rays like that for degenerative bone disease such as osteoarthritis, cartilage wear and things like that. I was well aware that I had osteoarthritis, so I don't think he did anything to explain the osteoarthritis because I was fairly well aware of what it was on about." Male, 60 years: "It's just basically wear and tear, and it's really bone on bone. The surgeon explained it to me, too. He sat me down with him at his computer looking at the MRI. It's little fragments of bone and stuff that are rubbing against each other and disintegration of your bone in your patella plus around your knee. Because there's no blood flow in that area, it doesn't heal."
Theme 2: Wide variation in access and provision of physiotherapy care	
Referral pathways	Male, 56 years: "Initially I went to the orthopaedic surgeon and it was deemed that surgery is inappropriate at the moment because of age and probably not severe enough to warrant a replacement. I [was referred by the surgeon to] the osteoarthritis [chronic care program]. The [osteoarthritis] chronic care program† was really an intermediary or, hopefully, a step to prevent requiring a knee replacement as such."

	Female, 49 years: "I mentioned to my doctor I'm getting these sore knees, she said, you should try Kieser‡. I knew it was up the road, my friend went there, and my doctor said it could be a good idea."
	Female, 55 years: "I just chose them [the physiotherapy centre] because I knew they did Pilates and exercise rehab, so that's why I went there. And they were close to home."
	Male, 72 years: "My doctor recommendation. I got on this Enhanced Primary Care Plan§ where they recommend a physiotherapist."
Funding models	Female, 60 years: "I had an accident at work a few years ago. I suffered quite a bit of pain and I was referred to a specialist, and he did an arthroscopy. Then I was doing follow-up physiotherapy after the arthroscopy. The surgeon did another arthroscopy and I followed up with more physiotherapy - and started doing hydrotherapy under a physiotherapist. I was doing those sessions on a regular basis. WorkCover then ceased to cover me, and so I was doing them myself out-of-pocket."
	Female, 69 years: "I went to my general practitioner and got the five treatments that you can get from the government for chronic illness. [With] the care plan you only get five treatments, but then I've got private health insurance, so I saw him under that as well."
	Female, 69 years: "I had ancillary benefits at that stage and I only got about five treatments covered by that ancillary benefits with Medibank Private. I couldn't afford the ancillary benefits anymore so, no, I won't go to a physio now."
Individual vs group sessions	Female, 69 years: "The most recent physio visit was with a new physio because I was having a bicycle fit, and as part of the bike fit the physio did a full-on assessment so he talked more about osteoarthritis as well. I've only seen him once."
	Female, 55 years: "I didn't see an individual physio for individual sessions in the last six months. I was always in group sessions. It's a general fitness class but it's mainly for menopausal age group. So, everyone has their own set of problems. It's not tailored just for one problem; it's tailored for everyone."
	Male, 75 years: "I went to a local physiotherapist and they did sort of two sessions of assessment. And then I started going to regular weekly classes."
	Female, 79 years: "Recently this year, I've been to a physiotherapist for the GLA:D* program. As part of the GLA:D* program, we had to do an education program and so she [the physiotherapist] showed us a diagram of the knee and explained how different things get worn out and rough. There were six different exercises in the GLA:D* program."
Theme 3: Seeking physiotherapy care for pain and functional limitations	
Knee symptoms	Female, 49 years: "My knees were becoming sorer and clicking as I walked, particularly up sets of stairs. And I have a lot of stairs at work. So, I thought I need to go and talk to a physio about it."
	Female, 51 years: "I had an ongoing knee problem and the pain was just killing me. I would be in tears with the pain. I went to the doctor; they were giving me anti-inflammatory tablets, they were not working. So, I said is there anything I can do, will physio help, and the doctor sent a referral to the physio."

	Female, 55 years: "Well, it was for knee pain that I wanted to go and build-up the strength in my legs to try and avoid surgery. I've lost capacity to squat and things like that; I've lost a lot of strength in my right leg and my legs have become quite bowed."
Functional problems	Female, 69 years: "I think she understood what my concerns were that I couldn't get upstairs. I couldn't drive the car because of the clutch and the knee pain. She looked at all those things and helped me with them."
	Female, 81 years: "I told her [the physiotherapist] that my foot turns in. I also told her that my knee crunches. I can manage the pain but going up and down stairs is one of the problems that I've got."
	Male, 72 years: "Well I told him [the physiotherapist], I said, look, I just want to get back surfing properly and snowboarding and skiing. I said I realise I'm 72 years old and it's not going to be easy and they said, oh no, no problem we can do it."
Theme 4: Physiotherapy management focussed on function and exercise	
Assessment of function	Male, 56 years: "Timing or just observing, getting in and out of a chair. Walking a set distance, I think it might have been like 100 metres and they time that. And then, there was going up and down stairs and they had some sort of a measurement with that. Then, over time would repeat that and see if there was any improvement."
	Female, 49 years: "He watched me from a seated position to standing. He looked at my movements. We went out the back and I did a lot of walking up and down, and they had a staircase of about three or four steps, and he watched where the pain happened there. He had me practicing, in particular, the way I walk up and down stairs to make sure that through my feet, I was balancing the weight and not throwing to one side."
	Male, 75 years: "They were measuring how far I could bend my legs laying down and standing up. Squats. Doing steps. They found that I was bending knees. I wasn't walking correctly, but I was doing that to relieve the pain. They got me stepping up correctly with a straight leg. I think she made a record of all of her findings and then set these exercises to hopefully relieve some of the pain and strengthen my leg muscles."
Various types of exercises prescribed	Female, 49 years: "He gave me an exercise program, just some gentle swinging of the knee initially, and then I built it up to other types of exercise. He had me practicing the way I walk up and down stairs, then we looked at me doing some kicking, gentle kicking with the board and gentle deep water running as opposed to doing the structured classes."
	Male, 75 years: "Other than exercise machines that they had in-house, there was elastic stretching band and she told me to do elliptical trainer at home and a cycle machine. I've got a list here. Its straight leg raise, bridging, clams, ball squeezes, sit to stand, lunges, calf raises ballet style, step-ups, go on the bike, and balance exercise."
	Female, 55 years: "I was doing Pilates, then I was doing Fit-Right classes. We did lots of clams with weights and off-weights. I did a lot of [reformer] where I sat on a spring-loaded box."

Surgery, medications, and injections are for doctors	Male, 56 years: "I think it's the rheumatologist or my general practitioner who would be issuing the drugs so I didn't think that would be physio. I don't think meds ever really was their [the physiotherapists'] jurisdiction." Male, 72 years: "The physio doesn't want to go into the drug side of it because of the risks. Why would he change it as regards something as serious as drugs? I'd had second thoughts and the fact that I thought they'd [a surgeon] done the wrong knee. He didn't go into that because obviously that's not part of his remit." Female, 69 years: "The surgeon will know better about how advanced it is and I've got a lot of faith in him. He can give me a better idea of where I should proceed after this. Because I've had it before, I have got a fairly good idea of what the process will be."
Adjunctive treatments	Male, 76 years: "I couldn't bend the knee very well; I was in real pain and he gave me a couple of needle sessions both hot and dry needles. He massaged the knee; he did a lot to try and bend the knee." Male, 60 years: "It's a little bit of ultrasound, but basically manipulation. I'm always tight in the hamstring. I play lawn bowls, and if it was niggly, I drop in the physio and say listen, could you tape my knee for me, please, and they do it for me straight away." Female, 69 years: "I did get a bit of massage and a trigger point treatment to help alleviate that. We also tried, I think it's called EMS machine, an electronic stimulation machine, to try and build the muscle at one point because my kneecap was so aggravated."
Theme 5: Professional and personalized care	
Trust and/or confidence	Male, 76 years: "I thought he was excellent. He was one of the best physiotherapists I've ever seen in my life. His approach to everything, his care. Many of them can be in and out, I'm finished with you, I've only got so much time for you. None of that. He was extremely good, and I had complete trust in what he was doing. And when he did hurt me it wasn't because he wanted to hurt me, he said, oh I'm sorry and tell me if that's too hard." Female, 69 years: "I thought she was really good. I think she understood what my concerns were that I couldn't get upstairs. I couldn't drive the car because of the clutch and the knee pain. She looked at all those things and helped me with them." Female, 69 years: "When he gave them to me, they all seemed quite logical because I know nothing, I wouldn't know what was good or bad for me. I trusted him because I had the condition before when my knee was bad. He also knew my background and what I'd been through, so that was good to have that kind of long-term relationship."
Personalized care	Female, 51 years: "I had a good say in it because every time she suggested something she would ask. With appointment times, she would always check, 'Is this a good time for you?' Every time she suggested a treatment, she would ask me. She was always checking back with me." Female, 49 years: "I think he has a very good understanding of my knee problem and I think he understands that better than my doctors, because he's worked side by side with me, he's supported me, it's more intimate. He's been keen to help resolve the problems,

	rather than doing, what I call a supermarket shelf, one size fits all program. He's really worked hard to try and work out what's best in my circumstance."
	Female, 49 years: "I also went to a gym called Kieser which is – I call it the sausage factory of physiotherapy. The person who started the program for me was a physiotherapist and guided that program, but I guess I didn't feel that really was addressing my issues. It was building my core strength, but it wasn't really helping my knees."
	Female, 57 years: "My physiotherapist knows me well. I've been seeing him for some time, he seems to know where my problems lie. He spent the time to look at other areas which because of my osteoarthritis in my knee, I was having problems with. So at least he looked at all those areas, so I was happy with that. He came up with a few suggestions on how he would approach it, and then we went from there."
Theme 6: Physiotherapy to postpone or prepare for surgery	
	Female, 60 years: "I was told by my surgeon a few years ago that it would be likely I would need a knee replacement. They don't like to do it until it's absolutely necessary. He kept telling me I was too young. They like to wait until you're so old you might die under the knife or you don't get long enough to enjoy the freedom of your new knee."
	Female, 69 years: "We were talking about the advantages of doing it [surgery] sooner than later, but then he's [the physiotherapist] saying if I do it a bit later then we can strengthen the muscles in my knee and around my knee, that will make maybe recovery quicker.""
	Female, 60 years: "I'm on a waiting list to have a knee replacement. We know that the waiting list is fairly long, so I'll keep myself as healthy and fit as I possibly can, so that I'm able to get through this okay."
	Male, 70 years: "Things like osteoarthritis and physiotherapy, there is only so much that physiotherapy can do. If it's bone on bone that doesn't replace the cartilage. All that physiotherapy can do is prescribe activities and exercises to help ameliorate the impact of the osteoarthritis because osteoarthritis doesn't go away. I've had arthroscopies on my knees, so there's no cartilage there. But I'm reluctant to have knee replacements."

*Good Life with Osteoarthritis: Denmark (GLA:D) is an education and exercise program developed in Denmark for people with hip/knee osteoarthritis. The program has been adapted and delivered by physiotherapists in Australia and comprises of an initial assessment, twelve supervised group exercise sessions, two group education sessions and a follow-up assessment.[19]

†The Osteoarthritis Chronic Care Program (OACCP) is a multidisciplinary model of care developed in New South Wales, Australia for people with hip/knee osteoarthritis, specifically those awaiting elective joint replacement surgery. The program is a public-health initiative in tertiary hospitals and offers conservative management, including programs for exercise and weight loss, self-management advice, psychological and pharmacological reviews and disease management education.[18]

‡Kieser is a strength training program using specific equipment and was originally developed in Switzerland. The program was adapted and delivered by physiotherapists in Australia in Kieser training centres.[20]

§The Enhanced Primary Care Plan is a former term for a program now called a Chronic Disease Management Plan, which is a Medicare subsidised program enabling general practitioners to refer patients with a chronic medical condition to a maximum of five allied health services (including physiotherapists) per calendar year.[21]

Theme 1: Presented with a pre-existing OA diagnosis

Participants tended to have a diagnosis of knee OA already made by a doctor prior to their physiotherapy consultation and did not seek physiotherapists to take on a diagnostic role. They often brought knee imaging results with them to the physiotherapy consultation. Some expected physiotherapists to access imaging results from their general practitioners. Participants described a range of other health professionals they had consulted for their knee problems before consulting a physiotherapist, such as a general practitioner, rheumatologist, orthopaedic surgeon and/or sports medicine physician.

Participants generally perceived their pre-existing knowledge and understanding about OA to be adequate. They had typically acquired their knowledge from personal experience and/or from conversations with healthcare professionals prior to them seeking physiotherapy care. Often, knowledge about OA was constructed from imaging (e.g. x-ray) results. Participants often described their OA with phrases such as 'wear and tear', 'bone on bone', 'degenerative' and/or 'cartilage wear'.

Theme 2: Wide variation in access and provision of physiotherapy care

Participants accessed physiotherapy through a variety of care models, including consultations at private physiotherapy practices, participation in programs specifically developed for OA management delivered in the public (e.g. Osteoarthritis Chronic Care Program(28)) and private (Good Life with Osteoarthritis Denmark (GLA:D(29)) healthcare settings, participation in more generic strengthening-based programs (e.g. Kieser(30)), hydrotherapy and/or generic exercise classes (e.g. Pilates/gym). Most were referred by their general practitioners or other medical specialists but some "self-referred" to a local physiotherapist. Participants chose their

physiotherapist by convenience (e.g. physiotherapist located in the same medical practice as their general practitioner or located close to home), by following a recommendation from their friend or doctor, or based on prior experience (e.g. previously consulted the physiotherapist for other musculoskeletal conditions and/or their knee problem).

Participant attendance at physiotherapy services often relied on funding being available to subsidise cost of care. Some participants described accessing physiotherapy in public hospital settings (e.g. Osteoarthritis Chronic Care Program(28)), some received Medicare rebates for physiotherapy services in the private sector (e.g. via Chronic Disease Management Plans(31)), whilst others were subsidised through their private health insurance or other regulatory body (such as worker compensation schemes). A few participants paid out-of-pocket to cover their physiotherapy costs. Participants often ceased their physiotherapy visits because funding ran out.

Participants received physiotherapy care via individual consultations and/or via group sessions. Some participants attended one-on-one consultations several times before transitioning to a group setting. Most described undergoing an individual assessment with the physiotherapist, including those who ultimately participated in group classes. People referred to physiotherapy under the Chronic Disease Management Plan typically attended individual physiotherapy sessions up to five times.

Theme 3: Seeking physiotherapy care for pain and functional limitations

Participants spoke about their knee symptoms as a major driver of seeking care, including ongoing knee pain, swelling, clicking and muscle weakness. They expressed frustration with the pain they experienced, particularly when it made them unable to move the knee or walk properly. Words such as ‘click’, ‘crunch’ or ‘crack’ were commonly used to describe other symptoms. Participants

spoke about feeling weak around their knees, which caused their knee to 'give way' or 'collapse'. Participants also sought care because of difficulties with functional activities such as walking, driving, getting in/out of the bed/chair/toilet/shower, negotiating steps and squatting. Some participants avoided doing sports/recreational activities (e.g. cycling, surfing, running, swimming) for fear of exacerbating pain. Many people expected physiotherapists to provide treatments to relieve the pain and assist with building knee strength, as well as helping them to return to activities they previously enjoyed or were now unable to do.

Theme 4: Physiotherapy management focused on function and exercise

The physiotherapist typically assessed functional ability, including walking, squatting, getting in/out of a chair and negotiating stairs. Some participants were timed when performing functional tests, and others were asked to repeat the tests as they progressed through their treatment sessions. Participants consistently described exercise as a key component of their physiotherapy consultations. They received advice about different types of exercises for their OA, including strengthening, cardiovascular, stretching, balance and functional movement programs. Some participants were instructed to use exercise equipment such as elastic resistance bands and/or weights to progress the intensity of the exercises. For those who were given home exercise programs, exercise handouts or online instructions were provided. Some participants also attended supervised group exercise classes such as gym or fitness-based program, Pilates, hydrotherapy, balance and/or strengthening classes.

Participants tended not to expect information about surgery, medications and knee injections from their physiotherapist, instead considering these domains of care as a doctor's responsibility. Many did not see the need for physiotherapists to cover these options further and some participants felt

that physiotherapists should refrain from providing any medication advice because they do not have prescription rights.

Some participants received adjunctive treatments from physiotherapists such as massage, dry needling/acupuncture and manual knee mobilisation techniques to relieve muscle tightness and joint stiffness. Transcutaneous electrical nerve stimulation and electronic muscle stimulator machines were sometimes provided to relieve knee pain and stimulate muscles respectively. Other common adjunctive treatments offered by physiotherapists included ultrasound, heat/cold pack, taping and using a knee brace. These were typically delivered during individual physiotherapy consultations.

Theme 5: Professional and personalized care

Generally, most participants were happy and satisfied with the physiotherapy care they received. Some described having trust in their physiotherapists, both in their clinical skills and professional knowledge when managing knee OA. Most felt that their physiotherapist understood and appreciated the problems they were experiencing, and some were impressed that the physiotherapist was able to identify what was 'going on' with their knees. Participants were also confident that their physiotherapists could help them by providing practical advice and/or strategies to overcome their specific problems.

Participants valued the highly personalised care they received and felt that physiotherapists generally provided care that was tailored to their needs. They spoke about their physiotherapist as being empathetic and understanding towards their condition/circumstances. Some felt that their physiotherapist 'knew them well', which enabled the physiotherapist to provide the care and support they desired/needed. Others highlighted the value of working collaboratively with their

physiotherapist and appreciated having a 'two-way discussion', where the participant was asked for their input in devising a treatment plan for their OA. When care was not personalised, participants expressed a sense of disappointment, describing the treatment received as a 'sausage factory', 'supermarket shelf', or being a 'one size fits all program'

Theme 6: Physiotherapy to postpone or prepare for surgery

Participants perceived that joint replacement surgery was inevitable for their knee problems. Many were informed of this by their doctor and some were already on hospital waiting lists for surgery. However, participants were also advised by their doctors/surgeons to delay surgery for as long as possible and some attended the physiotherapist in an effort to achieve this. Participants generally believed that physiotherapists were not able to 'cure' OA but could help in reducing its impact. Some described the role of physiotherapy as providing them with strategies to strengthen the knees and alleviate their OA symptoms in order to delay surgery. Whilst some participants 'prepared' their knee for surgery by seeing a physiotherapist, others were keen to have surgery as soon as possible.

Alignment with Clinical Care Standard for knee osteoarthritis

Deductive analysis was used to generate Table 4, which summarises how participant experiences of physiotherapy care for knee OA aligned with the Clinical Care Standard.

Table 4: Alignment of participant experiences of physiotherapy care with the national Clinical Care Standard for knee osteoarthritis (OA).

Domains of care	Key elements of care	Patient experiences receiving care
Comprehensive assessment	Assess history of presenting symptoms and other health conditions	Patients expected their physiotherapists to provide treatments for relief of knee pain, to strengthen muscles and to return them to activities they previously enjoyed or were now unable to do.
	Conduct a physical examination	Patients described being typically assessed for functional ability (e.g. walking, squatting, getting in/out of a chair, negotiating stairs). Some were timed when performing

		functional tests, and others were asked to repeat the tests as they progressed through their treatment sessions.
	Evaluate psychosocial factors	Patients rarely described any psychosocial evaluation by their physiotherapist.
Diagnosis	Diagnose knee OA clinically	Patients generally had received a knee OA diagnosis from their doctor prior to seeing their physiotherapist. They often had knee imaging results to bring to their physiotherapy consultations.
	Consider imaging for alternative diagnosis only	Patients did not touch on this aspect as they typically went to their physiotherapist with imaging results from their doctor.
Education and self-management	Provide education about knee OA and available treatments	Patients perceived they had adequate pre-existing knowledge and understanding about OA.
	Individualized self-management plan based on physical and psychosocial needs	Patients felt that their physiotherapist generally provided care that was tailored to their needs. Patients rarely mentioned any psychosocial considerations when discussing self-management plans with the physiotherapist.
Weight loss and exercise	Support people who are overweight or obese to lose weight	Some patients did not perceive their weight as an issue. For those with weight problems, some described having a discussion with their physiotherapist about the importance of weight loss/maintenance.
	Tailor exercise according to needs and preferences	Patients received advice about various exercises (e.g. strengthening, cardiovascular, stretching, balance, functional movement programs) for their OA. Some used elastic resistance bands and/or weights for exercises. Some attended supervised group exercise classes (e.g. gym or fitness-based program, Pilates, hydrotherapy, balance, strengthening classes). Some also received adjunctive treatments (e.g. massage, dry needling/acupuncture, manual techniques, transcutaneous electrical nerve stimulation, electronic muscle stimulator machines, ultrasound, heat/cold pack, and taping).
	Establish weight and exercise goals, and refer to other services for assistance as required	Exercise goals and programs were routinely established with physiotherapists. Patients rarely described establishing weight loss goals or being referred to other healthcare providers for weight loss support.
Medications to manage symptoms	Offer appropriate medicines to manage symptoms, considering clinical condition and preferences	Patients did not expect information about medications and knee injections from their physiotherapist.
Patient review	Agree on regular reviews according to patient's needs	Patient attendance at physiotherapy services often relied on funding being available to subsidise cost of care. Reviews would often cease when funding ran out.
	Refer to specialist if knee OA symptoms worsen and severe functional impairment persists despite conservative management	Patients generally sought care from a physiotherapist to postpone, or prepare for, knee surgery.

Surgery	Offer timely joint surgery to patients not responding to conservative management	Patients generally sought care from a physiotherapist to postpone, or prepare for, knee surgery.
	Provide surgical information to inform treatment decision	Patients did not expect information about knee surgery from their physiotherapist.
	Only offer arthroscopy to patients with true mechanical locking	Patients rarely mentioned discussing knee arthroscopy with their physiotherapist.

Discussion

This qualitative study explored experiences of people who had received physiotherapy care for their knee OA in Australia and how they aligned with the national Clinical Care Standard for knee OA.(8) Participants within this study valued physiotherapists' ability to provide professional and personalized care and described having a strong sense of trust and/or confidence in their physiotherapist. They also felt that physiotherapists understood their problems. These findings are consistent with previous research, which showed that patient satisfaction with physiotherapy care for a range of musculoskeletal conditions was generally high in Australia and other countries such as those in Northern Europe, North America, the United Kingdom and Ireland.(32) Physiotherapists' interpersonal and communication skills are important attributes to high patient satisfaction.(32) Our findings suggest that, generally, patients within this study perceived Australian physiotherapists to work in a patient-centred way to ensure that patients' treatment expectations, needs and preferences are respected. Such care aligned with the Clinical Care Standard relating to self-management, where patients received management plan that suited their needs and preferences. These findings were also similar to our previous study with physiotherapists,(7) who described offering an individualised self-management plan based on knee symptoms and signs, functional ability and goals.

Participants utilised various referral pathways and a range of different funding models to access physiotherapy care through a diverse array of service delivery options. This suggests that there is not a single 'one size fits all' model of physiotherapy care that will suit the needs and individual circumstances of all Australians living with knee OA. Our findings highlight how important it is for healthcare systems to offer different models of physiotherapy care, in both the public and private sectors, for example, spanning individual consultations through to group exercise classes. This helps to reduce inequity of access to physiotherapy care for people with knee OA, which may arise from geographical location or socioeconomic status.(33) Indeed, a community-based survey of 1000 people with arthritis in Australia found that over two thirds of respondents felt that they did not cope well with their condition because of the health care they experienced, and felt that they had poor access to medical doctors, specialists and allied health professionals.(34) Allowing patients the flexibility to choose which type of physiotherapy service best suits their needs, preferences and financial situation also aligns with a philosophy of patient-centred care,(35, 36) and permits the patient to have some control over their own health care.

Our findings highlight how reliant people with knee OA are on government-funded health care and/or third-party payers (such as private health insurers) to fund their physiotherapy care. Participants predominantly accessed and received care from physiotherapists in private practice settings and typically ceased physiotherapy when funding ran out and they were required to pay out-of-pocket for services. These findings are consistent with key Australian policy documents, including the National Osteoarthritis Strategy,(37) that have called for expansion of funding to support OA care delivery, including care delivered by physiotherapists.(38) Given the chronicity of knee OA, regular reviews and follow-up are advocated to allow for monitoring of symptoms, permit timely changes to management, and to support effective self-management.(1) However,

similar to a previous study in Australia,(39) the costs associated with physiotherapy treatments were identified by our participants as an important barrier to continuing to access physiotherapy care for OA. Our findings highlight the importance of funding mechanisms for physiotherapy services to relieve the financial burden that people experience when accessing necessary care for knee OA. Therefore, it remains unclear if patients were offered regular reviews by their physiotherapist, as recommended by the Clinical Care Standard, due to lack of funding being a potential barrier to regular reviews.

Although pain was one of the important drivers of care-seeking in our participants, many also desired help from the physiotherapist to maintain or improve muscle strength and physical function. These findings highlight the need for physiotherapists to co-develop (with the patient) a multi-faceted management plan that does not only focus on pain relief strategies but also incorporates interventions that target strength and assist patients to engage in activities that are meaningful to them. It is thus not surprising that participants in our study described the important role that physiotherapists played in prescribing personalised exercise and addressing functional deficits. A systematic review of patients' perceived health service needs for OA also showed that one of the key reasons patients typically consulted physiotherapists was for exercise advice/prescription.(5) Our patient perspectives about the important role that physiotherapists play in prescribing exercise align with the perspectives of general practitioners,(40, 41) who often refer patients with chronic knee pain to physiotherapists for exercise. General practitioners describe lack of time as the most common barrier for them to initiate exercise with their patients, preferring instead to refer their patient to a physiotherapist.(40, 42) Similarly, physiotherapists themselves also perceived exercise and physical activity to be their main role in the management of people with knee OA (7, 43) and are confident to prescribe exercises to improve knee strength and range

of movement.(44) However, inconsistent with the Clinical Care Standard, it appeared that patients were predominantly assessed by their physiotherapist for their knee symptoms and functional limitations, with little consideration of psychosocial factors. In addition, the management plan provided by the physiotherapist tended to overlook strategies specifically related to weight loss/maintenance. Our patient findings are also similar to our previous study with physiotherapists, (7) who tended to focus on biomedical assessment and management of knee OA. Regarding weight loss advice, they generally provided education about the importance of weight loss rather than advice about strategies to lose weight.

Interestingly, participants tended to have an OA diagnosis already made prior to their physiotherapy consultation. They also believed that they already had adequate knowledge and understanding about their knee OA. This was despite the fact that participants appeared to have different perceptions about knee OA (describing it as 'wear and tear', 'bone on bone', 'degenerative' and/or 'cartilage wear') and their belief that surgery is an inevitable consequence. These perceptions and beliefs about OA are similar to findings from another study exploring reasons why patients resorted to surgical interventions for knee OA.(45) Once the participants in that study had been "diagnosed" with "bone-on-bone" changes, many disregarded exercise-based interventions (which they believed would damage their joint) in favour of alternative and experimental treatments (which they believed would help regenerate lost cartilage). Such perceptions and beliefs about OA are detrimental considering there is often a mismatch between imaging findings and OA symptoms (46, 47) and that conservative management such as exercise can reduce pain irrespective of radiographic severity.(48, 49) In addition, as some primary care specialists are hesitant to refer patients with OA to physiotherapy because they either perceive exercise to be ineffective or lack trust in physiotherapists to provide evidence-based care,(50)

patients may not necessarily have been well-informed about the benefits of exercises during their specialist consultation.(51) In order to maximise success with exercise interventions, these findings suggest that physiotherapists could consider reframing their conversations to actively invite the patient to share their pre-existing knowledge about OA so that any perceptions may be subtly corrected, and evidence-based educational resources shared. Physiotherapists should consider the language they use when discussing OA (i.e. avoid biomedical terms such as 'wear and tear' or 'degenerative') so that they are not contributing to patient misinformation (i.e. joint surgery is inevitable; OA symptoms will worsen over time), and instead provide a sense of hope and optimism for prognosis with conservative care.

Participants also did not expect physiotherapists to provide them with information regarding medications, knee injections and surgery even though these topics are advocated as important responsibilities of all health professionals when managing OA.(1, 52) Instead, participants generally approached their medical doctors for advice in these domains of care. This is likely because, in Australia, physiotherapists can only provide advice about over-the-counter medications and do not have prescribing rights. Regarding knee surgery, patients mainly sought physiotherapy care to postpone or prepare for knee surgery. Our patient findings are similar to our previous study with physiotherapists,(7) who had also felt that surgical advice was outside the scope of practice of physiotherapy care. However, some physiotherapists described their role as preparing patients for knee surgery when they were referred for physiotherapy.

Some participants received adjunctive treatments from their physiotherapist, such as massage, acupuncture and electrotherapy interventions despite limited evidence to support their use.(1, 3, 53) We do not know if participants specifically requested these treatments and/or if their physiotherapist helped the participant to make an informed treatment decision by discussing their

limited treatment efficacy for knee OA. Patients with other musculoskeletal conditions, such as low back pain, often present to physiotherapists with pre-conceived ideas about physiotherapy treatment,(54) and may desire 'hands-on' treatment or any intervention that has previously eased their back symptoms. Physiotherapists may feel obliged to provide treatments with limited efficacy in order to meet the patient's treatment expectation.

A strength of our study was its qualitative design, which allowed us to explore the experiences of people receiving physiotherapy care for knee OA in Australia. In order to explore diversity in experiences, we interviewed a range of participants, including males and females of differing age, occupational status and geographical location across Australia. Our study also has limitations. There was no patient and public involvement in the design of this research. Participants responded to advertisements (social media) and/or email invitations (research volunteer database) to participate and thus our sample may be biased towards those who had favourable experiences with physiotherapy and/or were successful at accessing physiotherapy. There were many more females than males in the sample which may reflect the social media approach to recruitment. Participants were reimbursed for their time with a $50 gift card so they might have responded to interview questions in a socially desirable manner. Efforts were made to reduce this effect by informing participants at the beginning of the interview that there were no right or wrong answers to the questions asked. Our sample was constrained to participants who could speak English and given that 21% of Australians speak a language other than English at home,(55) we do not know if our findings reflect the experiences of people from culturally and linguistically diverse backgrounds. Furthermore, physiotherapists are a primary contact health profession in Australia so patient experiences with physiotherapy care for knee OA may be different in other countries where people can only access a physiotherapist on referral. Future research is particularly warranted in low to

middle income countries, given that social factors such as education level and income influence patient access to allied health services such as physiotherapy.(56) Our findings may also not be applicable in countries where cultural beliefs differ considerably from the Australian context. The perception of pain, health beliefs and concept of disability and its management often vary from one culture to another(57) and thus may influence patients' experiences managing their conditions.

In conclusion, our findings provide evidence from the patient's perspective about the important role physiotherapists play in the care of Australians with knee OA, reinforcing the need for equitable access to physiotherapy services that are supported by a range of funding models. Findings highlight the importance of different pathways for accessing care to meet the needs of individuals and ensure that all people with knee OA are adequately supported in managing their condition. Overall, patients' experiences with receiving physiotherapy care for their knee OA were partly aligned with the Clinical Care Standard, particularly regarding comprehensive assessment, self-management, and exercise.

Contributors

PLT, KLB, KSD and RSH contributed to the study conception and design. PLT completed data collection. PLT, KLB, LBJ, TE, KSD and RSH contributed to the data analysis and interpretation of data. PLT wrote the first draft of the manuscript. PLT, KLB, LBJ, TE, KSD and RSH revised the paper and provided scientific input. PLT, KLB, LBJ, TE, KSD and RSH approved the final version of the manuscript.

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Conflict of interest

The authors declare that they have no competing interests.

Data availability statement

No data are available.

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Supplementary File 1: An audit trail of evidence showing examples of each stage of the data analysis

Original data (Individually assessed by two researchers)	Code/category (generated by the two researchers)	Sub-theme (based on discussion between the researchers)	Theme (based on discussion between the researchers)
- We started with x-rays, and that was done by my general practitioner	general practitioner	*Prior osteoarthritis care from other health professionals*	Presented with a pre-existing osteoarthritis diagnosis
- First of all, I went to a knee specialist and then I went to a sports medicine specialist and orthopaedic surgeon	knee specialist, sports medicine specialist, orthopaedic surgeon		
- Initially I went to the orthopaedic surgeon	orthopaedic surgeon		
- I went to a specialist in this	specialist		
- I did a course with Dr L, who is a rheumatologist	rheumatologist		
- I suffered quite a bit of pain and I was referred to a specialist	specialist		
- I went to see a surgeon with the possible view of having replacements done	surgeon		
- If it's bone on bone that doesn't replace the cartilage	Bone on bone, no cartilage	*Perception of adequate osteoarthritis knowledge*	
- I've got a fair bit of wear and tear but because of my age	Wear and tear due to age		
- It's just basically wear and tear, and it's really bone on bone	Wear and tear, bone on bone		
- I've had all those tests. So I had all that and that's when they discovered [osteoarthritis]	Tests to confirm osteoarthritis		
- My understanding is it's really just a bit of integral wear and tear of the joint	Understanding, wear and tear		
- I have a fairly good understanding of what osteoarthritis	Good understanding of osteoarthritis		

-	I just chose them because I knew they did Pilates and exercise rehab	Self- referral	*Referral pathways*	Wide variation in access and provision of physiotherapy care
-	follow up physiotherapy after the arthroscopy	Rehabilitation program		
-	it [physiotherapy] was convenient because it was near my general practitioner	Self- referral		
-	Probably word of mouth	Peer recommendation		
-	I've actually had a work injury, so that [physiotherapy] was actually paid through my injury	Through work compensation scheme		
-	That [physiotherapy] was part of an advanced health care plan	Referred by doctor		
-	The general practitioner sent me to a physiotherapist	Referred by doctor		
-	I went to see a knee specialist, he suggested that physiotherapy might help strengthen the muscles	Referred by specialist		
-	I got them off the EPC Plan	Medicare subsidy	*Funding models*	
-	Subsidised by my health insurance	Health insurance		
-	I've got private health cover, so I paid a gap	Health insurance		
-	WorkCover then ceased to cover me	Work compensation scheme		
-	I've actually had a work injury, so that was actually paid through my injury	Work compensation scheme		
-	I was doing them myself out-of-pocket	Self-funded		
-	I actually participated in the GLA:D programme	Group setting	*Individual vs group sessions*	
-	They [the physiotherapist] wanted me to do the pilates in the group	Group setting		
-	trying to get me involved in aqua aerobics	Group setting		
-	The first has been my regular physio who I've seen for probably about four years	1:1		

-	continuing with intermittent physiotherapy sessions as well as exercising at home	1:1		
-	as part of the bike fit the physio did a full-on assessment	1:1		
-	the pain was just killing me. I would be in tears with the pain.	Knee pain	*Knee symptoms*	Seeking physiotherapy care for pain and functional limitations
-	I wanted to go and build-up the strength in my legs	Knee weakness		
-	I've had this really sore knee that's basically collapsing underneath	Knee pain and weakness		
-	it was swollen, hot, and I couldn't walk without a walking stick. It was very painful	Knee swelling, pain		
-	Loss of support. I was having trouble, I was struggling walking because the knee would just suddenly give way, and I'd fall down	Knee weakness, poor support		
-	my knees were becoming more and more sore and clicking as I walked	Knee pain, clicking		
-	my knees were becoming more and more sore and clicking as I walked, particularly up sets of stairs	Difficulty with steps negotiation	*Functional problems*	
-	my gait's not very good and it's throwing my back out. I was heading overseas and thought I've got to do	Walking difficulty		
-	something about this, I can't be hobbling around.	Walking difficulty		
-	I could not stand up out the chair unaided	Difficulty getting off the chair		
-	I was struggling to walk	Walking difficulty		
-	Because I've lost capacity to squat	Difficulty squatting		
-	I think she [the physiotherapist] made me walk a little bit	Gait assessment	*Assessment of function*	Physiotherapy management focussed on function and exercise
-	They'll [the physiotherapist] get you to do a few activities to try and I guess test the limits of what you can and can't do with your knee – squatting, bending, rotation	Functional tasks		

- timing or just observing, getting in and out of a chair	Functional tasks	
- the [physiotherapist] just got me doing step-ups	Steps assessment	
- the [physiotherapist] got me to walk straight away from him and then turn around and come straight back towards him	Gait assessment	
- she [the physiotherapist] recommended to keep riding the pushbike	Bike, cardio	*Various types of exercises prescribed*
- we went to the hydro	Hydrotherapy	
- advised me to walk in the pool, go on the exercise bike, those sorts of things	Water exercise, bike, cardio	
- to walk on the treadmill for five minutes as a warmup	Gym workout	
- she's [the physiotherapist] given me stretching exercises with a rubber band	Theraband	
- the [the physiotherapist] gave me, swimming, wall press ups, yeah, biceps, standing with dumbbells, and bridge, lie on your back, clamshells, wall squats, single leg stance with eyes open, seated abduction ball squeeze	Swimming, functional exercise, strengthening	
- I think it's the rheumatologist or my general practitioner probably, they would be the ones that would be issuing the drugs so I didn't think that would be a physio's	Medication is GP's role	*Surgery, medications, and injections are for doctors*
- I get the impression the physio doesn't want to go into the drug side of it because of the risks	Medication is not the physiotherapist's role	
- the doctor had covered that [medication]. I didn't feel that I need my physio [needs] to	Medication is GP's role	
- No but it's not his [the physiotherapist] place to manage it. Medications, the doctor does that.	Medication is GP's role	
- Because the surgeon will know better about how advanced it is	Surgery is the specialist's role	
- I remember him [physiotherapist] saying, your next point of call could be to go and speak to a physician who specialises in knees	Surgery is the specialist's role	

- They [the physiotherapist] said what you need to do is we're going to refer you to the doctor, and he can then make the best decision on what treatment should happen with your knee.	Surgery is the specialist's role		
- She [the physiotherapist] did a little massage on my calf and my knee	Massage	*Adjunctive treatments*	
- I think they've [the physiotherapist] played around with a TENs machine	TENS, electrotherapy		
- He [the physiotherapist] gave me exercises; put a little machine on my knee	Electrotherapy		
- she [the physiotherapist] would do deep tissue massage for five to 10 minutes	Massage		
- I had some strapping of the knee	Taping		
- I think I would've got some, a little bit of ultrasound	Ultrasound, electrotherapy		
- I think it's called EMS machine, an electronic stimulation machine	EMS, electrotherapy		
- she [the physiotherapist] had advised me to wear a Tubigrip, just pressure bandage over the knee	Tubigirp, knee bracing		
- He [the physiotherapist] was extremely good and I had complete trust in what he was doing	Trust in the physiotherapist, confident	*Trust and/or confidence*	Professional and personalized care
- I think we had quite a good relationship and he [the physiotherapist] also knew my background and what I'd been through	Good relationship, trust		
- She [the physiotherapist] had an instant grasp of what was happening and what was needed to try and assist	Understood my concern, tried to help		
- [The physiotherapist] was great and he was fairly well read and understanding of the situation	Competent, trust and confident		
- what I can say about my physio is that I think he has a very good understanding of my knee problem and I think he understands that better than my doctors	Good relationship, understanding		

- They [the physiotherapist] were always very empathetic towards it	Empathetic		
- I think she [the physiotherapist] understood what my concerns were, she looked at all those things and helped me with them.	Specific to the concern, helped me	*Personalized care*	
- She [the physiotherapist] was always checking back with me to make sure that it was possible for me to do it or if I could cope with it or whatever the case was	Checking with me		
- there was nothing that I wasn't confused about. And it was a two-way discussion	Two-way discussion		
- the [physiotherapist] assessed it best by working with me	Working with me		
- The surgeon said to me he probably gives me 10 years out of my right knee	Postpone surgery		Physiotherapy to postpone or prepare for surgery
- I actually am going to go to the orthopaedic specialist in February to have a look and just see whether I should have a replacement	Intention for knee surgery, preparation		
- My doctor just told me that I'm going to need a knee replacement eventually and so did the specialist surgeon, so I thought well I don't want to have a knee replacement just at this stage.	Need a knee replacement but not at this stage, prepare for surgery		
- We were talking about the advantages of doing it [surgery] sooner than later, but then he's [the physiotherapist] saying if I do it a bit later then we can strengthen the muscles in my knee	Prepare for surgery		
- I'm on a waiting list to have a knee replacement, but when that happens, who knows	Waiting list for knee replacement		

EMS: Electrical muscle stimulation
EPC: Enhanced primary care
GLA:D: Good Life with Osteoarthritis: Denmark (GLA:D)
TENS: Transcutaneous electrical nerve stimulation

Standards for Reporting Qualitative Research (SRQR)

No.	Topic	Item	Page/line number
	Title and abstract		
S1	Title	Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	Page 1, line 1
S2	Abstract	Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	Page 2, line 23
	Introduction		
S3	Problem formulation	Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	Page 5, line 95
S4	Purpose or research question	Purpose of the study and specific objectives or questions	Page 6, line 116
	Methods		
S5	Qualitative approach and research paradigm	Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale[b]	Page 7, line 146
S6	Researcher characteristics and reflexivity	Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	Page 10, line 176
S7	Context	Setting/site and salient contextual factors; rationale[b]	Page 8, line 156
S8	Sampling strategy	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale[b]	Page 8, line 156
S9	Ethical issues pertaining to human subjects	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	Page 8, line 164
S10	Data collection methods	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale[b]	Page 8, line 168; Page 10, line 186
S11	Data collection instruments and technologies	Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	Page 8, line 168
S12	Units of study	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	Page 11, line 201
S13	Data processing	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification	Page 10, line 186

		of data integrity, data coding, and anonymization/deidentification of excerpts	
S14	Data analysis	Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale [b]	Page 10, line 186
S15	Techniques to enhance trustworthiness	Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale[b]	Page 10, line 186; Page 14, line 224
	Results/findings		
S16	Synthesis and interpretation	Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	Page 20, line 242; Page 24, line 348
S17	Links to empirical data	Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	Page 14, line 227
	Discussion		
S18	Integration with prior work, implications, transferability, and contribution(s) to the field	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/ generalizability; identification of unique contribution(s) to scholarship in a discipline or field	Page 26, line 354
S19	Limitations	Trustworthiness and limitations of findings	Page 31, line 476
S20	Conflicts of interest	Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	Page 33, line 521
S21	Funding	Sources of funding and other support; role of funders in data collection, interpretation, and reporting	Page 33, line 511