



BMJ Open Guideline-based exercise management for hip and knee osteoarthritis: a cross-sectional comparison of healthcare professional and patient beliefs in Ireland

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ABSTRACT

Objectives To identify within-stakeholder agreement and between-stakeholder differences in beliefs regarding exercise for osteoarthritis among general practitioners (GPs), physiotherapists (PTs) and people with hip and knee osteoarthritis (PwOA). A secondary objective was to explore the association between referral patterns and beliefs of PwOA.

Design Cross-sectional.

Setting Online surveys administered to GPs, PTs and PwOA in Ireland via social media and healthcare networks.

Participants 421 valid responses (n=161 GPs, n=163 PTs, n=97 PwOA).

Primary and secondary outcome measures Nine belief statements related to exercise effectiveness, safety and delivery were rated on a 5-point Likert scale and analysed for within-stakeholder consensus. χ^2 tests assessed differences in agreement between groups. Multivariable linear regression models tested associations between beliefs in PwOA and referral to/attendance at physiotherapy.

Results Positive within-stakeholder consensus (>75% agreement) was reached for most statements (7/9 GPs, 6/9 PTs, 5/9 PwOA). However, beliefs of PwOA were significantly less positive compared with healthcare professionals for six statements. All stakeholders disagreed that exercise is effective regardless of the level of pain. Attendance at physiotherapy (49% of PwOA), rather than referral to physiotherapy from a GP only, was associated with positive exercise beliefs for PwOA ($\beta=0.287$ (95% CI 0.299 to 1.821)).

Conclusions Beliefs about exercise therapy for osteoarthritis are predominantly positive across all stakeholders, although less positive in PwOA. PwOA are more likely to have positive beliefs if they have seen a PT for their osteoarthritis. Knowledge translation should highlight the effectiveness of exercise for all levels of pain and osteoarthritis disease.

INTRODUCTION

The management of hip and knee osteoarthritis (OA), as for other chronic conditions,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Differences in beliefs about exercise between healthcare professionals and patients with osteoarthritis have not previously been examined.
- ⇒ This study also explored how healthcare professional visits may influence beliefs about effectiveness of evidence-based care.
- ⇒ This was a cross-sectional study so no inferences can be made.
- ⇒ Different results with respect to beliefs and influences may have been found if non-online recruitment methods were available (eg, paper surveys in healthcare settings).

should be determined by the best available evidence. Although there is no cure for this burdensome disease, healthcare professionals in this field have for a long time had a wealth of high-quality evidence to draw from, all pointing to optimal core clinical management that consists of land-based exercise, education and weight loss if appropriate.^{1 2} Despite this, implementation of these guidelines in practice is not optimal, often resulting in care that is fragmented in nature or considered low value.³ A global meta-analysis involving 16 103 people with OA (PwOA) in community care revealed that only 39% received a referral or recommendation to exercise⁴ while a UK-based survey in 2018 revealed that only 3.9% of the 502 respondents with an OA diagnosis were using exercise as part of their management.⁵ Some similarities in shortcomings to implementation of guidelines for musculoskeletal health have been identified globally.⁶

Alongside the use of best evidence, the provision of patient-centred care is a pillar of high-quality care that should help guide treatment for PwOA.⁷ Literature and expert opinion recommendations state that it is important to assess patients' ideas and concerns regarding the cause and management of their pain and to take into account their expectations and preferences for treatment.⁷ Regarding exercise, researchers have identified a considerable amount of uncertainty among PwOA regarding the benefits of exercise for their pain. Results from cross-sectional surveys and semistructured interviews have indicated that a lack of knowledge of the condition may result in patients believing that surgery is their only option.^{8,9} Furthermore, a view of OA as a 'wear and tear' condition was associated with the perspective that exercise was a counterintuitive treatment.^{8–10} Since it is widely understood that beliefs influence health-related behaviours,^{11,12} and because stronger recommendations for exercise have been made since previous publications,^{2,5,9} an updated understanding of how PwOA view exercise is required.

Healthcare professionals' perceptions and beliefs will affect the advice and management they offer patients, and researchers have suggested that those with biomedical or biomechanical beliefs about OA may transfer these beliefs to their patients, thus affecting their treatment choices.^{13,14} Currently, general practitioners (GPs) and physiotherapists (PTs) are considered among the core care providers for PwOA.¹⁵ While PTs have the knowledge and skills to adopt a key role in the management of hip and knee OA, GPs remain the most frequently accessed source of formal medical advice and treatment.^{15,16} The language used by healthcare professionals, especially GPs, can have a profound influence on patients' beliefs.^{17,18} A systematic review from Cottrell *et al.*¹⁹ in 2010 found that the attitudes and beliefs of GPs concerning exercise and chronic knee pain varied widely. An updated UK-based survey of GPs in 2017 found that perspectives were positive, with 87% reporting the use of exercise in their practice.¹⁶ However, only 11% reported using exercise in ways that aligned with evidence-based guidelines.¹⁶ This demonstrates the need for a better understanding of how GPs interact with up-to-date resources for care advancements for OA, in a time-demanding profession.

A scoping review of qualitative research exploring attitudes and beliefs shows that PTs generally have a positive attitude to activity and exercise in OA management, despite indications that some PTs may also be lacking up-to-date knowledge about best practice or may not be adhering to evidence-based treatments.²⁰ In contrast, a recent mixed-methods evaluation by Barton *et al.*²¹ in 2021 reported that awareness regarding evidence supporting exercise for knee OA was good (89%–96%) among PTs in Australia and Canada.

Greater knowledge of beliefs and belief influencers is needed in order to address negative beliefs or myths associated with exercise and joint pain. The objective of this study was to identify within-stakeholder agreement and between-stakeholder differences in beliefs in relation to

statements on exercise for management of hip and knee OA in PwOA, GPs and PTs. Secondary objectives were to explore any associations between beliefs of PwOA and whether they had ever received a GP referral to physiotherapy or had seen a PT for their painful joint. Based on previous work,^{9,13,16} it was hypothesised that the exercise beliefs of PTs would be more positive, and in line with clinical guidelines and the latest evidence, compared with GPs and PwOA. It was also hypothesised that PwOA who had received a physiotherapy referral from their GP, or who had seen a PT for their condition would have more positive beliefs about exercise compared with those who had not. Finally, an exploration of common sources of education for GPs and PTs was included to understand how beliefs regarding evidence are influenced.

METHODS

Design and recruitment

This study incorporates an analysis of three cross-sectional online surveys administered to three stakeholder groups—GPs, PTs and PwOA—in Ireland between March and September 2021. This cross-sectional study is embedded in a larger study (IMPACT, Implementation of osteoarthritis clinical guidelines together),²² that aims to codesign and evaluate implementation strategies for an exercise and education programme for PwOA in Ireland. Surveys were adapted from previous studies in this field^{9,13,16} and reviewed by coresearchers of a public and patient involvement (PPI) steering committee of representative stakeholders prior to distribution. Validation consisted of a round of pretesting with a convenience sample of three of each GPs, PTs and PwOA with feedback provided on readability, acceptability and appropriateness that was incorporated before distribution. Qualtrics software (Qualtrics, Provo, Utah, USA) was used to administer the online surveys. Surveys were completed anonymously after participants were provided with a participant information sheet and consent was implied by completion of the survey. Reporting is consistent with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines for cross-sectional studies.

The PT survey was distributed via email invite to all members of the Irish Society of Chartered Physiotherapists (n=2022), working across all fields. The survey was also advertised via social media (Twitter, LinkedIn) and among networks of researchers and PPI steering committee members. PTs were eligible for inclusion if they (1) were practising in Ireland and (2) treated a patient with hip or knee OA in the past 6 months. The GP survey was distributed to the Irish College of General Practitioners network (n=3152), the University of Limerick Education and Research Network for General Practice network²³ (n=140) and via social media (Twitter, LinkedIn). GPs were eligible to take part if they were currently treating patients with hip and/or knee pain in Ireland. The survey for PwOA was advertised via social media (Twitter, LinkedIn), Arthritis Ireland social

media, News Rheum patient newsletter and colleagues and networks of project steering committee and research team members. PwOA were eligible to take part if they (1) were living on the island of Ireland, (2) at least 30 years of age, (3) had chronic hip or knee pain for at least 6 months or more and (4) did not have joint replacement surgery on at least one of the painful hips or knees. Strategies to increase recruitment via social media across all three surveys were adopted including tagging specific advocacy groups, patient or professional organisations and influencers, providing visual infographics alongside social media posts and aligning posts with events, for example, National Arthritis Day.

Outcomes

Each survey (online supplemental file 1) included an initial set of questions related to participant demographics. For healthcare professionals, these included questions on sex (are you: (1) male, (2) female and (3) prefer not to say), length of time qualified, work setting, details of specific postqualification training related to OA/chronic pain, confidence in treating hip and knee OA, percentage of typical caseload with hip or knee OA and where they prefer to access knowledge of management for persons with hip or knee OA. For PwOA, demographic information related to sex (are you (1) male, (2) female, (3) prefer not to say), age category, geographical area and health conditions were asked. In relation to joint pain, questions regarding location, duration, severity, referrals to exercise and use of clinical guideline-specific treatments (muscle strengthening, aerobic exercise, education, weight loss) were asked. Additional questions were provided for PwOA to understand healthcare utilisation and previous experiences with exercise.

In each survey, a list of statements on exercise beliefs for hip and knee OA were provided and were rated on a 5-point Likert scale from strongly agree to strongly disagree. The belief statements were intended to align with current evidence-based guidelines¹² and best practice for exercise and OA. Healthcare professionals were given a more extensive list of statements that were related to exercise type or referral decisions. A final section related to barriers and enablers to exercise delivery, referral or uptake was included in each survey. The results of that analysis are presented elsewhere.

Statistical analysis

Demographic outcomes were summarised as counts/proportions as appropriate. Belief statements were grouped and summarised descriptively by theme, that is, exercise type and effectiveness, exercise safety and exercise delivery. Although some statements had slightly different wording to facilitate understanding and relevance to each group, there were nine statements that were deemed to be comparable across groups and used to analyse differences in beliefs. Responses for the 5-point Likert scale statements were collapsed to a binary scale to label positive beliefs ('strongly agree' or 'somewhat

agree') versus negative beliefs ('strongly disagree', 'somewhat disagree' or 'neither'). 'Neither' was included with negative beliefs since statements were deemed to align somewhat with best practice and anything short of agreement may be considered unsatisfactory knowledge translation or personal experience. A commonly defined cut-off for consensus (>75%)²⁴ between stakeholders was used. χ^2 (2×3) tests of independence were used to assess differences in agreement with statements between three groups and Bonferroni adjustment for between-group differences ($p<0.05$). Multivariable linear regression was used to explore associations between exercise beliefs (the number of statements agreed with (range 0–9)) in PwOA and (1) physiotherapy referral from their GP (Has your GP ever referred you to a physiotherapist for your painful joint? Yes/No) and (2) physiotherapy attendance (Have you seen a physiotherapist for your painful joint? Yes/No). Histograms, Kolmogorov-Smirnov tests and scatter plots of residuals versus fitted values were used to test assumptions of Poisson and linear regression and linear regression was deemed more appropriate. Pearson correlation coefficients ($r>0.5$) and variance inflation factor (>5) were used to determine the presence of collinearity between variables. Based on correlates of physical activity for hip and knee OA from previous literature, the following covariates were included using an enter method in each model: sex,²⁵ average pain rating (none/mild/moderate/severe),²⁵ pain duration (6 months to 1 year/1–2 years/2–3 years/3–4 years/4+ years)²⁶ and number of comorbidities.²⁵ The most parsimonious models were reported checking for a 10% difference in beta coefficients on removal of covariates ($p>0.05$). Data were analysed using IBM-SPSS V.26.0.0 and Microsoft Excel 365.

Patient and public involvement

This research was conducted as part of a larger project (IMPACT) that uses a participatory health research approach. A steering committee of key stakeholders with relevant research, clinical/system expertise or lived experience (academics, people with arthritis, patient advocacy group members, PTs, GPs and orthopaedic surgeon) have oversight of the project from inception to dissemination. Members of the committee were involved in designing the research question and outcome measures for these surveys, recruitment of participants, interpretation of analyses and dissemination as coauthors of the publication.

RESULTS

There were a total of 421 valid responses from the 3 distributed surveys, comprising 161 GPs, 163 PTs and 97 PwOA. An additional 26 GP, 33 PT and 15 PwOA surveys were collected but were not fully completed or did not contain sufficient data for analysis so were excluded. Demographic data for each stakeholder are presented in [table 1](#).

Table 1 Descriptive statistics using count (proportions) for healthcare professionals and people with osteoarthritis demographics

Healthcare professionals demographics	GP (n=161) Count (%)	PT (n=163) Count (%)	People with hip or knee Osteoarthritis Demographics	PwOA N=97 Count (%)
Sex			Sex	
Female	88 (54.7)	128 (78.5)	Female	76 (78.4)
Male	72 (44.7)	34 (20.9)	Male	20 (20.6)
Prefer not to say	1 (0.6)	1 (0.6)	Prefer not to say	1 (1.0)
How long have you been qualified?			Most bothersome joint	
Less than 5 years	33 (20.5)	19 (11.7)	Knee	52 (53.8)
5–10 years	25 (15.5)	21 (12.9)	Hip	45 (46.4)
More than 10 years	103 (64.0)	123 (75.5)	Age category	
Work practice setting (GPs)			30–39 years	12 (12.4)
Urban	60 (37.3)	–	40–49 years	24 (24.7)
Rural	34 (21.1)	–	50–59 years	30 (30.9)
Mixed	67 (41.6)	–	60–69 years	25 (25.8)
Work practice setting (PTs)			70–79 years	6 (6.2)
Public hospital	–	38 (23.3)	Living location	
Private hospital	–	7 (4.3)	Inner city or suburb	46 (47.4)
Primary care	–	41 (25.2)	Town	16 (16.5)
Private practice clinic	–	70 (42.9)	Village	15 (15.5)
Other	–	7 (4.3)	Open country	20 (20.6)
Postqualification training on OA/chronic pain			No. of other comorbidities	
No	72 (44.7)	37 (22.7)	0	31 (32.0)
Inservice/webinars/reading	32 (19.9)	17 (10.4)	1–2	45 (47.9)
Course or conference	28 (17.4)	72 (44.2)	3+	18 (19.1)
Diploma/APP or certification	15 (9.3)	3 (1.8)	Multijoint pain(>1)	
MSc in related field	14 (8.7)	32 (19.6)	No	6 (6.2)
PhD in related field	0	2 (1.2)	Yes	91 (93.8)
Confidence in treating hip and knee OA			Rating of pain/symptoms on an average day	
Not confident	2 (1.2)	0	No pain/symptoms	1 (1.0)
Slightly confident	33 (20.5)	5 (3.1)	Mild	30 (30.9)
Confident	80 (49.7)	41 (25.2)	Moderate	49 (50.5)
Very confident	36 (22.4)	86 (52.8)	Severe	17 (17.5)
Extremely confident	10 (6.2)	31 (19.0)		
% of typical caseload with hip/knee OA			Duration of pain	
1%–5%	19 (11.8)	19 (11.7)	6 months to 1 year	24 (24.7)
6%–25%	117 (72.7)	83 (50.9)	1–2 years	13 (13.4)
26%–50%	24 (14.9)	36 (22.1)	2–3 years	15 (15.5)
51%–75%	1 (0.6)	18 (11.0)	3–4 years	11 (11.3)
>75%	0	5 (3.1)	More than 4 years	34 (35.1)

APP, advanced practice physiotherapist; GP, general practitioner; OA, osteoarthritis; PT, physiotherapist; PwOA, people with osteoarthritis.

Experiences with exercise for PwOA

Of the 97 PwOA, 78.4% (n=76) had spoken to their GP regarding their joint pain, 63.9% (n=62) had an X-ray of their joint. 38.5% (n=37) had been referred to physiotherapy by their GP and 48.5% (n=47) had seen a PT for

their joint (either through GP or self-referral). Additionally, 50.5% (n=49) reported having been given specific exercises for their joint by any healthcare professional. A flow diagram with breakdown of these referral patterns is displayed in [figure 1](#). [Figure 2](#) shows answers to questions

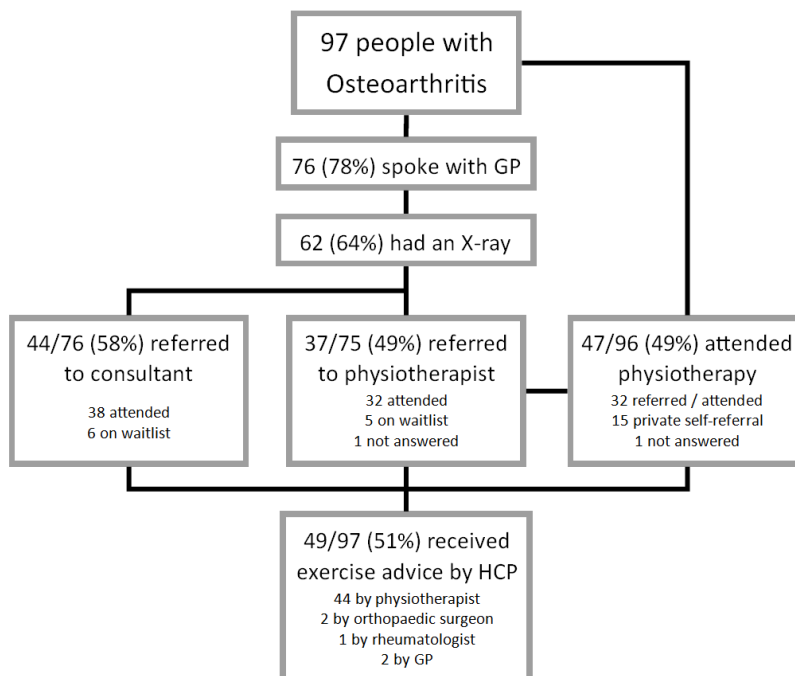


Figure 1 Flow chart of referral patterns for people with osteoarthritis. GP, general practitioner; HCP, healthcare professional.

regarding the types of treatments tried by PwOA, as per clinical guideline recommendations (aerobic exercise, strengthening exercise, education and weight management).

Within-stakeholder agreement in beliefs about exercise type and effectiveness, exercise safety and delivery

Figure 3 shows the Likert scale results in each stakeholder group for statements (A–D), related to the effectiveness of different types of exercise and for different levels of pain or perceived severity. Figure 4 shows the Likert scale results in each stakeholder group for statements (E–I), related to the safety and delivery of different types of exercise for PwOA. Beliefs were predominantly positive among GPs (positive consensus (>75% agreement) on

7/9 statements), PTs (6/9 statements) and PwOA (5/9 statements).

Between-stakeholder differences in beliefs about exercise type and effectiveness, exercise safety and delivery

Results of χ^2 tests for differences in agreement between stakeholders across belief statements are presented in table 2. There were differences in stakeholder responses across all statements, except for statement (d): ‘Exercise works just as well for everybody, regardless of the amount of pain they have’ ($\chi^2=5.14$, $p=0.076$). All three stakeholder groups reached a negative consensus regarding this statement. In six of the eight statements where differences were observed, patient beliefs were significantly different to healthcare professional beliefs. There were two statements with a medium effect size

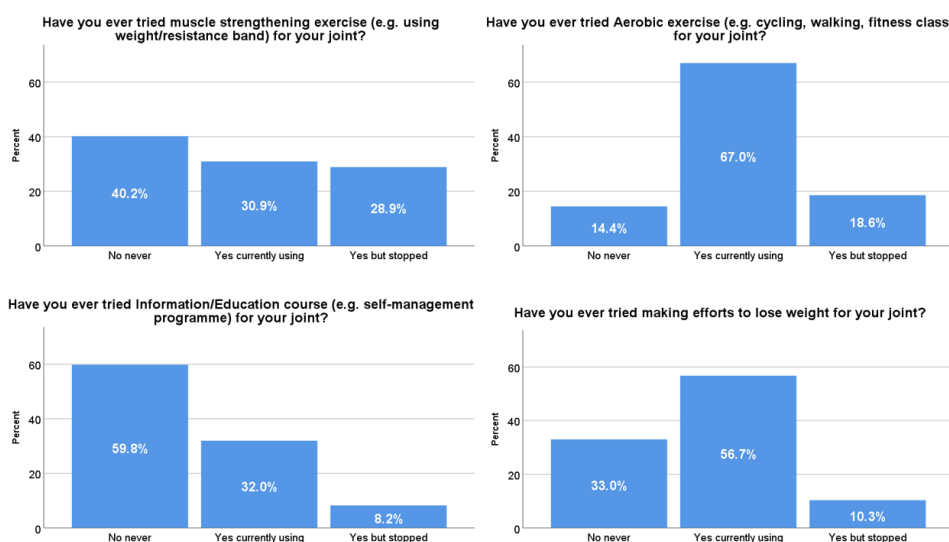


Figure 2 Proportion of responses to guideline-based treatments people with osteoarthritis (n=97) have tried.

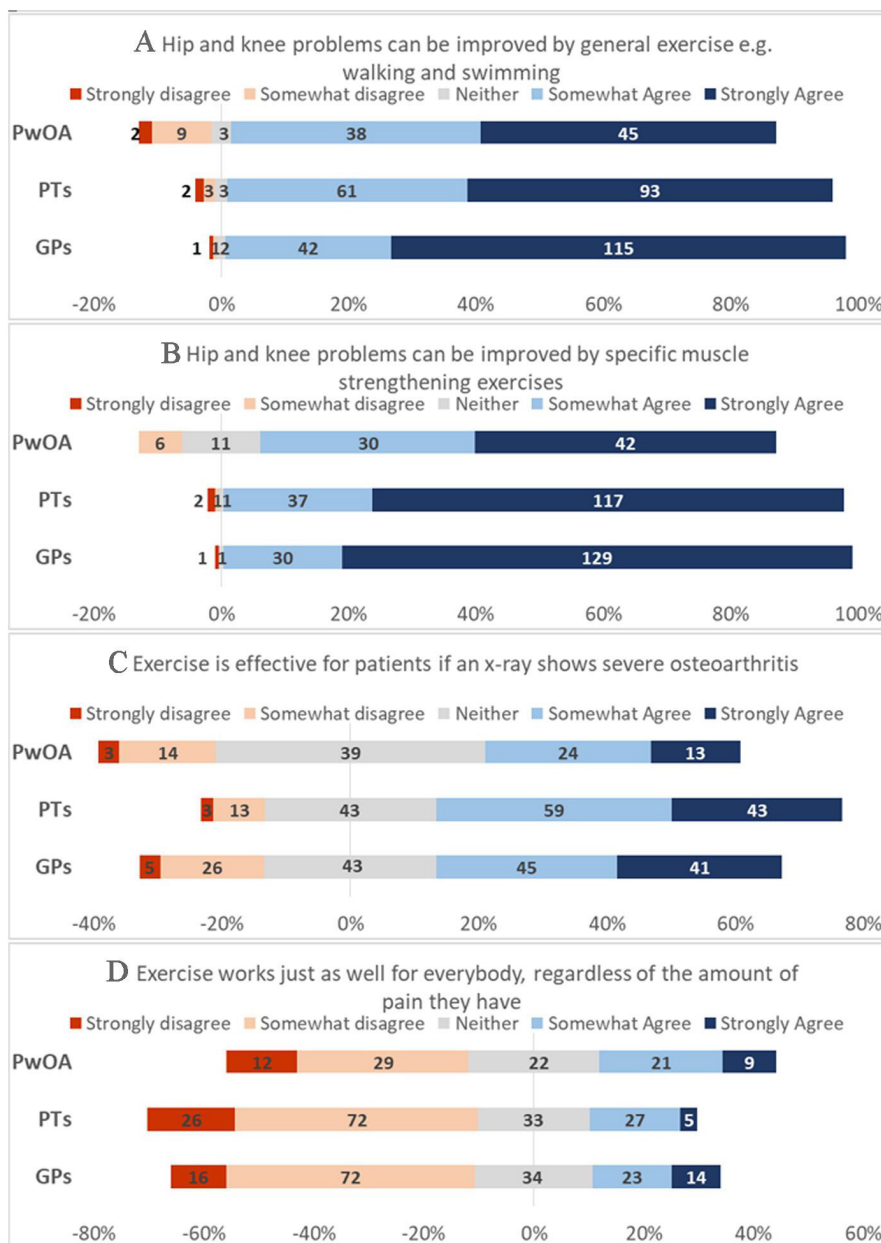


Figure 3 100% stacked bar chart showing Likert scale results with count for each stakeholder on belief statements (A–D) related to exercise effectiveness. GP, general practitioner; PT, physiotherapist; PwOA, people with osteoarthritis.

for differences between PwOA and service providers: statements (b) ‘Hip and knee problems can be improved by specific muscle strengthening exercises’ ($V=0.309$) and (h) ‘Most patients with hip or knee OA would benefit from a supervised group exercise programme’ ($V=0.384$). All other differences had a small effect size.

Predictors of patient beliefs

There was no association between beliefs of PwOA about exercise and the question: ‘Has your GP ever referred you to a PT for your painful joint?’ (online supplemental file 2) ($B=0.19$ (95% CI -0.10 to 1.50)). In this model, a higher number of comorbidities ($B=-0.26$ (95% CI -0.56 to -0.07)) was negatively associated with beliefs about exercise. In model 2, there was a positive association between beliefs of PwOA about exercise and the question: ‘Have you seen a physiotherapist

for your painful joint?’ ($B=1.06$ (95% CI 0.30 to 1.82)). Sex (male) ($B=-0.72$ (95% CI -1.44 to -0.00)), a longer duration of pain and symptoms ($B=-0.20$ (95% CI -0.40 to -0.01)) and a higher number of comorbidities ($B=-0.29$ (95% CI -0.53 to -0.06)) were negatively associated with beliefs about exercise in this model.

Healthcare professional sources of education

For the question, ‘Where do you get your knowledge of care advancements for persons with knee or hip osteoarthritis?’; the top five selected responses for GPs were continuous medical education (CME) or GP training networks (78%), published guidelines or recommendations (61%), reading medical journals (47%), conference attendance (47%) and course attendance (31%). For the question, ‘Where do you access your knowledge of management for persons with

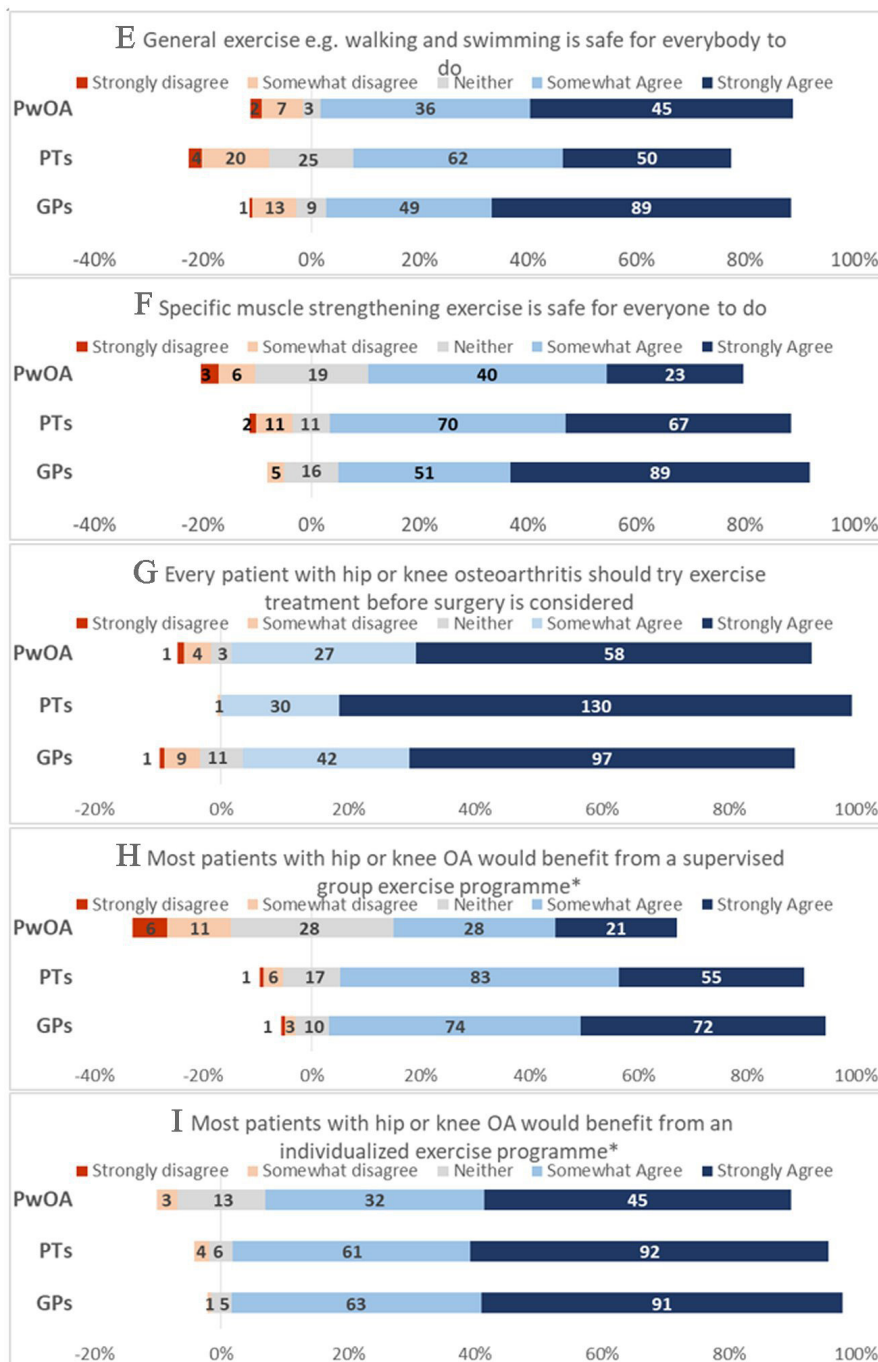


Figure 4 100% stacked bar chart showing Likert scale results with count for each stakeholder on belief statements (E–I) related to exercise safety and delivery. *Questions for PwOA phrased slightly differently: ‘The best way to learn about exercise is in a supervised group setting with people who have similar pain’ and ‘The best way to learn about exercise is in a one-on-one setting with a health professional’. GP, general practitioner; PT, physiotherapist; PwOA, people with osteoarthritis.

knee or hip osteoarthritis?’; the top five selected responses for PTs were published guidelines or recommendations (85%), reading research articles (75%), clinic protocols and discussion with peers or in-services (70%), course attendance (61%) and conference attendance (47%).

DISCUSSION

This research identified differences in beliefs about exercise effectiveness, safety and delivery between healthcare

professionals and PwOA. While predominantly positive beliefs were observed across stakeholders, there was less consensus regarding the effectiveness of exercise when an X-ray shows ‘severe’ OA. With regard to exercise referral, 48.5% of PwOA had either been referred to or self-referred to a PT for their joint pain. Referral to a PT by their GP was not associated with positive exercise beliefs. However, attendance at a PT for joint pain was associated with positive exercise beliefs in PwOA.

Table 2 Differences in agreement with statements between general practitioner (GP; n=161), physiotherapist (PT; n=163) and people with hip and knee osteoarthritis (PwOA; n=97)

Statement	Proportion in agreement			χ^2	Significance	Cramer's V \uparrow
	GP	PT	PwOA			
Hip and knee problems can be improved by general exercise, for example, walking and swimming	97.5%	95.1%	85.6%*	15.59	<0.0001	0.193
Hip and knee problems can be improved by specific muscle strengthening exercises	98.8%	97.5%	80.9%*	39.04	<0.0001	0.309
Exercise is effective for patients if an X-ray shows severe osteoarthritis	53.8%	63.4%	39.8%§	13.24	0.001	0.179
Exercise works just as well for everybody, regardless of the amount of pain they have	24.2%	19.6%	32.3%	5.14	0.076	n/a
General exercise, for example, walking and swimming is safe for everybody to do	85.7%	68.9%†	87.1%	18.13	<0.0001	0.209
Specific muscle strengthening exercise is safe for everyone to do	85.6%	84.5%	69.2%*	11.86	0.003	0.170
Every patient with hip or knee OA should try exercise treatment before surgery is considered	86.9%	99.4%†	91.4%	19.0	<0.0001	0.214
Most patients with hip or knee OA would benefit from a supervised group exercise programme‡	91.3%	85.3%	52.1%*	61.35	<0.0001	0.384
Most patients with hip or knee OA would benefit from an individualised exercise programme‡	96.3%	93.9%	82.8%*	15.91	<0.0001	0.196

Agreement was defined as those who selected 'strongly agree' or 'somewhat agree' on Likert scales. Proportions that reached within-stakeholder 'consensus', defined as >75% majority, are in bold.

*Significantly different compared with GP and PT, using Bonferroni at 0.05 level.

†Significantly different to GP and PwOA, using Bonferroni at 0.05 level.

‡Questions for PwOA phrased as: 'The best way to learn about exercise is in a supervised group setting with people who have similar pain' and 'The best way to learn about exercise is in a one-on-one setting with a health professional'.

§Significantly different to PT, using Bonferroni at 0.05 level.

¶Cramer's V=0.1 small, 0.3 medium, 0.5 large effect size.

n/a, not available; OA, osteoarthritis.

If OA management guidelines do not align with the personal beliefs of service providers or users, PwOA may not receive high-quality care. This study has found that GPs (7/9 statements), PTs (6/9 statements) and PwOA (5/9 statements) have largely positive beliefs regarding exercise for OA. However, there is less certainty about exercise when an X-ray shows 'severe osteoarthritis' across all stakeholders, and service providers do not agree that 'exercise works just as well for everybody, regardless of the level of pain they have'. These results highlight that beliefs are generally in line with best evidence and clinical guidelines. However, there may still be some misconceptions about the effectiveness of exercise for higher levels of pain and disease. Evidence suggests that the pain-relieving qualities of exercise are effective for even moderate to severe OA disease,^{27–29} and a more recent meta-analysis for hip and knee OA has shown that individuals with higher pain severity at baseline benefit more from therapeutic exercise than those with lower pain.³⁰ This evidence should be a focus of future efforts of knowledge translation to clinicians and PwOA.

Some of the beliefs identified in this study are reflective of the traditional view of OA as a 'wear and tear' disease, synonymous with a desire to protect a 'damaged' joint

on X-ray from further damage, as found previously.^{8 20} However, an encouraging finding from this research is the overwhelmingly more positive views towards exercise observed compared with similar studies published on a cohort of UK-based PTs in 2009,¹³ older adults with knee pain in 2012⁹ and GPs in 2017.¹⁶ Using the comparator of statements with at least majority view (>50% agreement), in the 2009 study,¹³ PTs agreed on the benefit of exercise for knee pain on 4/12 statements (33%), compared with 8/9 similar statements (89%) in the current study. For older adults with knee pain, there was no agreement for any statement in the 2012 study,⁹ compared with 7/9 statements (78%) in the current study. This may be reflective of the younger age and inclusion of hip and knee pain in the current study. In the 2017 study,¹⁶ GPs agreed on 9/12 statements (75%), compared with 8/9 statements (89%) in the current study. While some statements varied slightly, stronger exercise recommendations in clinical guidelines and greater efforts in implementation and translation to practice in the last 10 years are likely the rationale for these changes, particularly since clinical guideline updates in 2014.¹² However, there is still much space to enact recommendations from a 2018 Cochrane review to provide better information and advice about

the safety and value of exercise for patients.³¹ In particular, providing reassurance on the role of exercise in managing symptoms, and discussion of opportunities to participate in activities regarded as enjoyable and relevant, may encourage greater exercise participation.³¹

Beliefs of PwOA about exercise were significantly less positive compared with healthcare professional beliefs for 6/9 statements, even though significantly more PwOA believed that general exercises are safe for everybody to do, compared with PTs. The greatest differences were observed for statements in relation to the benefits of strengthening exercises and group-based exercise but effect sizes were small to medium overall. Given that 40% had never tried weight or strength-based training for their joint, and an additional 28% tried, but since stopped this type of exercise, healthcare professionals should be cognisant of ensuring patients understand the benefit of muscle strengthening and support patients to find enjoyable and sustainable ways to build these exercises into weekly routines. While strength-based training is not deemed superior to aerobic type exercise for pain relief in OA,^{27 32} knock-on benefits for improvements in physical function, longevity, bone health and frailty³³ during ageing are important to highlight. Results for aerobic type exercise, however, were much more promising as only 14% had not tried this type of exercise for their joint and 67% were actively using. Further exploration of reasons for stopping exercise would be of benefit to determine if low adherence is related to barriers to exercise participation or a lack of perceived improvement in symptoms. While there is no strong evidence to indicate a difference in effectiveness regarding exercise setting, PwOA were less likely to agree with the benefits of a supervised group setting compared with service providers. Additional benefits of group exercise for older adults, such as social support, peer-learning, improvements in mental health and loneliness, and cost-effectiveness should, however, be considered and encouraged.^{34–36}

PTs are primary care providers of therapeutic exercise for PwOA and other chronic conditions. It was, therefore, hypothesised that PTs would have more positive beliefs regarding exercise compared with GPs. However, this was not shown to be the case based on findings in this study. PTs were significantly more positive regarding statement (g): Every patient with hip or knee OA should try exercise treatment before surgery is considered. However, more GPs responded positively to statement (e): General exercise, for example, walking and swimming is safe for everybody to do, and overall, there was a positive consensus on more statements among GPs (7/9) compared with PTs (6/9). These findings are somewhat at odds with the review by Nissen *et al* (including studies published from 2006 to 2019), which identified a certain lack of knowledge about the role of physical activity, exercise and physiotherapy in OA management among some GPs and PTs.²⁰ It suggests that the main barriers to implementation of exercise may not be entirely related to lack of updated knowledge or beliefs of the healthcare professionals.

In this study, referral to physiotherapy by a GP was not associated with more positive exercise beliefs in PwOA, in contrast to what was hypothesised. Although GPs had the most positive beliefs in comparison with other stakeholders, this finding may reflect the lack of time in a GP consultation to educate about exercise therapy and influence patient beliefs. A referral to exercise therapy alone may not be enough. However, seeing a PT for osteoarthritis was associated with more positive exercise beliefs. This may suggest that PTs impart important knowledge and education regarding the benefits of exercise to their patients, that, in turn, changes patient beliefs. Equally, this finding may suggest that PwOA with more positive exercise beliefs are more likely to attend a PT appointment. Tracking of changes in beliefs over time is recommended to further explore this association. Compared with GPs, PTs have more time in a consultation to discuss the effectiveness, mechanism and safety of exercise for joint pain, which may help to influence beliefs and maximise the potential effect of exercise programmes by improving adherence.³⁷ It is known that the provision of education for OA is superior for patient outcomes when combined with exercise therapy.³⁸ Almost 60% of PwOA reported having not tried self-management/education, despite some programme availability in Ireland.³⁹ PwOA were not asked specifically if their GP referred them to a self-management programme, which is a required area of further exploration. Additional efforts are required to support clinicians with resources to deliver trustworthy educational content for PwOA, or increase knowledge of available self-management programmes, to ensure clinical recommendations are fully implemented.

In the current study, 78% of PwOA had spoken to their GP about their joint pain while under 50% of these people had been referred to a PT. Despite OA being among the leading causes of years lived with disability,⁴⁰ the decision to seek care can be deterred by negative or dismissive attitudes from healthcare professionals about their non-urgent condition, or the perception that pain is part of ageing.⁴¹ Healthcare professionals should take care regarding attitudes and language use during consultations⁴² to help promote the effectiveness of first-line treatment strategies. Additionally, decisions regarding treatment timing may require additional educational strategies given clinical guidelines support surgical intervention as the last resort.^{1 2} In this study, more PwOA were referred to an orthopaedic consultant (58%) rather than PT (49%). From the regression analysis, it is also apparent that people with multiple comorbidities may require additional support to improve positive beliefs about exercise for their condition. For people living with the burden of multiple conditions, additional barriers to exercise may require more supportive self-management sessions and thorough training of exercise facilitators.⁴³

This study has shown that the most used education sources for healthcare professionals on management of OA are published guidelines or recommendations (85% of PTs, 61% of GPs), use of training networks, in-clinic protocols,



discussion and in-services (70% of PTs, 78% of GPs) and reading medical journals or research articles (75% of PTs, 47% of GPs). Even where clinicians report using clinical guidelines and research to guide practice, this is no guarantee that the most up-to-date recommendations are being used with confidence, or that they are being interpreted, recalled or implemented appropriately.⁴⁴ In contrast to this study, previous international investigations have shown that only a small proportion of sport and musculoskeletal PTs use research articles to change their clinical practice (10.4%).⁴⁵ Over half of PTs instead cited ‘interactions with colleagues’ and ‘attending private education short courses’ as the source for change.⁴⁵ Given the high proportion of GPs that use CME small groups and training networks, peer-learning opportunities may be a viable source of intervention to ensure practice guidelines are being met.⁴⁶ The evidence-to-practice gap could be filled with clinical guideline supplements that address contextual barriers and time needed to treat,⁴⁷ and courses/training that includes opportunities to discuss the real-world implementation of evidence with experienced colleagues and experts, with input from patients on delivery needs.

While efforts were made to recruit participants for this research from multiple diverse sources, this study was not a representative sample. The highest proportion (31%) of PwOA in this study were in the 50–59 years age category and 50% reported moderate joint pain. While prevalence of OA is higher in older age categories, the sample recruited is likely reflective of the online nature of participation, wide inclusion criteria (age 30+ years) and exclusion criteria for previous joint replacement surgery. Due to the timing of survey administration (during COVID-19 pandemic lockdown), traditional survey advertising methods such as GP and health clinic waiting rooms were not used. Completion of an anonymous survey has benefits as results cannot be influenced, however, if there was any confusion related to the phrasing of a certain question or statement, then this could not be clarified. The selection of other belief statements about exercise may have yielded different results. Future research should also investigate similar beliefs using qualitative approach to allow for more context to these answers.

Conclusion

Beliefs of GPs, PTs and PwOA regarding exercise as a treatment for hip and knee OA have likely become more positive in recent years. However, there is still much scope for service improvement, with less than 50% of PwOA having seen a PT for their joint pain and all stakeholders in disagreement with statements relating to the effectiveness of exercise for severe joint pain. This sample included PwOA who did not have a previous joint replacement surgery and may, therefore, not be generalisable to an older sample with more severe disease. Knowledge translation activities should be aimed at increasing knowledge and improving access to first-line evidence-based exercise therapies, using stakeholder codesign to provide context on barriers and facilitators.

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