Author/s:
Egerton, T;McLachlan, L;Graham, B;Bolton, J;Setchell, J;Short, CE;Bryant, C;Bennell, KL

Title:
How do people with knee pain from osteoarthritis respond to a brief video delivering empowering education about the condition and its management?

Date:
2021-08-01

Citation:
Egerton, T., McLachlan, L., Graham, B., Bolton, J., Setchell, J., Short, C. E., Bryant, C. & Bennell, K. L. (2021). How do people with knee pain from osteoarthritis respond to a brief video delivering empowering education about the condition and its management?. Patient Education and Counseling, 104 (8), pp.2018-2027. https://doi.org/10.1016/j.pec.2021.01.007.

Title: How do people with knee pain from osteoarthritis respond to a brief video delivering empowering education about the condition and its management?

Thorlene Egerton[a], Liam McLachlan[b,c], Bridget Graham[a], Joanne Bolton[a], Jenny Setchell[b], Camille E Short[d,e], Christina Bryant[d], Kim L Bennell[a]

[a] Centre for Health, Exercise & Sports Medicine, Physiotherapy Department, The University of Melbourne, Melbourne, Australia

[b] School of Health & Rehabilitation Sciences, The University of Queensland, Brisbane, Australia

[c] The Kenneth G Jamison Department of Neurosurgery, Royal Brisbane and Women's Hospital, Australia

[d] Melbourne Centre for Behaviour Change, Melbourne School of Psychological Sciences, The University of Melbourne, Melbourne, Australia

[e] Melbourne School of Health Sciences, The University of Melbourne, Melbourne, Australia

Corresponding author at: Thorlene Egerton
Department of Physiotherapy | Centre for Health Exercise & Sports Medicine
Level 7, Alan Gilbert Building
The University of Melbourne, Victoria 3010 AUSTRALIA
T: +61 3 834 41233 M: 04 9938 2621
E: thorlene.egerton@unimelb.edu.au

Key words: Patient education, knee, osteoarthritis, behaviour change, qualitative

Declarations of Interest:
None

Abstract

Objective: To evaluate responses by people with knee osteoarthritis to a brief educational video about their condition that aimed to empower and motivate effective self-management. The video content addressed psychosocial contributors to pain and barriers to behaviour change.
Methods: A mixed methods design, including a survey and semi-structured interviews, was used to collect data from 118 people (46–83 years, 78% female) with knee osteoarthritis.
Results: Quantitative data analysis showed the video was rated positively on 0-6 scales for enjoyability (mean 5.0), helpfulness (4.9), relevance (5.0) and believability (5.4). The majority would recommend the video (89%), learned new information (78%) and/or reported intentions to change behaviour (78%). A minority disliked aspects of the video (23%). The thematic analyses identified three main themes: *Reactions* to the video, including emotions; *Learning* from the video*,* including new knowledge and empowerment, but also unmet information needs or disagreement; and *Intentions,* including behaviour changes, cognitive changes and help seeking.
Conclusion: Education about knee osteoarthritis with a focus on empowerment is well received by people with the condition, although some discordant views emerged.
Practice implications: The educational video about knee osteoarthritis can be recommended to promote effective self-management and counteract potential drawbacks associated with biomedical-based education.

1. Introduction

Knee osteoarthritis (OA) is a highly prevalent condition generating substantial burden on individuals, health systems and societies globally [1, 2]. Clinical practice guidelines recommend self-management interventions including physical activity and muscle strengthening exercise for all people with knee OA [3-5]. However, a recent Cochrane review highlighted that uptake of these recommendations is hampered by the beliefs people hold about the cause of their chronic pain, confusion about which behaviours are beneficial versus harmful, and fear of making their condition worse, which leads to activity avoidance [6]. Patient education may have a role in helping to overcome these barriers to effective self-management [7] and lessen the reliance on ineffective behaviours and low-value care, or behaviours and care that are not supported by the evidence base.

According to all high-quality clinical practice guidelines, education is considered a core component of effective care for people with knee OA [3, 5]. Health information can be conveyed via a range of communication and education strategies, however little is known about the optimal content and delivery to best promote effective self-management [3]. Currently, most patient education, including education directly from clinicians and from written and video resources produced for people with knee OA, utilises a biomedical discourse [8-10], fostering negative outcome expectations (i.e. expectations of symptom progression and that conservative treatment options will not help or may harm) [8, 11-14]. Imaging is commonly used by clinicians as an aid to education and many people are advised that surgery will be necessary [15]. These messages are out of step with contemporary understanding of chronic pain neurobiology and with studies showing knee OA trajectories are more often characterised by persistent fluctuating symptoms rather than worsening [3, 16]. Education that focusses on the 'wearing down' of joint surfaces, and on surgery as the only effective (and an inevitable) treatment, promotes fear and activity avoidance [11, 12], and may contribute to psychological distress, despondency and fatalism [13, 14, 17].

Communication with patients has been described as being based on either a 'patient education' or 'patient empowerment' discourse [9]. With a 'patient empowerment' discourse, patients are viewed as being active participants in the communication and recognised as having choice and individual perspectives, while the 'patient education' approach is founded in a biomedical model of health and assumes the patient's knowledge should align with that of the health professional. Further, it has been argued that education provision is not just about the accuracy of the words used to deliver the information. The resource is an intermediary that enables the recipient to construct their understanding of health and disease [18]. Recent clinical practice guidelines recommend that

clinicians provide accurate information on OA disease progression and "promote hope, optimism, and a positive expectation of benefit from [recommended] treatment" [3]p1583. This type of education was hypothesised to promote more helpful consumer knowledge about knee OA disease progression and best management options, while addressing counterproductive beliefs [19, 20]. This new approach to education about knee OA has the potential to increase adoption and maintenance of self-management behaviours, in particular exercise and physical activity interventions. However, there is currently no direct clinical trial evidence to support this recommendation [3].

We produced a short (nine minutes) patient educational video (Knee OA Info Video V1 "Knee Pain: What can I do?") that we designed to be engaging, empathetic and accessible as well as informative. The goal of the video was to increase people with knee OA's motivation, self-efficacy and engagement in effective self-management behaviours including muscle strengthening exercise, general physical activity, judicious use of pain medications, and appropriate utilisation of health care services. Given the video focuses on non-traditional content (i.e. behavioural and psychosocial contributors rather than structural damage) and promotes hope for the future, the primary aim of this study was to explore how people with knee OA respond to the content and delivery. Secondary aims included evaluating the relevance, credibility, acceptability and perceived benefits of the video.

1.1 Significance

Despite patient education being a core recommendation in all OA clinical practice guidelines [3-5], there is relatively little research in this area beyond delivery method and readability. Exploring the impact of non-biomedical content and empowerment messaging for people with chronic painful musculoskeletal conditions is a relatively new field of research [8-10, 21]. Given the global prevalence and burden of chronic painful musculoskeletal conditions [1, 2], the potential benefit of low-cost education interventions that change knowledge, motivation and confidence of people with OA is significant.

2. Methods

This mixed methods evaluation included both quantitative (survey) and qualitative (survey and interview) components. The study was approved by the School of Health Sciences Human Ethics (University of Melbourne: ID 1953681). All participants provided informed consent. Standardised rigour criteria (COREQ) [22] was used to guide study design and reporting.

2.1 Participants

Participants were volunteers recruited for either the survey group or the interview group using social media, community advertisement and word of mouth. Inclusion criteria were knee OA based on self-reported physician diagnosis or clinical diagnostic criteria [5]. Participants initially completed an online screening form and all participants were followed up by telephone and asked to confirm they met the clinical criteria for a diagnosis of knee OA. This included checking there were no indications of an alternative diagnosis such as an acute injury or inflammatory arthritis. This method of diagnosing knee OA is recommended by current clinical practice guidelines [3-5]. Exclusion criteria included: inflammatory arthritis; arthroplasty (any joint), prior participation in a self-management, chronic pain, or specialist OA program; or difficulty communicating in English. Sampling aimed for a range of age, sex, weight, educational level, geographical location (i.e. metropolitan vs regional/rural) and socioeconomic status in an attempt to represent people with differing experiences, knowledge, beliefs and perspectives (i.e. sample heterogeneity). Interview sample size was guided by the notion of saturation [23], whereby recruitment was ceased once a broad range of participants had been sampled, and limited new perspectives were being elicited.

2.2 Procedures

Initial eligibility screening was conducted online (Qualtrics^{TM}) for both survey and interview participants, followed by telephone screening. Volunteers were offered a choice to do the survey or interview until no further interview participants were required. Survey participants completed the consent form and baseline questionnaire electronically (Research Electronic Data Capture, REDCap^{TM}). They were then emailed the link to the video and asked to watch it and then complete the feedback survey. There was no limit on how many times they watched the video before or after completing the survey. Interview participants completed the consent form and baseline questionnaire electronically (REDCap^{TM}) before their interview, which was conducted at the University campus or online using video conference software (Zoom^{TM}). The interview sessions included watching the video, the interview, and then optionally re-watching the video with encouragement to talk over/pause the video to add further comments. Interview participants were offered a $25 gift voucher and the opportunity to ask an experienced physiotherapist any further questions.

2.3 Intervention

Video format was chosen because it is acceptable and accessible by many people. With over 1.6 billion YouTube users and over 2 billion videos viewed each month [24], a video has potential to reach many people. Details of the video information content and delivery features, including

embedded behaviour change techniques, are provided (Appendix A). In summary, the video (https://youtu.be/o8ZJN56aSic) was mostly animation apart from approximately 50 seconds of clips of real patients. Design was informed by behaviour change theory (Social-cognitive theory [25] and the Information-Motivation-Behavioural skills model [26]), adult education principles, and known barriers to lifestyle change among people with knee OA [11, 12, 27]. The video explained that knee OA can usually be diagnosed from clinical features, and that x-ray findings do not determine pain severity. It addressed common misbeliefs, including that knee OA is a condition of 'wear and tear', and that it inevitably progresses. The role of inactivity, fatigue, low mood, poor sleep and worry in worsening pain was briefly explained. The importance of lifestyle interventions in particular physical activity and exercise in maintaining joint function and controlling pain was emphasised. The video was designed based on the framework of 'patient empowerment discourse', which conceptualises the person with knee OA as competent and resourceful [9]. It concluded with short clips of real people with lived experience of knee OA conveying positive messages about how they manage their pain, and a call to action. It was University branded for credibility [28].

2.4 Data collection

Participants completed a baseline questionnaire including demographic details and self-report measures of pain, health literacy, and 'need for cognition'. Pain was self-reported using 11-point numerical rating scales (NRS) [29]. Health literacy was measured using the 44-item Health Literacy Questionnaire; a comprehensive measure of nine domains of health literacy with established validity [30]. 'Need for Cognition', a personality trait relating to how people tend to process information, was measured using three items and a 10-point NRS [31].

The bespoke feedback survey (Appendix B) included 7-point NRSs to measure overall enjoyment, degree of helpfulness, perceived relevance of the information, amount of new information, and perceived credibility of information. Yes/no questions asked whether they: would recommend the video to a friend; learned new information; disliked aspects of the video; found parts were unclear, and; intended to change any behaviours. Free text questions included: What new things did you learn? Was anything unclear? What did you dislike? What did you find didn't make sense or was unclear? What, if anything, will you change?

The interviews were conducted by one of three female physiotherapists (JB, BG, TE), who were otherwise unknown to participants. The semi-structured interview guide is provided in Appendix C and included questions to prompt the participants' reactions to the video including impressions, believability, relevance, feelings, and any changes to thoughts about living with knee OA. Interviews

were audio recorded and transcribed verbatim by an external provider and lasted an average of 42 minutes including video viewing(s).

2.5 Data analysis

Quantitative data from survey rating scales are reported descriptively. Qualitative data from free text survey questions and interviews were thematically analysed using techniques described by Braun and Clarke [32]. The analysis was inductive and descriptive – that is, not underpinned by predefined conceptual frameworks. For both sets of qualitative data, two researchers (BG and TE – survey data, LM and TE – interview data, all physiotherapists, TE has qualitative experience) independently grouped comments under separately and inductively proposed codes relating to the research question. The researchers then discussed proposed codes and refined themes/sub-themes iteratively during two (survey) or three (interview) exchanges, noting consistencies and inconsistencies between participant responses. Additional researchers (JS and CES) with physiotherapy and/or psychology backgrounds and extensive qualitative research experience, provided further analytic input by reviewing the raw data and draft themes. A final stage involved identifying overarching themes for both data sets. Independent consideration by two further team members (KB and CB) not involved in data collection or identification of themes, confirmed results were grounded in the data.

2.6 Trustworthiness

Credibility of the study findings was assured through investigator triangulation (multiple investigators involved in data analysis), data triangulation (data collected via both survey and interviews), and the multiple steps taken during data analysis and development of themes/subthemes [33]. We used the COREQ recommendations to guide study design and reporting to ensure dependability and confirmability. In addition, all data points (quotes used for coding) are provided (Appendix D). Judgement of transferability is aided by providing contextual information and a link to the video. Transferability and reflexivity, or the issues of biases, preferences and preconceptions among the researchers, are considered in the Discussion.

3. Results

3.1 Study sample characteristics

Of 100 participants recruited, 78 participants completed the survey. The remaining 22 received the link to the video but did not complete the survey. Eighteen people were interviewed an average of 10 days after baseline questionnaire completion. There was a range in age, sex, educational levels and employment status among the cohort, although educational attainment and health literacy were

relatively high overall. Full details are provided in Table 1. Knee pain ranged from mild to severe (average 4.6±1.9, range 0-9) and most (72%) had had pain for over 3 years. Most had first sought treatment over three years previously, although 7% had never sought treatment. There was variation across 'need for cognition' with most leaning towards greater need for cognition.

3.2 Quantitative survey results

Enjoyment of the video was highly rated, however eight survey respondents (10%) did not enjoy it, rating it ≤3/6. Most found it helpful, yet eight (10%) did not (≤3/6). Perceived relevance of the content was high, with only one survey respondent (1%) rating relevance below 3/6. Seventy-eight percent reported learning something new, with six survey respondents (8%) indicating there was a 'great deal' that was new. The ratings for whether the information was perceived to be correct were high (average 5.4/6±0.8), with the lowest rating being 3/6. Some survey respondents reported disliking some aspect of the video (23%) or finding something unclear (13%), yet 89% would recommend it to family/friends. Perceived benefit was high with 74% identifying a specific change they intended to make as a result of watching the video (Table 2).

3.3 Thematic analyses (Survey and interview)

Our thematic analysis of the qualitative survey and interview data produced three overarching themes: *Reactions*, *Learning* and *Intentions*. These are explained below with example quotes. Respondents are represented by an alphanumeric code where S=survey and I=interview. The full set of quotes that support each theme/subtheme is provided in Appendix D.

3.3.1 Theme 1: Reactions

There were three sub-themes related to *Reactions* **to the video content and delivery**: *Emotional reactions, Engaging with the content,* and *Trust*.

3.3.1.1 Emotional reactions

Firstly, *Emotional reactions* were mentioned by many respondents in response to the video. Emotional reactions were categorised as being either *Helpful* in relation to motivating change or *Unhelpful* (although it is acknowledged that these classifications were subjective and may be inaccurate). Most were *helpful* including feeling happy, reassured, relieved, comforted, hopeful, grateful (for the information).

> *S24: "It has been a huge relief to know that I don't have to have a knee operation, that surgery is not the only solution to the problem. I feel much more optimistic about the situation, and positive."*
>
> *I4: "I thought, finally, someone's talking to me, and actually, I couldn't stop smiling during this video because I thought, "This is such good news". I definitely thought, this is for me."*
>
> *S51: "I felt like breaking down into tears at the part with the downward spiral of how it can affect you (in fact I am crying as I am writing this). This part felt so much like my story. The part where it showed how you can turn that around made me feel lighter, as if there was actually hope and that I could do something positive for myself."*

Feeling more confident was another commonly expressed *helpful* reaction. Respondents were mostly more confident in relation to managing the condition in the future and keeping active.

> *I1: "I feel a bit more confident that I might be able to resolve the issues I've got at the moment, and get back to doing some of the activities that I've been … well, I've been taking things a lot easier, hoping that it will clear up a bit more. So [now I am more confident] that maybe I can improve the situation"*

Occasionally, a respondent felt saddened or regretful (that they hadn't been doing enough to help themselves), and/or perplexed (about what to do next). Frustration was also sometimes categorised as a *helpful* reaction to the video.

> *S27: "I feel frustrated that it was hard for me to find this information … if I had seen this video when first diagnosed it would have been very helpful."*

Only one interview participant's response was classified as an *unhelpful* emotional reaction.

> *I19: "I think people don't realize how much we all do [the suggestions in the video] anyway, and it's frustrating."*

3.3.1.2 Engaging with the content

The second sub-theme was *Engaging with the content*, which was understood by the researchers via respondents' discussions of how the video material *Connected to their lived experience*, their expressions of feeling *Validated* and that the content was *Relatable*. Parts of the video that

respondents *connected to their lived experiences* included the explanations of pain variability, mood impacts, exercise benefits, and that x-rays not matching symptoms.

> *I2: "That was really quite good. It reflects my experience quite a lot as well in terms of the way the pain can just be there, and then after a while it comes back down again. And yeah, it matches my experience that if you do exercise and you do manage it, it does control [the pain]."*
>
> *I17: "[Another thing in the video was] that even doing [hard] exercise, the pain will come back to where it was. I thought, because I hadn't done anything serious like climbing Mount X for quite some time, my knees would improve. But I must admit this year it was more painful. So even though the pain increases when doing extreme things, afterwards it comes back to exactly where it was."*

Some respondents indicated the video *Validated* some of the choices they had made. For example, their thoughts, actions or decisions were supported by the video.

> *S67: "When doctors tell you that the imaging shows "normal wear and tear", but your pain levels are elevated, you can feel like a hypochondriac."*
>
> *I11: "I totally agree with, you know. You do everything else you can before you go down that route [of having surgery]. In my age group I have a lot of friends who made a different choice and have knee replacements."*

Finally, some comments were specifically about whether the participant *Related* to the people (animated and real) in the video. The real people sharing their own experiences in the video seemed to help some respondents engage with the content.

> *I4: "Yes, that lady needs to lose a few pounds, like I do need to lose a few pounds, and the fact that she said it, I went, okay, you're onto it. She said the strength training thing, and I thought, okay, well, these are everyday people like me."*

For others, the real people and/or animated characters were a barrier to them engaging.

> *S96: "I didn't identify with them. Most of the people I know are like me - in their 40s and active, fit people (mainly women) who play sport."*
>
> *S44: "I was not captivated! I didn't warm to the faceless characters used in the video, they seemed small, dull and insignificant to me."*

3.3.1.3 Trust

The final sub-theme of *Reactions* was *Trust*, which incorporated a range of reactions including that trust was easy because of the university branding, or because the content reflected their lived experience. Having people with lived experience of having knee OA tell their stories was also identified as facilitating trust. One interview respondent identified that it would be helpful if they knew their health professionals trusted the information.

> *I5: "It would have been good to get a bit more of a sense of your GP, who you've trusted for years, and your physio that you may not know so well are actually on the same team and get some sense that they will agree that this is the right thing. So you feel if you obey the advice of the video and see your physio, you're not going behind your GP's back. It would be good to impart some sense of, "This is advice that your GP would also approve of as well.""*

3.3.2 Theme 2: Learning

In total, four sub-themes were identified within the *Learning* theme: *New knowledge*, *Empowerment, Discordance,* and *Unanswered questions*.

3.3.2.1 New knowledge

The majority of our respondents identified some *New knowledge* they had gained from watching the video.

> *I5: "I learned a lot. There's a lot of things in there I didn't know. I didn't know how common it was, and that this is something that a lot of people do live with."*
>
> *S26: "I had not heard many of the messages before. I was encouraged to look beyond the knee pain and to adopt a more positive outlook, having previously convinced myself that surgery was the next step."*
>
> *I11: "Even though I like to think that I know [a lot] and have found out a lot about what's happening with my knee, I've still got more to learn. [The video is] better in a lot of ways [than other information I have read] because it's a more complete picture of the whole lifestyle, the whole cycle. For instance, how you cope with the pain and how what you choose to do impacts on your life. If you sit more, get less exercise, you lose muscles, which is one of my main concerns now."*

Our respondents learned a range of different information and many recalled at least one of the key 'positive' messages that were in the video. Such as:

> *I7: "I thought what in this video was important was the bit about the x-ray and MRI side of it. It's only recently that the doctor had said to me you don't need an MRI but didn't explain fully why."*
>
> *I12: "The look [versus] the feel is the important thing as far as I'm concerned. So I should just use [the feel] as a measure of whatever I'm doing - whether it's successful or not. I thought that was good."*
>
> *I17: "[The video explained] it's not necessarily going to get a lot worse as time goes on if I keep managing it."*

Many respondents also identified learning that is related to the known barriers to effective self-management, such as fear of doing further damage:

> *S61: "The main thing that I got from the video was that pain does not necessarily equate to damage. I have been limiting my activity because I wondered if I was worsening my situation. Now I know that I'm not, I can relax and get on with my activities. I know not to be disheartened by the severity of my diagnosis after a CT scan."*
>
> *S87: "When I am in pain, I always thought that I needed to rest my knees but now I know that exercise will do them good."*

Many respondents additionally commented that the new information was 'good to know', useful, or that it offered hope. Some respondents indicated that they were surprised by the new information. However, two comments indicated the respondents did not learn anything. For example:

> *I19: "From my experiences, [the video] doesn't really make a difference. I've lived with knee pain for years and years and years. [The video] doesn't really help me."*

3.3.2.2 Empowerment

A second sub-theme of *Empowerment* related specifically to learning about their role in managing their pain. For some, empowerment related to their 'locus of control' whereby responsibility for managing the condition was realised to lie more with the individual.

> *I2: "I think that's a good message at the end; "What are you going to do about it?" [laughs] Yeah, not "What's your doctor going to do about it?", but "What are you going to do about it?""*
>
> *I7: "I think it reinforces it is important to lose the weight, do the exercise, and there will be days when it's harder than others, but you must sort of build that into your routine and make it a habit."*
>
> *I20: "[Re not necessarily needing surgery], I think that's a really good message, because I think that links in really well with people taking responsibility for the exercise that they do and being at a reasonable weight. Rather than looking for something else, for some magic cure. So good."*

Sometimes this was something the respondents already knew to a large extent but was reinforced by the video content.

> *I3: "Well, it validates what I'm currently thinking about my knees, which is that I've actually got to take control of it and take responsibility for the strengthening and doing the exercises and keeping the walking up."*

Sometimes empowerment seemed to be motivating:

> *I15: "This is my situation, and this is what I live with and this is what I need to do to get over this. Yes, I want this. I want this to happen, to keep doing what I can do."*

Some respondents also expressed greater optimism about their ability to manage with the condition.

> *I11: "I'm more hopeful after watching this and understanding where I slotted into that negative cycle, I think it's made me more motivated to get out of that negative cycle and into a more positive one."*

3.3.2.3 Discordance

The third sub-theme was *Discordance*. This sub-theme was separated into four types of discordance: *Disagreement*, *Yes but…* , *Lost in translation* and *Counter to prior understanding of health advice.* Firstly, *Disagreement,* which seemed from many of the statements to stem either from a respondent's beliefs or personal experiences. Some comments indicated a resistance to information that was new and at odds with beliefs.

> *S84: "I am struggling to believe: 1. You will not do any more damage, 2. Pain and sleep can be managed by mental and physical approaches."*
>
> *I19: "The [healthy] lifestyle thing is an important thing to teach everybody - to always exercise, to always be positive - and I could see it being of benefit to most people. But I certainly don't think [it is right for] people with chronic osteoarthritis and pain and things like that."*
>
> *S19: "The approach to knee osteoarthritis seemed a bit simplistic, given the conventional wisdom about the treatment of this."*

Disagreement with beliefs was particularly expressed around the notions that x-rays, imaging and surgery were rarely needed. Several respondents disagreed that x-rays were of low value. These people believed that x-rays are informative and help determine management. A few respondents indicated they believed that surgery is helpful (arthroscopy) or popular (arthroplasty).

> *I6: "Why discourage people from having an x-ray? I would be a little bit concerned about everybody who hasn't had an x-ray thinking they've got osteoarthritis if there is something wrong with their knee, which could easily be any other condition. Says she who's got cysts and who's had chondromalacia, all of which were and are painful for the knees. So, I wouldn't want to discourage people from having…, or give the message that they should feel discouraged from having x-rays."*
>
> *I19: "I've known elderly people, they get their knee and their hip replacements, and they have said that for the first time in years, they're pain-free. I don't understand why people have to be in severe pain, chronic pain for years and years, before it becomes an option to replace [the joint]."*

In terms of *Disagreement* with personal experience, comments all related to specific details within the video rather than the main messages.

> *S21: [In relation to the proportion of people with knee OA experiencing severe disease] "I do feel there is probably a question or two that might be worth asking about these figures. E.g. How were they derived? I think probably underlying my concern is the thought that there may be more people reporting severe pain - yet perhaps not be being heard accurately by their medical professionals."*

In some comments, respondents appeared to experience cognitive dissonance and seemed to be prompted by the video to consider a new way to approach to their condition.

> *S19: "Is it really as simple as portrayed in the video, in dealing with knee osteoarthritis? If that is the case, then I need to rethink how I approach this condition. There is a dearth of information about this."*
>
> *I12: "Changes in knee joints... I wonder what people would think about that. I imagine that people would think the cartilage is being eroded and there are holes in there or something. I presume people think that pain would be coming from the grating of the joint. But now I'm wondering whether that's really the case. So clearly there is another layer of complexity that people might want to know about."*

Yes but… comments involved respondents saying they thought the information was relevant for most people, but adding a reason for it not to be true for them.

> *I19: "The inflammation that seems to be in my joints just seems to drive me a bit batty. Long term chronic pain hurts. People don't understand this. They like to deal with the 99% that heal better. They don't like the one percent that don't heal easily."*
>
> *I3: "The only doubt for me was because when I got the X-ray, it showed a tear in my meniscus, so that wasn't… I know [the video] was purely on arthritis, but there can be other elements around it, and so that did enter my head at one stage, thinking, "You can't do anymore damage, but what if it isn't just the arthritis that's causing the pain?""*

Lost in translation comments indicated that some respondents seemed to misunderstand the key messaging in the video, or hold on to previously held beliefs despite having watched the content.

> *S34: "What if there is also wear and tear in knee i.e. the cartilage?"*
>
> *I6: "I thought there must be something wrong with me because I'm not feeling desperately depressed about the fact that I've got [osteoarthritis]. This video almost tells me I should be having depression. It's very heavy on the, you know, you ought to be depressed and why aren't you depressed, kind of thing [laughs]. Perhaps it's different for me."*
>
> *I3: "That "seek help when you're having problems" part. But it just said don't believe the x-rays from medical practitioners. So that could be a bit [confusing]."*

The last type of *Discordance* was *Counter to prior understanding of health advice.* This reflected a handful of comments made by respondents who noticed that the information differed from information or advice they had previously received.

> *I5: "That sounds very anti-GP: "It's generally good to avoid tests." If the GPs heard that you said that in a video from the University of Melbourne they might be going, "Who made this video? Because we like you to get tests. That's how we analyse stuff"."*
>
> *S79: "Probably the main thing is to not think too much about surgery into the future and just do the best I can and consider surgery when and if it is a good option. I guess this has always been my view, but the video reinforces that view more than medical professionals generally do. Every time I have an x-ray, I always hear that my knee is completely ruined."*

3.3.2.4 Unanswered questions

Almost all respondents had *Unanswered questions*.

> *S101: "I think the video should explain more what can be done if there is a flare up. Should I use hot or cold treatment? What are the pros and cons of pain killers and anti-inflammatory drugs? Is a gradual return to jogging possible or should I just stick to walking? Does bandaging assist?"*

The most common questions were around specific exercises and physical activity. For example, respondents asked about the safety of high impact activities, how much pain during exercise is too much, and what exercises should be done for problems with other joints. Quite a few respondents also asked for more information about other treatment options including medications and taping/bracing. Others' concerns were around whether there was a cure, if special diets or supplements help, the role of arthroscopic surgery, or requesting more information about flare-ups. Several respondents seemed to have a high unmet need for more help with the difficult decision-making around surgery. While most respondents expressed relief on hearing that relatively few people progress to severe disease, some indicated their OA was severe and they were struggling to decide whether to go ahead with surgery. Several respondents commented that weight/weight loss was not specifically recommended in the video, but their perspectives on this omission varied. Some said they appreciated that it was not emphasised since everyone knows that weight loss helps, while others felt they had unanswered questions about the role of weight loss as well as how to achieve it.

3.3.3 Theme 3: Intentions

Three *Intentions* sub-themes were: *Lifestyle behaviour change intentions, Cognitive change intentions,* and *Seeking help intentions.*

3.3.3.1 Lifestyle behaviour change intentions

Almost all our respondents stated an intention related to changing at least one 'lifestyle behaviour'. These were often physical activity and/or exercise, e.g. to walk more often, strengthening muscles, exercise in water, "stretch classes" (S2), "keep running" (S12), "try getting out on the tandem with my husband again" (S4). Respondents had a wide range of intentions, which suggests they were able to apply the information and advice to their own needs, preferences and contexts. For example, even though there was no specific advice to lose weight in the video apart from in the comments from the real people with lived experience of having knee OA, a few respondents mentioned an intention to try to lose weight. Some respondents said they would re-start something they had done before but stopped because of their knee pain, while others, who felt reassured that they were doing the right

thing, planned to continue what they were currently doing. Some respondents provided some insight as to why they intend to change including:

> *I8: "The end bit, when those people had done some exercise and noticed an improvement, that makes you think, "Oh, just keep going"."*
>
> *S51: "Walking, I have been avoiding walking, which I love, because of the pain, but now I realize that if I get out and do this then, hopefully, my knee and all those other things will improve too. Also getting back to the gym to strengthen the muscles in my legs. I have been too afraid to do that in case I did damage. Now I realize that I can do this, within reason, and rebuild my muscles."*

3.3.3.2 Cognitive change intentions

Regarding *Cognitive change intentions,* respondents said they would try and address their own thoughts and feelings, and "*be more positive"* (S53), for example, by not focussing on the pain or worrying less.

> *S79: "Probably the main thing is to not think too much about surgery into the future and just do the best I can."*

3.3.3.3 Seeking help intentions

Finally, some expressed an intention to S*eek help* from a health professional such as a physiotherapist or exercise physiologist.

> *I17: "I'd been thinking, "It's a long time since I've been [to see the physio], I should go back", but it was not going to come into action. But now I've watched your video I'm thinking, yes, I really do need to do that."*

4. Discussion and conclusions

The key findings from this study are that after watching the knee OA educational video most people reacted favourably, learned new information and stated apparently 'helpful' intentions. While some experienced 'unhelpful' reactions and appeared not to engage, and learning was not always successful, the video did not appear to motivate intentions of ineffective (or harmful) behaviours. Importantly, although hope and positive expectation was expected to be difficult to achieve in the

presence of the prevailing beliefs about knee OA, most people responded in ways that suggest some benefit. These qualitative findings were supported by the quantitative survey responses. In addition, a recent study that examined responses to a knee OA booklet with information similarly based on a biopsychosocial perspective, and that also deliberately challenged commonly existing beliefs, found it was well received, and viewed as informative and empowering by most [21]. Consistent with our findings, the study also found that some people with knee OA reported the information conflicted with clinician advice and previously held beliefs.

In this video, some of the psychosocial factors such as thoughts, sleep, and mood that can influence the pain experience were briefly mentioned [34]. The findings suggest some participants learned about the importance of a positive attitude, but few demonstrated new knowledge of the link between pain and sleep quality, fatigue, mood or stress, and fewer offered an intention to enact a change to psychosocial factors apart from 'staying positive' and 'worrying less'. This may suggest this particular video was ineffective in developing pain knowledge, or perhaps the video did not place enough attention on how to enact psychosocial change. Previous research has highlighted the challenges with teaching people about the neurobiology of pain and the role of psychosocial factors in their pain experience [35]. Education is particularly difficult when emotion and identity are involved, and when misbeliefs are reinforced by societal and healthcare practices. While the short video does not aim to fully explain the neurobiology of pain, it aims to deliver messages consistent with contemporary understanding of persistent pain [36] without creating resistance, being perceived as victim blaming or overwhelming the information recipients [37]. Despite this cautious approach, there is still a risk the video will produce the "Get stuffed!" [38] type of reaction, as evidenced by two study participants.

The responses from our participants suggest the video achieved helpful emotional responses, successful knowledge change, and high perceived personal relevance across a cohort that included a range of different information processing styles. In particular, an individual's 'need for cognition', may influence their response to communication strategies within education interventions. Individuals with a higher need for cognition tend to process information elaborately (e.g. weigh the pros and cons or strengths and weaknesses of an argument) when forming attitudes and making decisions, whereas individuals with a lower need for cognition tend to rely on less effortful processes, such as 'gut feelings' (e.g. liking it) and heuristics (e.g. 'a university professor said it'). Emotional reactions such as relief, comfort, hope, happiness, and reassurance, have been shown to be persuasive in terms of both attitude and behaviour change, particularly for people with low need for cognition [31, 39]. Likewise, presenting strong arguments and opportunities for deeper understanding has also

been shown to lead to effective persuasion, especially for those with a higher need for cognition, and/or where information is perceived as highly relevant [31, 39]. Education materials that can cater to both styles of information processing may have broader appeal [31] and this appears to have been achieved in this video.

Patients with chronic health conditions have been found to have cognitive biases towards illness messages [40]. In particular, people with chronic pain can make negative interpretations from ambiguous information [41]. Strongly held activity avoidance beliefs and misinterpretation of new information may lead to the continuation of poor uptake of recommended self-management and lifestyle changes despite evidence-based information provision. Thus, health information for people with long-held beliefs about pathology and prognosis, low health literacy (the ability to seek, interpret and use health information) and/or cognitive biases towards negative expectations needs careful consideration and reinforcement. To this end, the educational intervention in this study appeared to be largely, but not completely, successful at achieving its purpose of empowerment and motivation and addressing some known barriers to effective self-management.

There are nevertheless some limitations with this educational intervention. Most people had some education needs that were not met and some said they did not gain new knowledge. Several disagreed with, or were sceptical about, some of the information. People who have decided to have surgery may have felt disparaged, confused and/or dismissed, or experienced cognitive dissonance, which may explain resistance [42]. Finally, while increased awareness of the importance of self-management and an increased sense of self-efficacy and control, including the cognitive intentions to 'stay positive', would seem to be a beneficial effect of the education, a potential downside of this would be if people feel it is wholly their responsibility to manage their condition and therefore also their fault if they worsen or do not manage well. Systematic reviews of education-only interventions have demonstrated no or only small beneficial effects on symptoms and self-management skills [43, 44], so this brief video on its own was not expected to measurably improve symptom and function outcomes. Education is best considered part of an ongoing process, and these findings support the video being used as part of long-term care that includes opportunities to discuss the content with a health professional.

We speculate that in the context of this novel intervention, helpful reactions and successful learning were determinants of the effective self-management intentions, however this association needs to be tested. Importantly, intentions do not necessarily translate to behaviour change, and in fact there is a known large gap between physical activity intention and behaviour even at modest levels of

intention [45]. Thus it cannot be assumed that the education video affords benefits of clinical importance. Nevertheless, intention is considered a necessary antecedent for behaviour [26]. This study was also not designed to be able to unpack the relative contributions of the individual messages or various design features, and further investigations are needed.

4.1 Rigour considerations

Selection bias may have resulted from the recruitment strategy as well as the characteristics of volunteers. Participant non-completion among the survey group was higher than anticipated for a study with such low burden. Analysis of available data showed non-completers and completers were of very similar sex, age and BMI, but there were fewer people with tertiary education among the non-completers (20% vs 54% among completers) and higher pain severity was reported by non-completers (5.7 vs 4.6). Interestingly, most (71%) of the non-completers rated the importance of being physically active at baseline as 10/10, which does not suggest discord with the key messages in the video. Given the high prevalence of the condition, people with any environmental, cultural, social, and socioeconomic backgrounds can present with knee OA. We attempted to recruit a wide range of people, however, there will likely be many perspectives not represented in our data. The findings from both quantitative and qualitative data should therefore be interpreted based on who they represent. For example, the transferability of results might be constrained because the sample consisted of mainly highly educated people living in Australia.

The qualitative findings may also have been influenced by the perspectives of those analysing and interpreting the data. All three researchers involved with initial coding and developing of themes were physiotherapists who may have a professional focus on active self-management approaches, in particular exercise. One of the researchers was the designer of the video, which may also have affected results by potentially presenting them in a more positive light. To mitigate some of these potential effects, data and themes were cross-checked by co-authors who were not involved in intervention design to ensure the themes were grounded in the data, and fully represented the data, however further research to identify additional perspectives on this education approach would be beneficial. Finally, the results may have been more positive due to 'politeness' of interviewees not wanting to say negative comments in the presence of the interviewers given the observable characteristics of the interviewers. However, interviewers did not explicitly identify themselves as physiotherapists, so this possible influence on responses would be reduced. In addition, the use of surveys, and to some extent of videoconferencing, may have allowed participants to feel more comfortable expressing their views freely. The survey responses were substantively congruent with the interview responses.

4.2 Practice implications

This study showed that, for many participants, a short video (https://youtu.be/o8ZJN56aSic) providing positive messaging about the disease course and management of knee osteoarthritis is well received, contributed to learning and led to new intentions to engage in effective self-management behaviours. Based on the findings, the video can be recommended to people with knee OA. It is also plausible to recommend that it be used as part of care delivered by a health professional who could provide answers to additional questions, or be used as part of more comprehensive educational resources/websites. The study findings support a shift away from education that is based on a biomedical ('disease') approach to explaining knee osteoarthritis, to a more patient-centred ('illness' or whole person) approach, which acknowledges the information receiver as an active participant in the construction of new knowledge. Delivering education with an empowerment discourse may also be advisable more broadly for other painful musculoskeletal or chronic health conditions. Given the global prevalence and burden of chronic painful musculoskeletal conditions [1, 2], the potential benefit of low-cost education interventions that change knowledge, motivation and confidence of people with OA is significant.

Acknowledgements

Study data were collected and managed using REDCap electronic data capture tools hosted at The University of Melbourne.

Author contributions (CRediT) statement:

TE: Conceptualisation, methodology, project administration, intervention development, data collection and analysis, supervision and writing original draft; LM: intervention development, data analysis and writing review and editing; JB and BG: data collection and analysis, writing review and editing; JS, CES and CB: methodology, data analysis and writing review and editing; KB: resources, validation, writing review and editing.

Declaration

I confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

Funding

This work was supported by 1) the National Health & Medical Research Council Centre for Research Excellence in Translational Research (#1079078), and 2) Melbourne School of Health Sciences Internal Research Grant 2019.

References

[1] World Health Organisation, Chronic diseases and health promotion, http://www.who.int/chp/topics/rheumatic/en/. 2020 (Accessed 26 June 2020).

[2] Global burden of disease, https://vizhub.healthdata.org/gbd-compare/. 2020 (Accessed 26 June 2020).

[3] R.R. Bannuru, M.C. Osani, E.E. Vaysbrot, N.K. Arden, K. Bennell, S.M.A. Bierma-Zeinstra, V.B. Kraus, L.S. Lohmander, J.H. Abbott, M. Bhandari, F.J. Blanco, R. Espinosa, I.K. Haugen, J. Lin, L.A. Mandl, E. Moilanen, N. Nakamura, L. Snyder-Mackler, T. Trojian, M. Underwood, T.E. McAlindon, OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis, Osteoarthritis Cartilage 27 (2019) 1578-89.

[4] The Royal Australian College of General Practitioners, Guideline for the management of knee and hip osteoarthritis. Second edition. , RACGP, East Melbourne, Vic, 2018.

[5] National Institute for Health and Care Excellence, Osteoarthritis: Care and management in adults. Clinical Guideline CG177, NICE, London, 2014.

[6] M. Hurley, K. Dickson, R. Hallett, R. Grant, H. Hauari, N. Walsh, C. Stansfield, S. Oliver, Exercise interventions and patient beliefs for people with hip, knee or hip and knee osteoarthritis: A mixed methods review, Cochrane Database Syst. Rev. 4 (2018) CD010842.

[7] R. McCorkle, E. Ercolano, M. Lazenby, D. Schulman-Green, L.S. Schilling, K. Lorig, E.H. Wagner, Self-management: Enabling and empowering patients living with cancer as a chronic illness, CA Cancer J. Clin. 61 (2011) 50-62.

[8] J.C. Grime, B.N. Ong, Constructing osteoarthritis through discourse--a qualitative analysis of six patient information leaflets on osteoarthritis, BMC Musculoskelet. Disord. 8 (2007) 34.

[9] M. Dixon-Woods, Writing wrongs? An analysis of published discourses about the use of patient information leaflets, Soc. Sci. Med. 52 (2001) 1417-32.

[10] A. Barrow, S. Palmer, S. Thomas, S. Guy, J. Brotherton, L. Dear, J. Pearson, Quality of web-based information for osteoarthritis: a cross-sectional study, Physiotherapy 104 (2018) 318-26.

[11] S. Bunzli, P. O'Brien, D. Ayton, M. Dowsey, J. Gunn, P. Choong, J.A. Manski-Nankervis, Misconceptions and the acceptance of evidence-based nonsurgical interventions for knee osteoarthritis. A qualitative study, Clin. Orthop. Relat. Res. 477 (2019) 1975-83.

[12] B. Darlow, M. Brown, B. Thompson, B. Hudson, R. Grainger, E. McKinlay, J. Abbott, Living with osteoarthritis is a balancing act: An exploration of patients' beliefs about knee pain, BMC Rheumatology 2 (2018) 15.

[13] Z. Paskins, T. Sanders, A.B. Hassell, Comparison of patient experiences of the osteoarthritis consultation with GP attitudes and beliefs to OA: A narrative review, BMC Fam. Pract. 15 (2014) 46.

[14] J.A. Wallis, N.F. Taylor, S. Bunzli, N. Shields, Experience of living with knee osteoarthritis: A systematic review of qualitative studies, BMJ Open 9 (2019) e030060.

[15] T. Egerton, R. Nelligan, J. Setchell, L. Atkins, K.L. Bennell, General practitioners' views on managing knee osteoarthritis: A thematic analysis of factors influencing clinical practice guideline implementation in primary care, BMC Rheumatology Accepted (in press) (2018).

[16] J.E. Collins, J.N. Katz, E.E. Dervan, E. Losina, Trajectories and risk profiles of pain in persons with radiographic, symptomatic knee osteoarthritis: Data from the osteoarthritis initiative, Osteoarthritis Cartilage 22 (2014) 622-30.

[17] L. Chou, L. Ellis, M. Papandony, K. Seneviwickrama, F.M. Cicuttini, K. Sullivan, A.J. Teichtahl, Y. Wang, A.M. Briggs, A.E. Wluka, Patients' perceived needs of osteoarthritis health information: A systematic scoping review, PLoS One 13 (2018) e0195489.

[18] J. Potter, M. Wetherell, Discourse and social psychology : beyond attitudes and behaviour, Sage Publications Ltd1987.

[19] A.K. Burton, G. Waddell, K.M. Tillotson, N. Summerton, Information and advice to patients with back pain can have a positive effect. A randomized controlled trial of a novel educational booklet in primary care, Spine (Phila Pa 1976) 24 (1999) 2484-91.

[20] A. Louw, K. Zimney, E.J. Puentedura, I. Diener, The efficacy of pain neuroscience education on musculoskeletal pain: A systematic review of the literature, Physiother. Theory Pract. 32 (2016) 332-55.

[21] B. Darlow, M. Brown, R. Grainger, B. Hudson, A.M. Briggs, J.H. Abbott, E. McKinlay, Stakeholder views about a novel consumer health resource for knee osteoarthritis, Osteoarthritis and Cartilage Open (2020) 100058.

[22] A. Tong, P. Sainsbury, J. Craig, Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups, Int. J. Qual. Health Care 19 (2007) 349-57.

[23] L. Gibbs, M. Kealy, K. Willis, J. Green, N. Welch, J. Daly, What have sampling and data collection got to do with good qualitative research?, Aust. N. Z. J. Public Health 31 (2007) 540-4.

[24] Statista, https://www.statista.com/topics/2019/youtube/. (Accessed 18/11/2020.

[25] A. Bandura, Social cognitive theory of self-regulation, Organ. Behav. Hum. Decis. Process. 50 (1991).

[26] W. Fisher, J. Fisher, J. Harman, The information-motivation-behavioral skills model: A general social psychological approach to understanding and promoting health behavior, in: J. Suls, K. Wallston (Eds.), Social psychological foundations of health and illness, Blackwell Publishing, Walden, MA, 2003, pp. 82–106.

[27] F. Dobson, K.L. Bennell, S.D. French, P.J. Nicolson, R.N. Klaasman, M.A. Holden, L. Atkins, R.S. Hinman, Barriers and facilitators to exercise participation in people with hip and/or knee osteoarthritis: Synthesis of the literature using behavior change theory, Am. J. Phys. Med. Rehabil. 95 (2016) 372-89.

[28] Y.H. Jeon, I. Flaherty, H. Urban, S. Wortley, C. Dickson, G. Salkeld, D.J. Hunter, Qualitative evaluation of evidence-based online decision aid and resources for osteoarthritis management: Understanding patient perspectives, Arthritis Care Res. 71 (2019) 46-55.

[29] G.K. Fitzgerald, R.S. Hinman, J. Zeni, Jr., M.A. Risberg, L. Snyder-Mackler, K.L. Bennell, OARSI Clinical Trials Recommendations: Design and conduct of clinical trials of rehabilitation interventions for osteoarthritis, Osteoarthritis Cartilage 23 (2015) 803-14.

[30] R.H. Osborne, R.W. Batterham, G.R. Elsworth, M. Hawkins, R. Buchbinder, The grounded psychometric development and initial validation of the Health Literacy Questionnaire (HLQ), BMC Public Health 13 (2013) 658.

[31] I.A. Nikoloudakis, R. Crutzen, A.L. Rebar, C. Vandelanotte, P. Quester, M. Dry, A. Skuse, M.J. Duncan, C.E. Short, Can you elaborate on that? Addressing participants' need for cognition in computer-tailored health behavior interventions, Health Psychol. Rev. 12 (2018) 437-52.

[32] V. Braun, V. Clarke, Using thematic analysis in psychology, Qualitative research in psychology 3 (2006) 77-101.

[33] I. Korstjens, A. Moser, Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing, Eur J Gen Pract 24 (2018) 120-4.

[34] J.M. Hush, M. Nicholas, C.M. Dean, Embedding the IASP pain curriculum into a 3-year pre-licensure physical therapy program: Redesigning pain education for future clinicians, Pain Rep 3 (2018) e645.

[35] J.A. Watson, C.G. Ryan, L. Cooper, D. Ellington, R. Whittle, M. Lavender, J. Dixon, G. Atkinson, K. Cooper, D.J. Martin, Pain neuroscience education for adults with chronic musculoskeletal pain: A mixed-methods systematic review and meta-analysis, J. Pain 20 (2019) 1140 e1- e22.

[36] D. Butler, G. Moseley, Explain Pain 2nd Edn. , Noigroup publications 2013.

[37] A. Coulter, V. Entwistle, D. Gilbert, Informing patients : an assessment of the quality of patient information materials, King's Fund, London, 1998.

[38] D. Butler, G. Moseley, Explain pain supercharged, Adelaide City West, 2017.

[39] R.E. Petty, P. Briñol, C. Loersch, M.J. McCaslin, The need for cognition. , in: M. Leary, R. Hoyle (Eds.), Handbook of individual differences in social behavior, Guilford Press, New York, NY, 2009, pp. 318–29.

[40] A. Hughes, C. Hirsch, T. Chalder, R. Moss-Morris, Attentional and interpretive bias towards illness-related information in chronic fatigue syndrome: A systematic review, Br. J. Health Psychol. 21 (2016) 741-63.

[41] D.E. Schoth, C. Liossi, Biased interpretation of ambiguous information in patients with chronic pain: A systematic review and meta-analysis of current studies, Health Psychol. 35 (2016) 944-56.

[42] J. van 't Riet, R.A.C. Ruiter, Defensive reactions to health-promoting information: An overview and implications for future research, Health Psychol. Rev. 7 (2013) S104-S36.

[43] A. Warsi, P.S. Wang, M.P. LaValley, J. Avorn, D.H. Solomon, Self-management education programs in chronic disease: a systematic review and methodological critique of the literature, Arch. Intern. Med. 164 (2004) 1641-9.

[44] F.P. Kroon, L.R. van der Burg, R. Buchbinder, R.H. Osborne, R.V. Johnston, V. Pitt, Self-management education programmes for osteoarthritis, Cochrane Database Syst. Rev. (2014) CD008963.

[45] R.E. Rhodes, G.J. de Bruijn, How big is the physical activity intention-behaviour gap? A meta-analysis using the action control framework, Br. J. Health Psychol. 18 (2013) 296-309.

Tables

Table 1: Baseline characteristics of interview respondents and survey respondents.

Characteristic	Interview respondents (n = 18)	Survey respondents **(**n = 78)
Age, years (average ± SD, range)	64.7 ± 8.1, 51 - 78	63.0 ± 8.7, 46 - 83
Female (n, %)	15 (83%)	60 (77%)
Anthropometry (average ± SD, range)		
Height, cm	166.7 ± 8.9, 146 - 184	168.0 ± 9.5, 150 - 195
Weight, kg	76.3 ± 11.8, 60 - 96	84.3 ± 20.4, 52 - 178
BMI, kg/m^2	27.7 ± 5.2, 20.8 - 36.6	29.8 ± 6.4, 20.7 - 55.3
Highest level of education completed (n, %)		
Some high school	1 (5.6%)	3 (3.8%)
Completed high school	2 (11.1%)	8(10.3%)
Completed TAFE/apprenticeship	2 (11.1%)	25 (32.1%)
Completed bachelor's degree	13 (72.2%)	42 (53.8%)
Employment status (n, %)		
Paid work full-time	3 (16.7%)	16 (20.5%)
Paid work part-time	4 (22.2%)	23 (29.5%)
Unable to work due to health reasons	1 (5.6%)	4 (5.1%)
Retired not due to health reasons	9 (50.0%)	34 (43.6%)
Unemployed	1 (5.6%)	1 (1.3%)
Painful knee(s) (n, %)		
Left knee	1 (5.6%)	18 (23.1%)
Right knee	5 (27.8%)	19 (24.4%)
Both knees	12 (66.7%)	41 (52.6%)
Duration of pain in worst knee (n, %)		
Less than 1 year	2 (11.1%)	8 (10.3%)
1 or 2 years	5 (27.8%)	12 (15.4%)
3 to 5 years	3 (16.7%)	23 (29.5%)
5 to 10 years	3 (16.7%)	19 (24.4%)
More than 10 years	5 (27.8%)	16 (20.5%)
Time since first seeking treatment (n, %)		
Never	0 (0.0%)	7 (9.0%)
Less than 1 years ago	3 (16.7%)	11 (14.1%)
1 or 2 years ago	5 (27.8%)	12 (15.4%)
3 to 5 years ago	2 (11.1%)	22 (28.2%)
5 to 10 years ago	5 (27.8%)	12 (15.4%)
More than 10 years ago	3 (16.7%)	14 (17.9%)
Pain, NRS 0 - 10 (average ± SD, range)		

Average pain over past week in most painful knee?	4.5 ± 2.3, 1 – 9	4.6 ± 1.9, 0 – 8
Worst pain felt during activity over past week in most painful knee?	6.4 ± 2.0, 2 – 9	6.3 ± 1.8, 2 – 9
Health Literacy Questionnaire (average ± SD) *		
Feeling understood and supported by healthcare providers (0 – 4)	3.2 ± 0.4	3.0 ± 0.5
Having sufficient information to manage my health (0 – 4)	3.0 ± 0.5	2.8 ± 0.4
Actively managing my health (0 – 4)	3.2 ± 0.4	3.0 ± 0.4
Social support for health (0 – 4)	3.0 ± 0.5	2.9 ± 0.4
Appraisal of health information (0 – 4)	3.1 ± 0.3	3.0 ± 0.3
Ability to actively engage with healthcare providers (0 – 5)	3.9 ± 0.7	3.7 ± 0.6
Navigating the healthcare system (0 – 5)	3.8 ± 0.6	3.6 ± 0.5
Ability to find good health information (0 – 5)	3.8 ± 0.6	3.9 ± 0.5
Understand health information well enough to know what to do (0 – 5)	4.1 ± 0.4	4.1 ± 0.4
Need for Cognition NRS 0 – 10 (average ± SD, range)**		
Average score of 3 items, 0 - 10	7.7 ± 1.6, 4 – 10	7.5 ± 2.1, 2 – 10

* higher score signifies better health literacy, ** higher score signifies greater need for cognition
NRS = numerical rating scale

Table 2: Quantitative survey results (n=78)

Item	**Score (average ± SD, range)**
Enjoyability of the video (0=not at all enjoyable – 6=very enjoyable)	5.0 ± 1.0, 2 - 6
Degree to which the video was helpful (0=not at all helpful – 6=extremely helpful)	4.9 ± 1.2, 0 - 6
Relevance (average of 3 questions, scored 0 – 6, higher=more relevant)	5.0 ± 1.0, 2 - 6
Amount of new information (0=no new information – 6=a great deal of new information)	2.9 ± 1.7, 0 - 6
Perception that the information was true and correct (0=not at all – 6=completely)	5.4 ± 0.8, 3 - 6
Percentage of survey respondents who:	**%**
Would recommend the video to friends/family with knee pain	89%
Learnt new information from the video	78%
Disliked aspects of the video	23%
Found parts of the video didn't make sense to them/was unclear	13%
Reported they will change their behaviour as a result of watching the video	74%