



ORIGINAL ARTICLE

Low back pain and methods of coping with low back pain in nurses

Hemşirelerde bel ağrısı ve bel ağrısıyla baş etme yöntemleri

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Summary

Objectives: This research was conducted to determine low back pain in nurses and their methods of coping with low back pain.

Methods: This descriptive, cross-sectional study was performed with 356 nurses in three university hospitals in the province of Istanbul in April–August 2016. Percentage calculations and Chi-square tests were used in statistical analyses.

Results: The mean age of the nurses in the study was 28.70±5.92, 25.3% were working in intensive care, 46.6% worked 41–48 h a week, and 55.6% stood for 5–8 h within a 24 h period. Low back pain was moderate in 75.8% of participants, and low back pains sometimes affected work efficiency in 43.3% (n=154). In terms of coping, the great majority of participants did not visit a physician, but used analgesics, avoided wearing high-heeled shoes, and slept in hard beds. Statistical significance (p<0.05) was observed between participants' age groups, the unit where they worked, type of duty, the amount of time spent standing, and the amount of time standing in the same position and low back pain.

Conclusion: Based on the results obtained, nurses experienced a moderate level of low back pain, and we think that experiencing low back pain is a continuous risk for nurses because of their lengthy hours of work and time spent standing, and that their working hours should, therefore, be adjusted and that correct body mechanics should be included during in-service training.

Keywords: Back pain; coping; nurse.

Özet

Amaç: Bu araştırma, hemşirelerde bel ağrısı ve bel ağrısıyla baş etme yöntemlerinin belirlenmesi amacıyla yapıldı.

Gereç ve Yöntem: Tanımlayıcı, kesitsel tipte olan çalışma, Nisan–Ağustos 2016 tarihlerinde İstanbul ili'nde yer alan 3 üniversite hastanesinde, 356 hemşireyle gerçekleştirildi. İstatistiksel değerlendirmede yüzdelik hesaplama, ki-kare testleri kullanıldı.

Bulgular: Çalışmada, hemşirelerin yaş ortalaması 28.70±5.92 olup, %25,3'ünün yoğun bakımda çalıştığı, %46,6'sının haftada 41-48 saat arası çalıştığı, %55,6'sının 24 saat içerisinde 5-8 saat arası ayakta kaldığı belirlendi. Katılımcıların %75,8'inde mevcut bel ağrısı şiddetinin orta düzeyde olduğu, %43,3'ünde (n=154) bel ağrılarının çalışma verimini bazen etkilediği görüldü. Baş etme yöntemi olarak, büyük bir çoğunluğun hekime gitmediği, analjezik aldığı, topuklu ayakkabı giymedikleri, sert yatakta yattıkları görüldü. Katılımcıların yaş grupları, çalıştığı birim, görev durumu, ayakta durma süresi, aynı pozisyonda durma süresi ile bel ağrısı arasında istatistiksel anlamlılık (p<0.05) olduğu görüldü.

Sonuç: Çalışmadan elde edilen sonuçlar doğrultusunda; hemşirelerin orta düzeyde bel ağrısı deneyimlediği, bel ağrısı yaşamının, uzun süreli çalışma ve ayakta kalma nedeniyle hemşireler için sürekli bir risk olduğu; bu sonuç doğrultusunda çalışma saatlerinin düzenlenmesi ve doğru vücut mekaniklerine eğitimlerde yer verilmesi gereği düşünüldü.

Anahtar sözcükler: Bel ağrısı; baş etme; hemşire.

Introduction

Pain and musculoskeletal diseases due to exposure to physical and psychosocial risks are among the most common health problems that nurses encounter in their professional lives.^[1] Studies in the literature report that the incidence of low back pain in

nurses varies between 40% and 97.9%, and this high rate is regarded as an occupational problem.^[2,3] A recent study determined incidence of low back pain in nurses of 66.8% for 1-year prevalence and 51.3% for point prevalence, and described this as an occupational problem.^[4]

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Submitted (Başvuru tarihi) 05.03.2020 Accepted after revision (Düzeltilme sonrası kabul tarihi) 25.01.2021 Available online date (Online yayımlanma tarihi) 25.08.2021

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Some of the main reasons for this frequent problem experienced in nurses are prolonged working hours and prolonged time spent sitting or standing, weight lifting, use of the body in incorrect positions, ergonomic deficiencies arising from the working environment, and workload.^[5] Besides these reasons, psychosocial factors such as work monotony, job dissatisfaction, social support, a heavy workload, intense responsibility, lack of relaxation opportunities in the work environment, working without a break, and inadequate work organization also play a role in the development of low back pain.^[6]

In addition to physical and psychosocial risk factors, one previous study also identified factors such as gender, height, age, weight, body mass index (BMI), exercise, smoking, educational and marital status, working time, and working style as risk factors associated with low back pain.^[1]

Low back pain is also a frequent cause of disability among nurses,^[7] and alternative methods such as avoiding high-heeled shoes, prayer, hot spring (hot water), massage, listening to music, and acupuncture are used in coping with this pain.^[4,8]

Nurses are still at high risk for low back pain,^[3,4] which disrupts their activity levels, interpersonal relationships, and work performance and also causes sleep problems. Patient care and quality of life decrease as a result.^[3,9]

The aim of this study was, therefore, to determine the levels of low back pain in nurses and their methods of coping with it.

Material and Methods

This descriptive, cross-sectional study aimed to determine low back pain in nurses and their methods of coping with low back pain. The study population consisted of all nurses (N: 873) working in three hospitals in the province of İstanbul, Turkey. The study sample consisted of nurses (n: 356) working in these three hospitals between April and August 2016. Participants consisted of nurses who were in the hospital during data collection and agreed to participate in the study.

The inclusion criteria for the study were age 18 years or more, have no difficulty in communication, having

no low back pain before starting in the profession, working at the current clinic for at least 1 year, and willingness to participate in the study. The response rate was 40.77%.

Data collection form

As a data collection tool, a personal information form prepared by the researchers based on the literature review was used.^[1,2,4,6] This included 15 questions regarding the sociodemographic characteristics of the participants (age, gender, marital, educational and smoking status, BMI, length of time worked, and the clinic at which the nurses worked) and the characteristics about their disease. It took 15–20 min to complete the form. The Cronbach alpha value of the questionnaire in this study was 0.863.

The data collection method

Information was given with regard to the purpose and method of this study, and verbal permission was obtained from the nurses who agreed voluntarily to participate. The nurses were asked to answer these questions through face-to-face interviews, and this took approximately 15–20 min for each nurse. The data collection tools were distributed once the nurses agreeing to take part had been given the requisite information about them, and were collected after completion.

Analysis of the study

In the analysis of the data, Statistical Package for the Social Science (SPSS Ltd., Chicago, IL, USA) 20.0 software package program and SAS package program (Statistical Analysis System, Version 9, SAS Institute, Cary, NC) were used. In addition to the descriptive statistical methods (mean, standard deviation, and frequency), Mann–Whitney U and Kruskal–Wallis H tests were also used for comparisons between the two groups.

The ethical dimension

Permission for the study was received from the İstanbul Provincial Health Directorate under decision No. 07 dated October 16, 2015. Written approval was granted by the Kırklareli University Non-Interventional Clinical Research Ethical Committee, and written and verbal informed consent was given by all participants.

Limitations of the study

The limitations of the study are that many nurses were on leave and on sick leave between the study

Table 1. Distribution of patients according to their sociodemographic and work characteristics

	n	%		n	%
Age (year)			Total	356	100.0
Mean±SD*=28.70±5.92; Min.-Max=19–47			Working experience		
23 years old and below	96	27.0	1 year and below	53	14.9
24–28 years old	91	25.6	2–5 years	124	34.8
29–33 years old	95	26.7	6–10 years	102	28.7
34–38 years old	19	5.3	11–15 years	29	8.1
39 years and over	55	15.4	16 years and over	48	13.5
Total	356	100.0	Total	356	100.0
Gender			The unit where the nurses work		
Male	37	10.4	Internal medicine	83	23.3
Female	319	89.6	Surgical units	183	51.4
Total	356	100.0	Intensive care	90	25.3
Marital status			Total	356	100.0
Married	153	43.0	Weekly working hours		
Single	203	57.0	40 h	155	43.5
Total	356	100.0	41–48 h	166	46.6
Educational status			49 h and more	35	9.8
Medical vocational high school	46	12.9	Total	356	100.0
Associate degree	70	19.7	The amount of time spent standing		
Undergraduate	216	60.7	4 h and below	33	9.3
Postgraduate	24	6.7	5–8 h	198	55.6
Total	356	100.0	9 h and over	125	35.1
Smoking			Total	356	100.0
Yes	125	35.1	The amount of time spent staying in the same position		
No	231	64.9	1 h and below	293	82.3
Total	356	100.0	1–2 h	29	8.1
Body mass index			2–3 h	14	3.9
Underweight (<18.4)	104	29.2	4 h and over	20	5.7
Normal weight (18.5–24.9)	175	49.2	Total	356	100.0
Overweight (25–29.9)	77	21.6			

*: The difference in numbers is due to male gender; SD: Standard deviation.

dates, or could not spare enough time to complete the forms due to their busy schedule, and that generalization was not possible since the study was conducted in three hospitals.

Results

The mean age of the nurses was 28.70±5.92 years, 89.6% (n=319) were women, 60.7% (n=216) were graduates, 64.9% were non-smokers, and 49.2% (n=175) had normal BMI values. In addition, 34.8% (n=124) had 2–5 years' professional experience and 28.7% (n=102) 6–10 years' experience.

Analysis showed that 25.3% (n=90), 23.3% (n=83), and 51.4% (n=183) of the nurses were employed in the intensive care, internal medicine, and surgical units, respectively, and 82.8% (n=295) were working as inpatient service nurses.

In terms of working hours, 46.6% (n=166) of the participants worked 41–48 h a week, while 43.5% worked 40 h or less. In addition, 55.6% (n=198) stood for 5–8 h within a 24 h period, and 82.3% (n=293) remained in the same position for 1 h (Table 1).

Table 2. Nurses' opinions on back pain

Descriptive characteristics	n	%	Descriptive characteristics	n	%
Consulting a physician due to low back pain in the past year			Sometimes	154	43.3
Yes	120	33.7	Total	356	100.0
No	236	66.3	Having been transferred to a unit with a less workload due to low back pain		
Total	356	100.0	Yes	86	24.2
Having a medical intervention for low back pain			No	270	75.8
Yes	123	34.6	Total	356	100.0
No	233	65.4	Having a low back pain affecting job satisfaction		
Total	356	100.0	Yes	201	56.5
Type of medical intervention for low back pain			No	155	43.5
Physiotherapy	78	63.4	Total	356	100.0
Medication	45	36.6	Activities affected by low back pain		
Total	123	100.0	Weight lifting (1) – Walking (2) – Sitting (3)	10	2.8
Using medication for low back pain			(1) – Standing (4) – Sleeping (5)	8	2.2
Yes	234	65.7	(1) – (4) – House work (6)	4	1.1
No	122	34.3	(1) – (5) – (6)	6	1.7
Total	356	100.0	(1) – Social activities (7) – Sex life (8)	4	1.1
Medications used for low back pain			(1) – (2) – (3) – (4)	42	11.8
NSAII	35	15.0	(1) – (2) – (3) – (5)	10	2.8
Paracetamol	42	18.0	(1) – (2) – (5) – (8)	8	2.2
Muscle relaxant	126	53.8	(1) – (3) – (5) – (6)	2	0.6
Paracetamol and muscle relaxant	31	13.2	(1) – (4) – (5) – (6)	14	3.9
Total	234	100.0	(1) – (4) – (6) – (7)	49	13.8
Severity of low back pain			(1) – (5) – (6) – (8)	2	0.6
Moderately severe	270	75.8	(1) – (3) – (4) – (5) – (6)	36	10.1
Very severe	86	24.2	(1) – (3) – (4) – (6) – (7)	35	9.8
Total	356	100.0	(1) – (4) – (5) – (6) – (8)	2	0.6
Having a low back pain affecting work efficiency and performance			(2) – (3) – (4) – (5) – (6)	45	12.6
Yes	78	21.9	(1) – (2) – (3) – (4) – (5) – (6) – (8)	2	0.6
No	124	34.8	(1) – (2) – (3) – (4) – (5) – (6) – (7) – (8)	77	21.6
			Total	356	100.0

Table 2 includes the participants' opinions regarding low back pain and shows that 66.3% (n=236) had not consulted a physician due to low back pain in the previous year, and that 65.4% (n=233) received no intervention for it.

In addition, 53.8% (n=126) of the 234 nurses who used medication for their low back pain used muscle relaxants.

About 8% of the participants, the severity of low back pain was moderate, 43.3% (n=154) had a low back

pain that sometimes affected their work efficiency and 75.8% (n=270) had not ask for being transferred to a unit with a less workload due to their low back pain.

It was determined that in 56.5% (n=201) of the participants, low back pain affected job satisfaction, and most affected activities due to low back pain were weight lifting, walking, sitting, standing, sleeping, housework, social activities, and sex life for 21.6% (n=77) of the participants and weight lifting, standing, housework, and social activities for 13.8% (n=49).

Table 3. Nurses' coping methods to reduce their low back pain

Methods	Yes		Sometimes		No	
	n	%	n	%	n	%
Moving arms, shoulders, and hips in alignment	134	37.6	42	11.8	180	50.6
Keeping head in front and abdomen in	134	37.6	42	11.8	180	50.6
Not standing for long	125	35.1	84	23.6	147	41.3
Avoiding wearing high-heeled shoes when you have to stand for a long time	169	47.5	42	11.8	145	40.7
Not sitting in the same position for a long time	126	35.4	84	23.6	146	41.0
Putting one foot on the step – high support and changing it every 5–15 min when you have to stand for a long time	45	12.6	87	24.4	224	62.9
Putting the pillow under your knees and waist cavity while lying on your back	45	12.6	86	24.2	225	63.2
Lying on side with knees bent	42	11.8	86	24.2	228	64.2
Putting pillow between legs while lying on side	87	24.4	44	12.4	225	63.2
Supporting the back and waist cavity while sitting	80	22.5	209	58.7	67	18.8
Sleeping in hard bed	89	25.0	42	11.8	225	63.2
Not carrying heavy objects	193	54.2	84	23.6	35	9.8
Pushing heavy objects instead of pulling them	190	53.4	131	36.8	35	9.8
Bending down with your back upright instead of bending from your waist when carrying things	87	24.4	131	36.8	103	28.9
Exercising to strengthen waist muscles	80	22.5	167	46.9	109	30.6
Doing simple exercises such as walking in a way that does not tire you	116	32.6	131	36.8	109	30.6
Trying to lose weight	89	25.0	129	36.2	138	38.8
Having bed rest during painful period	166	46.6	123	34.6	67	18.8
Applying ice to the painful area	36	10.1	44	12.4	276	77.5
Applying hot to the painful area	112	31.5	42	11.8	202	56.7
Massaging or having someone massage on painful area	236	66.3	42	11.8	78	21.9
Massaging the painful area using a massager	112	31.5	42	11.8	202	56.7
Using pain killers	116	32.6	84	23.6	156	43.8
Using muscle relaxants	125	35.1	84	23.6	147	41.3
Using antidepressants	0	0.00	0	0.0	356	100.0
Wearing low back corset	36	10.1	0	0.0	320	89.9
Having Hijama therapy	0	0.0	0	0.0	356	100.0
Having cupping (dry) therapy	0	0.00	0	0.0	356	100.0
Having leech therapy	0	0.00	0	0.0	356	100.0
Using cataplasm	0	0.00	0	0.0	356	100.0

It was found that more than 50% of the participants answered “no” to the following questions; Moving arms, shoulders and hips in alignment, keeping head in front and abdomen in, putting one foot on the step-high support and changing it every 5–15 min when you have to stand for a long time, putting the pillow under your knees and waist cavity while lying on your back, lying on side with knees bent, sleeping in hard bed, applying ice to the painful area, applying hot to the painful area, mas-

saging the painful area using a massager and wearing a low back corset.

All the participants stated that they did not “use antidepressant drugs, have Cupping (Hijama in Arabic), leech therapy or use cataplasm.”

The majority of the participants replied “yes” to the following questions; “avoiding wearing high-heeled shoes when you have to stand for a long time, not

carrying heavy objects, pushing heavy objects instead of pulling them, having bed rest during painful period and massaging or having someone massage on painful area.

Nearly half or more of the participants answered the following questions as "sometimes;" supporting the back and waist cavity while sitting, bending down with your back upright instead of bending from your waist when carrying things, exercising to strengthen waist muscles, doing simple exercises such as walking in a way that does not tire you (Table 3)."

The Cronbach' alpha level of the responses to these items was found 0.85.

A significant relationship was found between the age groups of the participants and low back pain ($p=0.004$), and between low back pain and task type ($p=0.003$), time spent standing ($p=0.007$), and remaining in the same position ($p=0.000$).

There was not any significant correlation between the nurses' hospitals, gender, marital status, smoking status, BMI, having birth, and the number of births, the units they work in, weekly working hours, and low back pain ($p>0.05$) (Table 4).

Discussion

Low back pain is regarded as a disability and one of the most important health problems today. It is also common problem affecting health professionals, especially nurses.

Various studies of health workers have shown a positive relationship between low back pain and high BMI, smoking, age, gender, number of shifts worked, and inappropriate posture at work, but have reported that exercise prevents low back pain.^[10,11] In the present study, 66.9% of participants did not take regular exercise, 78.1% had moderate activity levels during leisure activities, 87.4% did not wear shoes with heels higher than 3.5 cm, 55.3% frequently complained of headache, 54.5% were sometimes satisfied with the work they did, 37.1% sometimes felt safe in their workplace, 56.7% thought that they sometimes had control over their work, 65.7% never thought that their work was monotonous and boring, 75.6% stated that there was no opportunity/

activity for relaxation in their working environment, 65.7% reported no support and encouragement in the working environment, 75.6% thought that their work was always physically strenuous, 88.2% thought that the working environment was stressful, and 53.4% encountered no physical stress factor. Davis and Kotowski (2015) found that 57 (26.2%), 120 (55%), and 41 (18.8%) nurses experienced mild, moderate, and severe low back pain, respectively, and that 49 had consulted a physician.^[1] Physical therapy, neurosurgery, orthopedics, and algology were the most frequently consulted departments for low back pain. In this study, it was seen that nurses' opinions about low back pain were similar to the literature. About 66.3% did not see a physician because of their low back pain in the past year, 65.4% did not have any intervention for it, 35.4% used muscle relaxants, 75.8% had moderately severe back pain, 43.3% had a low back pain which sometimes affected their work efficiency, 75.8% did not ask for being transferred to a unit with a less workload, and 6.5% had a low back pain that affected their job satisfaction. In addition, mostly affected activities were listed as weight lifting, walking, sitting, standing, sleeping, housework, social activities, and sex life by 21.6% of the participants and weight lifting, standing, housework, and social activities by 13.8%. Since all of the participants had low back pain, they did not receive any training regarding the reasons and prevention of occupational back pain, they did not have any musculoskeletal system diseases before starting the profession, their low back pain began after starting the nursing profession and they did not get sick leave due to back pain, they were not included in the table. It is thought that the probability of low back pain increases in health care workers due to severe working conditions.

In a study by Sanjoy et al.,^[12] 61.92% of 365 participants stated that physical activity had an effect on low back pain, and the most common physical activities were leaning forward, lifting things, standing, and sitting, respectively. Similar to the literature, more than 50, 0% of the participants in this study expressed that assisting the patients while walking them or taking them to the bathroom/toilet would not lead to low back pain, while 77.5% thought that other applications such as carrying heavy medical equipment, heavy objects/materials pushing, pull-

Table 4. The relationship between the participants' sociodemographic characteristics and their low back pain

Sociodemographic characteristics	The severity of low back pain				Mean±SD
	Moderately severe		Very severe		
	n	%	n	%	
Age (years)					
23 years and below (n=96)	73	27.0	23	26.7	2.24±0.42
24–28 years old (n=91)	63	23.4	28	32.6	2.31±0.46
29–33 years old (n=95)	66	24.5	29	33.7	2.31±0.46
34–38 years old (n=55)	49	18.1	6	7.0	2.11±0.31
39 years old and over (n=19)	19	7.0	0	0.0	2.00±0.00
Test value					KW=15.554
Significance					p=0.004*
Gender					
Male (n=37)	25	low 9.3	12	14.0	2.32±0.47
Female (n=319)	245	90.7	74	86.0	2.23±0.42
Test value					MW=5356.5
Significance					p=0.215
Marital status					
Married (n=153)	111	41.1	42	48.8	2.27±0.48
Single (n=203)	159	58.9	44	51.2	2.22±0.41
Test value					MW=14632.5
Significance					p=0.208
Educational status					
Medical vocational high school (n=46)	35	13.0	11	12.8	2.24±0.43
Associate degree (n=70)	54	20.0	16	18.6	2.23±0.42
Undergraduate (n=216)	159	58.9	57	66.3	2.26±0.44
Postgraduate (n=24)	22	8.1	2	2.3	2.08±0.42
Test value					MW=8.288
Significance					p=0.040**
Smoking					
Yes (n=125)	94	34.8	31	36.0	2.25±0.43
No (n=231)	176	65.2	55	64.0	2.24±0.42
Test value					MW=14294,5
Significance					p=0.835
Body mass index					
Underweight (n=104)	79	29.3	25	29.1	2.24±0.42
Normal weight (n=175)	131	48.5	44	51.2	2.25±0.43
Overweight (n=77)	60	22.2	17	19.7	2.22±0.41
Test value					KW=1.140
Significance					p=0.566
Having birth					
Yes (n=107)	81	30.0	26	30.2	2.24±0.43
No (n=249)*	189	70.0	60	69.8	2.24±0.42
Test value					MW=13294.5
Significance					p=0.967
The number of births					
0 (n=246)*	186	68.9	60	69.8	2.24±0.43

Table 4 (cont.). The relationship between the participants' sociodemographic characteristics and their low back pain

Sociodemographic characteristics	The severity of low back pain				Mean±SD
	Moderately severe		Very severe		
	n	%	n	%	
1 (n=58)	47	17.4	11	12.8	2.19±0.39
2 (n=50)	35	13.0	15	17.4	2.30±0.46
3 (n=2)	2	0.7	0	0.0	2.00±0.00
Test value					KW=2.422
Significance					p=0.489
Number of children					
0 (n=238)	182	67.4	56	65.1	2.24±0.43
1 (n=60)	47	17.4	13	15.1	2.24±0.43
2 (n=58)	41	15.2	17	19.8	2.24±0.43
Test value					KW=1.092
Significance					p=0.579
The unit you work					
Internal medicine (n=83)	61	22.6	22	25.6	2.27±0.44
Surgical units (n=183)	145	53.7	38	44.2	2.21±0.40
Intensive care (n=90)	64	23.7	26	30.2	2.29±0.45
Test value					KW=2.492
Significance					p=0.288
Task type					
Nurse in charge (n=35)	38	14.1	1	1.2	2.03±0.16
Inpatient service nurse (n=229)	215	79.6	80	93.0	2.27±0.44
Polyclinic nurse (n=6)	17	6.3	5	5.8	2.23±0.42
Test value					KW=11.330
Significance					p=0.003*
Weekly working hours					
40 h (n=155)	118	43.7	37	43.0	2.24±0.42
41–48 h (n=166)	124	45.9	42	48.8	2.25±0.43
49 h and over (n=35)	28	10.4	7	8.2	2.20±0.40
Test value					KW=0.454
Significance					p=0.797
Time spent standing					
4 h and below (n=33)	18	6.7	15	17.4	2.24±0.43
5–8 h (n=198)	151	55.9	47	54.7	2.24±0.43
9 h and over (n=125)	101	37.4	24	27.9	2.24±0.43
Test value					KW=9.838
Significance					p=0.007*
Time spent staying in the same position					
Up to 1 h (n=293)	219	81.1	74	86.0	2.45±0.50
1–2 h (n=29)	23	8.5	6	7.0	2.24±0.42
2–3 h (n=14)	14	5.2	0	0.0	2.19±0.39
4 h and over (n=20)	14	5.2	6	7.0	2.24±0.42
Test value					KW=28.060
Significance					p=0.000*

*: The difference in numbers is due to male gender; SD: Standard deviation.

ing heavy objects/materials, and changing the position of the patient would cause it. According to the literature, the most important factor that can cause low back pain in nurses can be said to be the removal and transport of patients.

Van Hoof et al.^[13] found that 89.8% of the nurses had some applications regarding their low back pain; 58.1% preferred to rest frequently and 28% preferred to use medication. In this study, it is seen that the applications used for low back pain are quite similar to the literature. The participants answered “yes” to the following questions such as “avoiding wearing high-heeled shoes when you have to stand for a long time, not carrying heavy goods, pushing heavy goods instead of pulling them while moving, having bed rest during the painful period, massaging/ having someone massage to the painful area.” Nearly or more than half of the participants replied the following questions as “sometimes;” supporting the back and waist cavity while sitting, bending down with your back upright instead of bending from your waist when carrying things, exercising to strengthen waist muscles, and doing simple exercises such as walking in a way that does not tire you.

In a study by Şimşek et al.,^[14] a significant relationship was found between gender and low back pain and it was reported that women had more pain than men. This may be due to anatomical, physiological, and structural differences between men and women. As for this study, it was observed that there was a significant relationship between the age groups, the unit they worked in, the task type, the amount of time spent standing and staying in the same position and low back pain. However, no significant relationship found between nurses' hospitals/units, gender, marital and smoking status, BMI, having birth, number of births, weekly working time, and low back pain.

Matsudaira et al.^[15] reported that there was a significant difference in terms of job satisfaction between those with and without low back pain, and that those who were satisfied with their job had a lower incidence of low back pain. Barnish and Barnish^[16] revealed that unlike those who did not wear high-heeled shoes (66.2%), the ones wearing high-heeled shoes (62.7%) had low back pain. In parallel with the literature, this study found a significant positive rela-

tionship between fatigue and low back pain, between the job satisfaction and low back pain, between satisfaction with working style and low back pain, between regular exercise and low back pain, between having intervention and low back pain, and between wearing high-heeled shoes and low back pain.

Limitations of the study can be listed as follows; some of the nurses were off duty, some of them were on sick leave, some could not take time to fill out the forms due to their heavy workload at the time of the study, and a generalization cannot be made as the study was conducted only in three hospitals.

Conclusion

In light of the results in this study, it is seen that experiencing a low back pain is a risk for nurses due to prolonged working and standing hours. Therefore, it is suggested that nurses' working hours should be arranged and appropriate body mechanics should be included in their in-service trainings.

Ethical Approval: Following the determination of the research subject and the hospitals to be studied, the ethics committee permission was obtained from Kirklareli University Institute of Health Sciences (No. 07 dated October 16, 2015). Before the data collection, written permission was obtained from the managers of the institutions where the study will be conducted. The nurses included in the study were informed about the aim of the study, and their verbal and informed written permissions were taken.

Conflict-of-interest issues regarding the authorship or article: None declared.

Peer-review: Externally peer-reviewed.

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