



Effectiveness of Training Programs on Functional Disability in Female Patients with Low Back Pain

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Background: Today, chronic low back pain is one of the growing worldwide problems, which caused in the reduction of individuals' physical, mental, and social functions. This study aimed to evaluate the impact of training programs on functional disability in female patients with low back pain after 6month follow-up of the training intervention strategies.

Methods and Materials: This quasi-experimental study was carried out in rheumatology research center of Tehran University of Medical Science. A total of 27 female patients suffering from low back pain participated in this study. All the participants were divided into groups of 6 to 8 members and provided with a 4-hour training session of physiotherapy and psychology, followed by telephone counseling after one and two months. In order to collect required data and evaluate females' functional disability, two questionnaires were employed: Roland-Morris Disability Assessment Questionnaire (RDQ) and Quebec Back Pain Disability Questionnaire (QDS). The questionnaires were completed at the beginning of the study-as the pretest, and 6-month follow up as the posttest. Data were analyzed through paired samples t-test using SPSS software version 16. A significant level of $P < .05$ was considered to compare the information.

Results: The results of the current study show that during the 6 months intervention program, the physical disability was significantly improved in terms of two aforementioned scales.

Conclusion: It seems that training intervention program along with the follow-up and phone counseling have significant effects on improving physical function of patients with chronic low back pain.

Keywords: Chronic Low Back Pain, Functional Disability, Training Programs, Roland and Morris Disability Questionnaire (RDQ), Quebec Back Pain Disability Questionnaire (QDS)

Introduction

Today, Chronic Low Back Pain (CLBP) is considered as one of the growing worldwide problems, which caused in the reduction of people' physical, mental, and social functions (Claiborne et al., 2002). One of the effective ways and low-cost methods to prevent risk factors related to the incidence of Low Back Pain (LBP) is the application of training methods

within the framework of the programs like back school. These programs aim to increase public awareness, to review body postures, to correct wrong postures, and finally, to improve people's life style (Tavafian et al., 2007). These programs are consisted of all the individual or group trainings which are used to promote spinal health. During these programs, patients are trained to perform everyday tasks with correct body postures and modify their lifestyle. These programs also aim to raise patients' awareness and willingness to actively participate in the process and play a role in their treatment. This type of trainings was conducted for the first time in Sweden in 1969 with the aim of reducing back pain and preventing repeated attacks of pain and improving physical function (Heymans et al., 2004; Cecchiet al., 2010). The structure of backhealth programs is

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based on the information extracted from different areas including: vertebra anatomy, biomechanics, proper posture, ergonomics, and back sports (Hall & Icton, 1983). In these training programs, the patients are taught to maintain consistently their lumbar lordosis while sitting, standing, walking, and lifting objects; and to take a body posture importing the least pressure to the back (Claiborne et al., 2002). The main objective of this study was to train correct body postures in daily activities and also stress management skills during a back school method, to establish the program effectiveness in the treatment of back pain, and to reduce disability in female patients with low back pain referred to the rheumatology research center of Tehran University of Medical Sciences. It is expected that these training interventions modify wrong behavior and lead to the decisions related to the life style in order to improve people's health.

Methods

This quasi-experimental study was conducted as the pretest and posttest comparison. This study aimed to evaluate the impact of training programs on physical function in female patients with low back pain referred to the rheumatology research center of Tehran University of Medical Science during the years 2012-2013. Fifty two participants were selected from the control group of the previously conducted study in 2005 (Tavafian et al., 2005). After calling the patients, the inclusion criteria for the participants to be included in this study were their eligibility and willingness. To take ethical considerations into account, study process and its objectives were explained to the patients, and after obtaining consent, the research was conducted. All the patients in the previous study's control group met the inclusion criteria. The exclusion criteria were losing previous study inclusion criteria or unwillingness to participate in the study. At the beginning, 27 patients were eligible to complete the questionnaires. The data were collected through interview and two standard questionnaires, Roland-Morris Disability Assessment questionnaire (RDQ) and Quebec Back Pain Disability Questionnaire (QDS) whose validity and reliability had been approved previously (Mousavi et al., 2006). Then the raw scores were converted into standard scores. Data were analyzed using paired samples t-test with a significance level of $P < .05$. The extent of physical disability due to low back pain was assessed using 24-item Roland-Morris

questionnaire. In this scale a higher score is an indicative of more physical disability. QDS was consisted of different activities and different situations in which the extent of pain is subjected to question. This questionnaire is a 6-option Likert scale ranging from zero (no problem) to 5 (inability to do so). Total scores were reported between zero and 100, with zero score as an indicative of healthy and no problem around the waist, and the higher score as an indicative of the more problem. This questionnaire provides good information about different aspects of the patient's disability in performing daily activities for therapist. After evaluating the aforementioned variables, the participants were divided into groups of 6 to 8 and provided with a 4-hour training session. At first, the participants were familiarized with the structure and function of the spine and factors affecting physical disability and pain in a 2-hour training session. Then they were taught the ability to maintain the spine in a correct position while performing physical activities of daily life, including standing; sitting; sleeping; walking; and flexibility, stretching, and strengthening exercises. In the next 2 hours, the patients were familiarized with mental stresses and their effects on pain; then they learnt and practiced stress management skills. At the end, educational pamphlets were given to them. This pamphlets contained pictures of exercise movements suitable for spine and muscles strengthening.

At the end of the first and second months, the patients were followed up and controlled by telephone. In phone calls, the possible obstacles of performing proper behavior and stress management techniques were discussed, and appropriate solutions were presented to the participants. During these calls, patients were encouraged to internalized correct behavior by repeating and performing the correct behavior and removing wrong behavior. Finally, after 6 months, the questionnaires ((RDQ, QDS) were completed and evaluated again. Data were analyzed using paired samples t-test in SPSS software version 16 with a significant level of $p < .05$.

Results

In this study, 27 female patients with chronic low back pain were enrolled, and 27 completed questionnaires were obtained in two stages (with 100% response rate). The average age of the participants was 51.62 year with the standard

deviation of 9.29 and age ranges from 33 to 66 years. The rest of the results, demographic and back pain characteristics of the participants at the beginning of the study are shown in Table 1.

As it is shown in Table 2, there is no significant correlation between disability and education,

occupation, the length of low back pain, and the length of low back pain treatment.

Table 3 shows that there is a significant difference between mean scores on two scales of RDQ ($P < .001$) and QDS ($P = .004$) after the intervention, and the process of recovery can be seen in both scales.

Table 1. Demographic data of studied participants.

Variables		Number (%)	Average (SD)
Age		–	51.62 (9.29)
The Length of Pain		–	148.59 (26.37)
The Length of Treatment		–	63.44 (58.81)
Occupation	Housewife	25 (92.59)	–
	Employed	2 (7.41)	–
Education	Illiterate & Primary	7 (25.9)	–
	High school and above	20 (74.1)	–

Table 2. Correlation between physical disability and some variables in studied participants.

Variables	*RDS	*QDS
The Length of Pain	0.08	0.69
The Length of Treatment	0.97	0.53
Education	0.09	0.06
Occupation	.023	0.49
Age	0.08	0.32
	$P < .05$	

Roland-Morris Disability (RDQ).

Quebec Back Pain Disability Scale (QDS).

Table 3. Physical disability average scores based on RDQ and QDS instruments before and after six months of the intervention in studied participants.

Variables	Before the Intervention Average (SD)	6 months after the Intervention Average (SD)	<i>P</i> -Value*
RDQ score	8.44 (4.19)	6.18 (4.00)	.001
QDS score	22.74 (16.08)	14.40 (8.22) * $P < .05$.004

Quebec Back Pain Disability Scale (QDS).

Roland-Morris Disability (RDQ).

Discussion

This study examined the impact of training programs on physical function in female patients with low back pain referred to the rheumatology research center of Tehran University of Medical Science. The obtained results show that there is no significant correlation between physical disability and educational level, occupation, the length of low back pain, and the length of low back pain treatment. These results are not consistent with the findings of other studies (Afsharnejad, Rezaie & Yousefzadeh, 2010; Cano, Mayo & Ventimiglia, 2006), which can be due to the small sample size in the current study.

The obtained results of the present study show that there is a significant relationship between the improvement level of physical disability in patients with low back pain and the training of appropriate body postures and stress management skills during a training program. In this regard, the present study's findings are consistent with some studies' findings (Cecchi et al., 2010; Kamali Sarvestani, Derakhshan Rad & Hamooleh, 2012) but inconsistent with other studies (Claiborne et al., 2002; Leclair et al., 1996). This can be due to the extent of training used by patients and whether the instructions are fully realized and implemented by patients or not (Linton & Kamwendo, 1987).

In the present study, to ensure full realization of the instructions, performing exercises was reminded to the patients during two stages follow-up. Also, the trainings were delivered to them in the form of a pamphlet that was easy to understand. Being less expensive than conventional physiotherapy, is one of the advantages of using this method. Cecchi and co-workers stated that if routine physiotherapy and back school program are used similarly in terms of the number and duration of treatment sessions, even with similar results, the back-school method would be more cost-effective than the conventional physiotherapy because in physiotherapy the ratio of patient to therapist is one-to-one, but in back school the ratio is one-to-four (Leclaire, et al. 1996; Cecchi et al., 2010). It seems that promoting such trainings along with routine treatments in health policy lead to the positive results due to the long-term effects caused by changes in lifestyle and habits as well as cost-effectiveness of the back-school method. However, this study showed that 6-month period of training program has substantial impact on improving the level of disability, and pamphlets used in this study could increase patients' awareness and understanding to correctly perform daily activities in order to minimize exposure to risk factors related to the incidence of low back pain. The changes occurred during 6 months in patients could clarify the impact of this intervention on physical ability over time. However, telephone counseling facilitated the preservation and promotion of correct behavior in the participants. The results show that encouraging and motivating patients can sustain the effect of trainings in longer term (Emmons & Rollnick, 2001; Tavafian, Jamshidi & Mohammad, 2011). On the other hand, it seems that holding training sessions in the form of group discussion and also telephone counseling can contribute to the improvement of mental and physical fitness. Other studies' findings confirm the present study's results (Hall & McIntosh, 2008).

Conclusion

It seems that designed training programs and continuous follow-up by phone and availability of the educational pamphlet in this study can be effective in reducing disability in patients with chronic low back pain during 6 months. Therefore, it is suggested and recommended that other studies to be carried out with a control group and larger sample size taken from both sexes.

Conflict of Interest

There is no conflict of interest for this article.

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Authors' contribution

SST: Conducted whole study and had full access to all of the data for analysis. Also she was involved in drafting the article

ARJ: Assessed the patients and confirmed their eligibility for the study. He took responsibility for conducting the study and the integrity of the data and the accuracy of the data collection.

SH, SH: Participated in conducting the study. All authors approved the final version of the manuscript.

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