Osteoarthritis and Cartilage Open 2 (2020) 100095

Contents lists available at ScienceDirect

Osteoarthritis and Cartilage Open

journal homepage: www.elsevier.com/journals/osteoarthritis-and-cartilage-open/2665-9131

Barriers and enablers to uptake of a contemporary guideline-based management program for hip and knee osteoarthritis: A qualitative study

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ARTICLE INFO

Keywords:
Hip
Knee
Barriers
Enablers
Osteoarthritis management program

SUMMARY

Objective: To explore barriers and enablers for referral to, and participation in, a contemporary guideline-based osteoarthritis management program – Good Life with osteoArthritis in Denmark (GLA:D® *Australia*).
Design: A qualitative design was used, involving semi-structured interviews with patients with osteoarthritis and medical professionals. Interviews were audiotaped, transcribed verbatim, coded and thematically analysed. Barrier and enabler themes were mapped to the theoretical domains framework and used to inform the development of recommendations for improving uptake of guideline-based osteoarthritis management programs.
Results: Twenty patients with hip and/or knee osteoarthritis and 15 medical professionals (5 general practitioners, 4 rheumatologists, 6 orthopaedic surgeons) were included. Across both groups, three themes emerged as barriers (program access; misinformation about osteoarthritis; patient and program factors), one theme emerged as a barrier and enabler (health professional trust, feedback and advice), and two themes emerged as enablers (opportunity to achieve positive outcomes and potentially avoid joint replacement surgery; better program promotion, patient and health professional education, and efficient referral processes).
Conclusions: Optimising uptake of guideline-based osteoarthritis management programs requires improved reimbursement models, and better promotion and educational initiatives for patients and medical professionals. A particular focus of education should include dispelling misinformation about osteoarthritis, and highlighting the safety and value of physiotherapist delivered exercise-therapy.

1. Introduction

Osteoarthritis management programs consisting of education and exercise-therapy for hip and knee osteoarthritis are implemented in several countries around the world [1–3]. The key intervention components, including exercise-therapy, are consistently recommended in clinical practice guidelines for all people with hip and knee osteoarthritis, regardless of pain or radiographic severity, in order to improve symptoms and/or function [4–6]. Good Life with osteoArthritis in Denmark (GLA:D®) is an example of a guideline-based, osteoarthritis management program that has been implemented in at least 6 countries including Denmark, Canada, Australia, China, Switzerland and New Zealand and has now been provided to more than 50,000 patients [1]. The GLA:D® program includes two patient education sessions related to osteoarthritis self-management, plus 12 sessions of joint-specific neuromuscular exercise with physiotherapist supervision to ensure optimal quality of movement, reassurance and appropriate progression [7,8]. An essential element of GLA:D® is the collection of participant outcomes in a national

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https://doi.org/10.1016/j.ocarto.2020.100095
Received 18 June 2020; Accepted 14 August 2020

registry to facilitate program evaluation. Twelve-month outcomes associated with GLA:D® for people with hip and knee osteoarthritis include clinically significant improvement in pain (reduced by 30%) and joint-related quality of life (improved by 20%), and 9% less people on sick leave [9].

In practice, uptake of guideline-based non-surgical care, including exercise-therapy, is suboptimal [10–12]. For example, one in two people with hip or knee osteoarthritis from an Australian community setting have never attempted exercise-therapy [11], despite compelling evidence of its effectiveness [13,14]. Therefore, patients may be referred for, and undergo, joint replacement surgery without ever having participated in appropriate guideline-based non-surgical management [11]. Barriers and enablers for referral to, and participation in osteoarthritis management programs occur at patient, health professional and health service levels. Known patient-related barriers include limited motivation and capacity to attend programs and enablers include appropriate scheduling and availability of local programs [15]. Health professional barriers include knowledge of the availability of local programs, and enablers include positive feelings about patient participation and likely benefits [16]. Health service barriers include limited capacity and constraints (e.g. physical space, administrative support, funding restrictions) to implement programs and enablers include support from key stakeholders and clinical champions [17].

While previous qualitative studies have provided insight into the potential barriers and enablers to uptake of osteoarthritis management programs from patients and medical professional perspectives [15–17], and the components of care [18–24], these results may not be generalisable to contemporary programs available internationally, such as GLA:D® [1]. Additionally, using a validated behaviour change theory such as the theoretical domains framework [25,26], can enable a more in-depth exploration of the potential barriers and enablers for referrals to, and participation in osteoarthritis management programs among patients and potential referrers. Finally, the theoretical domains framework can inform strategies that can be used to overcome modifiable barriers of change and enhance enablers to change in order to optimise referral to, and participation in, guideline-based osteoarthritis management programs such as GLA:D® [26].

Therefore the aims of this study were to: (i) explore perceptions about management of osteoarthritis of the hip and knee from the perspectives of patients and medical professionals, including barriers and enablers for referral to, and participation in a guideline-based osteoarthritis management program (GLA:D® *Australia*) and (ii) based on these findings, and guided by the theoretical domains framework [26], develop a set of recommendations to optimise referral to, and participation in osteoarthritis management programs.

2. Method

2.1. Study design

A qualitative study involving individual semi-structured interviews was conducted. The consolidated criterion for reporting qualitative research checklist (COREQ) was used for study reporting [27]. Ethics approval was obtained from the Cabrini Health Human Research Ethics Committee (reference number 02-22-01-18) in compliance with the Helsinki declaration. Ethics approval for the GLA:D® *Australia* program was obtained from the La Trobe University Human Research Ethics Committee (S17-193). All participants provided written informed consent prior to their interview.

2.2. Participants

2.2.1. Patients

Adults eligible for the study included patients diagnosed with hip or knee osteoarthritis using the National Institute for Health and Care Excellence criteria [5] including: (i) age 45 years or over, (ii) activity-related joint pain, and (iii) morning stiffness of the joint lasting no longer than 30 min, or no stiffness. Adults not eligible for the study included those with: (i) a joint replacement or other reasons for their symptoms such as inflammatory joint disease, fracture or soft tissue problem, (ii) other symptoms which were more pronounced than the joint problem, such as chronic generalised pain or fibromyalgia, or (iii) unable to speak fluent English. The study was advertised at a large 832 bed, not-for profit, private hospital (Cabrini Health, Melbourne, Australia). This hospital includes a comprehensive range of health services and healthcare programs, including GLA:D® *Australia*, which was recently implemented in a range of public and private healthcare settings in Australia [28]. The study was also advertised at the same hospital to current and former GLA:D® *Australia* participants, as well as patients with osteoarthritis who had not yet engaged in the program. Purposive sampling (involving patients who were aware and those who were unaware of the program) was used to ensure a range of views regarding barriers and enablers to program participation were captured.

2.2.2. Medical professionals

General practitioners, rheumatologists and orthopaedic surgeons were eligible to participate in the study if they were: (i) a registered medical practitioner, and (ii) currently involved in patient management of hip and/or knee osteoarthritis. Based on existing clinical networks, a convenience sample of medical professionals working at the same private hospital and nearby public hospitals in Melbourne, Australia were contacted by telephone by a member of the research team and invited to participate in the study.

2.3. Data collection

Interview schedules for the two participant groups (supplementary data) were developed, based on the theoretical domains framework [26]. Interview schedules were then refined using the determinants of implementation behaviour questionnaire [29]. The framework was kept to the background in the interviews; open-ended questions and prompts were used to ensure participants' own experiences and views were elicited. This approach meant that the study combined both planned and emergent data. Participants who did not have prior knowledge of the GLA:D® *Australia* program were given a brief, verbal summary of the components of the program alongside a Power Point presentation, prior to the interview, to enable these participants to discuss potential barriers and enablers to uptake of the program.

Data collection for the two participant groups was undertaken in parallel until data saturation for each group was achieved, defined as when no new themes emerged by the end of the patient and medical professional interviews, respectively. The male interviewer (JS), a registered physiotherapist of 9 years' experience, worked in the same clinical network but was not involved in providing care for any of the patients that were interviewed. Each interview was conducted either at the private hospital or a medical practice (medical professionals only), audiotaped, transcribed verbatim, and reviewed line-by-line by the interviewer. The interviewer received training in conducting qualitative interviews from an experienced qualitative researcher (IA) [18,30]. Member-checking was also undertaken to give participants an opportunity to review the transcript to ensure it provided a true account of their interview, and to make any modifications for accuracy.

2.4. Data analysis

Qualitative analysis of interview data commenced with a close review of each transcript by three researchers (JW, CB, IA) to gain an overall picture of the data. Next, data codes were developed for the two participant groups as separate cohorts using an inductive thematic analysis [31]. This was supported by NVivo software (QSR International Ptd Ltd, Melbourne, Australia) with two researchers identifying initial

descriptive codes for the two participant groups (JW – patients, CB – medical professionals). A random sample of 50% of interviews in each cohort was coded independently by a second researcher (CB – patients, IA – medical professionals) to substantiate the initial analysis. Emergent barrier and enabler themes were discussed between these researchers until a consensus was reached. Finally, the barrier and enabler themes were mapped to the relevant domains from the theoretical domains framework [26]. This theoretical method was used to inform development of recommendations and strategies targeted at patients, medical professionals and health systems to overcome barriers and augment enablers for referral to, and participation in osteoarthritis management programs.

The backgrounds of the researchers who conducted the data analysis are presented here, in recognition that prior knowledge and experience can potentially introduce bias. The three researchers were experienced physiotherapists ranging from 14 to 22 years' experience (JW, IA, CB). Additionally, all were academic research fellows (range 1–11 years post PhD), and all had previous experience in qualitative data collection and analysis.

3. Results

3.1. Participant characteristics

3.1.1. Patients

Twenty patients with hip and/or knee osteoarthritis were included with an average age of 70 years (SD 11) and 14 patients (70%) were female. One participant was excluded from the analysis due to recent joint replacement surgery. Eleven participants (55%) had no prior knowledge of the GLA:D® *Australia*, 2 participants (10%) had completed the program and 7 participants (35%) had commenced the program. The average length of the interviews for patients was 25 min (range 14–32 min). Table 1 reports the demographic and clinical characteristics of the patient cohort.

Table 1
Participant demographics – patients with hip or knee osteoarthritis.

Variable	n = 20
Age (years), mean (SD)	70 (11)
Female, n (%)	14 (70)
Diagnosis, n (%)	
Both hip and knee OA	10 (50)
Hip OA	3 (15)
Knee OA	7 (35)
Duration of OA symptoms, n (%)	
<5 years	4 (20)
5–10 years	4 (20)
11–15 years	4 (20)
>15 years	3 (15)
Not reported	5 (25)
Interventions received for OA, n (%)	
GLA:D® *Australia* exercise-therapy sessions completed	
0	11 (55)
1-6	3 (15)
7-12	5 (25)
13+	1 (5)
GLA:D® *Australia* education session attendance	5 (25)
Other exercise-therapy program	13 (65)
Other education program	13 (65)
Weight loss program	5 (25)
Injections	7 (35)
Oral analgesia	13 (65)
Supplements	6 (30)
Braces, orthotics, taping, footwear or canes	2 (10)
Manual therapy, dry needling or electrotherapy modalities	3 (15)
Previous hip or knee surgery other than joint replacement (e.g Arthroscopy)	10 (50)
Previous hip or knee replacement	10 (50)

OA – osteoarthritis, GLA:D® – Good Life with OsteoArthritis in Denmark.

3.1.2. Medical professionals

Five general practitioners, four rheumatologists and six orthopaedic surgeons were interviewed with an average age of 52 years (SD 12) and 25 years practice (SD 15). No general practitioners had prior knowledge of the program, two rheumatologists (13%) and five orthopaedic surgeons (33%) had prior knowledge of the program. Three orthopaedic surgeons (20%) had previously referred to the GLA:D® *Australia* program at the private hospital. The average length of the interviews for medical professional was 20 min (range 14–30 min). Table 2 reports the demographic and employment characteristics of these participants.

3.2. Themes

Across both participants groups, six common themes emerged including: three themes related to barriers, one theme that could be considered both a barrier and enabler, and two themes related to enablers.

(i) Program access (barrier)

Patients and medical professionals perceived cost as a barrier to both referrals to, and patient participation in, osteoarthritis management programs such as GLA:D® *Australia*, particularly for people without private health insurance.

Some patients with private health insurance considered that program costs were reasonable providing their insurance allowance was adequate. Out-of-pocket costs varied depending on the insurance provider and individual level of cover causing patients to express dissatisfaction to the health professionals in the study if the program (GLA:D® *Australia*) was not covered by their private insurance fund. Retired patients commented specifically about competing medical expenses, and the additional equipment cost to support exercise adherence after program completion as a barrier to ongoing exercise.

Other access barriers commonly perceived by both patients and medical professionals as barriers to both referrals to, and patient participation in osteoarthritis management programs such as GLA:D® *Australia* included transport, waiting time and parking related to attendance (e.g. reliance on family members to drive to sessions), geography, and available session times. For example, for patients who worked, a lack of session scheduling options outside of work hours was a key barrier.

(ii) Misinformation about osteoarthritis (barrier)

Patients and medical professionals commonly used negative language to describe osteoarthritis with terms such as 'wear-and-tear', 'joint damage', 'bone-on-bone' and 'degenerative condition'. This language may represent potential barriers for referrals to, and patient participation in, GLA:D® *Australia*. For example, some patients expressed concerns around structural changes to their joint and stated their clinician told them they had 'bone-on-bone' and would eventually require a joint replacement. Some patients stated they were told they had damaged

Table 2
Participant demographics – medical professionals.

Variable	n = 15
Profession, n (%)	
General practitioners	5 (33)
Rheumatologists	4 (27)
Orthopaedic surgeons	6 (40)
Age (years), mean (SD)	52 (12)
Years practicing, mean (SD)	25 (15)
General practitioners	32 (15)
Rheumatologists	22 (14)
Orthopaedic surgeons	15 (10)
Work setting for orthopaedic surgeons and rheumatologists (%)	
Both private and public	8 (80)
Private only	2 (20)
Public only	0 (0)

cartilage and that cleaning up the joint such as trimming the meniscus or cartilage would help their pain, and were deterred from exercising due to the potential for increased pain.

(iii) Patient and program factors (barrier)

Patient factors (e.g. existing comorbidities, osteoarthritis severity, motivation, older age, language backgrounds, and work/other commitments precluding exercise-therapy) and program factors (e.g. single discipline led intervention) were perceived by patients and medical professionals as potential barriers for both referrals to, and patient participation in osteoarthritis management programs.

Some patients wanted other health conditions 'fixed' first, such as back pain, which caused some to delay or stop the program. Some medical professionals were concerned for their patients with comorbidities that the program and may not be tailored to them. Instead, a more holistic program as part of a multidisciplinary model of service was preferred.

Some medical professionals considered their patients with mild osteoarthritis may not need non-surgical care, and those with severe osteoarthritis may not benefit. Some medical professionals were concerned that patients lacked motivation to participate active lifestyle interventions and were also concerned if the program could accommodate patients from different cultural backgrounds.

(iv) Health professional trust, feedback and advice (barrier or enabler)

Patients commonly had positive views about their own health professionals and reported that receiving a recommendation or referral from a trusted health professional was an enabler to participation in GLA:D® *Australia*. Some health professionals were preferred more than others for specific treatments. For example, some patients trusted orthopaedic surgeons for initial advice, physiotherapists about exercise and diagnosis, and general practitioners about their overall health.

A medical professional's knowledge that the program was delivered by a well-trained and trusted physiotherapist was an enabler to program referral, with physiotherapists considered to be important facilitators of exercise-therapy and physical activity interventions. Receiving communication back from the program physiotherapist about patient outcomes was also important for some medical professionals. Conversely, existing relationships with physiotherapists could represent a barrier to referral to osteoarthritis management programs if a patient already had a treating physiotherapist, and particularly if the physiotherapist was co-located within a medical practice.

Patients receiving sufficient supervision and feedback from a physiotherapist before, during and after the program about exercise performance was a key enabler to participation and completion of the program. Conversely, some patients perceived that sufficient time was not always provided by a physiotherapist, and sufficient advice was not always provided by health professionals, particularly their general practitioner, representing potential barriers to referrals. For example, some patients wanted more advice about treatment options, and advice that is tailored to their treatment preferences such as exercise-therapy or surgery.

Some medical professionals urged caution to patients about participating in higher impact exercise, physical activities, and physiotherapist interventions and aligns with patients' and medical professionals' common preference for exercise or physical activities with low joint loads (e.g. exercise bike, water–based exercise). These beliefs and preferences were due to simplicity, likely adherence, as well as being less likely to cause pain flare ups, and may represent potential barriers for referrals to, and participation in, osteoarthritis management programs that incorporate higher intensity exercise.

(v) Opportunity to achieve positive outcomes and potentially avoid joint replacement surgery (enabler)

Most of the patients and medical professionals were positive about the GLA:D® *Australia* program and viewed it as an alternative approach and opportunity to avoid a joint replacement. Both participant groups believed exercise-therapy (key component of GLA:D® *Australia*) may be effective for osteoarthritis by giving more muscular support for their joints and an opportunity to improve confidence about activities and mobility.

Medical professionals valued the GLA:D® *Australia* program's structure and peer (group) support, as it was perceived to both potentially improve engagement and motivation to exercise and act as a specific treatment for osteoarthritis. Some medical professionals considered the name of the program 'Good Life with OsteoArthritis' implied optimism and a positive outcome, whilst patients were less concerned about the name of the program, and were otherwise focussed on the potential outcome, such as improved symptoms or joint stability.

Most patients who had commenced or completed GLA:D® *Australia* at the health service were positive about the program and mentioned their overall benefits such as reductions in pain, and improvements in sleep, function, fitness and social benefits. Some patients observed 'amazing' improvements in their counterparts, while medical professionals who had referred to the program had received positive feedback from their patients. While most patients perceived benefits or potential benefits, a few patients remained sceptical about the benefits and wanted the same pain relief or structural solutions that can be achieved by joint replacement surgery.

(vi) Better program promotion, patient and health professional education and efficient referral processes (enabler)

Many patients provided suggestions for promotion and education, with some patients wanting to be 'champions' of the program. For example, providing general practitioners with 'practical' training in the GLA:D® *Australia* program was suggested to facilitate better understanding of the program's role in osteoarthritis management.

Medical professionals also provided suggestions for promotion and referrals. For example, when partnering with orthopaedic, rheumatology, general practitioner and physiotherapy organisations, including links on their websites was considered an important enabler by some of the participants. A simple, streamlined referral process was important for improving access with close, convenient locations, and appropriate session times for working populations. Specific information about the program (GLA:D® *Australia*) was also important, such as the cost to patients. This was summed up by an orthopaedic surgeon who commented that the first thing a patient asks is "how much does it cost?" Potentially providing a trial of sessions was suggested to assist their patients to get started, as well as provision of free parking at the health service.

3.3. Recommendations for practice

Drawing on the themes that emerged from the patient and medical professional interviews, and guided by the theoretical domains framework [26], key recommendations for practice were developed, as shown in Table 3.

4. Discussion

This study has identified Australian patient and medical professional views on barriers and enablers to participation in, and referral to, a contemporary guideline-based osteoarthritis management program (GLA:D® *Australia*). Emergent themes confirm findings from previous qualitative literature from both patient [15,18–20] and medical professional [16,21–24] perspectives about osteoarthritis management programs and the non-surgical components of care, and help to explain the currently limited uptake of guideline-based care for people with osteoarthritis [10–12]. Based on findings from this study and guided by the theoretical domains framework [25], our recommendations may help to improve the uptake and participation of guideline-based osteoarthritis

Table 3
Recommendations for implementing osteoarthritis management programs.

Themes (barriers/enablers)	Related TDF domain(s)	Recommendations and strategies targeted at patients, medical professionals and health systems to overcome barriers and augment enablers for referral to, and participation in osteoarthritis management programs
Enabler: opportunity to achieve positive outcomes and potentially avoid joint replacement surgery	Knowledge Motivation and goals	For patients and medical professionals: promote program with expected benefits, including alternative approach to surgery
Enabler: better program promotion, patient and health professional education, and efficient referral processes	Social influences Environmental context and resources	
Barrier: misinformation about osteoarthritis	Knowledge	For patients and medical professionals: develop resources (multiple languages) to encourage positive explanations about osteoarthritis including the safety and value of exercise-therapy (regardless of disease severity) For medical professionals: hold practical workshops and develop a 'community of practice' to discuss issues and share knowledge
Barrier: patient and program factors	Beliefs about capabilities	
Barrier/enabler: health professional trust, feedback and advice	Beliefs about consequences Environmental context and resources	
Enabler: better program promotion, patient and health professional education, and efficient referral processes		
Barrier: program access	Knowledge	For patients and medical professionals: provide information about costs (including out of pocket costs) and parking For medical professionals: develop program referral processes that are seamless, simple and fast; promote program to professional organisations For the health system: lower out-of-pocket program costs for individuals through improved reimbursement models for osteoarthritis management programs; increase program accessibility through provision of tele-rehabilitation; evaluate program as part of multidisciplinary care models
Barrier: patient and program factors	Environmental context and resources	
Enabler: better program promotion, patient and health professional education, and efficient referral processes		

TDF – theoretical domains framework.

management programs.

Access barriers, such as cost were identified as key barriers by patients and medical professionals for participation in, and referral to, GLA:D® *Australia*. This is despite the fact that exercise-therapy programs for hip and knee osteoarthritis are cost-effective and represent good value for money [32–35]. In Victoria, Australia in 2019 the reported out-of-pocket cost to participate in GLA:D® *Australia* was $AUD 600–800 in a private setting (non-reimbursed), and approximately $AUD 100 in a public setting based on knowledge gathered through the local GLA:D® *Australia* network. Presently, group-based exercise-therapy sessions for people with osteoarthritis are not covered within the taxpayer-funded public healthcare system in Australia. Health professionals should advise patients of, and consider, potential out-of-pocket costs which may limit a person's ability to participate in contemporary osteoarthritis management programs. Enhanced accessibility strategies that reduce the overall costs of the program to the individual could include improved reimbursement models, especially for patients with fewer economic resources. Provision of tele-rehabilitation sessions may also support greater participation in guideline-based education and exercise-therapy programs by eliminating access barriers related to attendance, and is likely to deliver equivalent outcomes [36].

Medical professional beliefs and advice regarding exercise-therapy for osteoarthritis management may act as potential barriers to GLA:D® *Australia* participation, and could explain why less than 4% of hip and knee osteoarthritis patients are referred to physiotherapists in Australia [37]. Some medical professionals perceived that people with moderate, but not mild or severe, osteoarthritis were likely to benefit from exercise-therapy, a belief that does not align with current clinical practice guidelines. Land-based exercise is strongly recommended for all people with hip and knee osteoarthritis, regardless of disease severity, based on low to moderate quality evidence of clinically important benefits for pain and function [4]. Some medical professionals and patients also preferred low load exercise, such as stationary cycling and water-based exercise, believing there was a need to protect the joint, with statements like "don't let the physio push you too hard". These preferences and beliefs may be based on past negative experiences with inappropriately prescribed exercise for osteoarthritis. Therefore, it may be important to educate patients and medical professionals about the benefits and safety of land-based exercise programs for hip and knee osteoarthritis. Additionally, guidance during supervised exercise sessions may provide reassurance and support in the case of temporary increases in pain and facilitate people with osteoarthritis to load their joint and progress exercise appropriately [7,13].

Unhelpful descriptions of osteoarthritis as 'bone-on-bone' or 'wear-and-tear' in this study are consistent with other qualitative research involving patients and medical professionals [38,39]. This language (used by both patients and medical professionals) to describe osteoarthritis may negatively impact people's beliefs [40], create concerns about joint damage, and subsequently reduce physical activity and drive beliefs that surgery is the only treatment option [41]. Importantly, these misinformed beliefs may also create barriers for referrals to, and participation in guideline-based non-surgical care such as exercise-therapy. Our findings indicate that increasing participation in osteoarthritis management programs may be enabled by facilitating positive perceptions of non-surgical management and the potential for patients to avoid or delay joint replacement surgery [42,43]. Additionally, clinician beliefs identified in this study may prevent them from providing key messages that exercise-therapy and physical activity are safe and do not cause damage to osteoarthritic joints if appropriately prescribed [44], and that osteoarthritis does not always progress or worsen [45]. Targeted education to address osteoarthritis misinformation for both patients and medical professionals is likely needed to improve the uptake of guideline-based care including exercise-therapy. Additionally, offering workshops for medical professionals to provide a better understanding of the potential benefits of exercise-therapy for osteoarthritis is recommended, based on findings from this study. General practitioner workshops for

osteoarthritis based on guidelines improve consultation and management competency [46] and can increase uptake of recommended primary care for people with hip and knee osteoarthritis [47].

Patient and medical professional participants familiar with GLA:D® *Australia* viewed the program positively, indicating successful exposure may be an enabler for referral to, and participation in, the program. Most patients and medical professionals believed that osteoarthritis management programs such as GLA:D® *Australia* may help patients to potentially avoid or delay joint replacement surgery. This belief fits with recent reports that exercise-therapy and education can delay hip and knee replacement surgery by at least 2 years for approximately 70% of people with advanced hip [42] and knee [43] osteoarthritis. It is possible that people participating in GLA:D® *Australia* could achieve similar benefits, and an evaluation of program outcomes in the Australian context is currently underway. The findings support appropriate promotion, education, and sharing of positive patient stories as perceived by patients and medical professionals to be enablers for referrals to, and participation in GLA:D® *Australia*.

This study explored in detail the views about a guideline-based osteoarthritis management program (GLA:D® *Australia*) from the perspectives of patients and medical professionals in order to understand key factors related to uptake of the program. A limitation of the study was the potential for the relationship between the participants and the interviewer (physiotherapist at the health service) to introduce respondent and researcher bias. To minimise bias during data collection and analysis and maximise rigour, we used multiple approaches including interviewer training, member-checking, use of three independent experienced reviewers for data analysis, and full disclosure of all researcher roles. While participant checking of interview transcripts was performed, we were mindful of participant burden and did not request participant feedback on the study findings. We also acknowledge that the sample of patient and medical professionals was small (as is common in qualitative studies), and all were English speaking and recruited predominantly from one private health service. Therefore, consistent with most qualitative research, these findings may not be generalisable to healthcare settings from other geographical locations, or to people from culturally and linguistically diverse backgrounds.

Optimising the referral to, and participation in, contemporary guideline-based osteoarthritis management programs such as GLA:D® *Australia* will require key changes including: improved reimbursement models, and better promotion and educational initiatives for patients and health professionals to overcome barriers and facilitate recommended practice. A particular focus of education should include dispelling misinformation about osteoarthritis, and highlighting the safety and value of physiotherapist delivered exercise-therapy.

Author contributions

All authors contributed to the conception and design, and contributed to the writing of the paper by revising it critically for important intellectual content. JS collected and assembled the data. JW, IA and CB contributed to analysis and interpretation of data. All authors read and approved the version of the manuscript submitted.

Role of the funding source

The research received competitive grant funding from the Cabrini Foundation. The study sponsors had no role in the study design; in the collection, analysis and interpretation of data; in the writing of the manuscript; and in the decision to submit the manuscript for publication.

Declaration of competing interest

CB is supported by a MRFF TRIP fellowship (APP1150439). IA is supported by a Victorian Health and Medical Research Fellowship awarded by the Victorian Government (Melbourne, Australia). JK is supported by an NHMRC early career fellowship (APP1119971). JK and CB lead the 'not-for-profit' implementation initiative, GLA:D® Australia. JW and JS are trained GLA:D® physiotherapists. All authors declare that they do not have any real or potential conflict of interest.

Acknowledgments

The authors would like to acknowledge the co-developers of GLA:D® (Professor Ewa Roos and Professor Soren Skou), and the Director of La Trobe Sport and Exercise Medicine Research Centre Professor Kay Crossley, for their support to implement GLA:D® *Australia*. We would also like to thank all the participants for giving their time to participate in this study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ocarto.2020.100095.

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