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Effectiveness of the Back School Program in Employees Suffering from Low Back Pain

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Authors

Seyedeh-Somayeh Kazemi,[1] *PhD*
Reza Maghbouli,[2*] *MD*
Mohammad Rafighi,[3] *MS*

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[1]Health Network, Mazandaran University of Medical Sciences, Chaloos, Iran.
[2]Faculty of Medicine, Zanjan University of Medical Sciences, Zanjan, Iran.
[3]Department of Education and Human Resources Development, Mazandaran University of Medical Sciences, Sari, Iran.

** Correspondence*
Address: Medicine Faculty, Zanjan University of Medical Sciences, Zanjan, Iran.
Tel: +98 24 331400
Fax: +98 24 33449553
P.O.Box: 4513956111
Email: Rezamaghbouli74@gmail.com

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ABSTRACT

Aims: To determine the effects of the in-person interventions in employees suffering from Low Back Pain (LBP).
Method and Instruments: A quasi-experimental methodological design was utilized for this study. Participants were employees with LBP who participated in the Back School program workshop. The demographic questionaire, Visual Analog Scales (VAS), and behavior questionnaires were filled at baseline and 2 -onths follow up. The data were entered into SPSS and analyzed through the paired T-Test.
Findings: Thirty-one participants (27 males, 4 females) completed this survey. The study participants' mean age was 40 ± 9.04 years. The intervention led to a decrease in the LBP scores of the employees (P< 0.0001) and improving behavior related to LBP.
Conclusion: This program can be suitable for the reduction of pain and improving behavior related to low back health among employees in the workplace.

Keywords: Back School Program, Low Back Pain, Behavior, Employees.

Introduction

Musculoskeletal disorders represent a considerable human and economic burden and lower back and neck pain were the leading global cause of disability in most countries in 2015 [1]. Low Back Pain (LBP) is a leading contributor to disease burden and disability worldwide, affecting people of all ages [2,3]. Despite considerable under reporting of Work-related Musculoskeletal Disorders (WMSD) to workers' compensation[4], WMSD account for 33–43% of these compensation cases [5, 6].

LBP is a common health problem in the workplace and most workers are expected to experience symptoms of low back pain during their working life [7, 8]. LBP has a profound impact both directly and indirectly on individual workers and their families, industries, and governments [9-11].

Substantial research conducted on this issue in the past three decades has identified a number of demographic, behavioral, health and work-related factors associated with low back pain [8, 12]. The two major categories of work-related risk factors for LBP are physical and psychosocial [13-15].

The comprehensive multidisciplinary programs Swedish Back School was introduced by Zachrisson Forsell in 1969 that aims to reduce the back pain and injury, teach people to care for their own backs and back pain in an active way to improve the functionality and quality of life. This program consisted of information on the structure and function of the spine, biomechanics, optimal posture, ergonomics, and performing special back exercises [16, 17].

This study was conducted with the aim of the effectiveness of the Back School program to decrease LBP and improving

**Corresponding Author:* Medicine Faculty, Zanjan University of Medical Sciences, Zanjan, Iran Tel: +9824331400; Fax: +98 24 33449553; P.O.Box: 4513956111; Email: Rezamaghbouli74@gmail.com

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behavior-related low back health among employees in the workplace.

Instruments and Methods

This semi-experimental study was conducted in 2017 regarding the effect of educational intervention on the reduction of LBP and improving behavior-related low back health. The participants were employees working in Shariati hospital affiliated to Tehran University of Medical Sciences (TUMS).

Inclusion and exclusion criteria

Inclusion criteria included being aged 23 to 66 years old, having a work history of at least one year, having work-related LBP lasting more than three months and approved by a physician, being satisfied to participate in the study. Exclusion criteria included simultaneous participation in treatment, exercise, other physiotherapy programs, having pathological LBP, and having illnesses that prevent the person from attending the study.

In this study demographic information was collected via a questionnaire. The pain was assessed using the Visual Analog Scale (VAS). VAS is a well-known measure of pain intensity [20]. VAS is a well-known measure of pain intensity [20]. Moreover, a 100 mm straight line was used to assess pain intensity utilizing the usual anchors. To assess behavior-related low back health, we used the self-design questionnaire. The questionnaires were completed by emploees at 2-time points; baseline and 3-months after intervention.

Educational intervention

After sampling, employees were included in the Back School workshop. Back School program helps employees on how to protect the spinal structures in daily activities and work [18, 19]. The program was administered by the researcher and a physiotherapist and the duration of the workshop was 2 hours. This workshop consisted of information on work-related LBP, low back health promotion behaviors, optimal posture, ergonomics, and performing special back exercises in accordance with the Back School program. As well as, the workshop had included social relationships, social skills, and stress management. The 15 minutes of the workshop's end was dedicated to questions and answers and in the end, low back pain CD that included a summary of workshop discussions was given to the participants.

Descriptive statistics were used to report employees' demographic. Statistical analyses were performed at a confidence level of 0.05 using IBM SPSS Statistics ver. 23.0. The mean and standard deviation were used to describe the quantitative variables, whereas the frequency and percentages were used to describe the qualitative variables (Chi-Square Test). The normality of the data distribution was examined using the Shapiro–Wilk test. To compare the mean difference in LBP the paired T-Test was used in pre and post-intervention.

Findings

A total of 31 employees participated in the study with a mean age of 40 ± 9.04 years. Table 1 shows the participants' demographic information. Over 2-months follow up, improved behavior-related low back health (Table 2). Comparison of the score of LBP across the two time periods of baseline, and 2-months after the intervention are shown in Table 3. The LBP score significantly decreased over 2-months follow up in the target group ($p < .0001$).

Discussion

Low back pain is a multifactorial and debilitating disorder with high prevalence, exerting a huge socioeconomic burden on

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Table 1. Demographic characteristics of the studied participants

Demographic Variables	**n= 31** N (%)	**n=31** Mean ± SD
Age (year)		40 ± 9.04
Height (cm)		165.90 ± 8.27
Weight (kg)		69 ± 11.09
Work hours /month		178.87 ± 100.08
Gender		
Male	27 (87.1)	
Female	4 (12.9)	
Smocking		
Yes	0	
No	31 (100)	
Income		
Good	7 (22.6)	
Moderate	21 (67.7)	
Bad	3 (9.7)	

Table 2. Comparing behavior-related low back health across the two time periods

	Baseline N(%)	**2-months follow-up** N(%)	**P***
Back Exercise			
Alwayse	0	2 (6.5)	
Sometimes	18 (58.1)	25 (80.6)	< .0001
Never	13 (41.9)	4 (12.9)	
Sitting Position			
Alwayse	2 (6.5)	5 (16.1)	
Sometimes	25 (80.6)	24 (77.4)	< .0001
Never	4 (12.9)	2 (6.5)	
Standing Position			
Alwayse	1 (3.2)	8 (25.8)	
Sometimes	26 (83.9)	21 (67.7)	< .0001
Never	4 (12.9)	2 (6.5)	
Walking Position			
Alwayse	2 (6.5)	7 (22.6)	
Sometimes	26 (83.9)	24 (77.4)	.002
Never	3 (9.7)	0	

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Continuation of Table 2

	Baseline N(%)	2-months follow-up N(%)	P*
Sleeping Position			
Alwayse	3 (9.7)	6 (19.4)	
Sometimes	21 (67.7)	24 (77.4)	< .0001
Never	7 (22.6)	1 (3.2)	
Handeling Position			
Alwayse	3 (9.7)	8 (25.8)	
Sometimes	22 (71.0)	20 (64.5)	<.001
Never	6 (19.4)	3 (9.7)	
Stress Control			
Alwayse	3 (9.7)	7 (22.6)	
Sometimes	25 (80.6)	20 (64.5)	<.001
Never	3 (9.7)	4 (12.9)	
Stress Technique			
Alwayse	1 (3.2)	3 (9.7)	
Sometimes	23 (74.2)	26 (83.9)	< .0001
Never	7 (22.6)	2 (6.5)	
Good Social Relationsheep			
Alwayse	13 (41.9)	14 (45.2)	
Sometimes	18 (58.1)	17 (54.8)	.59
Never	0	0	
Social Participation			
Alwayse	13 (41.9)	15 (48.4)	
Sometimes	18 (58.1)	16 (51.6)	.85
Never	0	0	
Social Skill			
Alwayse	17 (54.8)	20 (64.5)	
Sometimes	13 (41.9)	11 (35.5)	.10
Never	1 (3.2)	0	

*Chi-Square Test

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Table 3. Comparison of the score of low back pain across the two time periods

	Baseline Mean ± SD	**2-months follow-up** Mean ± SD	**P***	**CI**
Low Back Pain	60.03 ± 21.4	8.62 ± 1.79	<.0001	(43.49- 59.32)

* paired sample T-test

individuals and health care systems. In the present study, the educational intervention aimed at the reduction of LBP that can be conducted at the workplace was assessed. The findings of this study showed that LBP significantly reduced in employees who participated in the Back School program. According to evidence report, the educational intervention and preventive program such as Back School program can be significantly effective in pain relief [21, 22], improving function and the recovery of activities of daily living in people with chronic musculoskeletal pain [16]. The result of systematic reviews showed occupational interventions can prevent and decrease LBP in the workplace [21, 23].

In the present study, the educational intervention was successful in the decrease of LBP over 2-months follow up. This finding supported by Shebib' study. Shebib et. al. demonstrated the digital care program improved LBP after 12-week [24].

This study emphasizes that interventions targeting employees' behavior addressing chronic health issues such LBP that change the conditions of work have a greater effect than single-component interventions. Integrated approaches to improve employees health address multiple conditions of work, including work organization, physical environment, psychosocial factors, and job tasks and demand factors [25]. These integrated and comprehensive approaches have better success and larger effects than single narrowly focused programs [26]. For LBP, a systematic review says the effectiveness of narrowly focused programs, such as cognitive behavior therapy interventions or exercise therapy activity programs, is at best modest, while their comprehensive intervention had larger and robust effects [27].

The educational program was successful in improving behavior related to low back health over 2-months. Maghbouli et al. investigated the educational intervention could be resulted in healthy behaviors of the nursing students to prevent low back pain [28].

Our study has some limitations. In this study, we assessed the behavior related to low back health using the self-administered questionnaires that may be not exact. Thus, the use of objective measurements is recommended in future studies. This research was just a before-after design study, so it is recommended to design more studies in the future with the control group. Also, the follow up was 2-months, and this time is not adequate for behavior maintenance. It is recommended future studies conduct with a long time follow up.

Conclusion

This study demonstrated the back school program as an educational strategy can be suitable for the reduction of pain and improving behavior related to low back health among employees in the workplace.

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Ethical permission

The Ethics Committee ethics committee approval was obtained from in Rheumatology Research Center of TUMS. All participants completed a written consent form.

Conflicts of Interests

No conflict of interest has been declared by the authors.

Author's contribution

SSK was the main investigator, collected and analyzed the data, and wrote the first draft. RM contributed to the writing process. MR contributed to provide the final draft. All authors read and approved the final manuscript.

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References

1. Vos T, Allen C, Arora M, Barber RM, Bhutta ZA, Brown A, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990–2015: a systematic analysis for the Global Burden of Disease Study 2015. The lancet. 2016;388(10053):1545-602.
2. Hay SI, Abajobir AA, Abate KH, Abbafati C, Abbas KM, Abd-Allah F, et al. Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet. 2017;390(10100):1260-344.
3. Maher C, Underwood M, Buchbinder R. Non-specific low back pain. The Lancet. 2017;389(10070):736-47.
4. Stock S, Nicolakakis N, Raïq H, Messing K, Lippel K, Turcot A. Underreporting work absences for nontraumatic work-related musculoskeletal disorders to workers' compensation: results of a 2007–2008 survey of the Quebec working population. AJPH. 2014;104(3):e94-e101.
5. Stock SR, Nicolakakis N, Vezina M, Vezina N, Gilbert L, Turcot A, et al. Are work organization interventions effective in preventing or reducing work-related musculoskeletal disorders? A systematic review of the literature. Scand J Work Environ Health. 2018. 1;44(2):113-133. doi: 10.5271/sjweh.3696.
6. Safety W, Board I. By the numbers: 2012 WSIB statistical report, Schedule 1. Workplace Safety and Insurance Board (WSIB), Toronto. 2013.
7. Bernard BP, Putz-Anderson V. Musculoskeletal disorders and workplace factors; a critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back. 1997.
8. Hoy D, Brooks P, Blyth F, Buchbinder R. The epidemiology of low back pain. Best Pract Res Clin Rheumatol. 2010;24(6):769-81.
9. Haldeman S, Kopansky-Giles D, Hurwitz EL, Hoy D, Erwin WM, Dagenais S, et al. Advancements in the management of spine disorders. Best Pract Res Clin Rheumatol 2012;26(2):263-80.
10. Dagenais S, Caro J, Haldeman S. A systematic review of low back pain cost of illness studies in the United States and internationally. Spine J. 2008;8(1):8-20.
11. Yang H, Haldeman S, Lu M-L, Baker D. Low back pain prevalence and related workplace psychosocial risk factors: a study using data from the 2010 National Health Interview Survey. J Manipulative Physiol Ther. 2016;39(7):459-72.
12. Vassilaki M, EL. H. Insights in public health: perspectives on pain in the low back and neck: global burden, epidemiology, and management. Hawaii Med J. 2014;73(4):122–6.
13. Waters TR, Dick RB, Krieg EF. Trends in work-related musculoskeletal disorders: a comparison of risk factors for symptoms using quality of work life data from the 2002 and 2006 general social survey. J Occup Environ Med. 2011;53(9):1013-24.
14. Sterud T, Tynes T. Work-related psychosocial and mechanical risk factors for low back pain: a 3-year follow-up study of the general working population in Norway. J Occup Environ Med
15. Kazemi S-S, Tavafian S-S, Hidarnia A, Montazeri A. Consequences and factors affecting work-related low back pain among nursing professionals: A qualitative study. Payesh (Health Monitor). 2019;18(3):291-303.
16. Bartz PT, Vieira A, Noll M, Candotti CT. Effectiveness of the back school program for the performance of activities of daily living in users of a basic health unit in Porto Alegre, Brazil. J Phys Ther Sci. 2016;28(9):2581-6.
17. Straube S, Harden M, Schröder H, Arendacka B, Fan X, Moore RA, et al. Back schools for the treatment of chronic low back pain: possibility of benefit but no convincing evidence after 47 years of research—systematic review and meta-analysis. Pain. 2016;157(10):2160.
18. Parreira P, Heymans MW, van Tulder MW, Esmail R, Koes BW, Poquet N, et al. Back Schools for chronic non-specific low back pain. Cochrane

Database Syst Rev. 2017(8).
19. Brown KC, Sirles AT, Hilyer JC, Thomas MJ. Cost-effectiveness of a back school intervention for municipal employees. Spine. 1992;17(10):1224-8.
20. McCormack HM, David JdL, Sheather S. Clinical applications of visual analogue scales: a critical review. Psychol Med. 1988;18(4):1007-19.
21. Van Hoof W, O'Sullivan K, O'Keeffe M, Verschueren S, O'Sullivan P, Dankaerts W. The efficacy of interventions for low back pain in nurses: a systematic review. Int J Nurs Stud. 2018;77:222-31.
22. Jaromi M, Nemeth A, Kranicz J, Laczko T, Betlehem J. Treatment and ergonomics training of work-related lower back pain and body posture problems for nurses. J Clin Nurs. 2012;21(11-12):1776-84.
23. Sowah D, Boyko R, Antle D, Miller L, Zakhary M, Straube S. Occupational interventions for the prevention of back pain: Overview of systematic reviews. J Safety Res. 2018;66:39-59.
24. Shebib R, Bailey JF, Smittenaar P, Perez DA, Mecklenburg G, Hunter S. Randomized controlled trial of a 12-week digital care program in improving low back pain. NPJ Digit Med. 2019;2(1):1-8.
25. Sorensen G, McLellan DL, Sabbath EL, Dennerlein JT, Nagler EM, Hurtado DA, et al. Integrating worksite health protection and health promotion: A conceptual model for intervention and research. Am J Prev Med. 2016;91:188-96.
26. Anger WK, Elliot DL, Bodner T, Olson R, Rohlman DS, Truxillo DM, et al. Effectiveness of total worker health interventions. J Occup Health Psychol. 2015;20(2):226.
27. Richmond H, Hall AM, Copsey B, Hansen Z, Williamson E, Hoxey-Thomas N, et al. The effectiveness of cognitive behavioural treatment for non-specific low back pain: a systematic review and meta-analysis. PloS one. 2015;10(8):e0134192.
28. Maghbouli R, Kazemi S-S, Jamshidi AR. The effect of an educational Intervention on low back pain preventive behavior among nursing students: A pre-posted designed study. IJMPP. 2018;3(4):102-6.

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