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Effect of an Educational Intervention on Low Back Pain Preventive Behavior among Nursing Students: a Pre-posted Designed Study

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ABSTRACT

Aims: Low Back Pain (LBP) is a costly, recurrent and prevalent health problem among nurses. This study aimed to explore the effect of a multidimensional education program on changing unhealthy behaviors of nurses.

Instrument & Methods: This pre-posted designed study was carried out on 34 nursing students. Interventional program was accomplished in a three-hour session, in which the participants were familiar with musculoskeletal system, the right postures of this system, occupational factors which may cause skeletal LBP, skills of doing back exercise behaviors. The second and third hour of this session mentally factors influencing on LBP, the ways and techniques to manage daily stresses as well as healthy social skills in lifetime were discussed. The demographic and behavior questionnaires were filled at pre and post intervention. The data were entered into SPSS and analyzed through the paired T-Test.

Findings: Of 34 nursing students, 27 students with mean age of 22.44±2.76 completed the study. At 2- month follow up, the participants did back exercise significantly compared to initial of the study (p=0.003). Furthermore, keeping healthy posture of vertebra while walking and standing were significantly better than before intervention (p=0.001 and p=0.05 respectively).

Conclusion: This study revealed that the educational intervention could be resulted in healthy behaviors of the nursing students to prevent LBP.

Keywords: Low Back Pain, Educational Program, Nursing Student.

Introduction

Globally, Low Back Pain (LBP) is a costly, recurrent and prevalent health problem[1]. It has been estimated that more than 50 percent of general population suffer from LBP at some point during their lifetime [2]. LBP has an enormous medical and economic and social influence on individuals[3].

It has been argued that nurses - more than those who are employed in heavy industry - are at risk of LBP[4]. The year prevalence of LBP in nurses has been estimated as 70%[5] and ranges from 35 to 80% for the lifetime prevalence[6]. Recurrence rates of LBP in nurses exceed 70% [7].

Furthermore, previous studies have verified an association between work-related low back pain (WLBP), negative beliefs, reduced job satisfaction and increased days off work in nurses[8]. Initially, ergonomic factors were considered as the most important risk factor for LBP in nurses. However, it has recently been revealed that nursing seems to be stressful profession and that factors such as physical, psychosocial and lifestyle can be so important[9]. Over recent decades many attempts have been applied to reduce the prevalence of LBP among nurses. However, interventions have been mostly paid attention to physical aspects of LBP improvement such as healthy structure and ergonomic posture of vertebra column during daily activities that included LBP education[2], manual handling skills[10]. Previous systematic review [1] verified that mono disciplinary interventions, such as physical function improvement or stress management as a sole approach, were ineffective. These studies highlighted the important role for multidimensional interventions to

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improve and prevent LBP in nurses[11].

Instruments and Methods

This pre-posted designed study was carried out on 34 nursing students who were studying in nursing and Midwifery School of Tehran University of Medical Sciences (TUMS), Tehran, Iran in July 2017. All ethical issues were considered in this study. The research procedures were completely explained for the potential participants. Participants signed the consent form to be studied. This study deprived from an approved research in Rheumatology Research Center of TUMS.

To select the participants, all eligible nursing students who were passing their practical nursing course at that due time , in Shariati hospital affiliated to TUMS were explained the aim and procedure of the study . After this explanation, if they were satisfied to be studied they were recruited and asked them to fill the demographic questionnaire as well as the questionnaire regarding doing healthy behavior to prevent LBP.

Inclusion criteria were as studying on practical course in the hospital and being satisfied to be studied. However if someone suffering from any disease/ pain or disability that prevents him/her from doing exercises, was excluded from the study.

Interventional program

Firstly the Interventional program was designed based on previous studied[1]. This interventional program was accomplished in a three-hour session. In this session, the participants firstly were familiar with their musculoskeletal system, the right postures of this system and occupational factors which may cause skeletal pain and complications. Here, the skills of doing back exercise behaviors for different muscles were practiced with the participants. Furthermore, in this session the benefits of doing back exercise to improve musculoskeletal pain were discussed. The educational content was presented through lecture, slide shows and role playing. The second hour of this session the participants were familiar with mentally factors influencing LBP and subsequently the ways and techniques to manage and control daily stresses because of their impact on increasing their pain.

As applying healthy social skills in lifetime could influence on LBP improvement, in the third hour of this section the healthy social relationship and also interpersonal communication and the ways to improve these relationships were discussed with the participants. Data were collected through 2 questionnaires including demographic questionnaire and questionnaire regarding doing healthy behavior to prevent/ improve LBP. All the questionnaires were completed by the participants at initial of the study, and at 2-month follow up.

The demographic questionnaire included questions regarding age, educational level, gender, socio-economic status, marriage status, employment status, doing healthy behavior and other variables that were shown in Table1.

The second questionnaire was about the healthy behaviors due to LBP which were 3-option questions about doing behaviors for always, sometimes and never.

AS The questionnaires were about demographic characteristics and behavior, the validity of them was done through obtaining experts' views.

The data were entered into the SPSS, version 16 (IBM company, USA). Proportions were compared by using the chi–square and mean scores were analyzed through the paired T-Test.

Findings

Of 34 nursing students who were recruited, 27 students with mean age of 22.44±2.76 completely filled the questionnaires and took part in educational program. All the students had college education for two years and their mean work experience was about 3.18±5.85 years.

Table 1 shows the rest demographic characteristics of the participants. The comparison of healthy behaviors regarding. LBP prevention/ improvement was done at two time points of initial of the study and 2-month follow up that are shown in Table 2. According this Table, at 2- month follow up, the participants did back exercise significantly compared to initial of the study (p=0.003). Furthermore, after intervention keeping

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healthy posture of vertebra while walking and standing were significantly better than before intervention (P=0.001 and P=0.05 respectively). Other behaviors were also improved but the improvements were not significant (p>0.05).

Table 1. Demographic characteristics of the studied participants.

Demographic Characteristics	N= 27 N (%)	N=27 Mean ± SD
Age(year)		22.44±2.76
Height (cm)		169.25±8.01
Weight (kg)		65.44±15.44
Education (year)		14.00±0.00
Work experience (year)		3.18±5.85
Sex Male Female	 16 (59.3) 11(40.7)	
Marriage Status Married Single	 3 (11.1) 24 (88.9)	
Number of children 0 1	 25 (92.8) 2 (7.4)	
Residency status Dormitory Non-dormitory	 14 (51.9) 13 (48.1)	
Employment status Employed Non-employed	 9 (33.3) 18 (66.7)	
Income status Moderate Bad	 16 (59.3) 11 (40.7)	
Doing exercise Yes No	 8(29.6) 19 (70.4)	
Using proper shoe Yes No	 12 (44.4) 15 (55.6)	
Using proper bed Yes No	 16 (59.3) 11 (40.7)	

Table 2. Comparing healthy behavior to prevent low back pain at initial and three months after intervention

Using healthy interpersonal relationship Always Sometimes Never	 10 (37.3) 15 (55.6) 2 (7.4)	 24 (88.9) 3 (11.1) 0 (0.00)	0.91
Social participation Always Sometimes Never	 7 (25.9) 16 (59.3) 4 (14.8)	 13 (48.1) 14 (51.9) 0 (0.00)	0.12
Applying social skills Always Sometimes Never	 12 (44.4) 15 (55.6) 0 (0.00)	 16 (59.3) 11 (40.7) 0 (0.00)	0.47

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Discussion

The present study indicated that the 3- hour educational program could significantly improve doing back exercise behavior among the nursing students up to two months after completing intervention. Furthermore the findings of the present study verified that the program could significantly improve healthy ergonomically posture of vertebra column among this target group while standing and walking. Therefore, it could be argued that the back exercise behavior improvement in this group of students after intervention has been due to education and training that were done at first hour of the program.

One study indicated a benefit of stretching exercises in decreasing LBP among nurses compared to usual activities [12]. Although, in this study the severity of low back pain was not assessed, the authors – according to existed evidences- believed that the behaviors change regarding doing back exercise could benefit to reducing/ improving or preventing LBP among studied nursing students. The impact of exercise doing on LBP improvement has been documented in previous work[13].

In the line of the current study, previous studies have shown effects of bio psychosocial intervention on lowering low back pain[13]. In the education program of present study on the mentally factors influencing LBP and subsequently the ways and techniques to manage and control daily stresses were discussed with the participants. However, a previous systematic review study revealed that there is no strong evidence that only stress management program in isolation could be effective to decrease / prevent LBP in nurses who suffering from LBP[11]. Moreover, a recent systematic review indicating short-term and little effects of just stress management program on pain intensity and physical functioning of individual suffering from LBP compared to usual care and there were no significant differences compared to other active interventions[۱۴].Thus, it seems that in present study, stress management complained by doing back exercise behavior and applying social skills could be benefit for preventing/improving LBP. It has been argued that numerous factors could be stressful for nurses[15]. However, both job-related stress and personal stress could be risk factors for LBP among nurses [16-17]. However, it is unlikely to be the just risk factor[18], and might be best considered as part of comprehensive LBP management manner.

There is some limitation for this study that might influence on the results. The first one was self-reporting of the behaviors that might be a bias for doing real behavior. Thus, it could be commended in future study the behavior be observed by someone who lives with the participants. Furthermore, small sample size of this study could interfere the findings, so doing more studies with larger samples would be guaranteed. There are some potential limitations related to this study[1]. This research was just a before after designed study, so it is recommended to design more studies in future with control group.

Conclusion

This study revealed that the intervention could be resulted in healthy multidimensional healthy behaviors of the nursing students.

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Ethical permission

All ethical principals were considered in this study and it was approved in Rheumatology Research Center of TUMS.

Conflicts of Interests

There is no conflict of Interest.

Author's contribution: RM has been invited to write this manuscript. SST has designed the study and participated in implementation and data analysis. ARJ has approved the study.

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