Management of Early- and Late-Stage Rheumatoid Arthritis: Are Physiotherapy Students' Intended Behaviours Consistent with Canadian Best Practice Guidelines?

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ABSTRACT

Purpose: This study examined whether physiotherapy students in a problem-based learning (PBL) curriculum intend to implement best practices for management of clients with rheumatoid arthritis (RA). **Method:** Physiotherapy students ($n = 49$) completed a subsection of the ACREU Primary Care Survey to evaluate the concordance between intended behaviours and Canadian best practices for early- and late-stage RA, before and after completing the relevant PBL content. Changes in scores were assessed using McNemar's test for dependent proportions. **Results:** Most students indicated that they would recommend treatments or referrals for physiotherapy/exercise, education, and occupational therapy or joint protection pre- and post-PBL ($>83\%$ and $>95\%$, respectively). Post-PBL, more students recommended referral to a rheumatologist and disease-modifying anti-rheumatic drugs (DMARDs) for both early and late RA; however, the increase was significant only for early RA ($p = 0.013$ and 0.031 for referral to rheumatologist and DMARDs, respectively). More students recommended psychosocial support at both stages of RA post-PBL (early RA: $p < 0.001$; late RA: $p = 0.031$). Although more students recommended DMARDs post-PBL, only 8 students in total made this recommendation (16%), and fewer students considered use of non-steroidal anti-inflammatory drugs. Most students (94%) did not recommend referral to a surgeon for early or late RA. **Conclusion:** Intended behaviour of physiotherapy students was more consistent with Canadian best practice guidelines for managing clients with early- and late-stage RA following the PBL curriculum. Further study is required to determine whether the students were less aware of best practices related to pharmacologic interventions and timely referral to appropriate specialists, or whether they considered these issues to be outside their scope of practice.

Key Words: curriculum; evidence based practice; physical therapy specialty; primary health care; rheumatoid arthritis.

RÉSUMÉ

Objectif : Avec cette étude, on souhaitait voir si les étudiants en physiothérapie, dans le cadre de cours qui font appel à une méthode d'apprentissage axée sur les problèmes, tentaient de mettre en pratique les pratiques exemplaires pour la gestion des clients aux prises avec la polyarthrite rhumatoïde. **Méthode :** Des étudiants en physiothérapie ($n = 49$) ont rempli une sous-section du sondage de l'ACREU sur les soins de santé primaires en vue d'évaluer la concordance entre les comportements recherchés et les pratiques exemplaires canadiennes pour les patients en stade précoce et avancé de polyarthrite rhumatoïde avant et après avoir complété le contenu de la formation axée sur les problèmes. Les variations dans les pointages obtenus ont été évaluées à l'aide du test de McNemar sur les proportions dépendantes. **Résultats :** La plupart des étudiants ont indiqué qu'ils recommanderaient des traitements ou une consultation en physiothérapie pour des exercices, de l'éducation et de l'ergothérapie ou une protection des articulations, avant et après leur apprentissage axé sur les problèmes ($>83\%$ et $>95\%$, respectivement). Pour la polyarthrite en stade précoce ou avancé, plus d'étudiants ont recommandé une consultation auprès d'un rhumatologue et de DMARD (*disease-modifying anti-rheumatic drugs*; médicaments antirhumatismaux) à la suite de leur formation; toutefois, l'augmentation était considérable uniquement pour les cas de polyarthrite précoce ($p = 0,013$ et $0,031$ pour les consultations chez un rhumatologue et les DMARD, respectivement). Après leur formation, plus d'étudiants ont recommandé un soutien psychosocial aux deux stades de la

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maladie (PA précoce : $p < 0,001$; PA avancée : $p = 0,031$). Même si plus d'étudiants ont recommandé le recours à des DMARD après leur apprentissage axé sur les problèmes, 8 étudiants seulement ont formulé cette recommandation (16 %) et encore moins d'étudiants ont envisagé le recours à des anti-inflammatoires non stéroïdiens. La plupart des étudiants (94 %) n'ont pas recommandé une consultation par un chirurgien pour la PA précoce ou avancée.

Conclusion : Les comportements recherchés chez les étudiants en physiothérapie étaient plus fidèles aux lignes directrices canadiennes sur les pratiques exemplaires pour la gestion de clients avec PR en stade précoce ou avancé une fois qu'ils avaient reçu la formation axée sur les problèmes. Des études supplémentaires seront nécessaires pour déterminer si les étudiants étaient moins bien informés des pratiques exemplaires touchant les interventions pharmacologiques et le renvoi en consultation chez les spécialistes appropriés, ou s'ils considéraient ces tâches comme étant hors de la portée de leur pratique.

Rheumatoid arthritis (RA) is the most common type of autoimmune-based arthritis, affecting approximately 1% of the population.¹ People with RA may present with systemic symptoms such as fever, weight loss, anaemia, and fatigue.² Typically, people with RA experience pain, swelling, and morning stiffness bilaterally in multiple peripheral synovial joints, particularly the small joints of the wrists, hands, feet, and jaw.³ Periods of joint inflammation may be interspersed with periods of remission, or may persist and progress over time.² If inadequately controlled, joint inflammation can lead to many complications, such as muscle atrophy and joint deformity, which are associated with greater disability and reduced quality of life.³ However, early referral to a rheumatologist and initiation of disease-modifying anti-rheumatic drugs (DMARDs) have been shown to control symptoms and delay disease progression.²⁻⁷ From symptom onset, a delay of more than 12 weeks in seeing a rheumatologist is associated with greater joint destruction and a lower chance of achieving DMARD-free remission, relative to those assessed within this 12 week period.⁶ Non-steroidal anti-inflammatory drugs (NSAIDs) are helpful in individuals with no contraindications and acceptable tolerance.⁷⁻⁹ In addition, a variety of non-pharmacologic conservative interventions are recommended for effective management, from the early to late stages of RA.⁷⁻¹⁵ Clinical practice guidelines (CPGs) recommend providing education to improve patient understanding with regard to RA and its management (including referral to existing educational activities and self-management programmes).⁷⁻¹² Physiotherapy and/or occupational therapy is recommended to educate and assist with short-term pain management through thermal modalities and transcutaneous electrical nerve stimulation; to enhance fitness, joint flexibility, muscle strength, mobility, and physical function; and to improve joint protection and energy conservation through exercise, splinting, assistive devices, gait aids, and home/work modifications as required.⁷⁻¹⁵ Referral to appropriate health care providers in order to address client-specific needs regarding foot orthoses, social support, or coping strategies is recommended.⁷⁻¹² Surgical management and postoperative rehabilitation may be indicated as RA progresses.^{7-9,12}

In Canada, people with RA seek most of their health care through primary health care providers.¹⁶ These clinicians therefore play an important role in the manage-

ment of RA through the timely recognition of musculoskeletal problems which may have chronic sequelae. Appropriate referral and follow-up is facilitated by familiarity with CPGs for arthritis care. However, primary health care providers report lack of preparation and barriers to performing this important role in the primary care setting.^{16,17} To address this problem a national initiative was launched to develop and disseminate best practice guidelines (BPGs) for the care of RA (early and late stages—see Box 1) and moderate knee osteoarthritis in the primary care setting.¹⁸⁻²⁰ The effectiveness of dissemination through inter-professional educational workshops was determined using the Arthritis Community Research and Evaluation Unit (ACREU) Primary Care Survey. This questionnaire required primary health care providers (family physicians, nurses, nurse practitioners, occupational therapists, and physiotherapists) to indicate the interventions they would undertake (or recommend/refer, depending on their scope of practice) for each of three case scenarios.²⁰ Best practice scores improved significantly following the workshops.²⁰ These findings suggest that directed educational efforts to disseminate BPGs for arthritis care will change the behaviours of physiotherapists working in primary care.

The entry-level to practice problem-based learning (PBL) curriculum in the Master of Science (Physiotherapy) programme at McMaster University aims to prepare students to become competent primary-care physiotherapists. Since most people with RA will seek out health care through primary care,¹⁶ and most of our graduates work in a direct-access private-practice setting, we were interested in establishing whether physiotherapy students in a PBL curriculum were incorporating BPGs into their management plan after completing the curriculum addressing RA. The Essential Competency Profile for Physiotherapists in Canada (October 2009) describes advocacy and collaboration as two of the seven core competencies for physiotherapists.²¹ For effective management of clients with RA it is particularly important that physiotherapists integrate their knowledge, skills, and attitudes required for advocacy and collaboration with their key role as experts in function and mobility. Therefore, the primary objective of our study was to determine whether physiotherapy students identified more interventions and referrals for clients with RA as being within their scope of practice, after completing the PBL curriculum on RA. A

secondary objective was to pilot a supplemental learning module in a subgroup of students to address advocacy and collaboration roles as these relate to the Canadian BPGs for clients with early- and late-stage RA. We hypothesized that the students would be able to recommend evidence-based treatment plans for individuals with early and late RA which fell within the physiotherapist's central role as expert in function and mobility. We further hypothesized that students would have a limited understanding of their role as advocate and collaborator when considering recommendations for best RA practice, and that targeted educational efforts may promote timely referral to the appropriate specialists and pharmacologic treatment.

METHODS

Study design

This prospective pre-post study was approved by our institutional Faculty of Health Sciences/Hamilton Health Sciences Research Ethics Board, and all participants provided written informed consent before initiation of the study. As part of the informed consent, students indicated whether or not they would be willing to participate in a pre-post study piloting the supplementary learning module 3 months after the PBL content addressing RA.

Participants

The target sample included all second-year physiotherapy students in the School of Rehabilitation Science, with the exception of the four student investigators conducting this study. An email describing the study and inviting participation was sent to all eligible students using the class distribution list.

PBL content related to RA

The entry-level to physiotherapy practice programme at McMaster University can be classified as a fully integrated PBL curriculum using small-group tutorial discussions focused around clinical case scenarios to facilitate the integration of learning.^{22,23} Twice a week each group of five to seven students will meet with an assigned tutor (faculty member or clinician) acting as facilitator for the group discussion.^{22,23} In these discussions gaps in knowledge are identified, hypotheses are made, and strategies are developed to address specific health care problems.^{23,24} Students come to a consensus regarding the learning objectives that need to be addressed by the group.^{23,24} Following each tutorial session, the students are required to seek out resources addressing these objectives so that new knowledge can be applied to the problem in the next tutorial discussion, thereby consolidating their learning.^{23,24} Concurrent clinical skills laboratories are designed to reinforce the concepts addressed by each health care problem.²⁴

The PBL health care problem related to RA encountered by the students participating in this study began

by describing a young mother with early-stage RA, and ended 10 years later in order to introduce issues associated with RA in its late stage. Each tutorial group met to discuss this problem for a total of approximately 5 hours. The curriculum included two concurrent clinical skills laboratories reinforcing learning around physiotherapy assessment and management of clients with RA. Learning in the laboratory sessions was facilitated by rheumatologists, occupational therapists and physical therapists working for local branches of the Arthritis Society, and by community volunteers with RA.

Outcome measure

Participants completed a modified version of the ACREU Primary Care Survey, developed to evaluate intended use of best practices for management of RA and osteoarthritis by primary health care providers.^{16–20} The original survey included two RA clinical vignettes (one describing early presentation of RA, the other describing late presentation of RA), and one osteoarthritis clinical vignette.^{16–20} It was developed by a multidisciplinary group of health care providers (including a physiotherapist), underwent two rounds of pretesting and revision based on piloting with family physicians,¹⁶ and has been used with a variety of primary care health professionals (including physiotherapists) to assess intended behaviour.^{16,20} The use of clinical vignettes allows presentation of the same clinical detail to all respondents, and this method has acceptable validity relative to the observed behaviour of general practitioners interacting with simulated patients portraying the same clinical vignette.²⁵ Criterion validity for clinical vignettes is acceptable when comparing physiotherapists' intended and self-reported behaviours with respect to evidence-based management of low back pain (Spearman's $r = 0.31$);²⁶ however, the relationship between intended behaviour and that observed by a third party has not been investigated. For this study we retained the original two RA clinical vignettes (as previously published in full¹⁶), and replaced the open-ended response options with a checklist of evidence-based interventions and referrals for both early and late RA (see Box 1)^{4,5,7–9,12–15,17} to facilitate scoring. The following written instructions were provided with each vignette: "You are seeing this patient for the first time. Please check the interventions/treatments and referrals that you would recommend during this visit as it applies to your scope of practice." Students were presented with the same checklist of response options for both RA scenarios. We retained the osteoarthritis vignette and included the evidence-based recommendations specific to that scenario (intra-articular joint injection, weight management, analgesics) in the checklist of response options, but these data were not analyzed as part of the current project. (The modified questionnaire is available from sbrooks@on.arthritis.ca).

The pen-and-paper questionnaire was administered 2

Box 1 Recommended best practices for early and late RA and corresponding response options presented with both clinical vignettes

Recommendation	Response Option	Best Practice ^{4–6}	
		Early RA	Late RA
Client receives instruction for exercise or recommended/referral to physiotherapy or an exercise programme	☐ Physiotherapy/Exercise	yes	yes
Client receives education about self-management strategies and information about available resources	☐ Education	yes	yes
Client receives instruction in joint protection or energy conservation techniques or recommended/referral to occupational therapist. Provide a device or recommend/refer to rehabilitation specialist for assistive devices (e.g., canes, crutches, walkers)	☐ Occupational Therapy / Joint Protection	yes	yes
Clients receive instruction in coping strategies and social support and referrals for social worker / psychologist / psychiatrist / mental health worker / counsellor as needed	☐ Psychosocial Support	yes	yes
Rheumatology referral is initiated for clients with suspected inflammatory arthritis and to achieve/maintain disease control in confirmed RA cases	☐ Referral to Rheumatologist	yes	yes
Consider Disease Modifying Anti-Rheumatic Drugs (DMARDS) for treatment of early RA and monitor response in current users	☐ Disease Modifying Anti-Rheumatic Drugs (DMARDS)	yes	yes
Consider Non-Steroidal Anti-Inflammatory Drugs (NSAIDS); recognize risks (age >75y / history of peptic ulcer / gastrointestinal bleeding / cardiovascular disease)	☐ Non-steroidal Anti-Inflammatory Drugs (NSAIDS)	yes	yes
Consider referral to Surgeon/Orthopaedics clients who continue to experience significant pain and functional disability despite optimal conservative management	☐ Referral to Surgeon/Orthopaedics	no	yes
Total best practice score:		7	8

days before students began the PBL content related to physiotherapy assessment and management of clients with RA (pre-PBL), and again 5 days after they had completed the PBL content (post-PBL). The questionnaire took between 10 and 20 minutes to complete. To ensure confidentiality, questionnaires were anonymized immediately upon completion by an individual who was not responsible for evaluating the students. The form linking assigned study identification numbers with student participants was not available to the investigators.

The anonymized questionnaires were scored independently by two pairs of authors. One point was given for each selected checklist item that concurred with Canadian BPGs. Scores for each response option were then entered into an electronic database file. Treatment and referral recommendations were summed separately, with a maximum total score of 7 for the early presentation of RA and 8 for the late presentation of RA (see Box 1). Best practice total scores were not adjusted for the selection of response options not recommended for a particular vignette. These latter responses were summarized separately.

Piloting of supplemental learning module

A supplemental learning module was developed based on the pre- and post-PBL findings, to increase the agreement between intended behaviours and the BPGs. A 20-minute video of a mock PBL tutorial involving 3 students

and 1 tutor discussing the Arthritis Society's Getting a Grip on Arthritis BPGs for RA care at early and late stages⁹ was developed to provide a familiar context for the learner. (The video script is available from the authors on request). Video has been shown to be superior to purely visual or audio modalities with respect to retention of learning.²⁷ In addition, it is believed that social presence increases learner engagement and improves retention.²⁸

The supplemental learning module was piloted 3 months after the PBL content related to RA was completed. A sub-group of participants filled in the same questionnaire immediately before, and 8 days after viewing the supplemental learning module (pre-module and post-module, respectively). Questionnaires were again anonymized by an individual having no other involvement in the study, and were scored as described above.

Data analysis

For this study, sample size is a concern in terms of the extent to which results reflect the target population. A response rate of 80% ($n = 52$) would yield a margin of error of 6% at the 95% confidence level. A margin of error of 10% at the 95% confidence level was considered acceptable ($n = 39$) to address the primary objective.

All data were analyzed using the Statistical Package for the Social Sciences (SPSS), Version 17.0 (SPSS Inc.,

Figure 1 Number of the 49 physiotherapy students whose intended behaviours are consistent with best practices for early RA before and after studying RA in a problem-based curriculum (PBL); *denotes a statistically significant increase after PBL.

Figure 2 Number of the 49 physiotherapy students whose intended behaviours are consistent with best practices for late-stage RA before and after studying RA in a problem-based curriculum (PBL); *denotes a statistically significant increase after PBL.

Chicago, IL). McNemar's test for dependent proportions was used to separately assess change from pre-PBL to post-PBL for each recommended intervention and referral (primary outcome). Change in total best practice score and change in total score for recommendations lacking an evidence base, pre-PBL and post-PBL, were tested using the related-samples Wilcoxon signed-rank test. Statistical significance was set at $p < 0.05$. Descriptive analysis was used to summarize the median (minimum, maximum) total scores pre-PBL and post-PBL, and the frequency of each response option pre-module and post-module.

RESULTS

Of the 65 eligible physiotherapy students invited to participate, 51 consented and attended the pre-PBL test-

ing session; 49 attended both pre- and post-PBL testing sessions, while the remaining 2 were lost to follow-up.

The number of physiotherapy students who recorded interventions and referrals consistent with BPGs pre-PBL and post-PBL is illustrated for early RA in Figure 1. There was a significant improvement from baseline in recommendations to refer to a rheumatologist ($p = 0.013$), to provide psychosocial support ($p < 0.001$), and to recommend DMARDS ($p = 0.031$). The median (minimum, maximum) best practice score pre-PBL and post-PBL was 4 (1, 6) and 5 (2, 7), respectively, where a score of 7 indicates that the student selected all recommended interventions and referrals for early RA. For most students, total best practice scores either did not change ($n = 15$) or improved ($n = 31$) and, overall, total scores significantly improved ($p < 0.001$). On both occasions the median (minimum, maximum) score for response options that were not best practice for early RA ($n = 4$) was 0 (0, 2), with no significant change post-PBL ($p = 0.20$).

The number of physiotherapy students who recorded interventions and referrals consistent with BPGs for late RA pre-PBL and post-PBL is illustrated in Figure 2. There was a significant improvement from baseline in recommendations for psychosocial support ($p = 0.031$). The median (minimum, maximum) best practice score pre-PBL and post-PBL was 5 (2, 7) and 5 (3, 7), respectively, where a score of 8 indicates that the student selected all recommended interventions and referrals for late RA. For most students, total best practice scores either did not change ($n = 20$) or improved ($n = 21$) and, overall, total scores improved significantly ($p = 0.003$). The median (minimum, maximum) score for response options that were not best practice for late RA ($n = 3$) was 0 (0, 2) and 0 (0, 3) pre- and post-PBL, respectively, and the change was significant ($p = 0.033$).

Eleven physiotherapy students consented to participate in the follow up pilot testing of the supplemental learning module. Table 1 shows that more students selected recommended interventions and referrals after watching the video—with the exception of physiotherapy/exercise, which one student no longer selected. A similar small number of students recommended referral to an orthopaedic surgeon for late-stage RA ($n = 3$) and early-stage RA ($n = 2$), despite the fact that this referral is indicated only for late-stage RA. Few students selected response options that were not discussed in the video as evidence-based recommendations for the management of RA ($n \leq 3$).

DISCUSSION

The primary purpose of this study was to determine whether physiotherapy students intended to implement more interventions and referrals considered best practice for clients with early and late RA upon completion of the PBL curriculum on RA. Significantly more students recommended psychosocial support for both early and

Table 1 Number of Students Whose Intended Behaviours Are Consistent with Best Practices for Early and Late RA Before and After Watching a Supplemental Learning Module ($n = 11$)

Best practice for RA care	Early RA case		Late RA case	
	Pre-module	Post-module	Pre-module	Post-module
Physiotherapy/exercise	11	10	11	10
Education	11	11	11	11
Occupational therapy/joint protection/energy conservation	11	11	11	11
Psychosocial support	5	10	8	10
Referral to rheumatologist	7	10	7	10
DMARDS	0	8	1	8
NSAIDS	0	4	0	4
Referral to surgeon/orthopaedics	—	—	1	4

RA = rheumatoid arthritis; DMARDS = disease-modifying anti-rheumatic drugs; NSAIDS = non-steroidal anti-inflammatory drugs; — = Not best practice

late presentations of RA, and considered DMARDS and rheumatology referral for the early presentation of RA post-completion of the PBL curriculum. At baseline, the majority of physiotherapy students reported intended behaviours consistent with BPGs for physiotherapy/exercise interventions, joint protection / occupational therapy, and education. Some students may have had clients with RA on their caseloads during clinical placements in the 16 months before completing this PBL content. More likely, however, the students were already aware of the importance of these interventions in the management of clients with chronic diseases previously studied in the curriculum, and were therefore confident that these interventions would be within the physiotherapist's scope of practice. Thus, these findings support our hypothesis that the physiotherapy students would recommend evidence-based treatment for individuals with early and late RA central to their core role as experts in function and mobility.

Based on the total best practice scores, an increased number of evidence-based interventions and referrals were selected following PBL. For late RA, however, more students also selected interventions and referrals that were not evidence-based. Despite this general increase in selected treatment options, few students recommended referral to an orthopaedic surgeon or considered DMARDS or NSAIDS at the late stages of RA. Scores for best practices related to pharmacologic therapies were low for both early and late RA. These observations may be interpreted in two different ways. On the one hand, the students may not have known the best practices regarding these aspects of RA care. On the other hand, they may have been familiar with the best practices but did not think these fell within their scope of practice. The students were asked to identify which interventions and referrals they would recommend *within their scope of practice*. The ACREU questionnaire was designed for

completion by multidisciplinary teams of primary health care providers, and the question of which health care professionals can refer patients to specialists offers a potential source of confusion.¹⁸ Thus, physiotherapy students may have indicated that they would refer to the rheumatologist rather than recommending a referral regarding pharmacologic management or orthopaedic surgery specifically. However, this argument does not hold for the 18–24% of students who did not recommend referral to a rheumatologist. Nevertheless, it was encouraging to observe that 82% of participants indicated that they would recommend referral to a rheumatologist for the early RA case post-PBL. If this intended behaviour is enacted in clinical practice, and physiotherapists in primary care encourage individuals with suspected RA to see a rheumatologist as soon as possible, this one action has the potential to reduce joint destruction and increase the likelihood of DMARD-free remission for clients with RA.⁶

Competencies in the role of advocate and collaborator are important for physiotherapists working in primary-care and direct-access settings to be effective leaders in the “improvement and maintenance of the mobility, health and well-being of Canadians” with RA.^{21(p.5)} Awareness of recommendations for DMARDS and NSAIDS in RA management, psychosocial support, and referral for surgical consultation as RA progresses is useful as the physiotherapist monitors for medication side effects, interactions, or loss of effectiveness and deterioration in function and mobility. However, this knowledge is of limited value in the absence of follow-up with other members of the client's circle of care. Tutorial groups may differ with respect to the emphasis placed on integrating advocacy and collaboration into the physiotherapy management plan to achieve best RA care. This discrepancy may exist because PBL is self-directed and the same learning objectives may be addressed at differ-

ent levels of detail, using different resources.²³ In addition, group dynamics and the individual abilities of group tutors can vary greatly.²⁹

A secondary objective of this study was to pilot a supplemental learning module emphasizing advocacy and collaboration roles, insofar as these relate to the Canadian BPGs and physiotherapy management for clients with early- and late-stage RA. The supplemental learning module was designed to overcome the influence of variation among tutorial groups by having all 11 participants in the pilot subgroup view the same video of a mock tutorial discussion of the Canadian BPGs.⁹ The module appears to have been successful in increasing consistency between intended behaviours and BPGs related to psychosocial support, referral to a rheumatologist, and DMARDs. The observed improvements may overestimate the effectiveness of the module, since students were completing the same questionnaire for a third and fourth time. At the same time, however, pre-module scores and the low number of students recommending NSAIDs and referral for surgical consult for late-stage RA post-module argue against a learning effect of repeated exposure to the questionnaire, and for the general effectiveness of the module. Notably, one participant selected the response option *physiotherapy/exercise* pre-module, but did not select this response option post-module. It is impossible to know whether this was an oversight or whether the participant did not believe that this intervention was indicated. PBL students are introduced to the primary therapist model,³⁰ and thus recommending occupational therapy and physiotherapy interventions for a client with RA could have been viewed as redundant. The small number of students who participated in the pilot testing precludes strong conclusions. Thus, we cannot confirm our hypothesis that targeted educational efforts may promote timely referral to the appropriate specialists and consideration of pharmacologic treatment. Further studies are required to confirm and extend these observations.

The results of our study provide important preliminary information to consider in ongoing curriculum review and revision. As an immediate consequence of this study tutors and clinical laboratory facilitators in our PBL curriculum have been encouraged to facilitate discussion around collaborator and advocacy roles that physiotherapists can play in RA management. In subsequent years, the supplemental video will be shown in the tutors' meeting before starting the RA health care problem to highlight the best practices that provide a basis for developing the knowledge, skills, and attitudes required for advocacy and collaboration, with the goal of achieving optimal function and mobility for the RA client. Inter-professional learning may be the better context for enabling students to develop competency in advocacy and collaborative care for people with chronic conditions such as RA. An important next step is the validation and further development of an outcome measure suitable for

assessing the effectiveness of these proposed curricular changes.

LIMITATIONS

A major limitation of this study may be the method by which the intended behaviours of participants were evaluated. Interpretation and scoring of responses on the questionnaire were based on the BPGs developed by a national partners group as part of the Getting a Grip on Arthritis programme.^{9,18–20} The modified questionnaire was not piloted in a group of physiotherapy students, and scores may not reflect competency in operationalizing evidence-based care for an individual with RA in clinical practice. Correct responses did not require detailed explanation of the recommended interventions and referrals. The ceiling effect of the closed-ended response options regarding physiotherapy/exercise interventions, joint protection/occupational therapy, and education limits our understanding of the extent to which PBL enhances evidence-based RA practice in these domains. The findings of our study cannot be generalized to other physiotherapy students graduating from the same PBL programme, or to those graduating from non-PBL entry-level physiotherapy programmes. In addition, the subgroup of participants who completed the supplemental learning module may have been particularly interested in arthritis care, and not representative of the entire sample. Finally, it should be noted that all participants were volunteers, and that results might have differed if evaluation had contributed to participants' course grades.³¹ However, course evaluations tend to sample knowledge and skills in physiotherapy assessment and interventions addressing specific restrictions in physical function and mobility, and to place less emphasis on the broader scope of practice.

CONCLUSION

Given the number of people with RA who access care through primary health care settings, implementation of CPGs for early and late RA should be emphasized in entry-level to practice physiotherapy programmes. Physiotherapy students in a PBL programme about to become primary care practitioners intend to implement best practices that are most central to their core competency as experts in function and mobility, but they are less apt to implement best practices related to medications or referral to specialists, which may well have an impact on the client's function and mobility. Numerous barriers to the implementation of CPGs, such as a lack of awareness or lack of agreement, have been identified in previous literature.¹⁴ It is unclear whether our findings are due to any of these barriers, or whether they are due to the students' views regarding scope of practice. Preliminary piloting of a supplemental learning module suggests that learning is enhanced when emphasis is placed on the important advocacy and collaborator roles of the

physiotherapist, with a view to ensuring best arthritis care for their clients. Further research is warranted to determine how to ensure best care for individuals with RA who directly access physiotherapy services in the primary-care setting.

KEY MESSAGES

What is already known on this topic

Rheumatoid arthritis is a common auto-immune disease. People with RA seek most of their health care through primary health care providers. Primary access physiotherapists play an important role in the management of RA through timely recognition of musculoskeletal problems that may have chronic sequelae and factors that may contribute to musculoskeletal problems. Appropriate referral and follow-up are facilitated by familiarity with best practice guidelines for RA care.

What this study adds

Physiotherapy students about to enter private practice need to be adequately prepared to provide optimal care for clients with RA. We studied whether senior physiotherapy students in a PBL programme would implement best practices specific to case scenarios describing early and late RA. Our findings confirm that students intend to implement best practices related to physiotherapy/exercise, joint protection / occupational therapy, education, psychosocial support, and referral to rheumatologists (at least for early RA). Few physiotherapy students recommended interventions or referrals related to pharmacologic interventions, or the timely referral of clients with late RA to specialists. These results raise the possibility that greater emphasis on core competencies in advocacy and collaboration may be needed within the curriculum to promote best RA care.

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