

The Effect of Low Back Pain on Functional Disability and Work Limitation in Iranian Nurses Working in Hospital

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Abstract

Aim: Today, low back pain (LBP) is one of the major challenges among occupational health professionals in various jobs. The objective of this study was to investigate the relation between work limitation and functional disability with LBP in Iranian nurses. **Materials and Methods:** Overall, 400 subjects were examined systematic random sampling in this cross-sectional-comparative study. Participants were divided into the case (195 persons with LBP) and control (205 persons without LBP) groups. Data were collected using a comprehensive questionnaire including demographic information form, Nordic Musculoskeletal Questionnaire, Oswestry Disability Questionnaire, and Work Limitation Questionnaire. The collected data analyzed using SPSS statistical software version 20. **Results:** Findings showed that age, marital status, and family history were significantly associated with LBP ($P < 0.001$). The most common cause of back pain among nurses was work-related LBP (56.9%) and genetics (heredity) (30.2%). Furthermore, the mean score of functional disability and work limitation in the case group was higher than the control group ($P < 0.001$). **Conclusion:** Although, based on statistical analyzes, the frequency distribution and mean score of functional disability, work limitation, and all subscales in the group with LBP were higher than the group without LBP, it seems that back pain does not put nurses in working functional disruptive conditions.

Keywords: Functional status, low back pain, nurses, work limitation

INTRODUCTION

Musculoskeletal disorders (MSDs) are the second leading cause of physical disability with a high prevalence in the back and lumbar region.^[1,2] In industrialized countries, about 70%–80% of the population experience it at least once in their lifetime.^[3] Low back pain (LBP) is known with a wide range of biophysical, psychological, and social dimensions and affects a person's performance, social participation, economic status, and quality of life.^[4] The Global Burden of Disease in 2017 introduced LBP as one of the leading causes of disability throughout a person's life around the world.^[5] LBP-related disability often leads to serious socioeconomic consequences at the personal, employer, or social levels among the workforce.^[6]

Today, LBP is one of the major challenges in the occupational health field that has attracted the researchers' attention in various professions because of many consequences such as working disability, reduced productivity, and absenteeism.^[7] Surveys show that the nursing profession is

one of the occupations in which the prevalence of MSDs and the risk of spinal cord injuries are significantly evident due to the musculoskeletal structures compression, especially during repetitive and static movements, as well as bending and twisting (reported on average 66%–77%) and this rate is 63% and 61.2% among Iranian nurses, respectively, during their working life and a working year, which shows a high rate.^[1] Researches indicate that among all health-care professionals and even more than heavy industries, nurses are at the top of occupations at risk of LBP which may be the result of the complex interaction of biomechanical and pathological factors or physical, psychological, social, occupational,

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individual, and underlying factors (genetic).^[5,8-11] Pains and spinal injuries affect nurses seriously so that in addition to causing chronic pain, reducing the quality of life and social activities, and optimal performance loss, can lead to various work consequences such as disturbance, burnout, lower-quality care of patients, work limitation, and reduced productivity.^[12-14]

Furthermore, depression, anxiety, and weakness in controlling external factors are negative prognoses of functional disorders and patients with LBP show higher anxiety and depression about pain intensity and functional disability.^[15] Functional disability implies acquired difficulty in doing basic daily tasks or more complex tasks to have an autonomous life.^[16]

The Centers for Disease Control and Prevention defines disability as any physical or mental disorder that makes perform specific activities (activity limitations), interacts with the world around, and plays social roles (participation limitations) more difficult for a person.^[17]

In addition, LBP is one of the major causes of “activity limitation” in working age population (18–65 years).^[18] According to Lerner *et al.*, chronic health problems affect the ability to perform work activities. Her analyzes confirm limitation in time, physical activity, mental– interpersonal demands, and output demands as four distinct dimensions to work limitations.^[19] In recent years, investigating the upward trend in MSDs among nurses, prevention of permanent and chronic these disorders and the need to combat disabilities and occupational and functional limitations expresses special attention to this complication, especially in high-risk groups.^[20]

With regard to the fundamental role of the nurse as part of the treatment staff and the high prevalence of LBP among them, the importance of investigating the relationship between disorder and disability is doubled.^[21] Therefore, the present study aimed to investigate the relationship between occupational and nonoccupational LBP (specific or nonspecific/chronic or acute) with work limitations and functional disabilities in nurses working in one of the medical education hospitals in Isfahan. It was done to clarify whether LBP is associated with disability and limitation during activity or not.

MATERIALS AND METHODS

From the approximate population of 1000 nurses working in Al-Zahra Hospital, 400 nurses were examined through systematic random sampling in this cross-sectional comparative study. The sample size was calculated according to the equation 1:

$$N = \frac{Z^2 pq}{d^2}, d = 0.05, z = 1.96$$

Sample selection was based on inclusion criteria, included: (1) having a nursing degree, (2) at least 1 year of working experience, (3) not having a second job, (4) no complaint or discomfort in the lumbar region based on the results of the Nordic questionnaire, and also not to visit an orthopedist or

physiotherapist (for control group). All participants signed an informed consent form before starting the study.

Questionnaire

All participants completed a structural questionnaire included demographic information form, Nordic Musculoskeletal Questionnaire (NMQ), Oswestry questionnaire, and work limitation questionnaire (WLQ).

Demographic questionnaire

Information such as age, sex, height, weight, marital status, job title (nurse/matron), hospital wards, work experience, shift work, back pain history in family members (mentioning the type and cause of LBP), smoking, and having a second job was asked using a demographic questionnaire. Selection of participants and their placement into the two groups was largely the same based on age group, type of job, work experience, smoking, and having a second job.

Nordic musculoskeletal questionnaire

By answering the NMQ (just part related to upper back, lower back, and legs), healthy people were distinguished from people with LBP. According to this questionnaire, individuals who had pain and discomfort in the “upper back,” “lower back,” “upper/lower back and legs” were located as a person with LBP in the case group and the rest in the control group (without LBP). The Persian version of this questionnaire was validated by Choobineh *et al.*^[22]

Cause and type of LBP were obtained by asking the person and referring to the medical records. In this study, all types of LBP (chronic or acute, specific or nonspecific, occupational or nonoccupational) were considered.

Oswestry disability questionnaire

Functional disability was evaluated using the Oswestry Disability Questionnaire. This index consists of 10 items. One item on pain intensity and 9 other items cover daily life activities such as personal care, lifting, walking, sitting, standing, sleeping, sex life (if applicable), social life, travelling. Each section consists of 6 items, the severity of disability in each section is different. Per section score is from 0 to 5 (lowest performance level). Finally, the total score is multiplied by 2, and the results are expressed as a percentage (0–100). The scores are classified as 0–20 “minimal disability,” 21–40 “moderate disability,” 41–60 “severe disability,” 61–80 “crippled,” and 81–100 “bed-bound or exaggerating.” This index was translated into Persian in 2006 and its validity and reliability were proven.^[7]

Work limitations questionnaire

WLQ is a self-reported questionnaire that measures the impact of health problems on job performance and work efficiency in the past 2 weeks.^[23]

WLQ consists of 4 subscales, any of them related to the physical and mental health problems impact on the particular set of work tasks: (1) physical demands (6 items), (2) time management (5 items), (3) mental-interpersonal demands

(9 items), and (4) output demands (5 items). Response options include “all of the time (100%);” “a great deal of the time;” “some of the time (approximately 50%);” “a slight bit of the time;” “none of the time (0%);” and “does not apply to my job.” Scores for each of the 4 scales are computed as the mean of the nonmissing responses and converted from 0 (no limitation) to 100 (limited all of the time).^[24] The validity and reliability of the questionnaire were conducted by Yazdi *et al.*^[25]

Data were entered into SPSS20 software provided by the IBM Co. Armonk city, New York, USA for statistical analysis. Analysis of variance covariance test was used to examine the relation between functional disability and work limitation with other variables, and an independent *t*-test was used to assess the mean score of disability and limitation in both groups. To analyze the quantitative and qualitative consequences of the data, Chi-square test was used and other variables were analyzed by descriptive statistics. Data were analyzed considering a 95% confidence interval and 5% significance level.

RESULTS

In this study, a total of 400 people (385 nurses and 15 matrons) were examined. Overall, 205 people had no back pain and 195 had LBP. Table 1 shows the demographic information in the two groups studied.

The relationship between each variable and the history of back pain is shown in Table 1, accordingly, age ($P = 0.041$), marital status ($P = 0.001$), and family history ($P < 0.001$). It can be stated that LBP was most common, in married nurses, younger than 40 years, with a history of back pain in at least one of the first-degree members of the family. Descriptive statistics of variables are also given in Table 1.

According to the results, the most common cause of back pain among nurses was occupational (work-related LBP) (56.9%) followed by genetics (heredity) (30.2%) (standard deviation [SD] = 1.63).

According to Table 2, the frequency distribution of LBP types in the group with LBP showed that the most types of lumbar injuries were muscle pain (back muscle) (20.5%) and discopathy (18.5%), respectively. Furthermore, 18.5% of LBP among nurses was unknown and in other words, nonspecific (SD = 3.325).

The comparison of the mean scores of functional disability and work limitation in the two groups is shown in Table 3. As shown in the table, a significant difference was observed between the two groups in the mean score of functional disability and work limitation and all its subscales.

The frequency distribution of functional disability categories and work limitations and their contact are given in Table 4. According to the results, a significant difference has been observed between the two groups in the frequency distribution of functional disability, work limitation, and its subscales.

From comparing the total score of functional disability and work restriction separately sorted by the etiology of LBP, we found that the highest mean score of functional disability was distinguished among people with spinal stenosis, discopathy, and dehydrated disc. Furthermore, the highest mean score of work limitation was observed among people with spinal stenosis and disc herniation.

Table 5 shows the relationship between other variables and functional disability for each group separately. According to the table, increasing age and BMI in both groups, increasing work experience in the group without LBP, and being a woman in the group with LBP showed a significant relationship with functional disability. Following this table, for 1 year of age increasing, the mean score of functional disability increased in groups with and without LBP 0.22 and 0.13, respectively. Moreover, per unit increase in BMI score, we observed that 0.19 and 0.32 units increase in functional disability score in case and control group, respectively. One unit increase in the work experience of people without LBP increases 0.015 units the disability score. Further, the average disability score was higher in women than men ($B [S. E] = -4.31$).

Table 6 shows the relationship between work limitation score and other variables. Except for BMI in the control group, no other significant relationship was observed between any of the variables with work limitations. For one unit increase in BMI score, 0.26 units increase was observed in the work limitation score of the control group. Furthermore, there was no significant difference between men and women in terms of the severity of work limitation.

DISCUSSION

This study investigated the relation between work limitation and functional disability with LBP among Al-Zahra Hospital nurses (Isfahan). In our study, the results of the Chi-square test showed that age, marital status, and family history have a significant relation with LBP. Higher age was a significant risk factor for LBP. In many studies, a significant difference was expressed between different age groups and LBP, so that with increasing age group, the prevalence of LBP has also increased.^[26,27]

Faraz *et al.*, in their study, points to the role of age in increasing osteoporosis and weakening the muscles that support the spine and states that older people are more exposed to MSDs.^[28]

Married people had higher prevalence of LBP than unmarried people. It is possible that physiological mechanisms after marriage and the presence of a spouse operate as a social factor on lack of LBP.^[29]

One of the main factors related to LBP is the genetic heritability. Livshits *et al.* found a significant genetic correlation between LBP and Lumbar Disc Degeneration (LDD). Genetic variation of LBP and LDD is governed by some common but mostly independent genetic factors, the

Table 1: Demographic information

	No back pain (n = 205), count (%)	Mean	SD	Back pain (n = 195), count (%)	Mean	SD	P
Sex							
Male	46 (22.4)	-	-	40 (20.5)	-	-	0.715
Female	159 (77.6)	-	-	155 (79.5)	-	-	
Age							
<30	88 (42.9)	25.43	5.917	59 (30.3)	27.74	5.666	0.041
30-40	91 (44.4)	33.66	7.320	99 (50.8)	35.38	7.250	
40-50	19 (9.3)	43.23	5.275	30 (15.4)	46.11	5.091	
>50	7 (3.4)	52.28	3.211	7 (3.6)	55.68	3.140	
Marital status							
Single	75 (36.5)	-	-	39 (20)	-	-	0.001
Married	127 (62)	-	-	150 (76.9)	-	-	
Divorced	3 (1.5)	-	-	6 (3.1)	-	-	
Smoking history							
No	200 (97.6)	-	-	190 (97.4)	-	-	0.936
Yes	5 (2.4)	-	-	5 (2.6)	-	-	
BMI							
<18.5	9 (4.4)	18.2	1.435	7 (3.6)	18	1.0148	0.249
18.5-24.9	132 (64.4)	23.14	2.355	117 (60)	24.08	2.158	
25-29.9	58 (28.3)	26.49	1.661	57 (29.2)	28.31	1.157	
>30	6 (2.9)	31.57	1.318	14 (7.2)	33.12	1.186	
Family history							
Has	133 (64.9)	-	-	76 (39)	-	-	>0.001
Has not	72 (35.1)	-	-	119 (61)	-	-	
Job							
Nurse	198 (96.6)	-	-	187 (95.9)	-	-	0.796
Matron	7 (3.4)	-	-	8 (4.1)	-	-	
Shift work							
Morning	36 (17.6)	-	-	45 (23.1)	-	-	0.383
Night	5 (2.4)	-	-	5 (2.6)	-	-	
Rotation	164 (80)	-	-	145 (74.4)	-	-	
Work experience							
<10	129 (62.9)	5.02	2.447	108 (55.4)	5.83	2.047	0.279
10-20	59 (28.8)	14.33	2.380	70 (35.9)	16.57	2.569	
>20	17 (8.3)	23.57	1.862	17 (8.7)	24.06	1.931	

SD: Standard deviation

Table 2: Frequency distribution of low back pain types

	Count	Percentage ± (SD=3.325)
Nonspecific LBP (LBP with unknown cause)	36	18.5
Discopathy	36	18.5
Disc dehydration	27	13.8
Spondylosis (degenerative disc)	6	3.1
Osteoarthritis	5	2.6
Lumbar disc herniation (disc rupture)	23	11.8
Spinal canal stenosis	10	5.1
Low back strain and sprain	40	20.5
Scoliosis or kyphosis	9	4.6
Extruded disc	3	1.5

LBP: Low back pain, SD: Standard deviation

nature of which remain to be determined.^[11] In summary, there are novel genetic associations with chronic back pain at SOX5, CCDC26/GSDMC, and DCC genome.^[30]

Contrary to the results obtained in the present literature, work experience and shift work are influential factors in the incidence of LBP among nurses. Nurses with rotational shifts are more likely to experience LBP than those who work only in the morning shift, which can be due to the effect of shift work on human biological rhythm and disrupt it.^[31] Although several studies, such as Tanveer *et al.* study, point to the role of work experience in the development of LBP among female nurses, and Azizpour *et al.* also state that women are 2.5 times more likely to have LBP than men.^[1,32] However, in our study, no significant relationship was found between these two variables (work experience and gender) with LBP.

Table 3: Comparison of functional disability and work limitation

	No back pain (%)	Back pain (%)	P
Functional disability	5.40 (6.10)	22.08 (10.04)	<0.001
Time management	17.24 (12.88)	30.77 (14.70)	<0.001
Mental-interpersonal demands	12.24 (11.28)	18.36 (12.81)	<0.001
Physical demands	72.69 (16.10)	85.22 (12.03)	<0.001
Output demands	13.73 (12.97)	85.22 (12.03)	0.003
Work limitation (total score)	31.05 (5.88)	33.83 (7.11)	<0.001

Table 4: Frequency distribution of functional disability and work limitation

	No back pain (n=205), count (%)	Back pain (n=195), count (%)	P
Functional disability			
Minimal disability	199 (97.1)	83 (42.6)	<0.001
Moderate disability	6 (2.9)	102 (52.3)	
Severe disability	0	10 (5.1)	
Crippled	0	0	
Bed bound or exaggerating	0	0	
Time management			
None of the time	167 (81.5)	88 (45.1)	<0.001
A slight bit of the time	37 (18)	92 (47.2)	
Some of the time	1 (0.5)	15 (7.7)	
All of the time	0	0	
Mental-interpersonal demands			
None of the time	183 (89.3)	148 (75.9)	0.001
A slight bit of the time	22 (10.7)	44 (22.6)	
Some of the time	3 (1.5)	0	
All of the time	0	0	
Physical demands			
None of the time	154 (75.1)	76 (39)	<0.001
A slight bit of the time	50 (24.4)	95 (48.7)	
Some of the time	1 (0.5)	24 (12.3)	
All of the time	0	0	
Output demands			
None of the time	40 (19.5)	20 (10.3)	0.002
A slight bit of the time	164 (80)	172 (88.2)	
Some of the time	1 (0.5)	3 (1.5)	
All of the time	0	0	

A report by Suntsov *et al.* revealed that the cause of LBP is multifactorial and unknown, and for most people who suffer from LBP, cannot be determined the exact cause.^[33]

In the review of the frequency distribution of the cause of LBP in the present study, 56.9% of nurses with LBP considered the cause of their problem as a result of occupation and work activities. The inherent requirements important in nursing and the nurse’s working conditions, including patient movement, heavy, frequent, or awkward lifting, and intrahospital patient transportation with movement limitations due to inappropriate ergonomic of hospital equipment, also long shifts increase the risk of LBP that is consistent particularly with the results of the

present study.^[34,35] In addition, many public hospitals in Iran, including Al-Zahra hospital, are crowded teaching hospitals with a small number of nurses, heavy workload, and unsuitable work environment, which can be one of the reasons for the impact of the work on LBP.^[36] There is a statistically significant relationship between the condition and work organization with the outcome of LBP.^[37]

On the other hand, LBP is hereditary somewhat, in which the role of heredity in chronic LBP is more than acute.^[33]

Based on the results of the self-reported questionnaire, it was found that 30.2% of nurses with LBP had LBP in at least one of their first-degree family members. Multifactor processes, including genetics and lifestyle, may contribute to the worsening of LBP.^[38] In 2011, a study on genetics and disease of lumbar disc showed that lumbar disc degeneration (LDD) caused by degeneration or herniation disc may be inherited, so that, people with lumbar disc most likely, have an intervertebral disc in their family members that are consistent with the data from the present study.^[39]

Determining the cause of LBP is the biggest challenge for physicians.^[38] As mentioned, the most common type of lumbar injury was muscle pain (back muscles). Muscles, tendons, ligaments, and joint capsules need rest to heal that having a lot of activity and little sleep, which is inevitable in the nursing profession, cause ultimately muscle fatigue and an increased risk of musculoskeletal injuries.^[40] Furthermore, 18.5% of the case group had discopathy, which was the most common cause of LBP in the Yazdi *et al.* study in terms of frequency and prevalence of LBP.^[25] 18.5% of people with LBP were unaware of the causes of their back pain. In explaining this finding, it can be stated that about 90%–95% of LBP cases are nonspecific or mechanical; that is, These types of low back pain are not accurately diagnosed, do not result from a pathological problem and since they probably do not involve the nerve roots, they are not attributed to a specific pathology.^[37,41,42]

However, it is important to know what role LBP plays in nurses’ professional activities and daily routines. Regardless of the type of LBP and based on the results of the independent *t*-test, we found that there is a significant relationship between the mean score of functional disability and work limitation with LBP. In such a way, the average score of disability of nurses to perform daily activities such as sleeping, walking, sitting, standing, etc., and their work limitations, is higher among patients than healthy people. In recent years, functional capacity has attracted more attention, as disability can lead to an increase in the number of chronic diseases and become problematic in old age in maintaining independence, which is strongly related to the quality of life.^[43]

The results of Soleimanzadeh’s study Laleh showed that there is a significant relationship between functional disability and the severity of LBP.^[44] Yiengprugsawan *et al.* by examination of the lumbar position of 42,785 patients between 30 and

Table 5: Relationship between functional disability and other variables

	No back pain		Back pain	
	B (SE)	P	B (SE)	P
Gender (reference=women)	-0.39 (1.01)	0.697	-4.31 (1.74)	0.014
Age	0.13 (0.05)	0.022	0.22 (0.09)	0.022
Marital status (reference=single)				
Married	1.43 (0.88)	0.104	1.05 (1.79)	0.559
Divorced	0.16 (3.56)	0.964	-0.28 (4.38)	0.949
Smoking history (reference=yes)	0.20 (2.75)	0.942	8.29 (4.49)	0.065
BMI	0.32 (0.12)	0.010	0.19 (0.53)	0.006
Family history (Reference=having a family history of LBP)	-0.67 (0.88)	0.448	-0.82 (1.46)	0.575
Job (reference=matron)	-0.03 (2.34)	0.988	-1.21 (3.61)	0.736
Shift work (reference=rotational)				
Morning	0.85 (1.11)	0.445	0.40 (1.70)	0.813
Night	-0.45 (2.75)	0.869	-2.04 (4.55)	0.654
Work experience	0.015 (0.005)	0.002	0.013 (0.008)	0.123

SE: Standard error, BMI: Body mass index, LBP: Low back pain

Table 6: Relationship between work limitation and other variables

	No back pain		Back pain	
	B (SE)	P	B (SE)	P
Gender (reference=women)	0.07 (0.98)	0.942	-1.19 (1.250)	0.341
Age	0.06 (0.05)	0.258	-0.03 (0.07)	0.635
Marital status (reference=single)				
Married	0.51 (0.85)	0.549	-0.61 (1.27)	0.633
Divorced	0.26 (3.44)	0.938	0.38 (3.11)	0.902
Smoking history (reference=yes)	0.67 (2.65)	0.801	1.05 (3.21)	0.743
BMI	0.26 (0.12)	0.034	-0.08 (0.14)	0.529
Family history (reference=having a family history of LBP)	-0.47 (0.85)	0.580	0.65 (1.04)	0.531
Job (reference=matron)	0.49 (2.25)	0.825	1.25 (2.56)	0.625
Shift work (reference=rotational)				
Morning	0.28 (1.07)	0.790	0.04 (1.21)	0.971
Night	-0.61 (2.66)	0.816	0.60 (3.22)	0.853
Work experience	0.002 (0.004)	0.685	0.001 (0.006)	0.970

SE: Standard error, LBP: Low back pain, BMI: Body mass index

65 ages from 2009 to 2013, found that there was a link between back pain and functional limitations for Activities of Daily Living.^[45] Derakhshanrad *et al.*, in the Survey of Functional disability in nurses' upper limbs, reported that the level of functional disability in the upper extremities to be approximately three times higher in individuals with MSDs than those without MSDs.^[46]

The highest mean score of functional disability was observed among people with spinal stenosis, discopathy, and dehydrated disc, and the highest mean score of work limitation was observed among people with spinal stenosis and disc herniation (disc rupture). Mirzamohammadi *et al.* described that the association of functional disability with discopathy, spondylolysis, and spondylolisthesis was significant in 528 patients referred to spine clinics.^[47] On the other hand, Yazdi *et al.*, Found the most work limitations in patients with discopathy.^[25]

The results of the covariance test showed that the severity of functional disability was associated with increasing age and BMI in both groups and being a woman in the LBP group was associated with functional disability. The relationship between age and BMI with the disability was also observed in Candotti *et al.* and Derakhshanrad *et al.* study.^[46,48] Although Yazdi *et al.* pointed to the role of age in increasing the work limitation of patients with acute and chronic LBP, our results did not show a significant relationship between any of the variables with work limit in the case group.^[25]

Chi-square test showed that the frequency distribution of functional disability, work limitation, and its subscales in the case group was higher than the control group, but the level of disability was low in people with back pain and only 5% of patients have a severe disability. Furthermore, limitations in time management and physical activity relative to limitations in mental-interpersonal and output demands were observed in more people from both groups. The amount of limitation in both output and mental-interpersonal subscales were reported “a slight bit of the time” in the majority of participants, that work conscience, individual dependency to perform the duty and help to improve patients may be influenced to reduction limitation score in both subscales. However, back pain has not put nurses in operational and working disruptive conditions. It seems that the relationship between pain, disorder, and disability is weak and indirect.^[18]

Beyond back pain disorders, should be paid attention to the role of confounding or modifying factors such as acute or chronic back pain, Psychosocial factors, work organization, fear of pain, and other parameters in creating disability and limitations in doing routine daily chores and work activities. Di Iorio *et al.* stated that the interrelationship between LBP, disability, and physical function, and the causal pathway from disease to disability are complex and multifactorial.^[49] Fear of recurrence of pain that leads to avoidance of certain movements, called Fear-avoidance beliefs, is associated with both levels of disability and ability to work and there is a significant relationship between kinesophobia scores (fear of movement) and all subscales of workability.^[50]

Sayings of Yokota *et al.* denotes that there is a strong association between depression, chronic LBP, and work limitations, but acute LBP, which has little effect on depression, does not reduce work productivity.^[51] Sleeplessness (insufficient sleep) has a greater role in limiting a person's work than the severity of pain.^[52]

However, several studies imply that the concept of disability is multidimensional.^[5,53,54] The importance of this issue is so great that in 2001 the World Health Organization introduced the International Classification of Functioning, Disability, and Health, according to this system both personal and work factors affect the rate of activity and participation of individuals at different levels.^[54] However, it remains to be seen what other factors affect the level of individual's limitations, merely in performing assigned tasks in the work environments, that despite musculoskeletal disease, the person still expresses small rates of limitations, especially in output demands and mental-interpersonal demands. Knowing these factors is an important step in promoting and providing the highest possible degree of the physical-psychological and social status of nurses and thus can prevent diseases and accidents at work.

CONCLUSION

According to the results and the importance of nursing occupation, performing preemployment and periodical health examinations and selecting the person for the environment and work that he/she is physically and mentally able to do (human resilience and adaptability in the workplace), using ergonomic equipment and training courses (safety and health at work) to nurses can be very helpful in reducing disabilities and limitations both in daily life activities and in the workplace, as well as increasing productivity.

Ethics code

Ethical code: IR.MUI.RESEARCH.REC.1397.291.

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Conflicts of interest

There are no conflicts of interest.

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