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ORIGINAL ARTICLE

Effects of Tailored Motor Control Rehabilitation Vs Standard Exercise Program in Management Of Chronic Nonspecific LBP

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ABSTRACT

Lower back pain is one of the most common problems in adults all over the world, and chances of having back pain increases with the age.

Objectives: To determine the effect of tailored motor control rehabilitation versus standard exercise program in chronic nonspecific lower back pain.

Study Design: Non randomized clinical study.

Methodology: A non randomized clinical study was conducted in six-month during 2018 after ethical approval. 40 patients were enrolled through non-probability purposive sampling technique and allocated into two groups (Group A & B). Informed consent was obtained. Individuals between twenty to forty years with chronic nonspecific low back pain with intensity at least 3 on a 10cm visual analog scale (VAS) were included and individuals with past history of trauma of the spine and hip and with any red flags were excluded. Outcomes were measures by Modified Oswestry Disability Index (MODI) and Visual Analogue Scale (VAS).

Statistical analysis: Data was analyzed by SPSS software, version 19 as qualitative variables were expressed as mean ± SD. Independent sample T test was also applied.

Results: The mean age Group A was 29.05±8.58 and Group B, was 32.05±6.53 years. The result shows that there was a significant difference in outcomes among tailored motorcontrol rehabilitation (Group A) and standard exercise program (Group B).

Conclusion: We concluded that motor control rehabilitation was more effective than standard exercise program in decreasing low back pain and improving quality of life.

Key Words: Low Back Pain, Tailored Motor Control Rehabilitation, Standard Exercise Program and Modified Oswastry Disability Index.

INTRODUCTION

Lower back pain is one of the most common problems[1,2] in adults all over the world, and chances of having back pain increases with the age. Most of the adult has experienced or will experience back pain in their life which in turn cause disability, Which can last up to 7 to 12 weeks. It was defined as the activity limiting pain occurring on the posterior side of the body and without any pathophysiological cause is termed as non-specific back pain[3].

Lower back pain is generally non-specific in nature[4,5] and decreases over time with or without any therapeutic intervention and around 85% of the patients have no definite diagnosis[6]. Regarding age and gender, women report more restriction in housework as compared to men, and young males report more impairments[7] also chronic LBP causes a reduced level of activity as the day progresses[8]. Back pain also affects the sleep of the patient[9].

Exercise can be used for primary and secondary prevention of lower back pain[10]. An exercise program involving stretching exercises for the back, strengthening exercises for abdominal, hamstring, and iliopsoas was as effective as Kinesio taping, but the treatment of the lower back is not limited to exercise it can include spinal manipulation therapy[11] electrotherapy, kinesiology and educational programs. A common form of exercise to manage low backache is motor control exercise using motor learning[12,13].

Hides et al found that the motor control of the elite athletes having low back pain significantly improved with stabilization training which ultimately improved motor control[14]. Park et al concluded that motor control rehabilitation was more significant than stretching exercises in decreasing unnecessary pelvic motion and actions of muscle during active prone knee flexion and lessening low backache[15]. Luciana GazziMacedo and Jane Latimer conclude that controlled motor rehabilitation and graded physical activity has somehow the same effects for the patient with nonspecific persistent low backache[16]. In a review comparing lumbar surgery with motor control exercises reported that controlled motor rehabilitation was a better intervention in short-term follow-up by the patient in reducing pain[17].

Objectives: To determine the effectiveness of tailored motor control rehabilitation versus standard exercise program in persistent non specific low back pain.

METHODOLOGY

It was non randomized clinical study. Data was collected from physical therapy department of Amin Welfare & Teaching Hospital, Sialkot in six months during 2018 after ethical approval. Non-Probability Purposive Sampling technique was used. Patients of either genders (age 20-40 years) with nonspecific chronic LBP were included.

Participants who had at least one episode of LBP before the study and having backache of intensity 3/10 VAS score were included. Individuals with past history of abdominal, back and hip surgery fracture of the spine and hip; red flags were excluded.

Forty patient with nonspecific LBP were assigned into two groups: tailored motor control exercises (n=20) and standard exercise program (n=20). The intensity of pain was measured on VAS and disability in doing functional tasks was assessed through MODI before 1st treatment session and after last session.

Tailored motor control exercise: Patients were taught with tailored motor control exercises. Their intensity was regulated and exercises were performed under the supervision of physiotherapist. Firstly these movement control exercises were taught in sitting, standing and the four point kneeling, and advised to be performed once or twice daily. The intensity was then progressed over the period of five treatment.

General exercise: The patients were advised an exercise plan which were performed under the supervision of physiotherapist. Slowly the intensity of exercise was progressed over a period of five treatment sessions with continuous encouragement to the patient. Every session would last roughly from forty five minutes to one hour. Exercises prescribed for home were taught accurately and monitored in every visit of patient. It was advised to perform the home based exercises thrice a week.

Statistical Analysis: Data was entered into Statistical Package for Social Sciences (SPSS) version 19.0 for analysis in terms of mean ± SD. Independent sample T test was used to comparison of before treatment and after treatment values of visual analogue scale and oswestry disability index (group A and B). P-value ≤0.05 was taken as significant.

RESULTS

The mean age and standard deviation of 20 patients from Group A (motor control rehabilitation) was 29.05 ± 8.58 and Group B (standard exercise program) was 32.05 ± 6.53. The scores of visual analogue scale in group A reduced from 7.15±0.26 to 3.20±0.25. Whereas in group B, from 6.95±0.18 to 5.15±0.27. Post treatment values of oswestry disability index has been reduced from 62±8.33 to 34±9.94 in group A where as in group B it has reduced from 60±8.58 to 42.50±12.92 (Table-1). Post treatment values of both groups A and B are significant because their p value is less than 0.05. But the mean value of VAS and MODI were more reduce in group A which showed that motor control rehabilitation was more effective in decreasing low back pain than standard exercise program.

Table-1: Independent Samples Test (between groups) VAS & MODI scores

Measurement of outcomes	Groups	Mean ± SD	P value
Vas* Pre treatment scores	(Group A)	7.15 ± 1.18	0.539
	(Group B)	6.95 ± 0.82	
Vas* Post treatment scores	(Group A)	3.20±1.15	0.000
	(Group B)	5.15±1.22	
Modi** Pre treatment scores	(Group A)	62.0 ±8.33	0.459
	(Group A)	60.00±8.58	
Modi** Pre treatment scores	(Group A)	34.00±9.94	0.025
	(Group B)	42.50±12.92	

*VAS: visual analogue scale. MODI: modified oswestry disability index.

DISCUSSION

The randomized control trial study done by Akbari, Asghar, and Khorashadizadeh in 2008 show similar results as in our study and stated that motor control rehabilitation is more effective in treating non-specific lower back pain[18].

Luciana GazziMacedo and Jane Latimer in 2012 concluded that the controlled motor rehabilitation as the same effects on non-specific low back pain as the graded exercise but our study suggested otherwise that there was a mark difference in the pain of the patient in non-specific low back pain with motor control rehabilitation was added in the exercise program of the patient having non-specific low back pain[16].

The study done by the Park et al in 2016 also correlated with the results of our study stating that the motor control exercise in LBP decreases the pain intensity and that the effectiveness of theses exercises is greater than the standard exercise rehabilitation of the patients with the LBP[15].

Hides, Stanton, Wilson, Freke, and S. McMahon study In 2009 also confirm our study results in which they trained cricket players with motor control exercise and found that the pain in the participants became similar to the control group of the study which was asymptomatic[19]. By this, we can conclude that the results produced by our study correlate with the studies of the other authors that the controlled motor rehabilitation exercises are far more superior to the standard rehabilitation exercise in the treatment of non-specific lower back pain.

Limitations: The study has few limitations as well. The size of the sample was not enough to generalize the results over all patients. Limited resources were available.

CONLCUSION

We concluded that there was a significant difference in level of pain and quality of life more in group A as compared to group B. Hence, motor control rehabilitation was more effective than standard exercise program in decreasing low backache.

Authors' Contribution:

ML&WP: Conceptualized the study, analyzed the data, and formulated the initial draft.

DH&MAA: Contributed to the histomorphological evaluation.

MA,ZMB&FA: Contributed to the analysis of data and proofread the draft

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