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Letter to the editor

Feasibility of a short multidisciplinary education and exercise therapy program for patients with non-specific low back pain: A 3-month retrospective open pilot study

Dear Editor. Non-specific low back pain (LBP) [1] is the first cause of years lived with disability in the world [2]. One can distinguish acute (< 6 weeks), subacute (6 to 12 weeks) and chronic LBP (> 12 weeks). The prognosis of acute LBP is excellent [3]. Subacute and chronic LBP are more difficult to treat [3]. Reported factors of poor prognosis for subacute and chronic LBP are absenteeism at work, job dissatisfaction, poor perceived health status, catastrophizing, depression, high levels of perceived disability, erroneous fears and beliefs about LBP and LBP intensity [4,5].

In France, the treatment of patients with subacute and chronic LBP and factors of poor prognosis relies on standardized intensive multidisciplinary programs [6]. However, the cost-effectiveness of these programs is unclear [7]. Furthermore, the programs are offered only to patients of working age, who have high levels of work participation restrictions. Their results cannot be translated to patients who are less disabled. A better stratification of care in patients with non-specific LBP is vital to avoid unnecessary treatments [8].

We hypothesized that a short (1.5-day) multidisciplinary education and exercise therapy program could have positive effects in patients with subacute or chronic non-specific LBP, for whom first-line treatments had failed but for whom an intensive multidisciplinary rehabilitation program is not indicated. In the present study, we aimed to evaluate the feasibility of such an intervention.

1. Methods

We conducted a 3-month, single-arm, single-center, retrospective, open-pilot study. We enrolled all consecutive outpatients with non-specific subacute or chronic LBP who were referred for a consultation with one of the senior physicians in the rehabilitation department of Cochin Hospital (Paris, France) for whom first-line treatments had failed but for whom a long and intensive multidisciplinary rehabilitation program was not indicated according to the senior physician. Recruitment started on June 2017 and follow-up was completed on April 2018. Inclusion criteria were:

- age ≥ 16 years;
- subacute or chronic non-specific LBP ≥ 6 weeks;
- no indication for a long and intensive multidisciplinary rehabilitation program according to the senior physician, an experienced specialist in physical and rehabilitation medicine and/or rheumatology;
- currently working;
- written consent.

Exclusion criteria were:

- inability to speak or read French;
- cognitive impairment;
- previous treatment with a long and intensive multidisciplinary rehabilitation program for LBP.

Non-specific findings on imaging (e.g., facet joint osteoarthritis, degenerative disc disease, spondylolisthesis) were not exclusion criteria and were recorded. Baseline data and self-administered questionnaires were collected by using a standardized printed case report form during a face-to-face visit with one of the investigators (E-Component 1). All participants had a full physical examination with one of the investigators and at least had available imaging (i.e., radiography, CT scan or MRI) to rule out specific spinal conditions.

The intervention was developed by a multidisciplinary steering committee including 3 senior specialists in physical and rehabilitation medicine and/or rheumatology (CN, MB, FS), 1 physiotherapist (AR), 1 psychologist (CG), 3 occupational therapists (EI, FC, CB), 1 webmaster (SM), 1 instructor specialized in physical training (JL) and 1 rheumatology resident (RG) with clinical experience in managing non-specific LBP. Furthermore, we requested the opinion of 4 patients who had benefited from a similar intervention in our centre in June 2017 to help us design the present program.

The intervention consisted of a multidisciplinary education and exercise therapy program that included 2 outpatient supervised group sessions, one performed at baseline (6 hours) and one about 10 days later (4 hours), that were delivered to groups of 4 to 6 participants at the rehabilitation department of Cochin Hospital, followed by a 20-week home-based program. A full description is provided in E-Component 2.

The primary outcome was the feasibility of the program assessed by the acceptance rate to participate in the study, the participation rate in the 2 supervised sessions; the proportion of responders to questionnaires at baseline, 10 days and 20 weeks (last follow-up); and the acceptability of the program by using a self-administered numeric rating scale (NRS; 0, minimal acceptability, and 100, maximal acceptability), patient satisfaction by using a self-administered NRS (0, minimal satisfaction, and 100, maximal satisfaction), burden of treatment by using the self-administered Exercise Therapy Burden Questionnaire (ETBQ; 0, minimal burden, and 100, maximal burden) [9] and adherence to the home-based program by using the self-administered Exercise Adherence Rating Scale (EARS; 0, minimal adherence, and 24, maximal adherence) [10] at last follow-up. Participant feedback was collected at the end of the second supervised session and at last follow-up.

For descriptive analyses, qualitative data are expressed as absolute and relative frequencies (n/N [%]) and quantitative data as mean (SD or 95% confidence interval [CI]).

Informed oral and written consent was obtained from all patients. Because participants' data were retrospectively collected

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for the purpose of the present study, formal approval by an institutional review board was not required according to the Jardé Law of March 5, 2012 and its application decree (No. 2016–1537) relating to research involving the human person in France.

2. Results

From September 2017 to February 2018, 23 of 23 (100%) individuals who were approached agreed to participate in the study and 21/23 (91.3%) participated in the 2 supervised sessions (Fig. 1). Overall, 4 groups were scheduled. Ten of 21 (47.6%) participants were women, the mean (SD) age was 41.5 (10.7) years, mean LBP duration 2.5 (2.8) years and mean lumbar pain intensity 42.9/100 (24.7) (Table 1). A total of 17/21 (81%) participants had at least 1 sick leave because of their LBP in the previous year, and the mean number of sick-leave days in the previous year was 18.9 (36.5).

Among individuals who participated in the supervised sessions, 21/21 (100.0%), 21/21 (100.0%) and 17/21 (81.0%) responded to all the questionnaires at baseline, 10 days and at the last follow-up, respectively. The mean (SD) acceptability of the program was 90.6/100 (18.9), ETBQ score 26.5/100 (19.4), EARS score 12.4/24 (5.6) and satisfaction 78.2/100 (20.8) at the last follow-up (Table 2).

The mean (95% CI) change from baseline was −5.9/100 (−18.2–6.4) for mean LBP intensity, 14.1/100 (−0.6–27.6) for patient global health assessment, −9.6/100 (−14.7–−4.5) for Quebec Back Pain Disability Index (QBPDI) and −5.9/42 (−11.4–−0.3) for the Fear-Avoidance Beliefs Questionnaire (FABQ) work activity subscale (E-Component 3).

3. Discussion

A 1.5-day multidisciplinary education and exercise therapy program is a feasible and minimally burdensome intervention for people with subacute and chronic non-specific LBP. Our targeted population had moderate levels of LBP-specific activity limitations (mean [SD] QBPDI 36.6/100 [15.5]) and fear avoidance beliefs for physical activity (mean [SD] FABQ subscore 10.3/24 [6.6]) and work activity (mean [SD] FABQ subscore 18.9/42 [11.0]).

Using the ETBQ questionnaire, we found that the burden of the program was mostly represented by a lack of motivation and support and the fact that patients became bored while exercising. We also recorded positive aspects of our program: participants did not find the exercises too difficult, found them effective, and did not have pain when exercising, which could represent a barrier to exercising [11]. Using the EARS questionnaire, we found that patients managed to do their exercises but not as often as

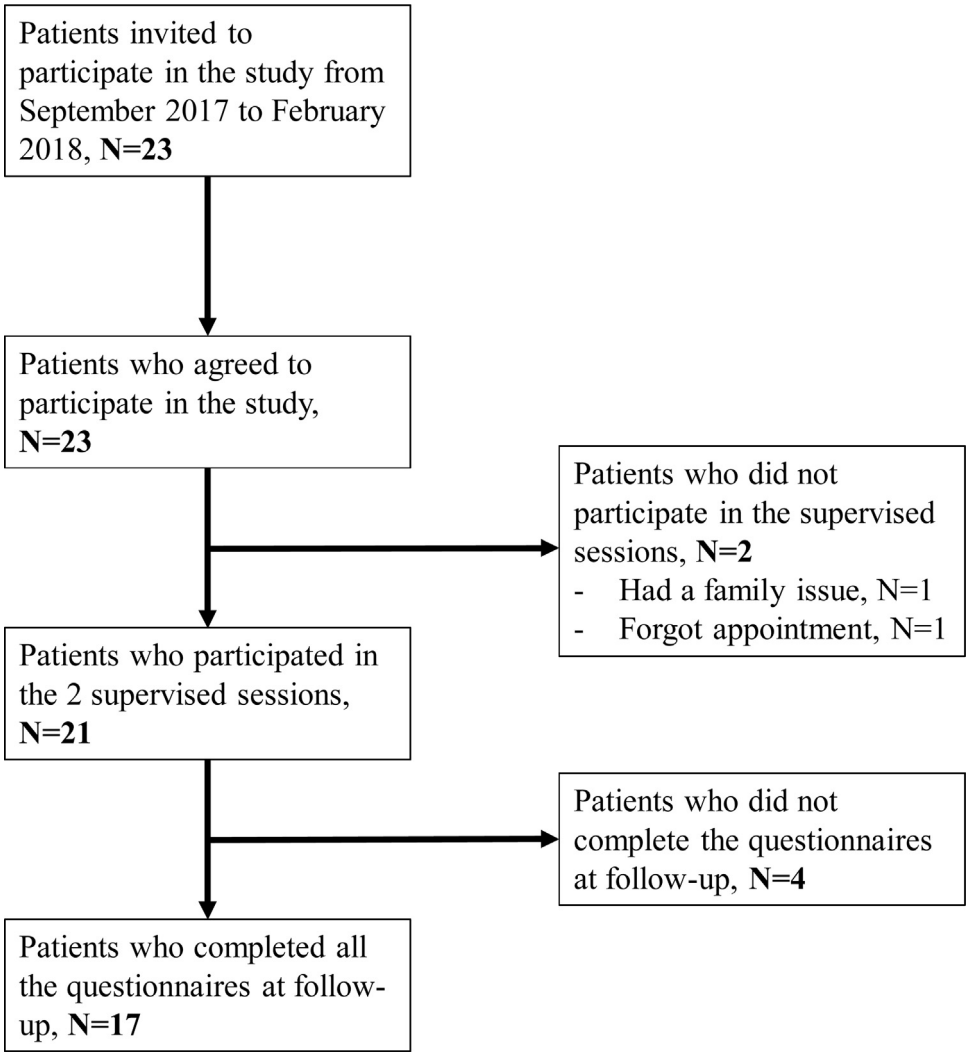

Fig. 1. Flow of participants in the study.

Table 1
Demographics and clinical characteristics of patients with low back pain (LBP) at baseline ($n = 21$).

Age (years), mean (SD)	41.5 (10.7)
Women, n (%)	10 (47)
Body mass index (kg/m^2), mean (SD)	25.6 (5.0)
Higher education, n (%)	11 (52)
Sick leave related to LBP in the previous year (yes/no), n (%)	17 (81)
Sick leave related to LBP in the previous year (days), mean (SD)	18.9 (36.5)
Work satisfaction (NRS, 0–100), mean (SD)	66.7 (25.8)
History of lumbar surgery, n (%)	2 (10)
LBP duration (years), mean (SD)	2.5 (2.8)
LBP intensity (NRS, 0–100), mean (SD)	42.9 (24.7)
Radicular pain intensity (NRS, 0–100), mean (SD)	19.5 (20.4)
Patient global health assessment (NRS, 0–100), mean (SD)	45.7 (25.0)
Anatomical findings on imaging, n (%)	
Degenerative disc disease	6 (29)
Active discopathy	4 (19)
Facet joint osteoarthritis	2 (10)
Spinal stenosis	0 (0)
Spondylolisthesis	2 (10)
Spinal disc herniation	7 (33)
Quebec Back Pain Disability score (0–100), mean (SD)	36.6 (15.5)
FABQ, mean (SD)	
Physical activity subscale (0–24)	10.3 (6.6)
Work activity subscale (0–42)	18.9 (11.0)
HAD, mean (SD)	
Depression subscale (0–21)	5.3 (4.6)
Anxiety subscale (0–21)	10.5 (4.8)
CSQ, mean (SD)	
Distancing from pain (4–16)	7.5 (3.4)
Ignoring pain sensation (4–16)	9.1 (2.9)
Distraction (5–20)	13.6 (3.5)
Coping self-statement (8–32)	25 (3.8)
Catastrophizing (5–20)	13.5 (3.7)
Praying (3–12)	6.1 (2.7)
Time elapsed between baseline and last follow-up (weeks), mean (SD)	19.8 (5.2)[a]

CSQ: Coping Strategies Questionnaire; FABQ: Fear-Avoidance Beliefs Questionnaire; HAD: Hospital Anxiety and Depression scale; NRS: numeric rating scale.
[a] $N = 17$

Table 2
Acceptability of the program (primary endpoint) ($n = 21$).

Participation in the program, n (%)	21/23 (91)
Participation in the 2 sessions, n (%)	21/21 (100)
Responders to all self-administered questionnaires at 3 months, n (%)	17/21 (81)
Acceptability of the program (NRS, 0–100), mean (SD)	90.6 (18.9)[a]
Satisfaction with the program (NRS, 0–100), mean (SD)	78.2 (20.7)[a]
Relevance of the program to one's situation (NRS, 0–100), mean (SD)	77.6 (20.8)[a]
Exercise Therapy Burden Questionnaire (0, no burden; 10, maximal burden)	
The exercises cause me pain (0–10)	1.9 (2.1)[a]
The exercises cause me fatigue (0–10)	2.0 (2.3)[a]
I get bored when I exercise (too much repetition, not enough fun) (0–10)	4.4 (2.9)[a]
The exercises in my program are too difficult (0–10)	0.9 (1.8)[a]
I waste too much time exercising (0–10)	2.5 (2.8)[a]
Exercising reminds me of my condition (0–10)	2.9 (4.2)[a]
I lack support to exercise (0–10)	3.6 (4.0)[a]
I lack motivation to exercise (0–10)	4.9 (3.2)[a]
The exercises that I am asked to do are not adapted to my physical activity objectives (0–10)	2.1 (2.9)[a]
I feel that exercising is not efficient in my case (0–10)	1.2 (1.7)[a]
Exercise Therapy Burden Questionnaire total score (0–100)	26.5 (19.4)[a]
Exercise Adherence Rating Scale (0, totally agree; 4, totally disagree. Questions 1, 4 and 6 are reversed score to calculate the total score)	
I do my exercises as often as prescribed (0–4)	2.2 (1.3)[a]
I forget to do my exercises (0–4)	1.8 (1.4)[a]
I do less exercise than advised by my doctor (0–4)	2.1 (1.7)[a]
I have made the exercises part of my daily living (0–4)	2.0 (1.5)[a]
I don't manage to do my exercises (0–4)	2.8 (1.1)[a]
I do all or almost all my exercises (0–4)	2.1 (1.4)[a]
Exercise Adherence Rating Scale total score (0–24)	12.4 (5.6)[a]

[a] N = 17

prescribed, which led to weak to moderate adherence to the home-based program.

Our study has limitations. Our sample size was small and our findings need to be confirmed in a larger study. Our results are valid for only a certain subset of patients with LBP without severe participation restrictions. We lost 4/21 (19.0%) patients to follow-up, which could be explained by the burden of the research for participants or improvement or worsening of the patient's condition. Finally, our study was not powered to assess efficacy outcomes and we did not conduct comparative analyses. However, the results of our descriptive analyses are encouraging: the evolution between baseline and last follow-up was positive for all outcomes, especially QBPDI and the FABQ work activity subscale.

The feedback from our patients will be taken into account to optimize and consolidate our program. From our findings, our consolidated intervention will include measures specifically designed to reduce the burden of treatment and enhance adherence (e.g., a face-to-face visit at 3 months with one of the physicians and regular personalized coaching with one of the care providers of the multidisciplinary team by phone, email or text messages according to patients' preferences and a self-graded exercise therapy program). We will assess its efficacy and safety in randomized controlled trial.

Author contributions

Conception and design of the study: MB, FS, FR, AR, CN; drafting of the original protocol: RG, MB, FS, JL, FR, AR, CN; acquisition of data: RG, MB, FS, AR, CN; coordination of the study: CN; design of the statistical analysis plan: CN; data analysis and interpretation: RG, AR, CN; drafting of the manuscript: RG, AR, CN; final approval: RG, MB, FS, JL, CG, SM, EI, FC, CB, MMLC, FR, AR, CN.

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Disclosure of interest

The authors declare that they have no competing interest.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.rehab.2019.05.005.

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