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Effects of motivational interviewing with conventional physical therapy on rehabilitation of chronic musculoskeletal disorders: a quasi-experimental study

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Abstract

Objective: To compare the effects of motivational interviewing with conventional physical therapy in the rehabilitation of chronic musculoskeletal disorders compared to conventional physical therapy alone.

Methods: The quasi-experimental study was conducted from September 2017 to March 2018 after approval from the University of Health Sciences, Lahore, Pakistan, and comprised patients with chronic musculoskeletal disorders enrolled from various outpatient physical therapy clinics in Lahore. The subjects were alternatively allocated to intervention group A and control group B, with the former receiveing motivational interviewing along with conventional physical therapy, and the latter receiving conventional physical therapy alone. The effects of the intervention were measured using visual analogue scale, patient-specific functional scale and exercise compliance chart with two-week follow-up. Data was analysed using SPSS 21.

Results: Of the 96 subjects, there were 48(50%) in each of the two groups. There were 21(44%) males and 27(56%) females in group A with a mean age of 50.10±10.35 years, and 23(48%) males and 25(52%) females in group B with a mean age of 50.18±11.58 years. Pain score and functional status were significantly better in group

A compared to group B from the baseline to day 14 ($p<0.001$). Exercise compliance was significantly different between the groups ($p<0.001$). Intra-group effects of pain intensity, functional status and exercise compliance were also significant ($p<0.001$).

Conclusion: Integration of motivational interviewing with conventional physical therapy was found to decrease pain and functional limitations and improve exercise compliance.

Key Words: Motivational interviewing, Musculoskeletal pain, Physical therapy, Patient compliance, Rehabilitation.

Introduction

Chronic musculoskeletal disorders are the second most common cause of long-term pain and functional limitations worldwide[1]. According to an estimate, all the musculoskeletal disorders together are reason behind 21.3% of the total years lived with disability. Among major musculoskeletal disorders are osteoarthritis, rheumatoid arthritis (RA), gout, low back pain (LBP), and neck and knee pain[2]. Chronic musculoskeletal pain and related functional limitations often coexist with depression and low level of motivation towards treatment approach.

Conventional physical therapy (CPT), including patient education, therapeutic techniques and exercises along with manual therapy, is considered effective in improving the functional status and de-conditioning in different musculoskeletal disorders[3]. Compliance with these therapeutic exercises is influenced by low motivational level and depression which results in failure of the accomplishment of the rehabilitation process[4]. Better treatment outcomes are achieved when patients engage themselves in developing their own goals. Increasing the motivation towards exercise therapy can be beneficial to overcome the pain and gain functional recovery[5].

Motivational interviewing (MI) is a client-oriented counselling process that aims at raising the motivation and accountability of clients to achieve behavioural changes. As

it activates the person's own desire for behaviour change and shifting the locus of control, hence it enables the person to self-manage the illness[6].

The current study was planned to assess the effective of integrating MI with CPT on the rehabilitation of patients suffering from chronic musculoskeletal disorders.

Patients and Methods

The quasi-experimental study was conducted from September 2017 to March 2018, and comprised patients with chronic musculoskeletal disorders enrolled from various outpatient physical therapy clinics in Lahore. Pakistan, including the Ehsan Rehab and Physiotherapy Clinic at Kazi Hospital.

After approval from the ethics review committee of the University of Health Sciences (UHS), Lahore, the sample size was calculated using 5% level of significance, 90% power of test with expected mean value with and without MI on the basis of literature[7]. The sample was raised using purposive sampling technique from among patients of either gender aged 26-65 years suffering from chronic pain and functional limitations due to musculoskeletal disorders related to shoulder, knee, neck and lower-back region having either acute or chronic condition. Those excluded were patients with recent history of trauma and acute conditions with third grade/degree of injury or severity of dysfunction, or pathologies, such as infections and tumours. Participants with cardiopulmonary dysfunction with poor exercise tolerance or any psychological problems were also excluded.

After taking written informed consent, the subjects were alternatively allocated to intervention group A and control group B, with the former receiveing MI along with CPT, and the latter receiving CPT alone. Odd numbers were assigned to group A and even numbers were allocated to group B. The enrollment and allocation process was done using the Transparent Reporting of Evaluations with Nonrandomized Designs (TREND) statement[8,9]. Demographic and clinical measurements were taken at baseline, and the outcome assessor post-intervention was kept blinded regarding the

group allocations. An exercise chart was given to the participants to keep a record of exercises performed.

Group A participants were given 14 CPT sessions according to the clinical practice guidelines of the American Physical Therapy Association (APTA)[10-13]. Three 30-minute MI sessions were given on days 1, 6 and 11 dealing with counselling techniques, reinforcement techniques and maintenance strategies[7].

Group B subjects were given 14 CPT sessions as per the APTA guidelines[10-13]. A 30-minute patient education session was given on days 1, 6 and 11 comprising details of the healing process, importance of exercise therapy, maintenance of correct body posture and benefits of doing regular exercises.

Three physical therapists with an average 3 years of experience were assigned to control group B, and they were asked to focus on determining the effects of physical therapy on chronic musculoskeletal conditions affecting the shoulder, knee, neck and lower-back area. Likewise, 3 physical therapists were assigned to experimental group A after giving them training on MI in two segments. In the first part, the theory, principles, uses and techniques of MI were taught by a certified psychologist, and the second part comprised video demonstration on MI application on patients. Pain intensity, functional status and exercise compliance assessed again on day 14 before the subjects got the respective treatments. A structured questionnaire was used for data collection. Pain intensity was measured using the visual analogue scale (VAS). Functional status was observed through Patient-Specific Functional Scale (PSFS) which had two components: first was the initial assessment, including identification of physical activities which the patient found difficult to perform and scoring of the difficulty level; the second part was the final assessment and it included score of difficulty level on follow-ups. Exercise compliance was assessed through exercise chart by calculating the sum of prescribed sessions performed by the patient.

Data was analysed using SPSS 21. Quantitative data was presented in the form of mean ± standard deviation (SD). The skewness and kurtosis of continuous variables were evaluated. Shapiro-Wilk test was used to check data normality. Paired sample t-

test was used to compare the mean difference in outcome measurements from day 1 to 14. Inter-group effects were measured through independent sample t-test. The significance level was set at $p<0.05$. Minimal clinically important difference (MCID) for VAS was set at 1.4cm[14], and 2.3 for FSPS.[15] For exercise compliance entailed minimum 3 sessions per week. Intention-to-treat analysis was used for those lost to follow-up.

Results

Of the 120 individuals assessed, 96(80%) were included; 48(50%) in each of the two groups (Figure).

There were 21(44%) males and 27(56%) females in group A with a mean age of 50.10±10.35 years, and 23(48%) males and 25(52%) females in group B with a mean age of 50.18±11.58 years. In group A, 11(23%) patients had shoulder pain, 13(27%) LBP 7(15%) neck pain, and 17(35%) had knee pain. In group B, the corresponding numbers were 15(31%), 16(33%), 6(13%) and 11(23%). There were no significant differences in terms of VAS and PSFS at baseline (Table 1).

There was significant reduction in pain intensity in group A on day 14 compared to group B($p<0.001$). Functional status and exercise compliance were also significantly improved on day 14 in group A than group B ($p<0.001$).

The difference on day 14 compared to baseline in both groups was significant (Table 2). Minimal clinically important difference (MCID) for pain reduction and functional improvement was also significant for both groups, but group A showed a slight higher reduction in pain intensity and higher improvement in functional status ($p<0.05$). There was no clinically significant difference observed for exercise compliance ($p<0.05$).

Discussion

The findings showed significant reduction in pain intensity and significant improvement in functional status and exercise compliance on day 14 in group A compared to group B ($p<0.001$), which is consistent with literature[16].

MI was applied for two weeks and significant clinical and statistical difference was observed compared to the control group ($p<0.001$), proving that MI is effective for short-term pain relief and improvement in functional status and exercise compliance. These results are parallel to a randomised control trial involving patients with fibromyalgia[17]. A meta-analysis produced similar findings as well[18].

Effectiveness of MI along with different physical therapy treatment methods in various chronic musculoskeletal disorders was observed in two studies[19,20].

One of the limitations of the current study was the short two-week follow-up. The other limitation was the short MI training duration for the therapists.

Conclusion

The addition of MI to CPT was more effective in the rehabilitation of chronic musculoskeletal disorders than CPT alone.

Disclaimer: The text is based on a post-graduation dissertation.

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Table 1: Group-wise comparison of demographic and outcome variables at baseline and on day 14.

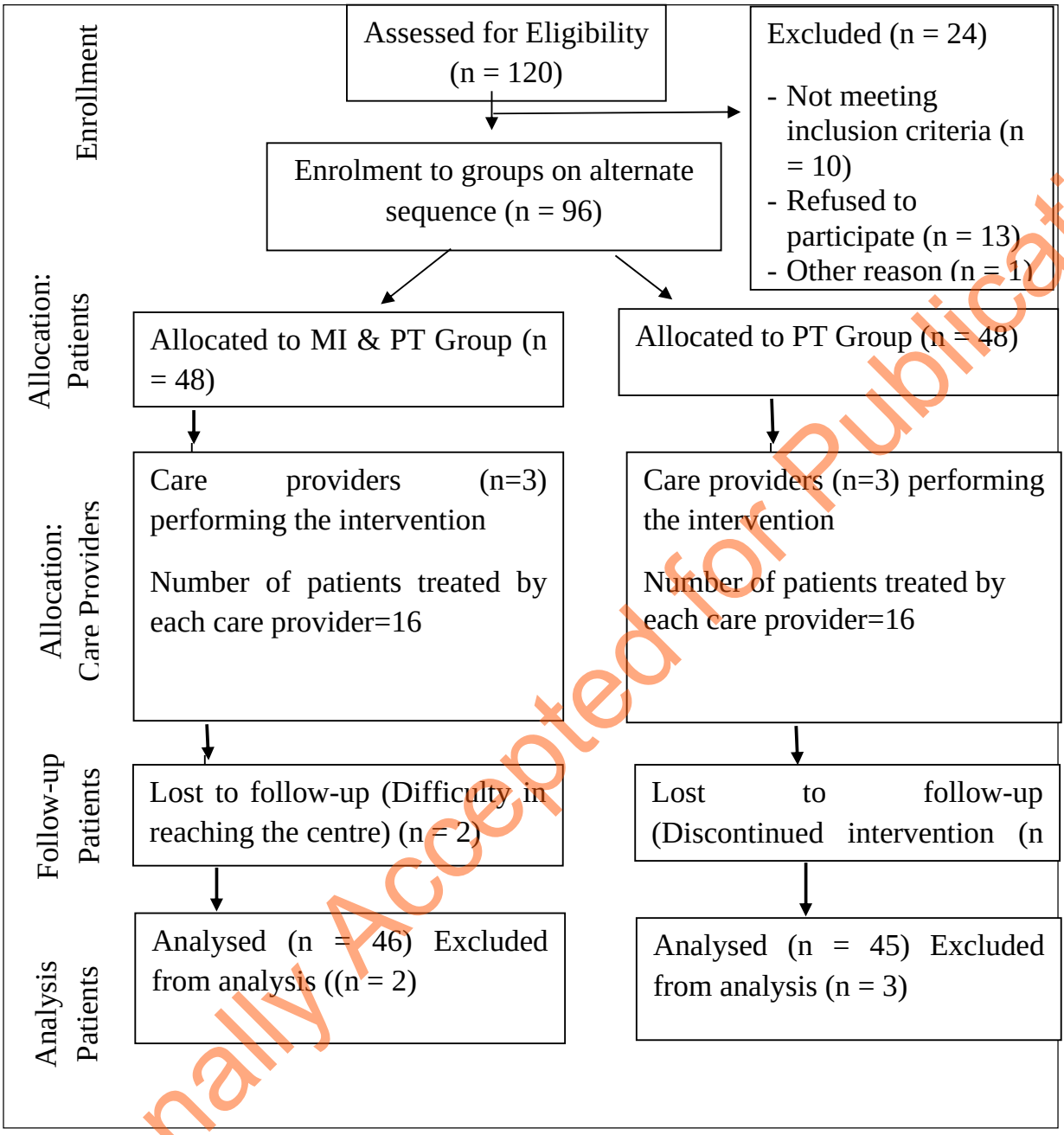
Outcome Variables	Time	Treatment Group	Mean ± SD	Mean Difference	P-Value
Age (Years)		MI & PT	50.10 ± 10.35	-0.08	0.97
		PT	50.18 ± 11.58		
Pain Intensity at VAS	**1st Day**	MI & PT	7.18 ± 0.866	0.35	0.11
		PT	6.83 ± 1.26		
	14th Day	MI & PT	1.67 ± 0.59	-0.73	< 0.001
		PT	2.39 ± 0.76		
Functional Status at PSFS	**1st Day**	MI & PT	3.22 ± 1.15	0.06	0.77
		PT	3.16 ± 0.93		
	14th Day	MI & PT	8.75 ± 0.93	1.13	< 0.001
		PT	7.62 ± 0.76		
Exercise Compliance	**1st week**	MI & PT	12.89 ± 1.58	3.42	< 0.001
		PT	9.47 ± 1.48		
	2nd week	MI & PT	13.93 ± 0.93	3.60	< 0.001
		PT	10.33 ± 1.22		

MI & PT: Motivational interviewing and physical therapy group (n=46); PT: Physical therapy group (n=45); VAS: Visual analogue scale; PSFS: Patient-specific functional scale.

Table 2: Intra-group comparison of mean score of pain intensity, functional status and exercise compliance from the baseline to day 14.

Outcome Variables	Type of Group	Time	Mean Difference	*t*- value	*p*-value
Pain Intensity	MI & PT	1st – 14th day	5.52	44.98	< 0.001
	PT		4.44	33.40	< 0.001
Functional Status	MI & PT	1st – 14th day	-5.52	-33.30	< 0.001
	PT		-4.46	-34.39	< 0.001
Exercise Compliance	MI & PT	1st – 14th day	-1.04	-4.72	< 0.001
	PT		-0.85	-4.42	< 0.001

MI & PT: Motivational interviewing and physical therapy group (n=46); PT: Physical therapy group (n=45).



276 **Figure: Study flow chart.**

277