Annals of Physical and Rehabilitation Medicine 59 (2016) 107–113

Available online at ScienceDirect www.sciencedirect.com

Elsevier Masson France EM|consulte www.em-consulte.com

Original article

Barriers to home-based exercise program adherence with chronic low back pain: Patient expectations regarding new technologies

Clémence Palazzo [a,b,f,*], Evelyne Klinger [c,f], Véronique Dorner [d], Abdelmajid Kadri [e], Olivier Thierry [d], Yasmine Boumenir [c], William Martin [a,b,f], Serge Poiraudeau [a,b,f], Isabelle Ville [d,f]

[a] Service de rééducation et réadaptation de l'appareil locomoteur et des pathologies du rachis, hôpital Cochin, AP–HP, Paris, France
[b] U1153, Inserm, université Paris Descartes, PRES Sorbonne Paris Cité, Paris, France
[c] Équipe innovations numériques santé handicap – ESIEA, 38, rue des Docteurs-Calmette-et-Guérin, 53000 Laval, France
[d] Programme handicaps et sociétés, EHESS, Cermes 3, Campus CNRS, Villejuif, France
[e] LAMPA – P&i, EA 1427, arts et métiers ParisTech, Laval, France
[f] Inserm/CNRS, institut fédératif de recherche handicap, Paris, France

ARTICLE INFO

Article history:
Received 2 November 2015
Accepted 25 January 2016

Keywords:
Adherence
Home-based exercise
Rehabilitation
Low back pain
Virtual reality

ABSTRACT

Objective: To assess views of patients with chronic low back pain (cLBP) concerning barriers to home-based exercise program adherence and to record expectations regarding new technologies.
Design: Qualitative study based on semi-structured interviews.
Participants: A heterogeneous sample of 29 patients who performed a home-based exercise program for cLBP learned during supervised physiotherapy sessions in a tertiary care hospital.
Interventions: Patients were interviewed at home by the same trained interviewer. Interviews combined a funnel-shaped structure and an itinerary method.
Results: Barriers to adherence related to the exercise program (number, effectiveness, complexity and burden of exercises), the healthcare journey (breakdown between supervised sessions and home exercise, lack of follow-up and difficulties in contacting care providers), patient representations (illness and exercise perception, despondency, depression and lack of motivation), and the environment (attitudes of others, difficulties in planning exercise practice). Adherence could be enhanced by increasing the attractiveness of exercise programs, improving patient performance (following a model or providing feedback), and the feeling of being supported by care providers and other patients. Regarding new technologies, relatively younger patients favored visual and dynamic support that provided an enjoyable and challenging environment and feedback on their performance. Relatively older patients favored the possibility of being guided when doing exercises. Whatever the tool proposed, patients expected its use to be learned during a supervised session and performance regularly checked by care providers; they expected adherence to be discussed with care providers.
Conclusions: For patients with cLBP, adherence to home-based exercise programs could be facilitated by increasing the attractiveness of the programs, improving patient performance and favoring a feeling of being supported. New technologies meet these challenges and seem attractive to patients but are not a substitute for the human relationship between patients and care providers.

1. Background

Low back pain (LBP) is one of the leading causes of disability [1], is highly prevalent [2], and has major socioeconomic impact [3]. Among the treatments proposed for chronic LBP, exercise therapy may be the most effective in decreasing pain and improving function [4]. Individually designed exercise programs appear to be effective in healthcare settings and are recommended to patients with LBP in addition to regular physical activity [4]. Programs that include stretching and strengthening exercises are learned during supervised sessions and followed by home-based sessions.

The reported adherence to home-based exercise is between 50 [5] and 70% [6]. Poor adherence can compromise treatment

* Corresponding author at: service de rééducation, hôpital Cochin 27, rue du Faubourg-Saint-Jacques, 75014 Paris, France.
E-mail address: clemence.palazzo@aphp.fr (C. Palazzo).

http://dx.doi.org/10.1016/j.rehab.2016.01.009
1877-0657/

outcome and cause recurrence of symptoms, so its determinants must be better understood and strategies proposed to encourage long-term exercise practice. Factors that can impair adherence include patient-related factors (poor self-efficacy, fear of pain, inability to fit exercises into daily life [6–8]), physiotherapy program characteristics (absence of supervision during learning sessions, "one size fits all" program design, large number of exercises [6,7,9–11]) and care providers' style (lack of monitoring or feedback [8,11]). Except for self-management techniques, no intervention has been found efficacious in enhancing the frequency of home exercising with LBP [9,12]. Refresher lessons, audiotapes and videotapes of exercises may improve patient performance [9]. Results for training diaries, telephone contact, brochures, email and website interventions in encouraging general physical activity were conflicting but have not been specifically studied in LBP [5,8,9,11–14].

New technologies based on virtual reality and/or information and communication technologies offer exciting perspectives for enhancing adherence to home-based exercise programs. Such technologies are interactive and playful; they can provide monitoring of patient performance and direct feedback and can include reminders and motivation strategies [15–18]. However, the extent to which this kind of technology fulfills expectations of patients with LBP to help them exercise at home is largely unknown.

Qualitative research may be the best way to understand patient needs and contexts [19]. A qualitative approach has been used to explore barriers to adherence to home exercising with LBP [20], but participants performed home exercises for only a short time and were all adherents. Moreover, interviews did not focus on strategies proposed by patients themselves to improve adherence, and their expectations regarding the use of new technologies were not recorded.

In a qualitative approach, we assessed the views of patients with chronic LBP concerning barriers to home-based exercise program adherence and solutions to increase adherence. We also recorded patient expectations regarding the use of new technologies to decrease the burden of home-based exercise programs.

2. Patients and methods

2.1. Qualitative interview study

A qualitative interview study of patients and healthcare providers was performed according to guidelines for inductive qualitative research [19,21,22]. Its reporting follows the Consolidated criteria for REporting Qualitative research (COREQ) criteria [23]. Semi-structured interviews were used to explore the barriers to home-based exercise program adherence with chronic LBP, propose acceptable strategies to promote it, and explore the expectations regarding the use of new technologies to decrease the burden of such programs. Individual behaviors (attitudes and practices), personal feelings and interpretations, social interactions and material backgrounds were examined throughout the patients' therapeutic journey to allow for a deep understanding of patient expectations.

2.2. Sample

We used non-probability judgment sampling of patients, assuring both relevance to the subject and diversity of the members selected. A heterogeneous sample of 29 patients was selected from the files of physicians in Cochin hospital, identifying patients with chronic LBP for whom home-based daily exercises for at least 2 months were recommended. All patients learned their exercise program during supervised sessions in the physical therapy department, and they received a brochure of the prescribed exercises. According to the medical situation and the patient's socioprofessional status, patients followed an out- or inpatient rehabilitation program and could have received other treatment. The programs all included group cognitive behavioral interventions to manage fear-avoidance beliefs, and individual psychological management was proposed if necessary.

The diversity of the patient sample was ensured for age (20–40 years, $n = 10$; 41–60 years, $n = 11$; 61–85 years, $n = 8$), gender (17 women), type of learning session (outpatient: $n = 18$; inpatient: $n = 11$), and level of adherence (14 adherent, 10 could have been adherent but abandoned the prescribed regimen, 5 not adherent).

2.3. Interviews

We studied the literature on the barriers and facilitators to adherence to home-based exercise programs, then created 2 focus groups conducted with care providers working in the physical therapy department of Cochin Hospital (8 physiotherapists, 1 physical coach, 1 occupational therapist, 1 psychologist, 2 physical medicine and rehabilitation physicians and 1 rheumatologist) to compile a semi-structured interview guide with open-ended questions (see appendix). Patients were to be interviewed in their home.

The interview protocol combined a "funnel-shaped" structure and an "itinerary method" [19,24]. The funnel-shaped structure was adopted to ensure that the interviews allowed for an inductive comprehension of the social reality underlying the adherence situation. The itinerary method was derived from anthropological data collection techniques and focused on objects, practices and the decision-making process. Applied to a therapeutic situation, this method allows the researcher to follow the course of the patient from the appearance of the pathologic condition, sometimes long before the physical therapy sessions, to the time of the interview, thus placing the problem of adherence in a broader context than the medical one. The postulate underlying this framework is that studying adherence to home-based exercise programs for patients with LBP cannot be limited to collecting barriers and expectations that patients might explicitly express: barriers and expectations must be identified throughout an analysis of the global social situation, identifying contradictions, ambivalence, implicit expectations, and unanswered needs. For the same reason, the use of new technologies to enhance adherence was mentioned only at the end of the interview. However, imagining a concrete tool that could help patients be adherent fleshed out the discussion and created new themes and questions.

The interview protocol was planned as a loose list of themes, the interviewer continually adjusting questions to the specific leads of the interview and pursuing unpredictable emergent data. The interview was designed to collect data on:

- the therapeutic journey from the initial health problem to the physical therapy supervised sessions (the global organization, relationship with care providers, satisfaction with the program, and number and type of prescribed exercises were evoked);
- the home-based exercise process (how patients fit exercises into daily life, preferred/disliked exercises, difficulties in following the prescribed regimen);
- strategies patients proposed to enhance adherence (supervision, feedback, reminders, playfulness, exercise practice with other patients or other family members);
- expectations regarding the use of new technologies (smart phone, tablets, computer, Internet, videogame, virtual reality).

Because patients were interviewed in their home, the interviewer could assess the home environment, the area devoted