ejpmr, 2022,9(12), 31-34

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

EFFECTIVENESS OF WORKPLACE INTERVENTION STRATEGIES IN LOWER BACK PAIN PREVENTION

Dr. Nirmal Kumar Barman*[1], Dr. Md. Abdullah-Hel-Baki[2], Dr. Milon Kumar Roy[3], Dr. Rizowana Akter[4], Dr. Md. Monwar Hossain[5] and Dr. Jaitun Neher[6]

[1]Asstt. Professor. Dept. of Anaesthesiology, M. A. Rahim Medical College, Dinajpur, Bangladesh.
[2]Junior Consultant, 250 Bedded General Hospital, Dinajpur, Bangladesh.
[3]Senior Consultant, M. A. Rahim Medical College Hospital, Dinajpur, Bangladesh.
[4]Anesthesiologist, 250 Beded General Hospital, Sadar, Dinajpur, Bangladesh.
[5]Asstt. Professor, Dept. of Anaesthesiology. M A Rahim Medical College, Dinajpur, Bangladesh.
[6]Junior Consultant, Upazilla Health Complex, Sadar, Dinajpur, Bangladesh.

***Corresponding Author: Dr. Nirmal Kumar Barman**

Asstt. Professor. Dept. of Anaesthesiology, M. A. Rahim Medical College, Dinajpur, Bangladesh.

Article Received on 03/10/2022 **Article Revised on 24/10/2022** **Article Accepted on 14/11/2022**

ABSTRACT

Background: Involuntary absence from work due to low back pain (LBP) is the leading cause of disability among employees under the age of 45. Multiple factors are believed to contribute to the development of LBP. Those who spend their days at an office and may be at risk for low back pain (LBP) have not been the focus of much prognostic study. **Objective:** In this study our goal is to evaluate the Effectiveness of workplace intervention strategies in lower back pain prevention. **Method:** A quasi-experimental study involving patients with non-specific chronic low back pain (NSLBP) was performed at tertiary hospital from January 2021 to January 2022. The participants gave their written informed consent once the trial procedure was explained to them. They were 100 patients diagnosed of mild to moderate non-specific low back pain(of at least 12 weeks duration) by the orthopaedic surgeon and/or anesthesiologist. **Results:** During the study, majority were belonging to 47-57 years age group, 60%. 66% had history of smoking and 50% were overweight followed by mean PI, DI, KIN, BME were 6.74 ± 1.37, 46.60 ± 16.67, 40.55 ± 5.61, 11.05 ± 8.39. During the study, the majority 50% of study participants reported low back pain has prevented them from doing their jobs one to 7 days in the past 12 months. In addition to that, while measuring quality of life and stress level among patients it was found that, nearly all office workers reported fair to good quality of life but about half of them experienced high to extremely high stress. However, after lumber stabilization exercise there were significant reductions in pain intensity scores (experimental: 6.74 ± 1.37; 3.48±1.09) and disability index scores (experimental: 46.60± 16.67; 26.55±14.78) and increase in back muscle endurance (experimental: 11.05± 8.39; 14.30±19.24s) between baseline and week 8. **Conclusion:** More effective relief from low back pain was attained when standard Physiotherapy was supplemented with lumbar stabilization exercises. The external validity of future research will improve if sample sizes are increased.

KEYWORDS: Pain management, lower back pain, lumbar stabilization exercises.

INTRODUCTION

When it comes to current health issues, lower back pain (LBP) is among the most inconvenient. The incidence of LPB varies with demographic characteristics such as age, education, and employment. Two-thirds of individuals have low back pain (LBP) at some point in their life, while anywhere from 12-44% of the population has LBP at any one moment. The frequency of LBP among office employees is between 23% and 38% after one year. When it comes to workers' compensation and medical costs, LBP is by far the most prevalent and costly cause of work-related disability among those under the age of 45.

It is important to note that LBP may be exacerbated by a number of different variables, including socio-demographic, psychological, and physical factors.[2,3,4,5] Absenteeism and disability have a negative effect on medical expenses and job productivity[6,7], which are linked to high costs for both patients and society as a whole.[8]

Improvements in productivity, job satisfaction, and workplace safety may occur from effective treatment and avoidance of LBP.[2] Both pharmacological or non-pharmacological methods are used in the management of low back pain.[9] Managing and avoiding LBP may be done in part via the use of preventative measures in the workplace. If the worker's physical demands are greater

than their functional capabilities, the risk of LBP increases. Both the organization of the office and the individual employee may be targeted in interventions meant to improve productivity in the workplace.

Repetitive physical duties, poor posture, and stress from close, personal quarters and prolonged standing are just a few of the many work-related factors that may lead to sickness.

Repetitive physical duties, poor posture, and stress due to local contact and standing position in the body all develop as a result of job demands.[10,11,12] Physical training[13] or education, enhancing a worker's knowledge and abilities, are other ways to improve the equilibrium between physical labor demands and functional capability.

In this study our goal is to evaluate the Effectiveness of workplace intervention strategies in lower back pain prevention.

OBJECTIVE

To asses the Effectiveness of workplace intervention strategies in lower back pain prevention.

METHODOLOGY

A quasi-experimental study involving patients with non-specific chronic low back pain (NSLBP) was performed at tertiary hospital from January 2021 to January 2022. The participants gave their written informed consent once the trial procedure was explained to them. They were 100 patients diagnosed of mild to moderate non-specific low back pain(of at least 12 weeks duration) by the orthopaedic surgeon and/or anesthesiologist.

RESULTS

In table-1 shows age distribution of the study group where majority were belonging to 47-57 years age group, 60%. The following table is given below in detail:

Table 1: Age distribution of the patients.

Age group	%
26-36 years	10%
37-47 years	5%
47-57 years	60%
>57 years	15%

In figure-1 shows gender distribution where 65% were male and 35% were female. The following figure is given below in detail:

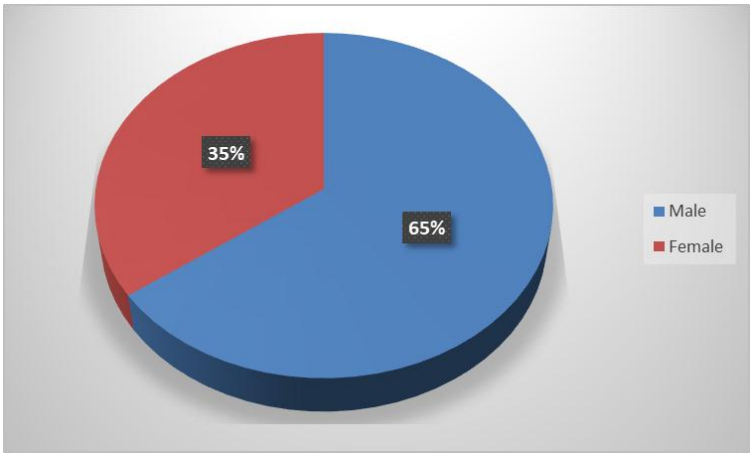

Figure 1: Gender Distribution.

In figure-2 shows distribution of the patients according to occupation where 30% were service holder and 30% were businessman. The following figure is given below in detail:

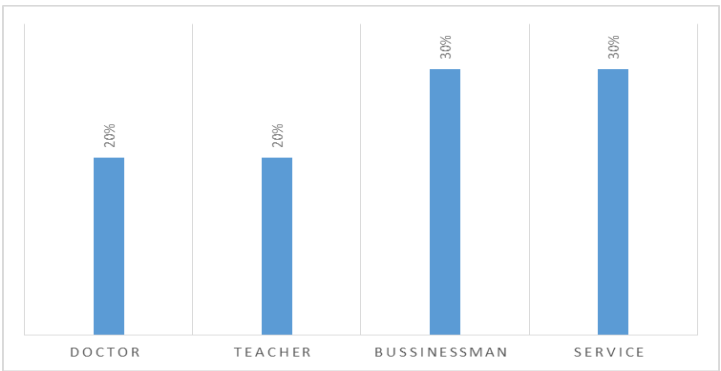

Figure 2: Distribution of the patients according to occupation.

In table-2 shows baseline status of the patients where 66% had history of smoking and 50% were overweight followed by mean PI, DI, KIN, BME were 6.74 ± 1.37, 46.60 ± 16.67, 40.55 ± 5.61, 11.05 ± 8.39. The following table is given below in detail:

Table 2: Baseline status of the patients.

BMI	%
Underweight	30%
overweight	50%
Obese	20%
Smoking	66%
PI	6.74 ± 1.37
DI	46.60 ± 16.67
KIN	40.55 ± 5.61
BME	11.05 ± 8.39

PI – pain intensity scores, DI – disability index scores, KIN- kinesiophobia scores, BME – back muscle endurance

In table-3 shows distribution of patients according to length of days of lower back pain where the majority 50% of study participants reported low back pain has prevented them from doing their jobs one to 7 days in the past 12 months. The following table is given below in detail:

Table 3: Distribution of patients according to length of days of lower back pain.

Length of days of lower back pain	%
1-7 days	50%
8-30 days	30%
>30 days	20%

In table-4 shows impact of lower back pain where nearly all office workers reported fair to good quality of life but about half of them experienced high to extremely high stress. The following table is given below in detail:

Table-4: Impact of lower back pain.

Quality of life measured by the WHOQOL-BREF-Thai	%
Poor	10%
Fair	50%
Good	40%
Stress level measured by the Suanprung stress test (	**%**
Low	15%
Medium	35%
High	34%
Extreme high	16%

In table-5 shows One-way ANCOVA comparison of the changes in the groups' parameters where there were significant reductions in pain intensity scores (experimental: 6.74 ± 1.37; 3.48±1.09) and disability index scores (experimental: 46.60± 16.67; 26.55±14.78) and increase in back muscle endurance (experimental: 11.05± 8.39; 14.30±19.24s) between baseline and week 8.

Table 5: One-way ANCOVA comparison of the changes in the groups' parameters.

Variable	Baseline Mean±SD (95% CI)	Week 8 Mean±SD (95% CI)	Value
PI	6.74 ± 1.37	3.48±1.09	0.002
DI	46.60 ± 16.67	26.55±14.78	0.001
KIN	40.55 ± 5.61	40.78±4.86	0.234
BME	11.05 ± 8.39	14.30±19.24	0.011

DISCUSSION

Most employees will suffer from low back discomfort at some point in their working lives. 1,2 Directly, low back pain affects employees and their families, but indirectly, it affects businesses and governments as well.

According to one study it was found that the prevalence of low back pain was 25.7% for all workers, 24.5% for males, 27.1% for females, 23.8% for younger workers and 27.7% for older workers. The results shows sex and age-group specific prevalence rates for low back pain with 22.5% for males in the younger age group and 28.8% for females in the older age group.[1]

Which was quite similar to our study where majority were belonging to 47-57 years age group, 60%. However, in our study majority were male.

Due to lower back pain, it raise the stress level of workers. Movement avoidance (fear-avoidance beliefs) brought on by LBP-induced movement anxiety may lead to deconditioning, which in turn may exacerbate existing difficulties with ADL, WA, and sexual function.

The results suggest that lumbar stabilization exercise plus conventional therapy and conventional therapy in isolation are similar in their effects on pain, kinesiophobia and back muscle endurance. The

combined treatment however appears more beneficial in terms of reduced disability.

There was a significant improvement in pain intensity, disability and back muscle endurance but not in kinesiophobia after 8 weeks of treatment in both groups. Reduction in pain intensity and disability was not surprising, since all participants received infrared radiation and Transcutaneous electrical nerve stimulation (TENS) which have been reported as being efficacious in relieving chronic low back pain and associated disability.[10-11]

Reduction in pain and consequent improvements in function following lumbar stabilisation exercise have been attributed to improved activation patterns of trunk muscles and relieved lumbar pain and incapacity through trunk muscle contraction.[12-13]

Weakness and lack of motor control of deep trunk muscles, such as the lumbar multifidus (LM) and transversus abdominis (TrA) muscles are consistent with LBP.[5,4] Individuals with chronic LBP are predisposed to delayed recruitment and insufficient control of the TrA.[4-5] It was opined that the emergence of biomechanical, neurophysiological, and histochemical dysfunctions in the LM of patients with LBP, such as atrophy occurs in the ipsilateral painful level.[7] Reduction in the size of the MF was also suggested deteriorating lumbar stability and cause painful structures or new injuries, thereby inducing pain and functional disabilities.8 Deficits of MF causing low back pain and disability as well the resultant instability in local regions as would not be reversed naturally and that is a crucial factor for increased recurrence rate of LBP.[5]

Spinal instability induces pain, reduces endurance and flexibility, and restricts the range of motion of the lumbar joints and all contributes to disability.9 Stabilisation exercises are hence indicated for the prevention of the recurrence of pain induced by damage to the musculoskeletal system and consequent improvement of functional activities.[5]

CONCLUSION

More effective relief from low back pain was attained when standard Physiotherapy was supplemented with lumbar stabilization exercises. The external validity of future research will improve if sample sizes are increased.

REFERENCE

1. Janwantanakul, P., Pensri, P., Moolkay, P. and Jiamjarasrangsi, W., Development of a risk score for low back pain in office workers-a cross-sectional study. *BMC musculoskeletal disorders*, 2011; *12*(1): 1-8.
2. Ehrlich, G.E., Bulletin of World Health Organisation [WHO]. *Low Back Pain Policy and Practice*, 2003; *81*(9).
3. Omokhodion, F.O., Low back pain in a rural community in South West Nigeria. *West African journal of medicine*, 2002; *21*(2): 87-90.
4. Manek, N.J. and MacGregor, A.J., Epidemiology of back disorders: prevalence, risk factors, and prognosis. *Current opinion in rheumatology*, 2005; *17*(2): 134-140.
5. Hides, J.A., Richardson, C.A. and Jull, G.A., Multifidus muscle recovery is not automatic after resolution of acute, first-episode low back pain. *Spine*, 1996; *21*(23): 2763-2769.
6. Abass, A.O., Alli, A.R., Olagbegi, O.M., Christie, C.J. and Bolarinde, S.O., Effects of an eight-week lumbar stabilization exercise programme on selected variables of patients with chronic low back pain. *Bangladesh Journal of Medical Science*, 2020; 19(3): 467-474.
7. ADESOLA, C.O., ADERONKE, A.A., BABATUNDE, A.A. and OLATUNJI, B.O., Economic burden of low back pain on patients seen at the outpatient Physiotherapy clinics of secondary and tertiary health institutions in Ibadan. *Journal of the Nigeria Society of Physiotherapy*, 2011; 18(1): 43-48.
8. Omokhodion, F.O. and Sanya, A.O., Risk factors for low back pain among office workers in Ibadan, Southwest Nigeria. *Occupational Medicine*, 2003; *53*(4): 287-289.
9. Battié, M.C. and May, L., 2001. Physical and occupational therapy assessment approaches.
10. Fritz, J.M., George, S.Z. and Delitto, A., The role of fear-avoidance beliefs in acute low back pain: relationships with current and future disability and work status. *Pain*, 2001; *94*(1): 7-15.
11. Vlaeyen, J.W., Kole-Snijders, A.M., Rotteveel, A.M., Ruesink, R. and Heuts, P.H., The role of fear of movement/(re) injury in pain disability. *Journal of occupational rehabilitation*, 1995; *5*(4): 235-252.
12. Kori, S.H., Kinesiophobia: a new view of chronic pain behavior. *Pain Manage*, 1990; *3*: 35-43.
13. Król, A., Polak, M., Szczygieł, E., Wójcik, P. and Gleb, K., Relationship between mechanical factors and pelvic tilt in adults with and without low back pain. *Journal of back and musculoskeletal rehabilitation*, 2017; *30*(4): 699-705.