



Contents lists available at ScienceDirect

Journal of Orthopaedic Science

journal homepage: <http://www.elsevier.com/locate/jos>

Original Article

Analysis of follow-up data from an outpatient pain management program for refractory chronic pain

Masayuki Inoue ^{a, b}, Tatsunori Ikemoto ^{a, b, *}, Shinsuke Inoue ^b, Masatoshi Nakata ^a, Makoto Nishihara ^b, Young-Chang P. Arai ^b, Hirofumi Miyagawa ^a, Kazuhiro Shimo ^{a, b}, Hiroki Iida ^a, Tomomi Hasegawa ^a, Toshiko Wakabayashi ^a, Hiroki Sakurai ^b, Yoshinobu Hasegawa ^b, Keiko Owari ^{a, b}, Noboru Hatakeyama ^b, Takahiro Ushida ^{a, b}

^a Institute of Physical Fitness, Sports Medicine and Rehabilitation, School of Medicine, Aichi Medical University, Aichi, Japan

^b Multidisciplinary Pain Center, Aichi Medical University, Aichi, Japan

ARTICLE INFO

Article history:

Received 20 February 2017

Received in revised form

3 July 2017

Accepted 20 July 2017

Available online xxx

ABSTRACT

Background: Numerous reports indicate that multifaceted pain management programs based on cognitive-behavioral principles are associated with clinically meaningful long-term improvements in chronic pain. However, this has not yet been investigated in Japan. This study investigated the effects of a multifaceted pain management program in Japanese patients with chronic pain, both immediately after the program and 6 months thereafter.

Methods: A total of 96 patients, 37 male and 59 female (mean age 63.8 years) experiencing treatment difficulties and suffering from intractable pain for more than 6 months were enrolled in the study. The programs were conducted with groups of 5–7 patients who met weekly for 9 weeks. Weekly sessions of approximately 2 h in duration incorporating a combination of lectures and exercise were conducted. Several measures related to pain and physical function were assessed at the start of the program, the end of the program, and 6 months after completion of the program. The resulting data were analyzed via Wilcoxon signed-rank test, and 'r' estimated by effect size was also assessed.

Results: Of the 96 initial participants, 11 dropped out during the program and 85 completed it. Thereafter, we evaluated 62 subjects at 6 months after the program, while 23 could not be evaluated at that time-point. Pain intensity upon moving, catastrophizing scores, and pain disability scores showed good improvements at the 6-month follow-up, with large efficacy ($r > 0.5$). Moving capacity and 6-min walking distance also showed good improvements with large efficacy, both at the end of the program and at the 6-month follow-up ($r > 0.5$).

Conclusions: A multifaceted pain-management program based on cognitive-behavioral principles was effective in Japanese patients with chronic pain, resulting in improved long-term clinical outcomes.

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1. Introduction

Chronic pain is one of the problems associated with musculo-skeletal disorder, and as well as being a physical burden on the patient, it also results in substantial costs via the extensive use of healthcare services [1]. According to a large survey conducted in Japan, approximately one in three adults experience chronic pain,

but it often goes unrecognized and/or is undertreated [2]. In recent years, pain management programs based on the cognitive behavioral technique (CBT) have been developed as a strategy for treating chronic pain [3–5]. In Japan, the effects of multidisciplinary treatment—also known as the liaison approach—in patients with chronic pain have recently been reported [6,7]. Inoue et al. [6] employed an outpatient pain management program in a small group, combining lectures with exercise based on the CBT, and reported favorable results immediately after the program. During that program, they instructed the participants that self-management via mottos such as “living a positive, active life in spite of pain” was an essential strategy for handling their pain.

* Corresponding author. Institute of Physical Fitness, Sports Medicine and Rehabilitation, Aichi Medical University, 1-1 yazako karimata, Nagakute, Aichi 480-1195, Japan. Fax: +81 561 62 5004.

E-mail address: tatsunon31@gmail.com (T. Ikemoto).

Notably however, it is difficult to provide such pain management programs profitably under Japan's health insurance system, because insurance is only available for examinations and strictly biomedical (as opposed to behavioral and psychological) interventions. Although the possible causes of chronic body pain are enigmatic in many patients, medical practitioners continue to seek biological evidence of pain if the cause of that pain is not identified. As a result, the patient's mood can gradually deteriorate over the course of repeated examinations.

Previous studies indicate that the effect size of a given outcome tends to be smaller at follow-up than it is immediately after a program [8–10]. Hence, it is sometimes uncertain whether the efficacy of a one-off program was transient or long-lasting in patients with chronic pain in Japan. Notably however, it has been hypothesized that the effect size of a given outcome can be maintained in the long-term if the participants utilize an ongoing self-management strategy based on cognitive-behavioral principles after the program has concluded. Therefore, in the current study we investigated the effects of a multifaceted pain management program in patients with chronic pain, both at the conclusion of the program and 6 months thereafter.

2. Materials and methods

2.1. Subjects and informed consent

A total of 96 patients (37 men, 59 women, mean age 63.8 ± 12.5 years) who were experiencing treatment difficulties and suffering from intractable pain participated in our program between October 2011 and December 2016. Patients who had experienced prolonged pain for more than 6 months were eligible to be enrolled in the program. Upon presentation at our center, all patients were assessed via a series of standardized self-reported measures, demographics, and symptoms, and provided an account of the history and duration of their pain. Before consenting to the program, each

participant was fully informed of the course content by the attending physician, and advised that the coursework would be performed safely and that all personal information would remain confidential. The study received ethical approval from the relevant institutional review board (approval number 14-067 & 2017-H094).

2.2. Program

All components of the program were conducted at the same physical fitness center, on the fitness floor, in the pool, and in classrooms. Each group consisted of 5–7 participants who met weekly for approximately 2 h over 9 weeks. The program combined lectures with exercise (Table 1). The content of the program utilized is described in detail in Inoue et al. [6].

2.3. Evaluations

As multimodal interventions are recommended for chronic pain management, the following instruments were used to assess the outcomes of the program: Visual analogue scale (VAS) for pain severity, the Pain Disability Assessment Scale (PDAS) for the degree of impact of pain-related disabilities on lifestyle [11], the Hospital Anxiety and Depression Scale for assessing anxiety and depression (HADS Anxiety and HADS Depression) [12], the Pain Catastrophizing Scale (PCS) for measuring catastrophizing due to pain [13], the EuroQol 5 Dimension (EQ-5D) for assessing quality of life (QOL) [14], the Pain Self Efficacy Questionnaire (PSEQ) for assessing pain self-efficacy beliefs [15,16], and the 25-question Geriatric Locomotive Function Scale (GLFS-25) for assessing the degree of locomotive syndrome [17]. All were conducted using Japanese translations [6]. Moreover, we independently prepared and administered a 39-item questionnaire called the 'Pain Knowledge Test' to characterize patient understanding of lectures and awareness of pain.

Table 1
Summary of the group program.

	Contents	Assigned medical personnel
Week 1 (2.5 h)	Introductory session Assessments of pain Assessments of physical function Floor exercise	Doctor Doctor Physical therapist, trainer, nurse Physical therapist
Week 2 (2.0 h)	Feedback (results of assessments) Lecture (theory and treatment) Floor exercise, aerobic exercise	Physical therapist Doctor Physical therapist, trainer
Week 3 (2.0 h)	Lecture (functional anatomy, tests) Floor exercise, aerobic exercise Water aerobics	Doctor Physical therapist, trainer Physical therapist
Week 4 (2.0 h)	Lecture (automatic thinking and pain awareness) Floor exercise, aerobic exercise Water aerobics	Doctor Physical therapist, trainer Physical therapist
Week 5 (2.0 h)	Lecture (cognitive reconstruction and sleep) Floor exercise, aerobic exercise Water aerobics	Doctor Physical therapist, trainer Physical therapist
Week 6 (2.5 h)	Lecture (dietary habits, nutrition) Group meeting Floor exercise, aerobic exercise Water aerobics	Dietician Doctor Physical therapist, trainer Physical therapist
Week 7 (2.0 h)	Group meeting Floor exercise, aerobic exercise Water aerobics	Doctor Physical therapist, trainer Physical therapist
Week 8 (2.5 h)	Assessments (measures of pain) Assessments (physical function) Water aerobics	Doctor Physical therapist, trainer, nurse Physical therapist
Week 9 (2.0 h)	Feedback (results of assessments) Home exercise instruction Closing session	Physical therapist Physical therapist Doctor

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