

Effects of a Guided Internet-Delivered Self-Help Intervention for Adolescents With Chronic Pain

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Abstract: Cognitive-behavioral therapy (CBT) is effective in reducing the frequency and intensity of chronic pain in adolescents. However, CBT seems not to be considered acceptable by all adolescents. The main aim of our study was therefore to evaluate the effects of guided Internet-delivered self-help for adolescents with chronic pain. Adolescents (N = 69) were assessed on the outcome measures of pain, coping, disability, catastrophizing, rewarding of pain behavior by parents, and quality of life. Measures were taken 7 weeks before treatment and at pretreatment, posttreatment, and 3-month follow-up. Multilevel modeling was used for longitudinal analysis of the data. Pain intensity, interference caused by pain, rewarding of pain behavior by parents, and sleep problems significantly decreased during the intervention. The quality-of-life scores for pain, general behavior, mental health, family activities, and health changes also significantly improved during the intervention. With regard to coping, only problem-focused avoidance behavior significantly increased. No significant differences were found for pain-related disability and pain catastrophizing. Contrary to expectations, guided Internet-delivered self-help for chronic pain is difficult to use in adolescents, resulting in treatment attrition and loss to follow-up. Trial registration: Dutch Trial Register NTR1926.

Perspective: The results of this trial suggest that Internet-based self-management is effective in decreasing pain intensity in adolescents with chronic pain. Because the intervention is grounded in CBT, we expect the underlying mechanism to be a change in self-management skills and in the ability of challenging dysfunctional thoughts.

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Key words: Pain management, adolescent, Internet, telephone, cognitive therapy.

Chronic pain in children and adolescents is defined as pain that exists for more than 3 months, either continuously or recurrently.^{18,19,27,28,32,33} Approximately 25% of children and adolescents (aged 0–18 years) in the general population report chronic pain.²⁷ Chronic pain is most frequently reported in girls aged 12 to 14 years. The most commonly reported types of pain are limb pain, headache, and abdominal pain.

Chronic pain frequently interferes with activities associated with daily living.¹¹ Children and adolescents are often unable to pursue their hobbies and to meet their friends. In addition, they may report school absenteeism, disturbed sleep, frequent use of medication, and depressive feelings. Pain-related disability in adolescents appears to be related to certain pain coping profiles.⁶ Adolescents with an avoidant or dependent coping style report more pain-related disability and more depressive and anxiety symptoms than do adolescents with more active coping profiles. This knowledge could be used to develop pain management interventions that stimulate the use of active coping strategies in adolescents with pain.

Research¹⁵ has shown that cognitive-behavioral therapy (CBT) and relaxation exercises are effective in reducing pain frequency and pain intensity in children and adolescents⁹ by providing strategies that help adolescents to better cope with their pain. As a result,

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depressive symptoms and functional disability may decrease.^{14,15} However, CBT seems not to be considered acceptable by all adolescents.²² Like adults, adolescents with chronic pain might not be inclined to consult a psychologist, because they have a biomedical perspective on their symptoms.³⁴ In addition, adolescents often have difficulty combining therapy sessions with their busy lives.²³ Psychological interventions using an Internet format might be more appealing to adolescents. The Internet is the most frequently used health information resource in this age group and is therefore in line with their frame of reference.¹⁶ Another advantage of CBT via the Internet is that it increases adolescents' access to CBT.¹ Both adolescents and therapists can work through the intervention at any place and any time. Adolescents do not have to miss school to visit their therapist.

Several studies have suggested that Internet therapy may be a promising alternative to face-to-face therapy in adolescents with chronic pain.^{13,25,36} In a systematic review, Stinson and colleagues³⁶ reported that Internet-based self-management interventions seemed to improve health outcomes in children and adolescents with various health complaints, including chronic pain. Hicks and colleagues¹³ examined the effectiveness of an Internet-based self-management intervention for adolescents with chronic pain in the general population. Treatment consisted of a Web-based manual for children (aged 9–16 years; N = 47) and their parents with weekly therapist contact by e-mail or telephone. One month after treatment, the adolescents in the experimental group experienced significantly less pain than did adolescents in the waiting list group. No differences in quality of life were found. Palermo and colleagues²⁵ also tested an Internet-based self-management intervention for adolescents with chronic pain and their parents. Treatment consisted of 4 child modules (aged 11–17 years; N = 48) and 4 parent modules. The modules were tailored to individual needs by personalizing instructions and assignments (fitting to reported stressors). The adolescents and their parents were supported by a therapist via online messages (in total 1 hour per family). Results showed a greater reduction in pain-related disability and pain intensity after treatment in the Internet group than in the waiting list group. No significant group differences in parental protectiveness or depressive symptoms were found.

A meta-analysis by Spek and colleagues³⁵ has shown that Internet-based therapy with support is more efficacious than Internet-based therapy without support. In addition, tailored content seems to increase the effectiveness of Internet-based therapy, probably by increasing personal relevance.¹⁷

The main objective of the present study was to examine the effects of a 7-week guided interactive CBT Internet intervention, *Move It Now*, for adolescents with chronic pain compared with a waiting list trajectory. Measurements were taken 7 weeks before treatment (T0), at pretreatment (T1), at posttreatment (T2), and at 3-month follow-up (T3). The innovative aspect of *Move It Now* is that elements of previous studies are combined:

the content of the intervention was tailored to the individual pain characteristics of the participants, and both adolescents and parents received emotional support by e-mail and telephone from a therapist. *Move It Now* is the first Internet intervention with telephonic therapeutic support according to a specific therapist protocol. The primary outcome of interest in the present study was pain intensity as measured with a visual analog scale (VAS) score. We hypothesized that pain intensity would decrease during the treatment trajectory but not during the waiting list trajectory. Secondary outcomes included pain-related disability, quality of life, rewarding of pain behavior by parents, pain coping, and pain catastrophizing. We explored whether adolescents improved on these outcomes during treatment. The second objective of the present study was to examine adolescents' satisfaction with treatment.

Methods

Participants

The study sample consisted of 69 adolescents with chronic pain. In this study, chronic pain was conceptualized as self-reported continuous or recurrent pain for at least 3 months, with a minimum of 1 pain episode per month. In girls, the pain was not allowed to be exclusively related to their menstrual cycle. Adolescents were eligible to participate if they met the following criteria: age 12 to 17 years; chronic abdominal pain, headache, back pain, or limb pain; no apparent medical cause of pain (an exception is made for adolescents with migraine); self-reported interference with daily activity (eg, missing school, withdrawing from sports, and withdrawing from activities with friends) or feeling overloaded (eg, not taking any rest); Internet access at home; fluent in Dutch; no current psychological treatment for pain; no current participation in other research trials; no severe psychosocial problems. During the first months of our trial, we changed the age criterion of 12 to 14 years of age to 12 to 17 years of age to increase inclusion. Adolescents did not receive any reward for their participation.

Recruitment of participants took place via youth health care nurses of the Municipal Health Services Rotterdam-Rijnmond, medical specialists in hospitals and rehabilitation centers all over The Netherlands, and the media (eg, Internet, newspapers, and radio). The study started in May 2010. The inclusion of patients ended in September 2013. The 3-month follow-up period was completed in December 2013. The full trial protocol can be accessed in Voerman and colleagues.⁴⁰

Study Design

The present study was originally meant to be a randomized controlled trial. Participants were automatically randomly assigned (ratio 1:1) to an experimental group or a waiting list group by the *Move It Now* website. The *Move It Now* website used a randomization list generated by an independent statistician. Block randomization was used to keep the group sizes equal.

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