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Educational Intervention for Promoting Low Back Pain Preventive Behaviors

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ABSTRACT

Aim: Musculoskeletal pain is one of the most prevalent causes of disability worldwide.The aim of this study was to assess the effects of a designed interventional program on promoting the knowledge, attitude and practice among clinical workers who working in hospitals of Lorestan, Iran.

Method and Materials: In total 80 clinical workers of two hospitals of Lorestan province in were assessed in groups of intervention (N= 40) and control (N=40). These participants completed the demographic and researcher - made questionnaires as well as Visual Analog Scale (VAS) at the beginning of the study. Just the Intervention group were trained with educational program. The data based on researcher - made questionnaire and VAS were collected at 3- month follow up and analyzed using SPSS version 19.

Findings: Totally, 40 clinical workers in each group of intervention and control with mean age of (33.18±6.025) and (31.40± 6.732) were assessed respectively. Both groups were the same in terms of all studied variables at initial of the study ($p > 0.05$). However, there was a significant difference between the groups at 3- month follow up in terms of knowledge, attitude and practice ($p<0.0001$). Furthermore, the mean score low back pain behavior in intervention group (18.35±.5.30) was significantly improved in comparison with the control group (16.05±4.52) ($p<0.001$).

Conclusion: This study showed the educational program was benefit to improve the knowledge, attitude and behavior of regarding preventing low back pain among clinical workers among Lorestan hospitals in Iran.

Keywords: Educational intervention, Low Back Pain- Clinical Worker, Preventive Behavior, Iran.

Introduction

The majority of world population are involved with bio-psychosocial factors of their workplace [(1)]. Due to the fact that incorrect physical postures of clinical workers during working are directly related to different pain such as Low Back Pain (LBP) [(2)]. Low back pain is one of the most important health problems that is common in all countries, especially developing countries. It has been argued that about 80-60% of people were suffered from this problem during their lifetime, and 10% of this problem has been led to disability [(2)].

Performing heavy activities and unbearable pressure on the limbs, as well as inactivity, will cause disorders and damage to the spine which ultimately be resulted in inability of individuals to perform daily activities [(3)]. According to studies, the prevalence of LBP among nurses in Taiwan has been estimated as 76%, in Italy 49%, in Africa 80% and in Iran 64.8% [(4-6)].

It has been argued that the effective causes of LBP are carrying heavy objects, incorrect physical posture and psychological factors such as job stress and individual factors such as gender and body mass index [(6)]. High rates of LBP in clinical workers and nurses lead to job loss, lack of manpower, and an increase in treatment-related sick leave in centers[(7-9)].

One of the ways to prevent the

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occurrence of chronic LBP is to teach the correct principles of body mechanics, observe the principles of ergonomics and maintain correct body postures. Increasing the prevalence of work-related musculoskeletal disorders is very closely related to non-compliance with ergonomic issues, so that repetitive work and improper body shape are the most important ergonomic factors affecting the prevalence and incidence of these disorders [10].

From the above reasons, it can be concluded that by keeping the correct principles in performing activities and avoiding unhealthy activities, irreversible or severely compensable complications of LBP can be prevented to a large extent[11]. Therefore, physical activity program in workplaces may help employers decreasing pain , disability and absenteeism subsequently [12]. Musculoskeletal pain has been reported as a most frequently managed health problem in primary care system. This study assessed the effects of a designed interventional program to promote the knowledge, attitude and behavior among clinical workers to prevent LBP in Lorestan Iran.

Method and Materials

This study was performed on 80 clinical workers who were working in two hospitals in Lorestan, Iran. The sample size was calculated through following formula (Fig1) based on previous evidence conducted in Iran[13].

$$n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2 (\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2}$$

Figure 1) Sample size formula

The sample size for each group of clinical worker with 95% confidence and 80% test power was considered, so taking into account the loss rate of 10%, a total of 40 participants was calculated for each group.

Firstly, two hospitals were selected from the hospitals of Lorestan and then these hospitals were divided into intervention and control hospital randomly. After listing the names of all clinical workers in each hospital, the qualified subjects were randomly selected to participate in the study up to reach the required sample size. In this regard, 80 working clinical workers (40 participants in each hospital) were selected by random sampling after obtaining consent. The conditions of the hospitals did not differ much in terms of staffs, facilities and office equipments. Inclusion criteria were as: being clinical worker in the medical wards of the selected hospitals, being able to attend classes, and having satisfaction with participating in the study. Excluding criteria were as suffering from any illness or problem that prevents the subjects from performing the right behaviors, leaving the hospital due to any reason, dismissal from service, job leaving due to pregnancy and maternity care, and suffering from congenital anomalies in the spine. Demographic characteristics questionnaire, research-made questionnaire as well as Visual Analog Scale (VAS) were used to collect data at initial of the study. The demographic questionnaire included questions regarding some variables that are shown in Table1. The second questionnaire consisted of sub scales of knowledge, attitude and behavior (KAB). This scale included 38 items with 3-option Likert system from never to always which scored 1 to 3 and the high scores indicated better situation . Attitude scale that included 9 items with 5-option Likert system from completely disagree to completely agree scored 1 to 5 and the high scores indicated better situation. The third tool was VAS that was used for measuring musculoskeletal pain. VAS is a one-dimensional scale to measure pain

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Table 1) Demographic characteristics of the studied clinical workers of both groups at initial of the study

Variables	Intervention (N=40) N (%)	Control (N=40) N (%)	P-value [a]
Gender			
Male	7 (17.5)	11 (27.5)	0.42
Female	33 (82.5)	29 (72.5)	
Age (Yrs)			
<= 30	13 (32.5)	18 (45)	0.21
> 30	37(67.5)	22 (55)	
Educational status			
Up Diploma	1 (2.5)	0 (0.00)	0.73
> Diploma	39 (97.5)	40 (100)	
Income (per month)			
Up to $300	29 (72.5)	36 (90)	0.91
More than $ 300	11 (27.5)	4 (10)	
Marriage status			
Single	27(67.5)	23 (57.5)	0.24
Married	13(32.5)	17 (42.5)	
Employment Status			
Formal	31(77.5)	59(73.8)	0.61
Informal	9(22.5)	21(26.3)	
work experience (Yrs)			
< 15	28 (70)	36 (90)	0.24
> 15	12 (30)	4 (10)	
Working shift			
Morning	8 (20)	5 (12.5)	0.38
Night	29 (72.5)	34 (85)	
Long day	3 (7.5)	1 (2.5)	

[a] chi square tests.

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severity. Using VAS, the clinical worker was asked to select a number which showed their pain severity. In this scale, number 10 means severe pain and number 0 means no pain. The validity and reliability of VAS are reported in previous evidences [14, 15].

In this study, interventional program was designed based on literature review and need assessment of the participants. In this study the participants in intervention group took part in one 90-minute session including 8 participants in which and learned about the issues through questions/answers, group discussion, role-playing and film screenings. The educational content was designed according to the booklets of the Ministry of Health of Iran and current texts and previous evidence [16]. Furthermore, an attempt was made to discuss and practice regarding all questions of the participants, the behavioral causes of LBP, back injury behaviors, benefits and obstacles to these preventive behaviors. At the end of the session, all participants were given a pamphlet about the issues raised in the session. Participants were followed at 3 months after intervention and data were collected based on research –made questionnaire, VAS and evaluated at this time.

The data were entered into the SPSS, version 21 (IBM company, USA). All data analyses were conducted according to the pre-established analysis plan. The obtained data were analyzed in 2 states before and 3 months after intervention. Appropriate central indices, dispersion, parametric and non-parametric tests were used to analyze the data.

All ethical issues were considered in this study. A license from Tarbiat Modares University, Faculty of Medical Sciences to conduct a research project and also a license from Lorestan University of Medical Sciences were obtained. In order to comply with the ethical points and obtain full consent and voluntary participation of the participants, It was confirmed that all data obtained from the participants would be confidential. This article is extracted from the dissertation for receiving a master's degree in health education and health promotion. Ethics committee of Tarbiat Modares University (TMU), approved this research through the code of IR.MODARES. REC.1398.203. this study was conducted in accordance with the Declaration of Helsinki.

Findings

The mean age of clinical workers in the intervention and control groups were 18.33 ±02.6 and 40.31 ± 73.6 years, respectively. The majority of the participants in the intervention group (82.5%, N=33) and the control group (72.5%, N=29) were female. Table 1 shows the rest demographic variables. According this table there were no significant difference between two groups in terms of all these variables at initial of the study (P <0.05).

Table 2 shows the comparison of the studied variables of knowledge, attitude and preventive behaviors of the participants of both groups at initial of the study and 3- month follow up. According this Table, there were no significant difference between two groups at the beginning of the study. However, two groups are different significantly at 3- month follow ups (P< 0.001). Table 3 shows the comparison of pain severity in both groups at two time points of before intervention and 3- month follow up. As this table shows two groups are the same at the beginning of the study but they are different significantly at 3-month follow up (P<0.001).

Discussion

The present study showed that the educational intervention among clinical workers at 3-month post intervention. The results of the present study showed that the interventional program could significantly improve knowledge, attitude

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and practice in intervention group. The results of this study were in line with the results of the studies [17=18] in terms of a significant effect on increasing the awareness score. Furthermore, in the previous study [19] Which was conducted in 2017 the knowledge score of the participants in intervention group after training was significantly improved. Moreover, the results of this study in terms of knowledge improvement are consistent with the results of the existed study [20] entitled "The effect of exercise program on changing preventive low back pain behaviors in pregnant women referred to Karaj community health centers".

In this study the attitude of the intervention and control groups of both intervention and control groups before the intervention did not differ significantly. However, after the implementing educational intervention which included discussing the causes and factors of complying with LBP health behavior and also providing appropriate solutions and removing possible obstacles as much as possible, in the 3-month follow up evaluation, there was a significant improvement in the attitude score of the intervention group, while there was no difference in control group in this regard.

Previous studies [18,20] have supported the findings of the present study in terms of attitude improvement due to interventional program. In the study of Kazemi et al.[18], it was argued that - in 3-month follow up, the face-to-face educational program was more

Table 2) Comparing knowledge, attitude and preventive behaviors of the two groups of intervention and control at initial of the study and 3- month follow up

Variables	Time	Initial of the study		3- Month Follow up		P.value
		Mean	Std. Deviation	Mean	Std. Deviation	
Knowledge	Intervention	13.28	2.21	14.93	1.28	< 0.001
	Control	13	1.79	13.08	1.71	0.980
P-value		0.544		<0.001		
Attitude	Intervention	40.13	6.86	43.98	4.81	< 0.001
	Control	13	1.79	13.08	1.71	0.987
P-value		0.616		<0.001		
Behavior	Intervention	15.17	5.92	18.35	5.30	< 0.001
	Control	16.96	6.90	16.05	4,52	0.905
P-value		0.508		0.039		

Table 3) Comparison of both groups in terms of pain severity at initial of the study and 3-month follow up

Group Time	Intervention Group Mean (SD)	Control Group Mean (SD)	P- value
Initial of the study	5.20 (1.47)	5.28 (1.37)	0.81
3- Month Follow up	2.83 (1.31)	5.45 (1.66)	<0.001
P-value	<0.001	0.20	

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effective than virtual educational program, in terms of attitude improvement because of two-way relationship between educator and participants. However, the effects of virtual education continued for longer time up to 6- month follow up because of some benefits such as greater accessibility and lower implementation costs. The findings of the present study showed that it has been more successful in changing attitudes among the audiences by setting up educational classes through questioning / answering and removing possible barriers towards behavior. Of course, the use of virtual education as a supplement and reminder continues training has also played an effective role for success of the educational program.

The findings of the present study also showed that the mean behavioral scores of both groups before the intervention were not statistically significant, but unlike the control group, the mean score of healthy behavior in the intervention group and also compared to the control group was significantly different. In the previous studies, it has been found that the rate of behavior is closely related to the level of people's awareness of the issue as well as their attitude towards the issue, and these improvements caused behavior improvement [14, 18, 20].

As the findings of this study showed, having a positive attitude of the intervention group towards the effect of complying with ergonomic principles in the prevention of low back pain, will eventually lead to the repetition of healthy behavior. Participants in the present study, after being justified about importance of keeping ergonomic postures, found a positive attitude towards doing ergonomic postural and proper exercises that could strengthen the back muscles and preventing LBP. Although this study has own limitation as self-reporting for answering to the research –made questionnaire and VAS, but supporting the obtained findings of this study by other validated studies is the strength points of the present study.

Conclusion

This study revealed that improving knowledge, attitude and practice is effective on chronic non-specific low back pain in clinical worker working in Lorestan hospitals, and better results can be achieved by removing these restrictions. However, doing more researches to confirm the results are guaranteed.

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Author contributions: AMG: conducted all stages of the study. SST was supervisor of the study and MHD was advisor of the study. All authors approved the final version of the manuscript.

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