Original Research Article

Psychosocial Treatment Techniques to Augment the Impact of Occupational Therapy Interventions for Chronic Low Back Pain among School Teachers

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Abstract

Background: School teachers perform numerous tasks that contribute to low back pain and affect their activities of daily living, social and vocational abilities. Low back pain is multidimensional in nature constituting physical, psychological and social components. Psychosocial variables pose as an obstacle to rehabilitative recovery and have a role in development of chronicity, these factors are often neglected in the rehabilitation process, the present study integrates psychosocial factors with musculoskeletal factors and utilises a rehabilitation program that focuses on overall recovery.

Objectives: This study aims to find effective treatment for psychosocial variables and examines the physical and psychosocial changes that occur in school teachers suffering with CLBP when they receive occupational therapy augmented with psychosocial intervention. The intervention targets anxiety, perceived stress, and self-efficacy.

Methodology: The study sample consisted of 60 school teachers, half of the sample was enrolled for occupational therapy intervention and other half for occupational therapy intervention augmented with psychosocial treatment techniques.

Results: At post-treatment participants in the occupational therapy augmented with psychosocial treatment group showed significant difference in measures of anxiety, perceived stress and self-efficacy, pain intensity, pain severity, pain disability and 5-minute walk test distance compared to participants who received occupational therapy treatment only. The two groups did not differ significantly in finger-to-floor test.

Conclusion: The findings of the study suggest that augmenting psychosocial variables is beneficial to person-environment factors of disability and result in better rehabilitation outcomes in terms of both psychosocial variables as well as pain related variables.

Keywords: Chronic Low back pain, psychosocial treatment, school teachers, integrative approach

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Introduction

A recent study suggests that low back pain is the leading cause of disability worldwide and is a major cause of years lived with disability (YLD). In 2020, low back pain affected 619 million people globally, with incidences found higher in Women, with a projection of 843 million prevalent cases by 2050, which the highest increase in Asia and Africa.[1]

Psychological factors are often assessed separately while there is an overlap between physical and psychological components. Fear avoidance beliefs, depression, anxiety, perceived disability, fear of movement, catastrophic thinking, poor self-efficacy and social stress are highly prevalent in adults with chronic LBP.[2,3] Psychosocial factors such as low job satisfaction, monotonous tasks, social relations, perceived demands, self-reported stress, and work pace show a strong association with low back pain.[4] A study found that if a worker is under psychosocial stress while performing a lifting task, it leads to increased muscle activity and increased spine compression and lateral shear.[5] Psychosocial factors have also been associated with influencing the development of LBP chronicity.[6]

As per the latest Unified District Information for Education plusreport, India is home to 95,07,123 school teachers. The average age of teachers with LBP was measured to be 42.22± 10.[7] School teachers perform numerous tasks that contribute to back pain, standing in the classroom or at the blackboard for long periods of time, bending over desks to read or grade students work, having to lift heavy books or classroom equipment, and absence of ergonomic classrooms and staff rooms.[8,9] Since LBP is multidimensional in nature its management should establish an integrative and multidisciplinary approach. From a socioecological perspective challenges related to regional differences, inadequate infrastructure, a lack of qualified workers, cultural issues, gender norms, social shame, religious views, economical implications, out-of-pocket costs and language problems leads to barriers in accessing multidisciplinary healthcare in India.[10]

Despite the call for the profession to embrace a more integrated and holistic approach to practice, therapists may be faced with practical challenges, including issues related to client caseloads, productivity demands, scheduling, entrenched practices, limitations on service imposed by payer sources, staffing and budgetary restraints. Due to these limitations, current OT practice may be predisposed to adopt a more reductive approach to the evaluation and treatment of symptoms, wherein psychosocial factors may be neglected, resulting in an unbalanced, fragmented, and incomplete approach to patient care.[11]

Materials and Methods

The research design is a before-after with control experimental study.

Participants: The study sample consisted of 60 school teachers from Apex public school and Joseph and Mary public school, using convenience sampling. Prior permission was taken from all participants and consent forms were signed. Every measure was taken to retain their confidentiality in the study. All the participants were informed about the study and its purpose. The participants were not harmed physically, emotionally, culturally or economically at any point of intervention and data collection, they retained the liberty to withdraw from the study in case of any discomfort.

Inclusion criteria: Participants suffering from chronic (> 12 weeks) / recurring/ progressive LBP, within the age group of 30-50 years. Participants of both genders. Participants with or without radiating pain.

Exclusion criteria: Individuals with reduced level of consciousness or psychiatric disorders (psychosis), cognitive and language disorders. Participants with LBP with history of trauma. Individuals currently seeking psychological counselling. Individuals engaging in other physical activity programs like gym, swimming, athletic activities etc.

Procedure: The sample was divided into Group A- experimental group (Psychosocial treatment along with OT intervention) and Group B- control group (Occupational therapy intervention only) for 4-weeks. Half the sample (27 women and 3 men) received intervention in a group setting of 5 participants in 6 groups, sessions were conducted weekly for 45 mins along with OT treatment administered under

supervision once a week for 45 mins in group setting including 6 groups of 5 participants. The other half (27 women and 3 men) received OT treatment only administered under supervision once a week for 45 mins in group setting including 6 groups of 5 participants, exercises were explained and demonstrated for the week and a printed booklet for the exercise program was provided to all the participants as a part of OT intervention. Feedback was taken from participants daily telephonically.

Measures:

Anxiety: The Hamilton anxiety scale (HAM-A) consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety and somatic anxiety. The reliability and the concurrent validity of the HAM-A and its subscales proved to be sufficient.[12]

Physical function: To measure physical functions, two functional performance tests will be used: a 5-minute walk and a finger-to-floor test. These assessments constitute a component of a battery that was previously evaluated on various patient populations.[13]

Self-rated disability: The Pain Disability Index (PDI) assesses the degree to which respondents perceive themselves to be disabled in seven different areas of daily living. The PDI has been shown to be internally reliable and significantly correlated with objective indices of disability.[14,15]

Severity of pain: The short-form McGill Pain Questionnaire (SF-MPQ) is a shorter version of the original MPQ, a study concluded that the SF-MPQ-2 is a valid instrument for use in clinical trials to assess pain qualities in patients with low back pain.[16]

Stress: PSS-10 The Perceived Stress Scale (PSS-10) is a 10-item questionnaire, it evaluates the degree to which an individual has perceived life as unpredictable, uncontrollable and overloading over the previous month. The psychometric properties of the 10-item PSS were found to be superior to those of the 14-item PSS.[17]

Self- efficacy: The General Self-Efficacy Scale is a 10-item psychometric scale that is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. Criterion-related validity is documented in numerous correlation studies where positive coefficients were found with favorable emotions, dispositional optimism, and work satisfaction.[18]

Psychosocial intervention:

Table 1. Distribution of Psychosocial intervention over 4 weeks

Week 1	Administration of assessment scales. Introduction to relaxation techniques. Incorporating relaxation technique for 10 minutes after every exercise session. Incorporating positive reinforcement during both psychosocial and exercise therapy sessions.
Week 2	Goal setting and leisure activity planning. Participation in leisure activity over the week. Identification of movement fears and incorporating graded exposure during exercise session.
Week 3	Patient education and challenging negative pain and disability beliefs.
week 4	Explaining Importance of positive self-talk and group discussion.
End of week 4	Re-administration of assessment scales.

Occupational therapy intervention:

Table 2. Distribution of Occupational therapy intervention over 4 weeks.

Week 1	Administration of assessment scales and brief OT assessment.
Week 2	Client-centered goal setting and establishing client-centered home-based treatment program. Distribution of exercise booklet. Hands-on treatment and telephonic follow up for the rest of the week.
Week 3	Follow up program.
Week 4	Follow up program.
End of week 4	Re-administration of assessment scales

Results

Demographic characteristics (Table 3) and outcome measure scores (Table 4) were comparable between the two groups at the pre-intervention stage tested using independent t-test.

Table 3. Sample distribution on the basis of Gender and Age.

GENDER	EXPERIMENTAL GROUP	CONTROL GROUP
FEMALE	27	27
MALE	03	03
AGE GROUP (Years)	**EXPERIMENTAL**	**CONTROL**
30-40	17	16
40-50	13	14

Table 4. Descriptive statistics of pre-treatment comparison of variables between experimental and control group

Variable	GROUPS	N	Mean	SD (±)	T-Test	P-Value (Two-tailed)	Significance
HAM-A-1	Experimental Control	30 30	23.87 22.37	3.674 4.735	1.438	.156	Not significant
5MWT-1 (m)	Experimental Control	30 30	330.57 331.07	9.898 8.166	-.213	.832	Not significant
FTFT-1 (cm)	Experimental Control	30 30	19.66 19.36	1.9201892 1.2925071	.710	.481	Not significant
PDI-1	Experimental Control	30 30	32.27 32.90	3.571 3.044	-.739	.463	Not significant
SF-MPQ-1	Experimental Control	30 30	24.23 23.90	2.431 2.187	.558	.579	Not significant
VAS-1	Experimental Control	30 30	6.67 6.40	1.241 1.163	.859	.394	Not significant
PSS-1	Experimental Control	30 30	24.67 24.47	3.397 4.075	.206	.837	Not significant
GSE-1	Experimental Control	30 30	22.43 23.07	2.873 3.084	-.823	.414	Not significant

Paired t-tests assessed the effectiveness of treatment provided to both group by comparing Pre-treatment and Post-treatment outcome scores (Table 5). The treatment provided had significant effects on indices of pain severity (VAS, SF-MPQ), physical function (5MWT, FTFT), or psychosocial variables (HAM-A, PDI, PSS, GSE) between pre-treatment and post-treatment of experimental group as well as control group.

Table 5. Descriptive statistics of comparison of variables between pre and post-treatment scores for experimental and control groups.

Groups	Experimental group					Control group				
Variable	**Mean**	**SD (±)**	**T-Test**	**P-Value (Two-tailed)**	**Sig.**	**Mean**	**SD (±)**	**T-Test**	**P-Value (Two-tailed)**	**Sig.**
HAM-A 1 HAM-A-2	23.87 17.07	3.674 3.183	27.603	.000	Sig.	22.37 20.13	4.375 4.125	14.969	.000	Sig.
5MWT-1 (m) 5MWT-2 (m)	330.57 355.47	9.898 8.042	-17.212	.000	Sig.	331.07 341.13	8.166 7.011	-22.264	.000	Sig.
FTFT-1 (cm) FTFT-2 (cm)	19.66 17.86	1.9201892 2.0750737	11.753	.000	Sig.	19.36 18.14	1.29 1.31	17.212	.000	Sig.
PDI-1 PDI-2	32.27 17.67	3.571 2.496	24.731	.000	Sig.	32.90 23.10	3.044 3.155	30.006	.000	Sig.
SF-MPQ-1 SF-MPQ-2	24.23 15.20	2.431 1.769	25.762	.000	Sig.	23.90 20.03	2.187 2.092	16.216	.000	Sig.
VAS-1 VAS-2	6.67 3.33	1.241 .959	19.796	.000	Sig.	6.40 4.10	1.163 1.185	27.028	.000	Sig.
PSS-1 PSS-2	24.67 13.30	3.397 1.932	25.641	.000	Sig.	24.47 20.77	4.075 3.626	13.205	.000	Sig.
GSE-1 GSE-2	22.43 28.63	2.873 2.918	-21.145	.000	Sig.	23.07 24.97	3.084 2.883	-10.846	.000	Sig.

At post-intervention data was compared between the two groups using independent t-test (Table 6). The two groups did not differ significantly in terms of physical functions in measure of finger-to-floor test (p=.535), but differed in 5-min walk test (p=.000), there were significant improvement in pain severity (SF-MPQ, p= .000), pain intensity (VAS, p=.008), and pain disability (PDI, p=.000), most pronounced differences were on post-treatment psychosocial variables including anxiety (HAM-A, p=.002), perceived stress (PDI, p=.000) and self-efficacy (GSE, p=.000)

Table 6. Descriptive statistics of post-treatment comparison of variables between experimental and control group

Variable	GROUPS	N	Mean	SD (±)	T-Test	P-Value (Two-tailed)	Significance
HAM-A-2	Experimental Control	30 30	17.07 20.13	3.183 4.125	-3.224	.002	Significant
5MWT-2 (m)	Experimental Control	30 30	355.47 341.13	8.042 7.011	7.358	.000	Significant
FTFT-2 (cm)	Experimental Control	30 30	17.8600 18.1400	2.0750737 1.3119083	-.625	.535	Not significant
PDI-2	Experimental Control	30 30	17.67 23.10	2.496 3.155	-7.397	.000	Significant
SF-MPQ-2	Experimental Control	30 30	15.20 20.03	1.769 2.092	-9.661	.000	Significant
VAS-2	Experimental Control	30 30	3.33 4.10	.959 1.185	-2.755	.008	Significant
PSS-2	Experimental Control	30 30	13.30 20.77	1.932 3.626	-9.953	.000	Significant
GSE-2	Experimental Control	30 30	28.63 24.97	2.918 2.883	4.896	.000	Significant

Discussion

The primary aim of this study was to examine the physical and psychosocial changes that occur in CLBP among school teachers when occupational therapy intervention is augmented with psychosocial intervention. Two samples of school teachers with CLBP were selected and data was compared on a number of clinical outcomes. Most marked differences between the two groups at post-treatment were among psychosocial variables, which can be explained as the psychosocial treatment was designed to target psychosocial risk factors for pain and disability. The psychosocial treatment also proved valuable by having an impact on pain intensity, severity, disability and 5-minute walk test. However, it is understandable that there wasn't significant difference between the two groups in terms of Finger-to-floor test because the two groups received comparable OT treatment. Psychosocial treatment techniques affected OT treatment with client-centered goals and graded exposure to feared movements.

Crofford et al.(2015) suggested that it is more important to identify psychological comorbidities in patients with chronic pain and develop a management plan taking these into account.[19] Turk et al. (1983) provided a cognitive behavioral perspective into disability and suggested that along with physical interventions, CBT has been recognized as a tool in the management of psychosocial factors associated with low back pain, traditionally it is delivered by psychologists. It uses several different techniques for pain management, that may include self-instruction (e.g., motivational self-talk), relaxation or biofeedback, exposure, developing coping strategies, minimizing negative or self-defeating thoughts, changing maladaptive beliefs about pain, and setting goals.[20] This study incorporates such treatment techniques focusing on relaxation, client-centered goal setting, patient education, engaging in leisure activities, challenging negative beliefs, graded exposure to feared movements, positive reinforcement and positive self-talk for targeting psychosocial risk factors.

The use of group sessions resulted in social bonding between teachers. LBP and the disability associated with it proved to be a common topic of discussion and facilitated social friendships that further existed beyond treatment sessions. Shariatetal. (2019) suggested that prior studies have shown the effectiveness of relaxation techniques on pain perception and reduction, the most frequently employed are progressive relaxation, autogenic training, guided imagery and deep breathing.[21] This study utilizes all four of the relaxation techniques mentioned. In this study Relaxation exercises were implemented for 10 minutes at the end of every session and helped participants reduce stress and feelings of anxiety. Engaging in leisure activities had positive benefits in bringing joy and motivation to the participants. 10-20 minutes of leisure activities were part of the participant's daily activity schedule and were chosen based on participant's interests and brought about nostalgia and enjoyment. Traeger et al. (2015) suggests that there is evidence that patient education can provide long-term reassurance, reduce pain-related distress, and reduce healthcare use in patients with LBP.[22] This study involved patient education about the causes of LBP and its effects on physical and mental well-being, precautions to be taken to avoid exaggeration of symptoms and to maintain proper posture and mechanics while going about their day; open discussion about negative beliefs and their effects in daily life. Negative beliefs were challenged through rationalizing negative thoughts, using medical facts and building a new perspective towards the same. Coppack et al. (2012) suggest that goal setting has been found to have a positive effect on adherence to exercise and on self-efficacy.[23] In this study goals included feared movements attained using exposure therapy. Practicing positive self-talk helped participants to feel optimistic and motivated to exercise.

Pergolizzi et al. (2020) described that biopsychosocial interventions for LBP were found to be more effective than education/advice for LBP patients. The most effective forms of biopsychosocial interventions were those that focused on psychosocial factors (understanding the nature of pain, coping skills, goal setting, and pushing aside unhelpful thoughts).[24] Using a biopsychosocial approach, OTists can incorporate psychosocial and occupation-focused assessments and interventions to improve overall well-being and rehabilitation outcomes. Incorporating psychosocial treatment

along with occupational therapy is a cost-effective approach, programs that include routine evaluation of psychosocial variables can facilitate timely identification of risk factors for chronicity and their reduction to prevent long term disability.

Conclusion

The present findings conclude that providing psychosocial treatment along with occupational therapy can augment the impact of occupational therapy for CLBP among school teachers. It also concludes that treatment techniques focusing on relaxation, client-centered goal setting, patient education, engaging in leisure activities, challenging negative beliefs, graded exposure to feared movements, positive reinforcement and positive self-talk are effective in targeting psychosocial risk factors and have additional benefits towards pain management.The length of treatment program was 4 weeks long and should be considered while interpreting the findings of this study. Nevertheless, the results are clinically significant. It is further recommended that treatment program incorporated in this study could be designed for a longer duration with a long-term follow up post intervention, and could be implemented for different musculoskeletal conditions among a range of population.

Conflicts of Interest: None

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Ethical Clearance: Jamia Hamdard Institutional Ethics Committee, New Delhi-110062, Reference number- 02/24 (16/02/2024)

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