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CLINICAL REHABILITATION

Clinical Rehabilitation
2014, Vol. 28(11) 1067–1077

DOI: 10.1177/0269215514532478
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# Self-management interventions for chronic disease: a systematic scoping review

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## Abstract

**Objective:** To investigate the contributions of physiotherapy and occupational therapy to self-management interventions and the theoretical models used to support these interventions in chronic disease.

**Data sources:** We conducted two literature searches to identify studies that evaluated self-management interventions involving physiotherapists and occupational therapists in MEDLINE, the Cochrane Library, CINAHL, EMBASE, AMED (Allied and Complementary Medicine), SPORTdiscus, and REHABDATA databases.

**Study selection:** Four investigator pairs screened article title and abstract, then full text with inclusion criteria. Selected articles ($n$ = 57) included adults who received a chronic disease self-management intervention, developed or delivered by a physiotherapist and/or an occupational therapist compared with a control group.

**Data extraction:** Four pairs of investigators performed independent reviews of each article and data extraction included: (a) participant characteristics, (b) the self-management intervention, (c) the comparison intervention, (d) outcome measures, construct measured and results.

**Data synthesis:** A total of 47 articles reported the involvement of physiotherapy in self-management compared with 10 occupational therapy articles. The type of chronic condition produced different yields: arthritis $n$ = 21 articles; chronic obstructive pulmonary disease and chronic pain $n$ = 9 articles each. The theoretical frameworks most frequently cited were social cognitive theory and self-efficacy theory. Physical activity was the predominant focus of the self-management interventions. Physiotherapy programmes included disease-specific education, fatigue, posture, and pain management, while occupational therapists concentrated on joint protection, fatigue, and stress management.

**Conclusions:** Physiotherapists and occupational therapists make moderate contributions to self-management interventions. Most of these interventions are disease-specific and are most frequently based on the principles of behaviour change theories.

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**Keywords**
Chronic disease, occupational therapy, physical therapy modalities, rehabilitation, scoping review, self-care

Received: 26 June 2013; accepted: 29 March 2014

## Introduction

In response to a global rise in chronic health conditions and the aging of the population, a self-management agenda has been adopted to mitigate the impending increase in healthcare costs. The goal of this self-management agenda is to empower patients to be actively involved in managing their health issues, which is a transition from medical management to behavioural management.[1]

This global rise in chronic diseases will also result in an increase in the prevalence of disability.[2] As a result, there has been a call for greater involvement of rehabilitation professionals in the chronic disease management approach[3] and some work has been done already with disease-specific groups such as stroke.[4,5] Rehabilitation has been defined as a process that assists persons who experience disability and are likely to have difficulty achieving optimal functioning within their environment.[6] Self-management of a disabling condition is seen as one solution to the increasing demands made upon rehabilitation services by people with long standing disease and disability. Since physiotherapists and occupational therapists spend considerable time with their patients during the rehabilitation process, patients often use the opportunity to informally discuss management strategies of longer term issues.[7]

Although there is an opportunity for physiotherapists and occupational therapists to develop a community-based role around self-management of chronic conditions, it is not known the extent to which therapists are currently engaging in this role. Such knowledge would be useful to identify gaps in service delivery or areas where trainees might need education to fulfil such roles. We undertook a scoping review following the guidelines set out by Levac et al.[8] and Arksey and O'Malley[9] to determine the extent of the involvement by physiotherapists and occupational therapists in self-management interventions for persons with chronic disease, as well as the theoretical models used to support the interventions.

## Methods

For this review we defined self-management as 'involving (the person with the chronic disease) who engages in activities that protect and promote health, monitoring and managing the symptoms and signs of illness; managing the impact of illness on functioning, emotions and interpersonal relationships: and adhering to treatment regimes'.[10] It enables participants to make informed choices, to adopt new perspectives and generic skills that can be applied to new problems as they arise, and to practice new health behaviours. A self-management programme is a multi-component strategy that aims to promote and support adequate self-management for persons with chronic diseases. Chronic diseases are permanent conditions that result in residual disability, are caused by non-reversible pathological alteration, require special training of the patient for rehabilitation, and are expected to require a long period of supervision, observation, or care.[11]

One of the authors (AL) undertook two literature searches: one to identify studies that evaluated self-management interventions involving physiotherapists, and the second to identify (self-management) studies involving occupational therapists. MEDLINE (1948–January 2013), the Cochrane Library, CINAHL (1981–January 2013), Embase (1980–January 2013), AMED (Allied and Complementary Medicine) (1985–January 2013), SPORTdiscus, and REHABDATA databases were searched utilizing separate strategies for occupational therapy and physiotherapy. PEDro was also included in the search for physiotherapy articles and OTseeker was included in the search for occupational therapy articles.

To identify the physiotherapy-specific studies, the MeSH headings and keywords searched included *chronic disease* combined with *self-care* or *self-management* and *physical therapy modalities, physical therapy specialty, physical therapy*, or *physiotherapy*. To identify the occupational therapy-specific studies, the MeSH headings and

keywords searched included *chronic disease* combined with *self-care* or *self-management* and *occupational therapy* or *vocational rehabilitation*. A manual search of the reference lists of relevant articles was also conducted to identify any studies missed using this search strategy.

Studies were included if: (1) they involved a multi-component intervention that contained elements of self-management that were either developed or delivered by an occupational therapist and/or a physiotherapist; (2) the evaluation included a control group, as we wanted to look at the most rigorous interventions and best quality studies; (3) they recruited a sample of people ≥18 years of age; (4) they were written in the English language. Studies were excluded if they only involved pharmacological interventions, focused only on caregivers, or assessed a single outcome.

After the initial search was completed, all articles were screened by title and abstract. This was completed by four pairs of investigators. Following this, full text screening was completed on the remaining articles to determine eligibility based on the inclusion and exclusion criteria. In cases where it was unclear who developed or delivered the self-management intervention, we included articles if one of the authors was a physiotherapist or an occupational therapist.

The investigator pairs undertook independent reviews of each article before reaching consensus about inclusion, exclusion, and data extraction. Agreement between each pair of investigators was assessed through kappa statistics. Data extraction was conducted by the same four pairs of investigators who did the screening of articles and included: (a) participant/sample characteristics (chronic disease, country, sample size, mean age, sex); (b) description of the self-management intervention (objective, theoretical framework, who designed/delivered the intervention, the format, content, and dosage); (c) details about the comparison intervention; and (d) information regarding the outcome measures used, the construct that they measured, as well as their relevance to the objective of the intervention. Each investigator was then asked to either agree or disagree with the reported result of the self-management intervention. A second data extraction form was created to obtain additional detail about the components of the self-management intervention and the contribution of physiotherapy or occupational therapy to its design or delivery. Agreement and consensus by pairs was achieved after completion of the data extraction forms for each eligible article.

All of the information on the data extraction forms was summarized in table form by two physiotherapists who were independent to the extraction process. Separate tables were created for each disease group and for each profession involved in the intervention. The details of each included article were condensed under the following headings: first author, country, study design, sample size, age, theory/model, self-management objective, components of the self-management intervention, strategies used to deliver the self-management intervention, description of the physiotherapy, and occupational therapy role in the self-management intervention, interpretation of the results by the authors. (See Table 1, available online, for a summary of all self-management interventions included in this review.)

## Results

A total of 57 articles were included in this review. See Figure 1 for details of the articles included at each stage of the process. Agreement within pairs was moderate to very good (Kappa = 0.45–0.91).

A summary of each article by chronic condition is available in Table 1, available online. There is a greater involvement by physiotherapy ($n$ = 34 articles) compared with occupational therapy ($n$ = 9 articles) in the development and delivery of self-management reported in the literature included in the review, while collaborative practice by the two professions ($n$ = 14 articles) was most consistently reported in arthritis studies. Physiotherapy contributed to self-management interventions in the following diseases: diabetes mellitus (1), chronic fatigue (1), coronary artery disease (1), ankylosing spondylitis (2), arthritis (2), rheumatoid arthritis (4), osteoarthritis (3), lymphedema (1), cancer (3), chronic obstructive pulmonary disease (8), and chronic pain (7) (see Table 2). Occupational therapy was primarily involved in self-management interventions for

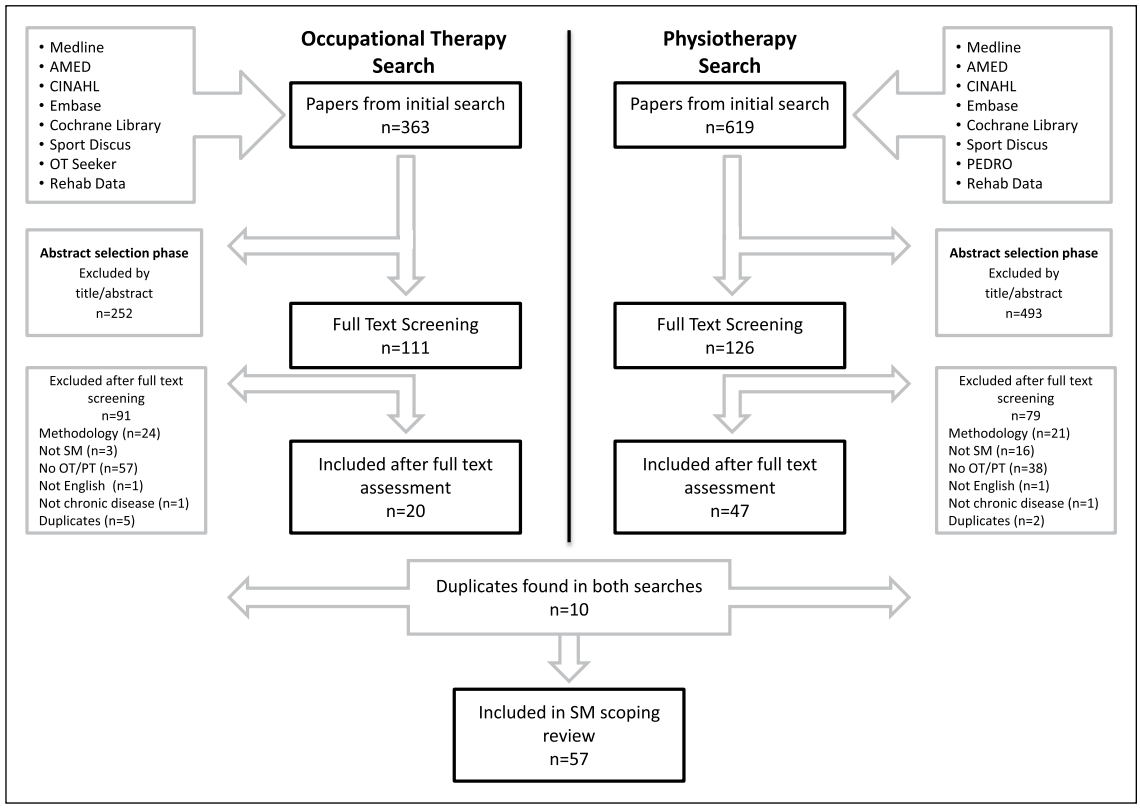


**Figure 1.** Included articles.

patients with the following diseases: diabetes mellitus (2), ankylosing spondylitis (1), arthritis (1), rheumatoid arthritis (3), chronic obstructive respiratory disease (1), and chronic disease (1). Jointly, the two professions were involved with self-management in coronary artery disease (1), arthritis (5), rheumatoid arthritis (2), osteoarthritis (1), chronic pain (2), chronic disease (2), and fibromyalgia (1) (see Table 2). There were areas of practice, such as chronic fatigue, cancer, and lymphedema, where physiotherapy was the only rehabilitation professional participating in the self-management intervention.

Both professions were primarily involved in disease-specific interventions; only two of the studies involved generic self-management interventions.[12,13] One of these studies modified the self-management component to include rehabilitation principles in the programme.[12]

The length of the interventions ranged from four to 12 weeks, although some were offered over 12 to 24 months. Most of the interventions were tested using a randomized controlled trial design ($n = 50$), while other designs used were quasi-experimental ($n = 5$), retrospective cohort ($n = 1$), and randomized controlled trial pilot ($n = 1$).

Twenty of the 57 articles did not describe an underlying theory in the development or support of the intervention. The two theories that were used most frequently to explain the intervention were social cognitive theory and self-efficacy theory, which are closely linked. The Health Belief Model,[14–16] the Trans Theoretical Model of Behaviour Change,[16–18] Social Learning Theory,[15,19] Social Ecological Theory,[20,21] Goals System Theory,[20] Rationale Emotive Theory,[22] and the Skilled Helper Model[23] were also listed as supporting the underlying self-management intervention.

**Table 2.** Number of studies included by disease and by profession.

| Disease | Physiotherapy | Occupational therapy | Physiotherapy + occupational therapy | Total |
|---|---|---|---|---|
| Ankylosing spondylitis | 2 | 1 | 0 | 3 |
| Arthritis | | | | |
| Unspecified | 2 | 1 | 5 | 8 |
| Osteoarthritis | 3 | 0 | 1 | 4 |
| Rheumatoid Arthritis | 4 | 3 | 2 | 9 |
| Chronic pain | 7 | 0 | 2 | 9 |
| Cancer | 3 | 0 | 0 | 3 |
| Chronic disease | 0 | 1 | 2 | 3 |
| Chronic fatigue | 1 | 0 | 0 | 1 |
| COPD | 9 | 1 | 0 | 10 |
| Coronary artery disease | 1 | 0 | 1 | 2 |
| Diabetes | 1 | 2 | 0 | 3 |
| Fibromyalgia | 0 | 0 | 1 | 1 |
| Lymphedema | 1 | 0 | 0 | 1 |
| Total | 34 | 9 | 14 | 57 |

COPD: chronic obstructive pulmonary disease.

There were two diseases, chronic obstructive pulmonary disease and chronic pain, where only 25% of the studies reviewed had a theoretical underpinning for their self-management intervention. In diseases like arthritis, where self-management has a long-standing history as part of the overall management of the condition, a theory was more consistently identified as being fundamental to the self-management intervention.

The objectives of the reviewed studies were generally framed as an enquiry about whether an intervention that was directed at a health behaviour affected the outcome. For example, did self-management strategies with a focus on exercise and dietary practices,[20] self-monitoring,[18] symptom management,[24,25] education about a disease,[26] or joint protection practices[14,27] alter the outcome of an impairment, such as limb volume,[28] function,[17] or health service utilization?[12,25] In some articles, the study objective focussed on self-management,[29,30] and in others the study objective was stated as educational.[26]

The components of the self-management approach delivered by physiotherapists and occupational therapists addressed rehabilitation-related issues, such as education, physical activity and strengthening exercises, pain management, fatigue management, risk factor modification, dyspnea management, ergonomics, relaxation, energy conservation, joint protection, and assistive devices. There were also issues covered which some therapists may consider outside their scope of practice. These topics were related to nutrition, medication, and emotional management such as stress management, communication techniques, and cognitive behavioural techniques. Emotional management or stress management were cited as part of the self-management intervention for eight of the studies in which physiotherapists participated[17,29–34] and three studies where both physiotherapists and occupational therapists were involved.[22,35,36]

Physiotherapists delivered self-management interventions most frequently in outpatient departments (usually situated in hospital settings) ($n = 20$), in the home ($n = 5$), in primary care ($n = 4$), and in community-based settings ($n = 2$). Self-management was offered in a private practice setting in one study. Occupational therapists most frequently provided the self-management intervention in an outpatient ($n = 4$), in the home ($n = 2$), in primary care ($n = 1$), and one study offered self-management online.[21] The settings where self-management was offered jointly

by physiotherapists and occupational therapist included outpatient departments ($n$ = 3), community-based settings ($n$ = 3), the home ($n$ = 2), primary care ($n$ = 1), and research centres ($n$ = 1). Telephone support in addition to the intervention was offered in six studies set in the home, in an outpatient setting, or in primary care.[20,24,37–41]

The strategies used to deliver the self-management interventions involved some aspect of behavioural change consistent with self-management principles. These included goal setting, barrier identification, problem solving, goal modification, peer support, action planning, and self-regulation. Coaching and self-regulation were strategies that were identified in multiple disease groups. Health coaching has been described as an established method used to support patient self-management and to sustain behaviour change and associated health-related outcomes.[42,43] Self-regulation can be defined as an iterative, guided, goal-directed process that requires an individual to be self-reflective while engaging in a change process aimed at task- and time-specific outcomes.[44] Of the studies included in this review, there was variability in the number of strategies used in the delivery of the self-management intervention. In fact, several studies used education as their primary strategy, which alone can be viewed as inconsistent with the active involvement of the patient.[45–47]

The role played by the two professions varied. In 32 out of 55 articles reviewed, the physiotherapist or occupational therapist was involved in the design and the delivery of the self-management intervention. In the remaining 23 studies, the physiotherapist or occupational therapist was either involved in the design or the delivery, but usually the latter. There were some differences in involvement by disease group. For example, in interventions that were not disease-specific, the physiotherapist was involved in both the design and delivery, whereas for disease-specific self-management interventions, like those for chronic obstructive pulmonary disease, the physiotherapist typically delivered an intervention that was designed by another health professional (often a registered nurse and a respiratory therapist). Physiotherapists also contributed to the delivery of the physical training component of the self-management interventions for patients with cancer rather than the intervention design, while the cognitive behavioural component was often led by a psychologist and a social worker. In studies where the physiotherapists and occupational therapists were both involved, there was not a significant difference in their contribution to either the design or delivery of the intervention.

All of the studies used established outcome measures to assess the results of the intervention. Disease-specific outcomes were used in some studies; other outcomes included knowledge, function, emotional well-being, cognition, physical activity, quality of life, health status, work absenteeism, patient and provider satisfaction, health service utilization, caregiver burden, adherence to joint protection, and energy conservation techniques and impairment measures such as pain, sleep, disease activity, glycemic control, and strength. A total of 18 studies measured self-efficacy as a way of determining whether the participants' confidence had played a role in increasing the self-management of symptoms and behaviour change. These included studies of patients with arthritis ($n$ = 15),[14–17,19,27,29,36,39,45,48–52] chronic pain ($n$ = 3),[53–55] general chronic disease ($n$ = 2),[12,13] and coronary artery disease ($n$ = 1).[18] Eleven of these studies reported increases in self-efficacy. Only two studies used standardized outcomes to assess self-management behaviours.[12,26]

Most studies used multiple outcome measures and reported both significant and non-significant findings (see Table 3). Most studies relied on patient report, however six studies used performance measures as well to assess outcomes, such as hand grip strength, walking speed (6MWT), mobility (TUG), lower extremity performance, endurance (step test, stair climbing), and function (functional lifting). One study reported positive findings on these outcomes,[18] while five studies reported non-significant findings with the performance measures used.[12,33,52,53,56]

## Discussion

The results of this scoping review show that both physiotherapists and occupational therapists are

**Table 3.** Summary of results reported by authors.

| | Physiotherapy studies | Occupational therapy studies | Physiotherapy and occupational therapy studies |
|---|---|---|---|
| Significant positive findings | 6 | 1 | 2 |
| Mixed findings (significant and non-significant findings) | 22 | 4 | 8 |
| Non-significant findings | 8 | 4 | 2 |
| Significant negative findings | 2 | 1 | – |

involved in self-management interventions and describe how these interventions are being evaluated. In the studies reviewed, physiotherapists played a greater role than occupational therapists in self-management and both professions played the greatest role in studies involving arthritis. The degree of rehabilitation involvement may relate more to established advocates for disease organizations rather than lack of professional leadership in self-management. Physical activity was the most frequently described focus of the self-management intervention that involved physiotherapists, in addition to other issues such as fatigue management, posture, disease-specific education, and pain management. In studies where occupational therapists were involved, physical activity was also cited as the focus of the self-management intervention, along with other issues such as fatigue management, joint protection, and stress management. These results show that there is a significant overlap between the two professions in the areas they address through their self-management involvement. It was somewhat surprising that other forms of emotional management were not included as a component of self-management offered by occupational therapists, for whom strategies around psychological health would be more commonly part of their scope of practice.

The principles of rehabilitation that assist people to accept and adjust to a different level of functioning subsequent to a catastrophic event or a progressive illness[57,58] are very similar to the processes advocated in self-management. They differ in that the autonomy of the patient in self-management is paramount, and problem identification and goal setting are entirely the responsibility of the patient. The development and implementation of the action plan, which might equate to the practice schedule outlined by the therapist, is also the responsibility of the patient in self-management. Similarities and differences between the processes have been discussed in the literature.[3,59,60] The focus of goal setting in rehabilitation is to optimize function (e.g. improve endurance or coping skills), whereas the focus for self-management is life goals (e.g. participating in recreation or returning to work); however, the focus of the life goals often requires strategies to manage issues such as endurance or coping skills, which if not addressed may impact optimal functioning. The contact time physiotherapists and occupational therapists have with patients enables them to identify issues impacting health and full participation in activities and roles.

The focus of the theoretical approaches used in the studies reviewed was behaviour change. The theory most frequently used was social cognitive theory, where the underlying premise is that the participants' self-efficacy for a particular activity can increase as a result of the self-management intervention, and there was evidence that this associated behaviour change could affect a certain health outcome. Understanding the concepts underlying behaviour change theories is crucial to delivering self-management programmes, and therefore university curricula, as well as those offering continuing education and professional development, need to ensure that both professions are adequately prepared to integrate rehabilitation theories and models alongside those typically used in self-management interventions.

Increased dialogue within each profession is needed about which rehabilitation principles would

make contributions to persons being able to better manage their chronic disease. There were only three studies where both professions contributed together[12,13] or occupational therapy contributed alone[37] to generic chronic disease programmes that have been evaluated as part of larger, complex interventions. It will be important moving forward to determine the unique contribution that can be made by physiotherapy and occupational therapy to the self-management portion of the intervention as part of the active ingredient in these complex interventions.

None of the studies we reviewed examined how the skills acquired by the patient could be integrated into the functioning of the inter-professional team and into the interactions between the patient and the healthcare professional. If self-management is to have an optimal effect, the self-management strategy adopted by the patient needs to be integrated into the overall healthcare plan and approach. A continuance of provider-directed care may stunt the ongoing development of self-management skills by the patient. An initiative to move this area forward would be to encourage healthcare providers to gain skills in partnership based roles.[61]

### Clinical messages

- Social cognitive theory was most frequently used to explain the self-management interventions: the underlying premise is that the participants' self-efficacy for a particular activity increases as a result of the self-management intervention.
- The majority of studies focused on physical activity and arthritic conditions were the most commonly studied.

## Contributors

This scoping study was initially conceived by JR. AL performed the literature searches and JR, AL, JH, LL, NM, LW, SW, GB, and KMG contributed to the discussion about the methodology for the article, and comprised the investigator pairs who screened all articles and performed data extraction on the eligible articles. SS and CM collated and summarized the extracted data. The first draft of the article was written by JR with contributions from AL and SS. All authors critically reviewed the article and their input was incorporated into the final draft. All authors have approved this final version of the article.

## Conflict of interest

The author declares that there is no conflict of interest.

## Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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