Promoting physical activity in patients with rheumatoid arthritis

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Chapter 1

General Introduction

Introduction

Rheumatoid Arthritis (RA) is a chronic inflammatory and systematic disease which predominantly affects the joints. It is characterised by an unpredictable course with periods of exacerbation and remission of disease activity (1). Poly-arthritis is classified as being RA when at least four out of the seven classification criteria formulated by the American College of Rheumatology (ACR; formerly the American Rheumatism Association) are met (2). RA is more common in women than in men and occurs in 0.5-1.0% of the adult population worldwide (3;4). In the Netherlands approximately 150.000 individuals suffer from RA, making it the most common inflammatory joint disease. Patients with RA have an increased risk of osteoporosis (5), cardiovascular disease, and infection (6;7). Moreover, RA is associated with increased mortality, with standardised mortality rates two to three times above normal (8).

Patients with RA show a reduction in physical functioning compared with healthy persons (9;10). In many patients symptoms such as pain, fatigue, stiffness, and decreased muscle strength cause difficulties with daily activities such as dressing, cooking, cleaning, shopping, work, and leisure activities (11). Moreover, RA has been linked to depression, helplessness, anxiety, and in general has a considerable impact on quality of life (12;13).

Non-pharmacological care for patients with RA

Traditionally, the management of RA has been provided mainly by rheumatologists, whose main task is the prescription of drugs and monitoring their effectiveness and safety. In many cases, additional physicians and health care professionals from various disciplines are involved in the management, examples of which are orthopaedic surgeons, rehabilitation specialists, physical therapists, clinical nurse specialists, occupational therapists, dieticians, and social workers. The actions of these professionals are generally directed at the consequences of the RA in terms of the patient's body functions, activities and participation. Moreover, the patient's environment and personal factors are explicitly taken into account (14).

It is generally acknowledged that patients themselves play a central role in the control or reduction of the impact of their disease. These actions are often designated as self-management strategies (15;16). Self-management strategies include activities such as taking medications, wearing splints or braces, using adaptive equipment, monitoring the balance between activity and

rest, obtaining emotional and/or practical support from friends, family or colleagues, or achieving and maintaining sufficient levels of physical activity. Indeed, acquiring a sufficient amount of physical activity is a commonly used and advocated self-management strategy among patients with RA (17;18). Physical activity is defined as any bodily movement resulting in energy expenditure (19). Exercise is included in this definition, since it is considered as a subset of physical activity that pertains to planned, structured and repetitive bodily movements, aimed at improving or maintaining physical fitness.

Physical activity promotion in people with arthritis

Physical activity decreases the risk of cardiovascular disease and a variety of other chronic diseases in the general population, including diabetes mellitus, cancer, obesity, hypertension, osteoporosis and depression (20-22). The scientific evidence linking physical activity to a multitude of health benefits has contributed to various public health efforts to increase physical activity among sedentary persons. Despite these efforts, the majority of the adult population in Western nations does not meet general physical activity recommendations (23-25).

For people with arthritis, besides the general health benefits as described above, various disease specific benefits of regular physical activity have been extensively reported such as reduced pain, improved mental health and delayed disability (26-29). Moreover, it has been found that physical activity or exercise has no deleterious effect on disease activity or radiological joint damage (29-31). Despite the proven health benefits, recent studies have shown that people with arthritis have even higher rates of sedentary behaviour than the general population (32-34).

So far, several socio-demographic and behavioural factors associated with a lack of physical activity and/or exercise among people with arthritis have been identified such as age, gender, education, social support, perceived benefits, and self-efficacy (35-39). Moreover, since income has proven to be positively related to participation in physical activity (40;41) and people with arthritis in general are faced with a lower income compared to their healthy peers (42), lack of financial resources among these patients may serve as a barrier as well. The relatively low levels of physical activity are all the more worrisome as people with arthritis have an increased risk of chronic conditions such as osteoporosis or cardiovascular disease in comparison with the general population because of their arthritis (5;6). Therefore, enhancing physical activity and exercise levels of persons with arthritis is nowadays more and more advocated.

A number of studies have investigated the effectiveness of physical activity interventions with respect to increasing physical activity levels among people with arthritis (43-46). In general, these interventions appear to be effective on the short-term, but problems have been reported with patients' long-term compliance (47-49). Understanding reasons for non-compliance with physical activity interventions is crucial in the process of offering, monitoring and evaluating these interventions for people with arthritis.

Usage of Internet in physical activity promotion

The use of Internet technology has provided new opportunities for promoting various health behaviours such as physical activity. The Internet has significantly expanded over the past years and has become a part of our everyday lives. The number of Internet users has more than doubled since the year 2000, and in 2006 the Internet is available to over one billion people worldwide (50). Internet usage is highest in North America (69%), followed by Australia (54%) and Europe (38%) (50). With respect to patients with arthritis, estimates of Internet usage among these patients varies between 30% and 50% (51-53), with almost 30% of the arthritis population using the Internet to obtain health care information (51).

The Internet can be used to deliver specialised health care services to patients in a cost-effective manner, regardless of geographic location (54-56). Within the rheumatology setting, new models for arthritis management have been developed that involve Internet technology, for example for health record keeping (57), patient monitoring (58;59) or outpatient consultations (60).

With respect to consultations, the use of the Internet and e-mail to promote physical activity has been described in healthy persons (61-67) as well as people with chronic conditions (68;69). The strength of these interventions is that they can reach large numbers of individuals at lower costs than those associated with face-to-face interventions (70;71). In arthritis care, the experience with Internet-based physical activity interventions is limited.

Aim of this thesis

The aim of the present thesis was to study:

1. The engagement of patients with RA in various forms of physical activity and their preferences regarding the delivery of physical activity interventions;

2. The evidence regarding the effectiveness of physical activity interventions delivered by means of the Internet in general and for patients with RA in particular;
3. Barriers and facilitators for the broader implementation of physical activity interventions in patients with arthritis.

This thesis is divided into two parts. **Part 1** describes the current engagement of RA patients with various types of physical activity. In *Chapter 2* the results of a study comparing RA patients' physical activity levels with those of the general Dutch population are presented. *Chapter 3* describes the participation and preferences regarding various types of leisure-time physical activity in patients with RA. **Part 2** focuses on a specific, innovative strategy to promote physical activity, i.e. enhancing physical activity levels by means of interventions delivered through the Internet and e-mail. In *Chapter 4* the results of a randomised controlled trial, comparing the effectiveness of two Internet-based physical activity interventions for patients with RA, are described. *Chapter 5* describes RA patients' engagement and satisfaction with one of these physical activity interventions. *Chapter 6* presents the results of a systematic literature review concerning the effectiveness of Internet-based physical activity interventions for healthy people as well as people with chronic conditions. In *Chapter 7* barriers and facilitators regarding the implementation of physical activity interventions for people with arthritis are described and illustrated by means of a case study. Finally, a summary of the results and a general discussion are given in *Chapter 8*.

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