Original Article

Knowledge, self-efficacy, and practice among nurses for prevention of chronic low back pain in Arak, Iran, in 2014

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Abstract

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Background: Chronic low back pain (CLBP) is an important occupational injury. Musculoskeletal injuries, especially CLBP, are prevalent in the nurses, and can lead to reduced productivity, work absenteeism, and work disability.

The purpose of this study was to determine nurses' knowledge of the risk factors of low back pain (LBP) and their self-efficacy in coping with the risk factors, and to evaluate CLBP preventive behaviors in nurses.

Materials and Methods: This descriptive cross-sectional research was performed on 133 nurses selected randomly from 3 government hospitals affiliated with Arak University of Medical Sciences, Arak, Iran. The data collection tool was a questionnaire on demographic characteristics, knowledge, self-efficacy, and practice of the nursing staff in CLBP preventive behaviors. Data was analyzed using descriptive and analytical statistical methods and Pearson's correlation coefficient.

Results: The mean age of the nurses was 32.1 ± 5.3. Our findings showed that in terms of LBP the nursing staff had average level of knowledge with a mean score of 60.2 ± 19.69 out of 100, average level of self-efficacy with a mean score of 55.9 ± 10.6 out of 100, and poor practice with a mean score of 43.9 ± 6.9 out of 100. The correlation between knowledge, and self-efficacy and practice was not significant, but self-efficacy showed a significant correlation with practice and being married ($P < 0.05$).

Conclusions: According to our study, most participants lacked appropriate knowledge, self-efficacy, and practice with regard to CLBP preventive behaviors. Since back pain strongly affects the performance and service quality of the caregivers, the Iranian Ministry of Health and the related universities should make necessary educational and managerial arrangements to present educational programs aimed at CLBP prevention in the form of university courses, posters, films, workshops, and etcetera.

Keywords: Musculoskeletal Diseases, Nurses, Knowledge, Self Efficacy, Low Back Pain.

Introduction

Chronic low back pain (CLBP) is a discomfort in the back that may radiate to the calf, thigh, or buttocks and lasts for more that 3 months. Generally, low back pain (LBP) is categorized as specific and non-specific (1, 2). In theUS, LBP accounts for more than 18 million physician visits per year (3). LBP affects 70-80% of the population in their lifetime (4). According to the available statistics, LBP is the most common cause of activity limitation, the 5th most frequent

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cause of hospitalization, and the 3rd most common cause of surgery in the US (5).

The annual consequences of the LBP epidemic in the UK are 52.6 million days of work lost, making it the primary cause of work absenteesim among all diseases (12.5%), waste of 2 million pounds, and loss of manpower. Each year, more than 2 million people seek advice about back pain from their general practitioners, 300,000 people receive out-patient consultation for their back pain in the hospital, and 50-1000 individuals become severely debilitated in a health domain of 250,000 population (6).

Regarding the prevalence of LBP, nursing is the 3rd leading occupation (7). LBP is the most important occupational injury in nurses with a prevalence of 56-90%, which is slightly higher than in other populations (8). The prevalence of LBP has been reported as 62% (9) and 49.4% in (10) some parts of Iran. In a study conducted on the nursing staff of Namazi and Shahid Faghihi Hospitals, Shiraz, Iran, in 1999, a 78.3% prevalence of occupational LBP was reported (11). About 98% of nurses move patients in such a way that applies a great amount of pressure on the lumbar vertebrae (12). Moreover, bending on the patient's bed during work and stretching the back increases the risk of back pain. In addition, inappropriate body postures, squatting, bending, prolonged standing, and a low nurse to patient ratio are other risk factors of back pain in nurses (12). Nurses who work in intensive care units are particularly prone to back pain due to their distinct work conditions (13, 14). Nurses are an efficient and effective part of any health system and are prone to the risk factors of back pain more than other occupational groups. They lose many work days due to back pain every year which lowers their productivity. However, back pain can be decreased using appropriate preventive measures, which requires the knowledgability of nurses on the principles of risk factor modification, like body posture during work, sitting, moving patients, and etcetera. This knowedgebility can only be achieved through education. Therefore, the aim of the present study was to evaluate the nursing staff's knowledge, self-efficacy, and practice in regard to the prevention of CLBP.

Materials and Methods

This descriptive cross-sectional study was conducted in Arak, Iran, in 2014. The minimum sample size was calculated at 126 persons considering a study conducted by Zakerian et al (15), using the following formula $n = \frac{Z^2 + SD^2}{d^2}$, (SD = 1, d = 0.175, and a CI of 95%). However, in this study, we included 133 nurses who worked in government and educational hospitals (Amir-al-Momenin, Amir Kabir, and Vali-e-Asr) affiliated with Arak University of Medical Sciences, Arak. Simple random sampling was used to select the nurses who had the inclusion criteria. The inclusion criteria consisted of BSc or higher degree in nursing, at least 1 year experience in clinical nursing, no musculoskeletal disorders (MSDs) in self-reports, no history of surgery on skeletal muscles, lack of pregnancy, and signing a written informed consent form. The exclusion criterion of the study was nurses' unwillingness to participate in the study. The research environment of this study consisted of the emergency, gynecology, surgical, internal, angiography, ENT (Ear, Nose, and Throat), neurosurgery, and orthopedic wards, operating rooms, CCUs, and adult and neonatal ICUs of the 3 hospitals. The data collection tool was a researcher-made questionnaire which had 24 questions in 4 sections. The sections consisted of demographic information, knowledge (8 questions such as: "What is the appropriate posture for sitting on a chair?"), self-

efficacy, and a section containing a checklist on practice regarding CLBP preventive behaviors adopted from the Occupational Safety and Health Administration (OSHA) guidelines for nurses.

In the knowledge section, each correct answer scored 1 and each wrong answer scored 0. The section on self-efficacy included 5 questions (for example: I am sure that I can exercise for at least four days per week for 30 minutes, in spite of my busy working schedule) on a 5-point Likert scale. The score of each question ranged from 1 to 5 (I totally agree = 5, I agree = 4, no idea = 3, I disagree = 2, and I totally disagree = 1).

In the section containing questions on practice, a 22-item checklist assessed the principles of moving or lifting the patient or an object, keeping from bending on the patient or the work surface while working, applying the correct posture of standing or sitting on a chair, use of accessory tools and equipment, identification and illimination of ergonomic hazards of back pain, and appropriate work management to reduce exposure to CLBP risk factors on a 4-point Likert scale (never = 0, seldom = 1, often = 2, and always = 3). The scores of the sections of knowledge, self-efficacy, and practice were finalized proportionate for 100.

In data analysis, the nurses' scores of knowledge, self-efficacy, and practice regarding CLBP were categorized based on an expert panel in 3 different levels; poor (0-50), average (51-75), and acceptable (76-100). The assumption on high and low levels of knowledge and practice was drawn from focus group discussion (16). The reliability of the questionnaire was assessed using Cronbach's alpha in a study on 30 nurses who were similar to the study population in terms of demographic characteristics. The Cronbach's alpha of the knowledge and self-efficacy sections, and practice checklist was 0.79, 0.73, and 0.72, respectively. Credible published articles on back pain were used to prepare the questionnaire about CLBP (17-19). The questionnaires' content and face validity were evaluated through an interview with specialists in occupational medicine, ergonomics, occupational health, health education, nursing, and midwifery; their suggestion about the questions and required changes were observed. All data were entered into SPSS software (version 20, SPSS Inc, Chicago, IL, USA). Data analysis was conducted using descriptive statistics for normal data distribution and the results were confirmed using the Kolmogorov-Smirnov test and Pearson's correlation coefficient. The independent t-test was used to compare the mean scores of self efficacy, practice, and knowledge of the two groups (age, sex, marital status, and work experience).

Results

Questionnaires were given to 170 participants; 133 were fully completed and returned. The mean age of our participants was 32.1 ± 5.3 years and 76.6% of the nurses had 10 years of experience or less. Other demographic characteristics of the participants are presented in table 1.

The mean score of the general knowledge of the participants on CLBP prevention was 60.2 ± 19.69 in the 133 nurses who completed the questionnaire.The mean score self-efficacy was 55.9 ± 10.6 out of 100.

The mean score of the nurses' practice was 43.9 ± 6.9. Moreover, 47 of the nurses (35.5%) did not exercise at all, 83 (62.4%) rarely exercised, 3 (2.3%) exercised most often, and no one exercised constantly. Knowledge was not significantly correlated with self-efficacy and practice. Moreover, there was no significant relationship between knowledge and variables like age, marital status, employment status, work experience, level of education, and the duty station. Nevertheless, the correlation between self-

efficacy and practice was significant (P=0.027) (Table 2).

Table 1: Relative and absolute frequency of the demographic characteristics of the participants

Demographic Characteristic		umberN	Percent
Sex	Male	11	8.3
	Female	122	91.7
Age	Below 35	106	79.7
	35 and over	27	20.3
Education	BSc	131	98.5
	MSc or higher	2	1.5
Experience	Less than 5	42	31.6
	5-10	60	45.1
	11-15	11	8.3
	16-20	14	10.5
	More than 20	6	4.5
Marital Status	Single	50	37.6
	Married	83	62.4
Total		133	100

Independent t-test showed a statistically significant difference between married and single groups (P = 0.009) in terms of self-efficacy. The relationship of self-efficacy with variables like age, employment status, work experience, and level of education was not significant.

Table 2: Coefficient correlations of the knowledge level and self-efficacy with practice

Variable	Knowledge	Self-efficacy	Practice
Knowledge	1		
Self-efficacy	r = 0.01 P = 0. 87	1	
Practice	r = 0.03 P = 0.67	r = 0.19* P = 0.027	1

Discussion

Regarding the first objective of our study, our findings showed an average level of knowledge among the nurses on CLBP preventive behaviors. The nurses' knowledge of the risk factors of CLBP and related issues was poor, which is in line with the results of a similar study performed by Choobineh et al. in Shiraz, Iran (20). In our study, the respondents had little knowledge on the correct posture of sitting on a chair and the risk factors of CLBP (49.6% and 56.3% correct answers, respectively). Nevertheless, their knowledge of back pain preventive behaviors and mechanical causes of CLBP was average (66.1% and 64.6% correct answer, respectively).

The nurses also had poor knowledge of ergonomics principles, which is not congruent with the results of a study by Zakeriyan et al. who assessed the correlation of the knowledge of ergonomics and the

conditions of the work place with MSDs in nurses and reported an average level of knowledge. They also suggested comprehensive training programs to increase the nurses' knowledge of ergonomic principles in the workplace (15).

Wongthanakit et al. suggested that in order to increase the level of LBP preventive behaviors, the hospital should promote knowledge about and positive attitude toward LBP preventive behaviors in nursing tasks as well as daily activities (21). However, Bigos et al. showed that ergonomics or back education, and reduced lifting programmes are not effective (22). This finding is supported that of Smedley et al. who found that an ergonomic program provided no improvement in patient handling activities or the prevalence of musculoskeletal symptoms (23).

Berthelette et al. performed a study to evaluate the effect of an ergonomic training program on back pain prevention and reported that interventional programs should start before the incidence of the problems (24).

No significant relationship was observed between knowledge and practice. According to Mahmoudishan, knowledge by itself does not result in good practice; attitudes should change and the structure of the beliefs must be scientific (25). Single preventative measures, such as education programs, have largely been unsuccessful in reducing back injuries or back pain among nurses (26, 27).

A significant relationship was observed between self-efficacy and practice, but the correlation of knowledge with variables such as age, marital and employment status, work experience, level of education, and the duty station (work settings) was not significant. In studies performed by Branney et al. and Engkvist et al., no significant correlation was reported between sex, marital status, work experience, and back pain (28, 29). However, in a study conducted by Ramezani Badr et al., the correlation of back pain with age, work experience, marital status, and duty station was significant (30).

The second objective of our study was to evaluate the nurses' self-efficacy in LBP preventive behaviors, which was found to be average with a mean score of 55.9 ± 10.6 out of 100. Of all the participants, 36 nurses (27.1%) scored poorly, 91 nurses (68.4%) scored average, and 6 nurses (4.5%) scored well. Self-efficacy acts as an intermediary between knowledge and behavior and is a prerequisite for behavioral change. It is in fact the confidence that a person has in his abilities to perform a certain behavior (31). Fongsri et al. performed a study to evaluate the effects of a self-efficacy promoting program for the prevention of LBP in patient transfer workers in Bangkok (32). They found that after the interventions, there was a significant correlation between perceived self-efficacy and LBP preventive behaviors. Therefore, the implementation of self-efficacy training programs for the prevention of back pain were suggested in other work groups (32). Ng'uurah et al. reported that elevated self-efficacy levels allowed participants in their study to decide on more challenging settings, explore their environment, or create a new environment that would facilitate their wellness such as joining health clubs for healthy lifestyle changes regardless of LBP (33).

Regarding the third objective, our findings showed that the nurses' overall practice, with a mean score of 43.9 ± 6.9, was poor. In our study population, 113 (85%) had poor practice scores, 20 (15%) had average scores, and no one had good practice scores. The results of the study performed by Choobineh et al. showed that a limited number of nurses acquired a favorable score in adopting necessary corrective actions in order to lower the prevalence of back pain, which is congruent with the findings of our study (20).

Regarding the effect of exercise on back pain, reports suggest that regular exercise reduces the risk of back pain, indicating that physical exercise is the most important protective factor which reduces the odds of back pain by 60%. The odds ratio is almost similar in the multivariate model, suggesting that the protective effect of exercise is almost independent of other factors. Different studies show that the prevalence of back pain is lower in individuals who exercise regularly (34). Findings from systematic reviews of trials into the prevention of LBP show that only exercise interventions seem to be effective (35). Since the nurses had a poor practice score in terms of exercise, they should be encouraged to exercise through appropriate plans and programs in order to strengthen their back muscles. The relationship of knowledge and practice was not significant in our study. Nevertheless, Collins et al., in a prospective 6-year study, showed that educational programs on the principles of patient handling and movement, correct use of assistive devices like lifting equipment, education of the OSHA guidelines of patient handling and movement, and assuming correct posture while handling patients lowered musculoskeletal injuries in nurses (36). Therefore, educational programs on back pain prevention are an inseparable part of prevention strategies for back pain.

Stetler believes that to prevent musculoskeletal injuries, multidimensional interventions should at least contain removal of the risk factors, along with engineering, managerial, and educational control (37). It should be noted that there are different tasks in the nursing profession which may cause musculoskeletal injuries if performed repeatedly and as a routine throughout their professional life. In most of the studies, education of the correct body mechanics during work, and modification of the occupational physical pressure with regard to ergonomic processes like the use of assistive devices (which both lower physical tension and injury in nurses and bring more comfort to patients) have been proposed as preventive strategies for MSDs in nurses (38-42).

Conclusion

According to our study, most nurses lacked appropriate knowledge, self-efficacy, and practice with regard to CLBP preventive behaviors. Therefore, since back pain strongly affects the performance and service quality of the caregivers, the Iranian Ministry of Health and the related universities should make necessary educational and managerial arrangements to present educational programs aimed at CLBP prevention in the form of university courses, posters, films, workshops, and etcetera.

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Conflict of interest: Non declared

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