

Effect of Number of Physical Therapy Sessions on Level of Pain, Depression, Anxiety, and Quality of Life

Fizik Tedavi Seans Sayısının Ağrı, Depresyon, Anksiyete Düzeyleri ve Yaşam Kalitesine Etkisi

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ABSTRACT

Objective: The aim of this study was to explore the effects of 10 sessions vs 15 sessions of physical therapy on level of pain, depression, anxiety, and quality-of-life in patients who had physical therapy programme.

Methods: Demographic data of volunteer patients who would have physical therapy programme were noted. Patients were evaluated before treatment, after 10 sessions, and after 15 sessions. Evaluation parameters were the Level of pain (0-no-pain, 10-severe-pain), patients' own-global-evaluation and physician's global-evaluation (0-the best condition, 10-the worst condition) with Visual-Analog-Scale(VAS); Beck-Depression-InVENTORY(BDI); State-Trait-Anxiety-InVENTORY(STAI); Nothingam-Health-Profile(NHP).

Results: Fifty three patients (30-female, 23-male) with the mean age of 44.6 ± 12.3 years were evaluated. The mean symptom duration was 22.5 ± 33.0 months. Seventeen (32.1%) patients had neck, 3(5.7%) had shoulder, 24(45.3%) had lumbar, 9 (17%) had knee-pain. There were significant improvements for rest and activity VAS both at 10th-session and 15th-session compared to before-treatment, and the difference between 10 and 15 sessions was significant too. There were significant improvements for Patient's own global-evaluation, and Physician's global-evaluation score at 10th-session and 15th-session compared to before-treatment, and significant difference was detected between 10 and 15 sessions. There was no significant difference for BDI between 10 and 15 sessions. There was no difference for STAI-state-and trait scale among evaluation dates. Significant improvements were detected between 10 and 15 sessions for NHP pain, physical-activity, and fatigue-subscores.

Conclusion: Increasing the number of physical therapy sessions from 10 to 15 resulted in significant improvement in severity of pain, patient's own-global-evaluation, physician's global-evaluation, and subscores of quality-of-life parameters, while it did not cause significant improvement on levels of depression, and anxiety.

Keywords: Physical therapy, number of sessions, quality of life

ÖZET

Amaç: Çalışmanın amacı fizik tedavi programı(FT) alan hastalarda 10 veya 15-seans fizik tedavinin, ağrı, depresyon, anksiyete düzeyi ve yaşam kalitesine etkilerinin araştırılmasıdır.

Yöntemler: Fizik tedavi programı alacak hastalardan çalışma için gönüllü olanlarının demografik verileri kaydedildi. Hastalar tedavi öncesi(TÖ), 10. seans sonunda(10S) ve 15. seans sonunda(15S) değerlendirildi. Değerlendirme parametreleri: ağrı şiddeti (0-hiç ağrı yok, 10-çok şiddetli ağrı), hastanın kendini global değerlendirme ve hekimin hastayı global değerlendirmesi(0-en iyi durum, 10-en kötü durum) Görsel Analog Skala (GAS) ile, Beck Depresyon Envanteri(BDE), Durumluk-Süreklilik Kaygı Ölçeği (STAI), Nothingam Sağlık Profilini (NSP) idi.

Bulgular: Yaş ortalaması 44.6 ± 12.3 yıl olan, elli üç hasta (30 kadın, 23 erkek) değerlendirildi. Hastaların semptom süresi ortalama $22,5 \pm 33,0$ aydı. Hastaların 17'sinde (%32,1) boyun, 3'ünde (%5,7) omuz, 24'ünde

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(%45,3) bel, 9'unda (%17) diz ağrısı şikayeti vardı.GAS istirahat ve hareket değerleri için TÖ'ne göre hem 10S, hem de 15S'da anlamlı iyileşme saptandı, 10S ve 15S arası fark da anlamlıydı.Hastanın kendini global değerlendirmesi ve doktorun hastayı global değerlendirmesinde TÖ'ne göre 10S'de ve 15S'de anlamlı iyileşme olduğu ve 10S ile 15S arasında anlamlı fark olduğu saptandı.Depresyon düzeyi için 10S ile 15S arasında anlamlı fark yoktu.STAI durumluk ve sürekli kaygı ölçeğinde değerlendirme günleri arasında anlamlı farklılık yoktu.NSP ağrı, fiziksel aktivite ve yorgunluk alt skorları için 10S ile 15S arasında anlamlı iyileşme saptandı.

Sonuçlar: Fizik tedavi seans sayısının 10'dan 15'e artırılması, ağrı şiddeti, hastanın kendini ve doktorun hastayı global değerlendirmesi, yaşam kalitesi alt parametrelerinde anlamlı iyileşme ile sonuçlanırken, depresyon ve anksiyete düzeylerinde anlamlı iyileşmeye neden olmamıştır.

Anahtar sözcükler: Fizik tedavi, seans sayısı, yaşam kalitesi

Introduction

Standards of the physical therapy practice are not defined completely and vary in mode of administration and number of the sessions in painful musculoskeletal disorders (1-3). Mean number of physical therapy sessions is 5 to 9.5 sessions in Netherlands, 11 sessions in the United States and 5 sessions in Ireland (4-6). Although the number of therapy sessions is generally determined by the coverage of insurance companies, this is not appropriate therapeutically. Furthermore, although the changes in the number of sessions due to disease-related factors are reasonable, it is certainly inappropriate to determine the number of sessions by social status, health-related beliefs, or accessibility to the healthcare services (3,4).

Several patient-related factors, including behavioral model of coping with pain, exaggerated pain response, decreased spinal mobility and inadequate motor behavior learning performance, were found to be related to the number of physical therapy sessions (7). Moreover, older patients, female patients and those with governmental insurance received physical therapy for longer time periods (4).

While the factors that cause changes in the number of therapy sessions have been studied for several musculoskeletal disorders (3,4), the impact of increasing the number of therapy sessions on patients' satisfaction, pain, mood, or quality of life in due course was not studied yet. Although the treatment plans are based on the clinical course of each individual patient, the benefit of increased number of therapy sessions is unclear. The present study aimed to evaluate the impact of the number of therapy sessions on patients' satisfaction, pain, depression, anxiety level and quality of life in patients receiving physical therapy for a musculoskeletal disorder.

Patients and Methods

Fifty-three patients, who had neck, shoulder, low-back, or knee pain at least for 3 months, and for whom a physical therapy program was planned, were included to the study. Age, sex, body mass index (kg/m²), education, employment and symptom duration (month) data were

recorded for all patients. Evaluations were performed before the therapy (before-treatment), and at the end of the sessions 10 (10th-session) and sessions 15 (15th-session).

Evaluation parameters

Pain was evaluated by a 100-mm Visual Analogue Scale (VAS). All patients scored their pain severity while resting and while performing exercise (from 0-no pain to 10-worst possible pain). Patients assessed themselves and clinician assessed the patient globally on VAS (from 0-best to 10-worst).

Beck Depression Inventory (BDI) was used to assess the level of depressive mood. This instrument has 4 choices for each of 21 symptom categories (8,9). Patients mark the most appropriate statement which represents how he/she has been feeling in the last week, including the testing day. Each item is rated on a 4-point scale ranging from 0 to 3 and the maximum total score is 63. Higher total scores indicate more severe depressive symptoms. It was also reported that a score of 10 represents at least mild depression (8).

State-Trait Anxiety Inventory (STAI) was used to measure anxiety. STAI is a self-assessment tool with short expressions and comprises from two subscales with a total of 40 items. In the first subscale, State Anxiety Inventory (STAI-S), subjects report the intensity of their feelings of anxiety at a certain moment and under a certain condition, with considering their emotions at that moment and rate themselves on a 4-point scale: (1) never, (2) somewhat, (3) much, (4) very much. In the second subscale, Trait Anxiety Inventory (STAI-T), subjects indicate how they generally feel and report how often they have experienced anxiety-related feelings and cognitions on the following 4-point scale: (1) almost never, (2) sometimes, (3) frequently, and (4) almost always. The range of scores for each subscale is 20 to 80, the higher the score indicating greater anxiety level (10,11).

Quality of Life (QoL) was assessed by using Nottingham Health Profile (NHP). The Nottingham Health Profile indicates a patient's emotional, social and physical health problems. It consists of 38 dichotomous (yes/no) items in 6 categories: energy, pain, physical mobility, sleep, emotional reactions and social isolation. The

questionnaire examines the complaints at that moment. Positive responses to certain categories are used to quantify the perceived health problems or sum of the six categories can be expressed as a profile. Adaptation of the NHP into Turkish and assessment of its psychometric measures were performed by Kucukdeveci et al (12).

Statistical analyses were performed using SPSS 17.0 software. Descriptive statistics were used for numeric variables, and frequency analysis for categorical variables. Wilcoxon test was used to compare the data before-treatment, and at the end of the 10th and 15th sessions. Correlation analyses were done by using Pearson coefficients. P values less than .05 were considered significant.

Results

A total of 53 patients, 30 (56.6%) female and 23 (43.4%) male with a mean age of 44.6±12.3 were included to the study. Overall, mean BMI was 27.0±4.1 kg/m² and mean duration of symptoms was 22.5±33.0 months. Twenty-one (39.6%) of the patients were primary/middle school graduated, 32 (60.4%) were high school/college graduated, 21 (39.6%) were housewives, 13 (24.5%) were retired, 10 (18.9%) officer and 9 (17%) were worker. Neck, shoulder, lower-back and knee pain was present in 17 (32.1%), 3 (5.7%), 24 (45.3%) and 9 (17%) patients, respectively.

Table 1 demonstrates the VAS-resting and VAS-activity scores, global assessment of the patient and the clinician, and scores of BDI, STAI-S and STAI-T before the therapy, and at 10th-session and 15th-session. VAS-resting and VAS-activity scores, and global assessment of the patient and the clinician were significantly improved at the 10th and 15th-sessions compared to before-treatment. There was also a significant improvement at the 15th-session when compared to the 10th-session.

With regard to the depression level, while BDI scores were significantly better at the 10th- and 15th-sessions as compared to before-treatment, there was no significant difference between the 10th and 15th-sessions. Scores of STAI-S and STAI-T were not different between evaluation times.

Sleep, social isolation and emotional reaction subscores of NHP were significantly improved at the 15th-session when compared to before-treatment and the 10th-session, but not different between before-treatment and the 10th-session. On the other hand, pain, physical activity and energy subscores of NHP were significantly improved both at the 10th and 15th-sessions as compared to before-treatment, and when the 15th-session was compared to the 10th-session (Table 2).

When considering the relationship between pain at the 10th and 15th-sessions with age and duration of symptoms, only relief of resting pain at the 10th-session was decreased as the age increased, but the relationship was weak (Table 3).

Discussion

Although increasing the number of sessions from 10 to 15 resulted in no significant difference as regards the depression level, and state and trait of anxiety levels, there were significant improvements in the severity of resting- and activity-pain, global assessment of the patient and the clinician, and several subscores of QoL in patients receiving a physical therapy program for neck, shoulder, lower-back or knee pain.

In Turkey, maximum number of the therapy sessions and of re-treatments per year is determined by Social Insurance Institution and cannot be exceeded. The number of sessions for painful musculoskeletal disorders is generally planned as 3 to 5 days weekly and it could be 10 to a maximum of 30 sessions, with no reimbursement after the 30th session.

Table 1. Comparison of the level of pain, patients' own global assessment, doctor's global assessment, level of depression and anxiety among physical therapy sessions.

	Before-treatment Mean±SD	10 th - session Mean±SD	15 th - session Mean±SD	10 th - session and Before-treatment p	15 th - session and Before-treatment p	15 th - session and 10 th - session p
VAS resting	5,3±2,7	3,4±2,6	2,0±1,9	0,001*	0,001*	0,001*
VAS activity	7,8±1,8	4,8±2,8	3,4±2,4	0,001*	0,001*	0,001*
Patients' own global assessment	5,9±2,0	3,9±2,4	2,9±2,0	0,001*	0,001*	0,001*
Doctor's global assessment	6,2±1,9	3,9±2,3	1,9±1,8	0,001*	0,001*	0,001*
Beck Depression Inventory	11,2±8,5	10,1±8,6	9,5±8,6	0,008*	0,001*	0,112
STAI-stait	39,4±6,3	39,6±6,3	40,2±7,4	0,699	0,395	0,304
STAI- trait	45,6±5,8	46,0±6,1	46,4±6,3	0,381	0,160	0,151

VAS: Visual analog scale, STAI: State-Trait Anxiety Inventory, *:p<0.05

Table 2. Comparison of quality of life scores among physical therapy sessions.

	Before-treatment Mean±SD	10 th - session Mean±SD	15 th - session Mean±SD	10 th - session and Before-treatment p	15 th - session and Before-treatment p	15 th - session and 10 th -séance p
NHP-Pain	60,4±27,2	42,2±28,7	30,9±27,3	0,001*	0,001*	0,001*
NHP-Physical Activity	35,2±21,5	24,9±19,7	19,9±17,1	0,001*	0,001*	0,006*
NHP-Fatigue	39,8±39,0	31,4±33,6	23,3±27,6	0,008*	0,001*	0,002*
NHP-Sleep	30,2±24,7	25,3±23,3	19,6±22,7	0,120	0,008*	0,007*
NHP-Social	15,8±23,9	13,2±22,5	9,1±19,0	0,202	0,001*	0,008*
NHP-Emotional	19,5±23,3	15,3±23,3	11,3±19,3	0,060	0,001*	0,010*

NHP:Nothingam Health Profile, *:p<0.05

Table 3. The correlations between pain relief and patient characteristics.

	p	r
Age-Relief of resting pain at 10 th - session	0,031*	-0,296
Age-Relief of resting pain at 15 th - session	0,202	-0,178
Age-Relief of activity pain at 10 th - session	0,376	-0,124
Age-Relief of activity pain at 15 th - session	0,961	-0,007
Duration of symptoms - Relief of resting pain at 10 th - session	0,325	-0,138
Duration of symptoms - Relief of resting pain at 15 th - session	0,854	-0,026
Duration of symptoms - Relief of activity pain at 10 th - session	0,123	-0,214
Duration of symptoms - Relief of activity pain at 15 th - session	0,361	-0,128

*: p<0.05

Although physical therapy program is insufficient and should be prolonged in many patients, there are limited number of studies examining the benefits of increased number of physical therapy sessions objectively and also number of sessions in these studies is not comparable to the clinical practice in our country (4,13). Pain relief, improvement in QoL parameters, and functional state are the expected benefits of physical therapy. Besides, improvements in psychiatric conditions like depression, and anxiety are also expected in patients with chronic musculoskeletal pain with physical therapy. We are currently planning the physical therapy program for these patients as 10 to a maximum of 20 sessions and also evaluating the patient after every 5 sessions in usual clinical practice. The present study was conducted to evaluate the benefits of prolonging the therapy in this manner and to determine if there is a difference with increased number of sessions for same patient.

Several factors, such as outcomes and response to treatment, the sources, and accessibility to Physical therapy programs, can determine the number of physical therapy sessions and duration of the treatment is a major aspect concerning the design of clinical studies evaluating the response to physical therapy (5,14).

However, systematic reviews on prognostic factors for effectiveness and the expected benefits of physical therapy did not examine the number of physical therapy sessions (14). Clair et al. (14) treated 92 patients with nonacute, nontraumatic neck pain according to the needs of the patient by electrotherapy, exercise, or manual therapy and found significant improvements in pain severity and in Neck Disability Index scores. Authors found no significant relationships between age, duration of symptoms, and number of sessions and improvements in pain and functional scores. They also reported that response to therapy could not be correlated with the number of physical therapy sessions, because the number of physical therapy sessions required to achieve the desired treatment outcome would be different in each patient (14). Conversely, there are several studies reporting a positive correlation between the number of physical therapy sessions and patient age, symptom duration, and other organ systems-associated symptoms (15,16). We observed significant improvements in pain severity, global assessment of the patient and the clinician, as well as in pain, physical activity and fatigue subscores of QoL both at the 10th and 15th-sessions. It is also noteworthy that these parameters were further

improved at the 15th-session compared to the 10th-session. Similarly, prolonging the therapy for 5 sessions resulted in significant improvements in sleep, social isolation and emotional subscores of the QoL compared to the results of before the therapy. While there were no correlations between relief of activity pain, age, and duration of symptoms for either treatments of 10 or 15 sessions, there was a significant relationship between age and relief of resting pain for 10 sessions treatment. Accordingly, younger patients seem to have better responses for relief of resting pain with fewer treatment sessions.

In a study examining the number of physical therapy sessions and factors that can explain the number of sessions on 1733 patients with nonspecific low back pain, Swinkels et al concluded that the number of physical therapy sessions mainly depended on patient-related psychosocial factors, baseline disability, the ability to learn motor behavior and the ability of coping with the pain (4). Relationship between musculoskeletal pain, quality of life and, anxiety were reported previously (17). Depression and anxiety assessment tools were used to determine the mood state in our study. However we did not find any difference regarding anxiety, because of probably short treatment and follow-up period. While depression was improved at both the 10th and 15th-sessions as compared to before-treatment, prolongation of the treatment had no effect on depression.

The modality of physical therapy can also be related to the number of sessions (2). A manual therapy can decrease the number of therapy by 1.4 sessions (4). In the present study, patients were unaware from the number of sessions and standard treatment protocols including electrotherapy, superficial and deep heat applications, and conventional exercise programs were applied. Moffett et al evaluated the effectiveness of a brief physiotherapy intervention (cognitive behavioral therapy with encouragement to returning normal daily activities for 1 to 3 sessions) and routine physical therapy interventions on 268 patients with subacute and chronic neck pain to whom preferences for treatment duration were allowed (13). All participants were asked if they had a preference for a short- or long-lasting physical therapy program and their preferences were recorded, but then they randomized to a program independently from their preferences. Scores of functional disability on neck pain questionnaire were better for patients who received routine (long-lasting) physical therapy at 12 months. However, results of patients who preferred and received a brief program were similar to those who received a long-lasting program (13). In an attempt to avoid bias due to awareness of the patient about the number of sessions before starting the therapy, we evaluated all patients at every 5 sessions routinely and patients completed the questionnaires of pain, mood and QoL at the sessions 10 and 15.

One of the limitations of the present study is the fact that several musculoskeletal disorders were evaluated together rather than evaluating a specific disorder. Another important limitation is that functional assessments of the patients were not included in the statistical analyses. However, because several musculoskeletal disorders were evaluated together, the impact of functional outcomes on the number of physical therapy was not possible. Future studies evaluating the impact of the number of sessions in specific disorders individually would provide more clear data and help evaluate the contribution of functional status.

Elucidating the impact of increased number of physical therapy sessions on pain, patients' satisfaction and QoL would provide more objective data for determination of the appropriate and cost-effective number of physical therapy sessions.

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