Original Article

Effects of Low Back Pain on Functional Disability Level and Quality of Life in Nurses Working in a University Hospital

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Abstract

Background: The nurses are under a greater risk in terms of Low Back Pain (LBP) and LBP can affect the nurses' quality of life adversely and result in disability. This study aims at analysing the effects of LBP on functional disability level and quality of life in nurses.
Methods: This is a descriptive study. The population consisted of all the nurses working at a university hospital. The whole population was included in the sampling. 514 nurses participated in the study. The confirmation of the ethics committee and permission of the institution were obtained prior to the study. The data were collected via Personal Information Form, Quality of Life Scale Short Form 36 (SF-36) and Oswestry Disability Index (ODI).
Objectives: This study aims at exploring the effects of Low Back Pain (LBP) on functional disability level and quality of life in nurses.
Material and Methods: This is a descriptive study. The population consisted of all the nurses working at a university hospital. The whole population was included in the sampling. 514 nurses participated in the study. The confirmation of the ethics committee and permission of the institution were obtained prior to the study. The data were collected via Personal Information Form, Quality of Life Scale Short Form 36 (SF-36) and Oswestry Disability Index (ODI).
Results: It was found that 85.4% of the nurses had low back pain at any stage of their life and 57.8% had continuing back pain. Nurses' average scores are lower for each subscale of the SF-36 except for Emotional Role when compared with other nurses who do not suffer from LBP. The mean score that the nurses with low back pain obtained from the ODI was 11.09 ± 6.18 and majority of the nurses experiences mild disability. It was indicated that there is a negative correlation between nurses' average scores for all subscales of SF-36 and ODI ($p<.05$).
Conclusion: The results of this study revealed that LBP is a common health problem among working nurse. LBP affects the nurses' quality of life adversely and results in disability. Taking necessary precautions for the prevention of LBP in nurses would provide positive effects on nurses' quality of life and functional levels.

Keywords: Low back pain, Functional disability, Nurse, Quality of life.

Introduction

Low back pain (LBP) is defined as a symptom complex consisting of pain and muscle tension or stiffness in the lumbar region localized below the costal margin and above the inferior gluteal folds, with or without pain radiating into the legs (Harrianto, 2010).The nurses are under a greater risk in terms of LBP when compared with other health professionals as they directly carry out all the care practices for the patients. The literature points out that frequency of LBP in nurses changes between 37.5% and 97.9%.

Physical and psychosocial risk factors are effective for the occurrence of LBPs (Jafari et al., 2019; Ibrahim et al., 2019). The nurses may be exposed to various physical risk factors that threat their low

back health due to their working places and occupational responsibilities. Long working hours, excessive work-load, insufficient breaks, shift related disruptions that affect sleeping cycle, eating habits and social life, duties that require assistance to patients in their daily lives, positioning them on the bed, carrying, lifting and transferring them or carrying medical devices of various weights and sizes, tidying beds of various heights increase the risk of a low back trauma for nurses (Abou El-Soud et al., 2014; Ibrahim et al., 2019). American Nurses Association (ANA) stated that the duties of nurses that require carrying patients are related with LBP (ANA, 2016).Psychosocial risk factors that result in stress and anxiety such as dissatisfaction about the job, lack of opportunities for relaxation and lack of a supportive and encouraging culture, and passive coping skills and may also cause LBP in nurses (Shieh et al., 2016; Abou El-Soud et al., 2014).LBP may affect the level of daily life activities and quality of life adversely and cause physical and psychological problems (Gurleyik et al., 2013; Shieh et al., 2016; Kalyani, 2019). Majority of health professionals experience disability related with LBP and their daily life activities are restraint (Al-Samawi & Awad, 2015; Kalyani, 2019). Numerous studies found that individuals who suffer from LBP have lower quality of life when compared with individuals without pain (Dundar et al., 2009; Hasanefendioglu et al., 2012). LBP affects the nurses by disability, efficiency restriction, burnout and low quality of life, also affects the organizations by absence from work, reduction in productivity and loss of labour force (Jafari et al., 2019; Ibrahim et al., 2019; Hasanefendioglu et al., 2012). These conditions cause an enormous medical and economic burden on individuals, families, employers, and the healthcare system (Pakbaz, 2019; Ibrahim et al., 2019; Van Hoof et al., 2018).A major characteristic of LBP, one of the occupational diseases, is that it is not related to what duty is done but how it is done and it can be prevented completely if the necessary precautions are taken (KoseTosunoz&Oztunc, 2017; Shieh et al., 2016).Precautions for prevention of LBPs in nurses is important in order for nurses to exercise their fundamental right to work under healthy and safe conditions, to maintain their professions and to provide beter support for their patients (Kabatas, Kocuk&Kuçukler, 2012; Ovayolu et al., 2014;

Pakbaz et al., 2019). Overall, the nurses who have important duty and responsibilities for improvement and protection of health need to protect and improve their health first in order to be able to provide effective care and be more beneficial for the patients (Pakbaz et al., 2019).

This study aims at analysing the effects of LBP on functional disability level and quality of life in nurses.

Methods

This is a descriptive study and the population of the study consisted of all the nurses working at a university hospital (N:874). No sampling criteria was applied and the whole population was included in the study. In total 514 nurses (participation rate of 58.8%) participated as somewhere on vacation (maternity leave, yearly vacation) and somewhere not willing to participate in the study.

Data collection: "Personal Information Form", "Short form (SF)-36 Quality of Life Scale" and "Oswestry Disability Index (ODI)" were used in data collection.

Personal Information Form: The form created by the researcher making use of literature review consisted of 26 items that question nurses' socio-demographic features, working and life style, LBP characteristics, frequency of carrying out some patient care practices and getting help during these practices.

Short Form (SF)-36 Quality of Life Scale: SF-36 was developed in 1992 by Rand Corporation (Ware & Sherbourne, 1992).Validity and reliability tests of the form were conducted by Kocyigit et al. (1999) in Turkey. SF-36 is the most commonly used quality of life scale in medical field and consists of 36 items and 8 subscales. These eight scales are physical functioning (PF), bodily pain (BP), role limitations due to physical health problems (RP), role limitations due to personal or emotional problems (RE), general mental health (MH), social functioning (SF), energy/fatigue or vitality (VIT), and general health perceptions (GH). The scale is evaluated considering the last four weeks. Each of the 8 subscales of the scale are evaluated separately. The scores range between 0 and 100. 100 refers to the best health condition while 0 refers to the worst health condition.

Oswestry Disability Index (ODI): Developed by Roland & Fairbanks (2000), ODI is a scale that is

sensitive for measuring functional disabilities of individuals with LBP. Validity and reliability tests were conducted by Yakut et al. (2004) in Turkey. ODI measures the intensity of LBP, how much it affects the life and the disability it causes. The scale consists of 10 questions that measure the intensity of the pain, personal care, lifting, walking, sitting, standing up, social life, sleeping, travelling and level of pain. Each question has 6 options and each can be scored between 0 and 5. Maximum score is 50 and as the score increases, so does the level of disability.

Ethical Considerations: The confirmation of the ethics committee, permission of the institution and verbal consent of the nurses were obtained prior to the study.

Data Analysis: SPSS 16.0 package program was used in data analysis. Descriptive statistics were reported as frequencies, means and standard deviations, medians, minimum and maximum. Chi-square was used to determine the relationship between characteristics of nurses that may influence having LBP. Mann-Whitney U test (Z value) was used in comparing two independent groups for non-parametric methods; Kruskal-Wallis H test ($\chi2$ value) was used in comparing three or more independent groups. Bonferroni corrected paired comparison was used in spotting the groups that make the difference in group comparisons. The significance level was considered *p*<.05 for all statistical analyses.

Results

Out of the 514 respondents, 88.7% of the nurses were female and the average age was 32.36±9.54. It was found that 56.2% of the nurses hold a bachelor's and above degree, 58% have normal weights according to BMI, 76.6% have medium economic level, 56.2% are married, 50.6% have no child and 27.4% of the nurses who have children have two children (Table 1).

The relationship between socio-demographic characteristics of nurses and their status of experiencing LBP is shown in Table 1. It was indicated that there was relationship between nurses' status of experiencing LBP and gender (*p*<.05) (Table 1).

In the present study, 57.8% of nurses suffer from LBP (n=297). 87.5% of the nurses who suffer from LBP had family members that suffer from LBP,

%66.0 of them had education about body mechanics and 93.7% experienced LBP before in their lifetime (Table 3). It was also determined that 47.5% of the nurses with LBP performed nursing intervention of "Making bed" sometimes and with help (88.6%); 5.1% of performed intervention of "Giving bedpan" sometimes and with help (68.2%) (Table 4).

ODI percentile score average of nurses with LBP were 22.81±12.59 (2.0-77.7) and their raw score average was 11.09±6.18. According to ODI, 15.2% of nurses did not have disability, 61.3% had mild, 20.5% had moderate and 3% had high/full disability (Table 2). When the relationships between some of the characteristics of nurses and their mean ODI scores were evaluated, no significant relationship was found between ODI mean scores and gender, marital status, educational status, presence of children as socio-demographic characteristics; years of working, position, working style and number of patients given care (daily) as working characteristics; smoking, using alcohol and exercise as lifestyle characteristics; LBP in family and body mechanics education as (p>0.05). There was a significant relationship between the nursess' ODI mean scores and age, BMI, economic level, working units, unit satisfaction, daily activity time, wearing high heels and experience of LBP in any period of life. It was found that ODI mean scores were significantly higher in the nurses between the ages of 31-35 and 41 and older compared with nurses who are 25 and younger; I. degree obesity or over has when compared with thin nurses; nurses with bad economic condition when compared with nurses with medium or good economic condition; work at policlinics and intensive care units (ICU) when compared with nurses that work at internal disease clinics and surgical clinics; the nurses that are not satisfied about their unit when compared with those who are satisfied with their unit; in the nurses who exercise for 30 minutes or less daily when compared with nurses who exercise for 31 minutes or more; nurses who wear high hills when compared with nurses who do not wear high hills; in the nurses who experienced LBP at a certain point in their life course when compared with nurses who did not experience LBP (*p*<.05) (Table 4). The nurses who perform the practices of "Changing the diaper", "Making bed", "Providing body care",

"Transferring the patient to wheelchair/stretcher" and "Lifting/transporting heavy medical equipment" "often" had significantly higher ODI score averages (p=.014; p=.025; p=.020; p=.013; p=.021) (Table 5).

It was found that the nurses who do not suffer from LBP have significantly higher average scores on each subscale of the SF-36 except for Role-Emotional difficulty subscale when compared with nurses who suffer from LBP (p<.05). The median scores of SF-36 subscales in nurses with LBP were 85.0(20.0-100.0) for physical functioning (PF), 77.5 (0.0-100.0) for bodily pain (BP), 50.0 (0.0-50.0) for role limitations due to physical health problems (RP); 33.3 (0.0-50.0) for role limitations due to personal or emotional problems (RE); 64.0 (12.0-100.0) for general mental health (MH), 62.5 (0.0-100.0) for social functioning (SF), 55.0 (0.0-100.0) for energy/fatigue or vitality (VIT) and 60.0 (10.0-100.0) for general health perceptions (GH). The nurses who suffer from LBP obtained the highest scores in the "Physical Function" subscale of the quality of life scale, and the lowest scores in the "Emotional Role" subscale (Table 3). A significant correlation was identified between nurses' gender and PF ve RF subscales; age groups and PF, SF subscales; BMI groups and PF subscales; educational status and PF subscale; presence of children and PF subscale; economic level and all subscales except for PF subscale; years of working and PF subscale; working units and PF, VIT, MH, SF, BP, GH subscales; position and PF, RP, VIT, MH, SF subscales; working style and MH, SF subscales; patients given care and GH subscale; unit satisfaction and PF, VIT, MIH, SF, BP, GH subscales; Alcohol and PF subscale; exercise and PF, VIT subscales; wearing high heels and PF, VIT, BP, GH subscales; LBP in any period of life and BP (p<.05) (Table 4).

Averages of nurses' ODI score had a medium level, statistically significant negative correlation with Physical Functioning, Role-Physical and Bodily Pain subscale score averages; low level statistically significant negative correlation with Role-Emotional, Vitality, Mental Health, Social Functioning and General Health Perception. It was found that as the SF-36 subscale score averages of the nurses increase, their ODI score averages decrease (Table 6).

Table 1. Distribution of socio-demographic characteristics of all nurses and The relationship between socio-demographic characteristics of nurses and their status of experiencing LBP (*N*=514)

Socio-demographic Characteristics	All nurses (n= 514)		LBP sufferers (n=217)		No LBP (n=297)		Tests P values
	n	%	n	%	n	%	
Gender							
Male	58	11.3				7.4	χ2= 10.561
Female	456	88.7	36	16.6	22	92.6	**p= .001**
			181	83.4	275		
Age Groups (X ± SD=32.36 ± 9.54)							
25 Age and ↓	164	31.9	76	35.0	88	29.6	χ2=8.634
26-30 Age	90	17.5	39	18.0	51	17.2	p= .071
31-35 Age	67	13.1	35	16.1	32	10.8	
36-40 Age	65	12.6	21	9.7	44	14.8	
41 Age and ↑	128	24.9	46	21.2	82	27.6	
BMI Groups							
Underweight	31	6.0	10	4.6	21	7.1	χ2=3.370
Normal	298	58.0	134	61.8	164	55.2	p= .338
Overweight	144	28.0	59	27.2	85	28.6	
Obese	41	7.0	14	6.5	27	9.1	
Marital Status							
Married	289	56.2	116	53.5	173	58.2	χ2=1.170
Unmarried/Single	225	43.8	101	46.5	124	41.8	p=.279
Educational Status							
Health High School	137	26.7	61	28.1	76	25.6	χ2=1.116
Associate's degree	88	17.1	33	15.2	55	18.5	p=.572
Bachelor's and Master's degree	289	56.2	123	56.7	166	55.9	
Having Children							
Yes	254	49.4	119	54.8	141	47.5	χ2=2.720
No	260	50.6	98	45.2	156	52.5	p=.99
Number of Children							
No Child	260	50.6	119	54.8	141	47.5	
Onechild	78	15.2	35	16.1	43	14.5	χ2=7.543
TwoChildren	141	27.4	55	25.3	86	29.0	p=.56
Three Children	35	6.8	8	3.7	27	9.1	
Economic Level							
High	79	15.4	37	17.1	42	14.1	χ2=2.552

Medium	394	76.6	167	77.0	227	76.4	p=.279
Low	41	8.0	13	6.0	28	9.4

Table 2. Distribution of functional disability levels of nurses with LBP according to ODI

Scale	$\bar{X}\pm SD$	Min-Max
ODI (Percent)	22.81 ±12.59	2.0-77.7
ODI (Raw score)	11.09±6.18	1.0-35.0

Functional disability levels	n	%
No disability (0-4)	45	15.2
Mild Disability (5-14)	182	61.3
Moderate Disability (15-24)	61	20.5
Complete / Advanced Disability (25-34)	9	3.0
Total	297	100.0

Table 3. SF-36 scores according to having LBP (*N*=514)

	N (%)	PF	RP	RE	VIT	MH	SF	BP	GH
					SF-36 Subscales				
					Median (Min-Max)				
Nurses with LBP	217(42.2)	85.0 (20-100)	50.0 (0-50)	33.3 (0-50)	55.0 (0-100)	64.0 (12-100)	62.5 (0-100)	77.5 (0-100)	60.0 (10-100)
Nurses without LBP	297(57.8)	60.0 (0-100)	25.0 (0-50)	33.3 (0-50)	45.0 (0-90)	52.0 (0-100)	50.0 (0-100)	47.5 (0-100)	45.0 (5-85)
Tests P value		Z=-9.722 *p=.000*	Z=-6.482 *p=.000*	Z=-1.407 *p=.159*	Z=-6.302 *p=.000*	Z=4.690 *p=.000*	Z=-6.661 *p=.000*	Z=10.279 *p=.000*	Z=-8.365 *p=.000*

Table 4. The relationship between socio-demographic. work. lifestyle and LBP related characteristics of nurses and ODI and SF-36 subscales scores (n=297)

Characteristics	N (%)	ODI Scores	PF	RP	RE	VIT	MH	SF	BP	GH
					Median (Min-Max)					
Gender										
Male	22(7.4)	16(6-54)	75 (35-100)	25 (0-50)	33.3 (0-33)	45 (15-80)	54 (16-100)	62.5 (25-100)	67.5 (22.5-90)	45 (5-70)
Female	275(92.6)	22(2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	52 (0-92)	50 (0-100)	45 (0-100)	45 (5-85)
Tests		Z=-1.552	Z=-2.552	Z=-.221	Z=-.465	Z=-1.112	Z=-.546	Z=-1.480	Z=-3.189	Z=-.111
P value		p=.121	**p=.012**	p=.825	p=.642	p=.266	p=.585	p=.139	**p=.001**	p=.911
Age Groups										
25 Age and ↓	88(29.6)	16.9 (2-55.5)	75 (0-100)	25 (0-50)	33.3 (0-50)	42.5 (0-80)	54 (8-92)	50 (25-100)	57.5 (10-100)	45 (5-85)
26-30 Age	51(17.2)	22 (2-58)	60 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	52 (12-84)	50 (0-87.5)	57.5 (0-100)	45 (10-75)
31-35 Age	32(10.8)	26 (4-50)	50 (5-90)	0 (0-50)	16.7 (0-50)	37.5 (0-80)	48 (0-88)	37.5 (0-100)	45 (0-80)	40 (5-85)
36-40 Age	44(14.8)	21 (2-40)	65 (10-90)	25 (0-50)	33.3 (0-50)	40 (5-80)	56 (16-100)	50 (12.5-100)	45 (20-90)	45 (5-80)
41 Age and ↑	82(27.6)	24.2 (2-77.8)	50 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-85)	56 (16-88)	50 (0-100)	45 (10-100)	40 (15-85)
Tests		χ^2=12.392	χ^2=25.377	χ^2=6.010	χ^2=3.158	χ^2=9.448	χ^2=8.409	χ^2=16.496	χ^2=9.389	χ^2=1.887
P value		**p=.015 (1-3,5)**	**p=.000** **(1-3,5)(4-5)**	p=.198 -	p=.532 -	p=.051 -	p=.078 -	**p=0.002** **(1,2,4,5-3)**	p=.052 -	p=.757 -
BMI Groups										
Underweight	21(7.1)	15.6 (2-54)	55 (15-100)	25(0-50)	16.7 (16.7-50)	50 (10-80)	52 (8-76)	50 (25-87.5)	57.5 (22.5-90)	45 (5-70)
Normal	164(55.2)	20 (2-57.8)	65 (0-100)	25 (0-50)	33.3 (0-50)	45(0-90)	56 (0-92)	50 (0-100)	47.5 (0-100)	45 (5-85)
Overweight	85(28.6)	22 (2-60)	65 (0-100)	12.5 (0-50)	33.3 (0-50)	40 (0-85)	52 (16-100)	50 (0-100)	55 (0-90)	45 (5-85)
Obese	27(9.1)	26.7 (4-77.8)	50 (5-85.0)	12.5 (0-50)	16.7 (0-50)	40 (0-75)	52 (16-80)	50 (0-87.5)	45 (0-77.5)	40 (15-60)
Tests		χ^2=8.386	χ^2=7.676	χ^2=3.242	χ^2=.732	χ^2=2.231	χ^2=1.394	χ^2=6.338	χ^2=2.525	χ^2=3.404
P value		**p=.039 (1-4)**	p=.053	p=.356	p=.866	p=.526	p=.707	p=.096	p=.471	p=.303
Marital Status										
Married	173(58.2)	22(2-60)	60 (0-100)	12.5 (0-50)	33.3 (0-50)	45 (0-80)	52 (0-100)	50 (0-100)	47.5 (0-100)	45 (5-85)
Unmarried/Single	124(41.8)	20 (2-77.8)	70 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	52 (12-92)	50 (0-100)	55 (0-100)	45 (5-85)
Tests		Z=-110	Z=-2.345	Z=-.849	Z=-.034	Z=-.905	Z=-.237	Z=-.186	Z=-.898	Z=-.997
P value		p=.312	**p=.019**	p=.396	p=.973	p=.365	p=.813	p=.852	p=.369	p=.319
Educational Status										
Health High School	76(25.6)	18.9 (2-77.8)	70 (0-100)	25 (0-50)	33.3 (0-50)	40 (10-80)	56 (8-88)	50 (0-100)	57.5 (10-100)	45 (5-85)
Associate's degree	55(18.5)	22 (2-60)	50 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-85)	52 (12-92)	50 (12.5-100)	47.5 (20-77.5)	40 (5-80)
Bachelor's and ↑	166(55.9)	22 (2-62.2)	60 (0-100)	12.5 (0-50)	33.3 (0-50)	45 (0-90)	56 (0-100)	50 (0-100)	45 (0-100)	45 (5-85)
Tests		χ^2=4.579	χ^2=9.972	χ^2=2.010	χ^2=.566	χ^2=.486	χ^2=.433	χ^2=.298	χ^2=1.583	χ^2=3.373
P value		p=.101	**p=.007(1-2)**	p=.366	p=.753	p=.784	p=.805	p=.861	p=.463	p=.185
Presence of children										
Yes	141(47.5)	20 (2-77.8)	70 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	52 (0-92)	50 (0-100)	55 (0-100)	45 (5-85)
No	156(52.5)	22 (2-60)	55 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-80)	56 (12-100)	50 (0-100)	46.3 (0-100)	40 (5-85)
Tests		Z=-.962	Z=-3.744	Z=-.515	Z=-.409	Z=-.253	Z=-.824	Z=-.808	Z=-.912	Z=-1.145
P value		p=.336	**p=.000**	p=.606	p=.683	p=.800	p=.410	p=.419	p=.362	p=.252

Economic Level

	n(%)									
High	42(14.1)	18 (2-40)	70 (0-100)	25 (0-50)	33.3 (16.7-50)	55 (5-80)	62 (36-92)	62.5 (0-100)	56.3 (0-90)	52.5 (5-80)
Medium	227(76.4)	22 (2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-90)	52 (8-100)	50 (0-100)	50 (0-100)	45 (5-85)
Low	28(9.4)	26.7 (8-62.2)	57.5 (0-95)	0 (0-50)	16.7 (0-50)	35 (0-85)	46 (0-76)	37.5 (0-87.5)	45 (10-67.5)	37.5 (10-70)
Tests		χ^2=11.152	χ^2=3.727	χ^2=7.261	χ^2=12.633	χ^2=17.596	χ^2=14.475	χ^2=14.912	χ^2=8.112	χ^2=15.397
P value		**p=.004 (1.2-3)**	p=0.155 -	**p=0.027 (1,2-3)**	**p=0.002 (1,2-3)**	**p=0.000 (1-2,3)**	**p=0.001 (1-2,3) (2-3)**	**p=0.001 (1-2,3) (2-3)**	**p=0.017 (1-3)**	**p=0.000 (1-2,3)**

Years of working

	n(%)									
1 <	13(4.4)	20 (6-33)	60 (5-90)	0 (0-50.0)	16.7 (0-50)	50 (15-70)	68 (20-84)	37.5 (37.5-100)	47.5 (22.5-80)	45 (35-85)
1-4	87(29.3)	20 (2-58)	75 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-80)	52 (8-92)	50 (0-100)	57.5 (0-100)	45 (5-80)
5-8	42(14.1)	21 (2-48)	70 (0-100)	25 (0-50)	25 (0-50)	40 (5-90)	50 (12-84)	50 (0-87.5)	51.3 (22.5-100)	45 (10-75)
9-12	34(11.4)	24 (2-50)	57.5 (0-90)	6.3 (0-50)	33.3 (0-50)	40 (0-80)	52 (12-100)	50 (12.5-100)	45 (0-80)	40 (5-75)
> 13	121(40.7)	22 (2-77.8)	55 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-85)	56 (0-88)	50 (0-100)	45 (10-100)	40 (5-85)
Tests		χ^2=4.266	χ^2=18.739	χ^2=8.841	χ^2=4.363	χ^2=6.651	χ^2=8.111	χ^2=6.995	χ^2=8.878	χ^2=2.587
P value		p=.371	**p=.001 (2-4.5)**	p=.065 -	p=.359 -	p=.156 -	p=.088 -	p=.136 -	p=.064 -	p=.629 -

Working units

	n(%)									
Internal Clinics [1]	62(20.9)	20 (2-54)	70 (0-100)	25 (0-50)	16.7 (0-50)	40 (0-80)	52 (12-88)	50 (0-100)	55 (10-90)	47.5 (5-75)
Surgical clinics [2]	83(27.9)	20 (2-58)	70 (0-100)	25 (0-50)	33.3 (0-50)	50 (10-90)	64 (24-100)	62.5 (0-100)	57.5 (0-100)	45 (5-85)
Polyclinics [3]	56(18.9)	26 (6-77.8)	55 (5-100)	12.5 (0-50)	33.3 (0-50)	50 (0-85)	60 (16-88)	50 (0-100)	45 (10-100)	40 (15-80)
ICU [4]	69(23.2)	26.7 (4-57.8)	55 (0-100)	12.5 (0-50)	16.7 (0-50)	40 (0-80)	52 (0-88)	37.5 (0-100)	45 (0-90)	40 (5-85)
Pediatric Clinics [5]	23(7.7)	21 (2-42.2)	55 (0-95)	12.5 (0-50)	16.7 (0-33.3)	35 (10-80)	48 (16-80)	37.5 (12.5-87.5)	45 (10-77.5)	40 (5-80)
Other*	4(1.3)									
Tests		χ^2=14.566	χ^2=12.142	χ^2=6.278	χ^2=8.311	χ^2=26.910	χ^2=22.219	χ^2=13.976	χ^2=11.135	χ^2=6.175
P value		**p=.006 (1-3,4) (2-3,4)**	**p=.016 (1,2-3)**	p=.179 -	p=.081 -	**p=.000 (1-2,3) (2-4,5) (3-4)**	**p=.000 (1-2,3) (2,3-4)**	**p=.007 (1-2,3)**	**p=.025 (1,3,4-2) (2-4)**	p=0.186 -

Position

	n(%)									
Responsible nurse	26(8.8)	19 (2-50)	77.5 (0-100)	50 (0-50)	33.3 (0-50)	50 (0-80)	60 (36-84)	62.5 (12.5-87.5)	67.5 (22.5-90)	45 (20-80)
Clinic nurse	221(74.4)	22 (2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-90)	52 (0-100)	50 (0-100)	47.5 (0-100)	45 (5-85)
Polyclinic Nurse	46 (15.5)	26 (6-60)	55 (10-100)	12.5 (0-50)	33.3 (16.7-50)	47.5 (10-85)	62 (16-88)	50 (12.5-100)	45 (22.5-100)	42.5 (15-80)
Other**	4 (1.3)									
Tests		χ^2=5.190	χ^2=8.359	χ^2=7.343	χ^2=4.441	χ^2=10.457	χ^2=9.274	χ^2=7.325	χ^2=5.725	χ^2=1.280
P value		p=.075	**p=.015 (1-3)**	**p=.025 (1-2,3)**	p=.109 -	**p=.005 (2-3)**	**p=.010 (2-3)**	**p=.026 (1-2)**	p=.057 -	p=.527 -

Working style

	n(%)									
Day shifts	116(39.1)	22.1 (2-77.8)	60 (0-100)	12.5 (0-50)	33.3 (0-50)	45 (0-85)	60 (0-88)	62.5 (0-100)	45 (0-100)	42.5 (5-85)
Night shifts	20(6.7)	20 (2-46)	70 (30-100)	37.5 (0-50)	33.3 (16.7-33.3)	50 (10-90)	58 (8-88)	50 (25-100)	56.3 (10-100)	45 (5-70)
Day and night shifts	161(54.2)	20 (2-58)	65 (0-100)	25 (0-50)	33.3 (0-50)	40 (5-80)	52 (12-100)	50 (0-100)	47.5 (0-100)	45 (5-85)
Tests		χ^2=2.961	χ^2=4.433	χ^2=1.079	χ^2=2.459	χ^2=4.861	χ^2=6.325	χ^2=7.323	χ^2=.722	χ^2=.046
P value		p=.228	p=.109	p=.583	p=.292	p=.088	**p=.042(1-3)**	**p=.026 (1-3)**	p=.697	p=.977

Patients Given Care (Daily)	147(49.5)	22 (2-60)	60 (0-100)	12.5 (0-50)	33.3 (0-50)	40 (0-90)	52 (0-92)	50 (0-100)	45 (0-100)	40 (5-85)
10 and less	87(29.3)	20 (2-77.8)	70 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-80)	60 (12-100)	62.5 (0-100)	55 (0-100)	45 (5-85)
11-20	63(21.2)	20 (2-54)	65 (0-100)	12.5 (0-50)	16.7 (0-50)	45 (0-85)	52 (16-84)	50 (12.5-87.5)	47.5 (22.5-90)	42.5 (15-80)
21 and over										
Tests		χ^2=2.837	χ^2=1.634	χ^2=4.003	χ^2=1.794	χ^2=3.398	χ^2=1.502	χ^2=3.457	χ^2=2.695	χ^2=10.632
P value		p=.242	p=0.442	p=0.135	p=0.408	p=0.183	p=0.472	p=0.178	p=0.260	**p=.005(1-2)**
Unit satisfaction										
Yes	160(53.9)	20 (2-58)	70 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	62 (12-100)	50 (0-100)	55 (0-100)	45 (5-85)
No	30(10.1)	30 (2-77.8)	40 (0-90)	6.3 (0-50)	16.7 (0-50)	25 (0-65)	40 (12-84)	37.5 (0-87.5)	35 (0-77.5)	40 (5-75)
Partially	107(36.0)	22 (2.2-60)	60 (5-100)	25 (0-50)	33.3 (0-50)	40 (0-80)	52 (0-88)	50 (0-100)	55 (10-90)	45 (5-80)
Tests		χ^2=12.009	χ^2=12.089	χ^2=4.768	χ^2=3.079	χ^2=31.694	χ^2=36.401	χ^2=25.525	χ^2=14.208	χ^2=6.994
P value		**p=.002 (1,3-2)**	**p=.002 (1,3-2)**	p=.092 -	p=.215 -	**p=.000 (1-2,3) (2-3)**	**p=.000 (1,3-2)**	**p=.000 (1,3-2)**	**p=.001 (1,3-2)**	**p=.030 (1,3-2)**
Smoking										
Yes	77(25.9)	22 (2-77.8)	65 (5-100)	25 (0-50)	16.7 (0-50)	45 (0-85)	52 (0-88)	50 (0-100)	45 (10-100)	45 (5-85)
No	220(74.1)	22 (2-60)	60 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	56 (8-100)	50 (0-100)	55 (0-100)	45 (5-85)
Tests		Z=-.988	Z=-0.357	Z=-1.389	Z=-1.266	Z=-.391	Z=-1.377	Z=-1.653	Z=-1.190	Z=-.034
P value		p=.323	p=.721	p=.165	p=.206	p=.696	p=.168	p=.098	p=.234	p=.973
Alcohol										
Yes	239(80.5)	22 (2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-90)	56 (8-100)	50 (0-100)	55 (0-100)	45 (5-85)
No	58(19.5)	23.1 (2-46)	70 (0-100)	18.8 (0-50)	16.7 (0-50)	40 (0-80)	52 (0-88)	50 (0-100)	45 (20-100)	45 (10-85)
Tests		Z=-.025	Z=-2.908	Z=-.360	Z=-1.353	Z=-.605	Z=-.197	Z=-.823	Z=-.998	Z=-1.311
P value		p=.980	**p=.004**	p=.719	p=.176	p=.545	p=.844	p=.411	p=.319	p=.190
Exercise										
No	231(77.8)	22 (2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-85)	52 (8-100)	50 (00-100)	50 (0-100)	45 (5-85)
Yes	66(22.2)	20 (2-62.2)	70 (5-100)	25 (0-50)	33.3 (0-50)	50 (0-90)	54 (0-84)	62.5 (0-87.5)	47.5 (0-100)	45 (15-80)
Tests		Z=-.288	Z=-2.574	Z=-.294	Z=-.727	Z=-2.784	Z=-.684	Z=-1.757	Z=-.036	Z=-1.673
P value		p=.773	**p=.010**	p=.769	p=.467	**p=.005**	p=.494	p=.079	p=.971	p=.094
Daily activity time (min.)										
30 minute and ↑	22(32.8)	28.4 (2-62.2)	60 (5-100)	25 (0-50)	33.3(0-33.3)	50 (0-90)	50 (16-84)	50 (12.5-87.5)	45 (0-100)	45 (15-80)
31 minute and ↓	45(67.2)	18 (2.2-54)	75 (15-100)	12.5 (0-50)	33.3 (0-50)	50 (0-80)	56 (0-84)	62.5 (0-87.5)	55 (0-100)	50 (15-80)
Tests		Z=-2.252	Z=-1.500	Z=-.480	Z=-.525	Z=-.181	Z=-.529	Z=-.916	Z=-1.085	Z=-.724
P value		**p=.024**	p=.134	p=.631	p=.600	p=.856	p=.597	p=.359	p=.278	p=.469
Wearing high heels										
No	191(70.2)	24 (2-77.8)	55 (0-100)	12.5 (0-50)	33.3 (0-50)	40 (0-90)	52 (0-92)	50 (0-100)	45 (0-100)	40 (5-85)
Yes	81(29.8)	18 (2-57.8)	75 (15-100)	25 (0-50)	33.3 (0-50)	50 (5-85)	56 (12-84)	50 (25-87.5)	55 (22.5-90)	50 (15-85)
Tests		Z=-3.368	Z=-4.486	Z=-.383	Z=-.798	Z=-2.901	Z=-1.239	Z=-1.404	Z=-2.581	Z=-4.111
P value		**p=.001**	**p=.000**	p=.702	p=.425	**p=.004**	p=.215	p=.160	**p=.010**	**p=.000**

LBP in the family

No	37(12.5)	20 (2-58)	65 (10-100)	25 (0-50)	33.3 (0-50)	50 (0-90)	56 (0-88)	50 (0-100)	55 (0-100)	45 (5-85)
Yes	260 (87.5)	22 (2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-85)	52 (8-100)	50 (0-100)	47.5 (0-100)	45 (5-85)
Tests		Z=-.838	Z=-1.098	Z=-.582	Z=-.541	Z=-2.334	Z=-1.446	Z=-.420	Z=-.478	Z=-1.704
P value		p=.402	p=.272	p=.560	p=.588	**p=0.020**	p=.148	p=.674	p=.633	p=.088

Body Mechanics Education

No	196(66.0)	20 (2-62.2)	60 (0-100)	25 (0-50)	33.3 (0-50)	40 (0-85)	52 (0-92)	50 (0-100)	55 (0-100)	45 (5-85)
Yes	101(34.0)	24 (2-77.8)	60 (5-100)	25 (0-50)	33.3 (0-50)	50 (0-90)	56 (12-100)	50 (0-100)	45 (0-100)	45 (5-85)
Tests		Z=-1.580	Z=-0.334	Z=-0.007	Z=-1.427	Z=-1.460	Z=-1.002	Z=-0.861	Z=-0.649	Z=-1.303
P value		p=.114	p=0.738	p=0.994	p=0.154	p=0.144	p=0.316	p=0.389	p=0.517	p=0.193

LBP in Any Period of Life

No	9(3.0)	13.3 (2-28)	70 (35-100)	37.5 (0-50)	33.3 (16.7-33.3)	50 (0-90)	56 (28-84)	62.5 (25-75)	57.5 (45-100)	45 (20-85)
Yes	288(93.7)	22(2-77.8)	60 (0-100)	25 (0-50)	33.3 (0-50)	45 (0-85)	52 (0-100)	50 (0-100)	47.5 (0-100)	45 (5-85)
Tests		Z=-2.267	Z=-1.084	Z=-1.851	Z=-0.121	Z=-0.755	Z=-0.364	Z=-0.626	Z=-2.149	Z=-0.267
P value		**p=.023**	p=0.278	p=0.064	p=0.904	p=0.450	p=0.716	p=0.532	**p=0.032**	p=0.789

* The Infection Control Committee. Training Unit. Quality Management Unit. ** Infection Control Nurse. Training Nurses. Quality Management Nurses. ***Cycling. swimming. running. pilates. football

Table 5. Mean ODI scores according to frequence and methos of nursing interventions (*N*=297)

Nursing Interventions	Frequancy of Nursing Interventions							Working Method				
	Often (1)		Sometimes (2)		Never (3)			Alone		With Help		
	N (%)	Median (Min-Max)	N (%)	Median (Min-Max)	N (%)	Median (Min-Max)	Test P value	N (%)	Median (Min-Max)	N (%)	Median (Min-Max)	Test P value
Positioning in bed	119 (40.1)	22.0 (2.0-57.8)	121 (40.7)	20.0 (2.0-77.0)	57 (19.2)	22.0 (2.0-60.0)	χ^2=2.060 p=.357	53 (22.1)	18.0 (2.0-77.8)	187 (77.9)	22.0 (2.0-62.2)	χ^2=2.421 p=.490
Giving bedpan	15 (5.1)	30.0 (2.0-57.8)	169 (56.9)	22.0 (2.0-77.0)	113 (38.0)	22.0 (2.0-60.0)	χ^2=4.809 p=.090	68 (36.2)	18.0 (2.0-77.8)	118 (68.3)	22.0 (2.0-62.2)	χ^2=1.689 p=.639
Changing the diaper	69 (23.2)	24.0 (2.0-57.8)	120 (40.4)	20.0 (2.0-58.0)	108 (36.4)	22.0 (2.0-77.8)	χ^2=8.600 **p=.014 (1-2)**	28 (14.7)	22.0 (6.0-77.8)	161 (85.3)	22.0 (2.0-62.2)	χ^2=.695 p=.874
Making bed	141 (47.5)	22.0 (2.0-77.8)	87 (29.3)	18.0 (2.0-54.0)	69 (23.2)	22.0 (2.0-62.2)	χ^2=7.395 **p=0.025 (1-2)**	26 (11.4)	19.0 (6.0-48.0)	202 (88.6)	22.0 (2.0-58.0)	χ^2=1.304 p=.728
Lifting up and walking the patient	78 (26.3)	22.0 (2.0-58.0)	147 (49.5)	20.0 (2.0-77.0)	72 (24.2)	23.0 (2.0-62.2)	χ^2=2.050 p=.359	51 (22.3)	22.0 (2.2-48.0)	174 (77.7)	20.0 (2.0-77.8)	χ^2=1.789 p=.617
Providing body care	84 (28.3)	24.2 (2.0-57.8)	135 (45.4)	20.0 (2.0-58.0)	78 (26.2)	22.0 (2.0-77.8)	χ^2=7.812 **p=.020 (1-2)**	73 (33.0)	22.0 (2.0-53.3)	146 (67.0)	20.0 (2.0-77.8)	χ^2=3.619 p=.306
Transferring patients to wheelchair/strecher	44 (14.8)	26.3 (2.2-58.0)	167 (56.2)	20.0 (2.0-77.0)	86 (28.9)	22.1 (2.0-60.0)	χ^2=8.716 **p=.013 (1-2)**	24 (11.3)	22.0 (2.0-55.6)	187 (88.7)	20.0 (2.0-58.0)	χ^2=2.470 p=.481
Lifting / transporting heavy medical equipment	32 (10.8)	28.0 (2.0-55.6)	172 (57.9)	20.0 (2.0-77.0)	93 (31.3)	22.0 (2.0-62.2)	χ^2=7.761 **p=.021 (1-2)**	76 (37.2)	19.0 (2.0-36.0)	128 (62.8)	22.0 (2.0-77.8)	χ^2=.704 p=.872

Table 6. The relationship between SF-36 subscale and ODI in nurses with LBP (*N*=297)

	SF-36 Subscale							
	Physical Functioning	Role Physical	Role Emotional	Vitality	Mental Health	Social Functioning	Bodily Pain	General Health Perception
ODI	*r*=-0.545 *p*=.000	*r*=-0.545 *p*=.000	*r*=-0.494 *p*=.000	*r*=-.377 *p*=.000	*r*=-0.370 *p*=.000	r=-0.398 *p*=.000	*r*=-0.547 *p*=.000	*r*=-0.448 *p*=.000

Discussion

Of all people, 60-85% experience LBP at a certain point in their lives (Terzi & Altın, 2015; Moussa, El-Ezaby & El-Mowafy, 2015). In our study, it was observed that 85.4% of the nurses experienced LBP and 57.8% of the nurses currently suffer from LBP, and this result was found to be similar to the findings of previously conducted studies. Budhrani-Shani et al. (2016), pointed out that the frequency of LBP in nurses is 40-90%.There are studies in the literature that found lower frequency of LBP in nurses (Ibrahım et al., 2019; Abou El-Soud et al., 2014), higher frequency (Abou El-Soud et al., 2014; Shieh et al., 2016; Al-Samawi & Awad, 2015; Sikiru & Hanifa, 2010; Rustøen, 2016; Petersan & Marziale, 2014) and similar (Moreira et al., 2014) when compared with the findings of our study. The difference between the findings of the study on the frequency of LBP in nurses can be related to the fact that the etiology of LBP is multifactorial. In the light of our study and similar studies, LBP still appears to be a common musculoskeletal disorder among nurses.

It was found that majority of the nurses (61.3%) experiences mild disability and few nurses (3%) experience advanced/full level of disability. Similarly, a higher ODI score was also reported among patients with LBP compared with healthy controls (Dundar et al., 2009). In a study by Ustun (2014), 62.2% of the nurses were found to have mild and 1.8% high disability.In a study by Samawi and Awad (2015), 64.3% of nurses had disabilities. Yilmaz and Ozkan (2008) also reported 64.6% of nurses having mild, and 4.6% having moderate disability. In a study by Kabatas, Kocuk and Kucukler (2012) conducted with healthcare workers, 44.4% of the nurses and midwives had mild, 13.9% had moderate, and 5% had severe disability. This was also in agreement with Yuksel's study (2010),in which 51.8% of the nurses had mild, 9.5% had moderate, and 0.5% had severe disability. LBP seems to be a cause of disability for nurses as well as for individuals in all segments of the society, and mostly causes mild disability. The low number of nurses with severe disability in studies may result from the fact that nurses with such disability are unable to work. However, unlike other individuals in society, nurses, who play an important role in protecting, maintaining and improving individuals' health,

should attach more importance to applying protective and improving actions for their own health, to be able to provide nursing care quality, to be productive and to administer patient care without interruption.

The literature review points out that even mild LBP results in significant function loss and decreases quality of life for individuals (Sikiru & Hanifa, 2010).In our study, the nurses who suffer from LBP had adversely affected score averages in all subscales of SF-36 except for Role-Emotional difficulty. It is stated in the literature that life quality of patients with LBP are affected more adversely when compared with patients without such pain (Dundar et al., 2009).The study conducted by Hasanefendioglu et al. (2012) indicated that especially physical component of health-related quality of life is worse in the patients with chronic LBP compared to healthy controls, and pain severity and functional status negatively affected the physical component of quality of life.

LBP is one of the most common causes of functional disability (Gunduz & Ercalık, 2014; Rustøen, 2016). It was found in the study that physical activities of nurses with LBP are more adversely affected when compared with nurses who do not have LBP. A study conducted on patients found that LBP affects especially the physical components of the quality of life adversely (Hasanefendioglu et al., 2012).In line with the literature (Dundar et al., 2009), it was found that emotional health of the nurses who suffer from LBP are more adversely affected when compared with nurses who do not suffer from LBP. This situation is thought to be stemming from the physical pain that is accompanied by emotional problems. Parallel to the literature, it was found in the study that physical and emotion problems related social activities and social lives of the nurses who suffer from LBP are more adversely affected when compared with nurses who do not have the LBP (Gunduz & Ercalık T, 2014; Kent & Kjaer, 2012). Moreover, it is indicated that the nurses with LBP experience more functionally restricting pains when compared with nurses without LBP. Vitality refers to the energy that the person thinks he/she is reflecting around. It is stated that the pain reduces the vitality and results in fatigue (Gurleyik et al., 2013).The study found that the nurses who experience LBP feel more

exhausted/weary when compared with the nurses without LBP. Chronic LBP may result in emotional stress and negative health perception (Gurleyik et al., 2013).It was found in the study that the nurses with LBP are more likely to believe that their health condition is bad and will get worse by the time when compared with nurses without LBP. The nurses experience problems in their daily and working lives due to emotional problems; however, LBP does not affect emotional conditions of the nurses.

In previously conducted study, a relationship was found between age and LBP, and older nurses were shown to experience more LBP (Al-Samawi & Awad, 2015; Moussa, El-Ezaby & El-Mowafy, 2015). In line with the literature, in our study it was found that there is correlation between ODI scores of the nurses and their ages. This result may be associated with the anatomic, physiologic and structural changes due to age. It would be beneficial for older nurses to take precautions for low back pain.

Literature indicates that high-intensity LBP and/or disability are associated with increased rates of obesity and overweight (Chou et al., 2016; Shiri et al., 2010; Brady et al., 2019). Parallel with the literature, our study demonstrated that ODI mean score was associated with BMI,and high BMI affected functional capacity negatively. There are also similar studies conducted with nurses supporting our study results (Abou El-Soud et al., 2014; Schlossmacher & Amaral, 2012). Preventing obesity in nurses is important in preventing musculoskeletal diseases such as LBP.

As a determinant of health, economic statuswasfoundto have an effect on LBP in our study. Nurses with poor economic status had higher ODI mean scores compared with nurses with medium or good economic status. A similar result was obtained in another study conducted with healthcare professionals, and this result was associated with the fact that those who had difficulties economically had a higher ODI mean score (Kabatas et al., 2012). In a study by Yilmaz and Ozkan (2008), it was stated that prevalence of LBP and mild + moderate functional disability was higher in nurses with low income. Based on these results, economic level seems to be one of the

determinants of health for nurses, like individuals in every segment of the society.

In the present study, a relationship was found between nurses' working units and LBP, and nurses who worked at policlinics and ICU departments experienced more LBP. This result may be related to the high average age of policlinic nurses. Higher ODI scores observed in nurses working in ICUs may be associated with interventions that require physical strength, such as positioning and lifting the patient, which are more likely to cause LBP, and which are applied more in patients hospitalized in ICUs due to the majority of patients being dependent and unconscious in ICUs. In addition, intensive care nurses need to stand for long periods, which is a probable cause of LBP. Results of studies conducted with intensive care nurses demonstrate thatmost nurses have LBP and complain of LBP at least once a month. (Petersan & Marziale, 2014; June & Cho, 2011). This result was consistent with that of Abou El-Soud et al. (2014), who reported the highest percentage of LBP complaints was among nurses working in the ICU, followed by surgical departments, and the lowest percentage was in the outpatient clinics. Therefore, evaluating the clinics where nurses work and the risks posed by these clinics in terms of LBP was suggested.

In our study, the nurses who were not satisfied with their working unit had higher ODI mean scores. These results could be explained on the basis that professional dissatisfaction can cause stress and anxiety, which are risk factors of LBP. This result is also supported by a study conducted by Yilmaz and Ozkan (2008), which revealed that nurses who experienced professional dissatisfaction experienced also more mild and moderate functional disability.

Although exercise was not related to functional capacity, duration of exercise was effective in the current study. In this context, results indicate that the duration of the exercise is important as well as regular exercise. Similarly, previous studies havedemonstrated that exercise improves and strengthens the back muscles, protects the waist from trauma, reduces LBP (Moussa, El-Ezaby& El-Mowafy, 2015; Al-Samawi & Awad; 2015; Pakbaz et al., 2019), and improves the functional

capacity (Stankovic et al., 2015; Shani et al., 2016; Sahin, Karahan & Albayrak, 2018).

Literature suggests that wearinghigh-heeled shoes may cause LBP by increasing the pressure on the lordotic curve of the lumbar vertebrae and in the lumbar region (Pezzan et al., 2011; Kumar et al., 2015; Afzal & Manzoor, 2017). Given that everyone who wears high heels does not have low back pain, heel height was examined in our study considering it may be important. In the study, heel height of 3.5 cm and above was considered as high heels. In the literature, there are studies categorizing heel heights differently (Kumar et al., 2015) and similarly (Reed et al., 2014). In contrast to the literature, the present study found that ODI mean scores of nurses who did not wearhigh-heeled shoeswere higher than nurses who wore high heels. Our findings may be explained by the low number of nurses who did not wearhigh-heeled shoes that were included in the research, and low frequency of wearing high-heeled shoes due to their profession. There are not enough studies in the literature examining the relationship between LBP and footwear in nurses. A study conducted among ICU nurses by Ovayolu et al. (2014) reported no significant relationship between LBP and wearing high-heeled shoes. In a study by Kumar et al. (2015) conducted with 100 female patients who attended orthopedic outpatient department, a positive correlation between duration of wear and height of footwear with regards to both heel and back pain was found. In light of the literature and our study, height and duration of wearing footwear by nurses during patient careshould also be examined.

Nursing interventions include physical, personal and ergonomic risk factors for low back pain (Ovayolu et al., 2014). It was found that the nurses who perform the practices of changing the diaper, making bed, providing body care, carrying the patient to wheelchair/stretcher and lifting heavy medical equipment often had significantly higher LBP. The study conducted by Abou El-Soud et al. (2014), indicated that 85.7% of the nurses have experienced LBP stemming from carrying heavy loads and it was found that carrying heavy loads increase the frequency of LBP. It was also found in studies conducted by Al-Samawi &Awad (2015)that carrying heavy medical equipment and patients are the major causes of LBP. The study

conducted on surgical nursesfound that the factor that causes LBP the most often is transferring a patient to another bed/stretcher (Hinmikaiye & Bamishaiye, 2012). Ibrahim et al. (2019) found that wisting of the body while working and manual handling of patients in wards are the factors significantly associated with LBP. Abou El-Soud et al. (2014) found that LBP was associated with lifting heavy loads, followed by twisting, prolonged standing, prolonged sitting, walking for long distances, and bending forward. There are different studies in the literature that found relationship between nursing tasks performed at the workplaces and LBP (Wong, Teo & Kyaw, 2010; Al-Samawi & Awad, 2015; Schlossmacher & Amaral, 2012).

In our study, significant associations were found among almost all physical and mental health indicators with the presence of LBP. It was found that the nurses who suffer from LBP had significantly lower average scores on each subscale of the SF-36 except for Role-Emotional difficulty subscale when compared with nurses who do not suffer from LBP. Similarly, two different studies conducted on patients reported that LBP and disability related to LBP is associated with quality of life (Dundar et al., 2009; Hasanefendioglu et al., 2012). According this result, it can be said that LBP in nurses affects nurses' quality of life adversely in many ways and associated with poorer quality of life. As physical component of health and quality of life, it was indicated that LBP affect physical functions adversely and cause *role limitations due to physical health problems*. It is stated in the literature that especially chronic pain restricts functionality and daily life activities of individuals (Tutuncu & Gunay, 2011; Kalyani, 2019). In parallel with the literature in our study negative correlation was found between nurses' functional disability (ODI) and quality of life level (SF-36). Our findings may be explained by fear-avoidance behavior of nurses. Nurses who suffer from LBP may limit their activities and responsibilities to prevent additional pain (Al-Mutairi, 2019). As mental component of health and quality of life, in our study it was indicated that LBP affect *social functioning, mental health* adversely and cause *role limitations due to emotional problems.* It is stated in the literature that LBP leads to psychological distress, withdrawal,

anxiety, loneliness, anger, and affecting the social status of patients (Tutuncu & Gunay, 2011; Dundar et al., 2009; Al-Mutairi, 2019). This finding, which is compatible with the literature, can be explained by stemming from tendency of nurses to abstain from social activities due to pain and reduction in functional capacity as psychosocial effects of LBP.

Limitations of the Study: The study was conducted on nurses working at a single hospital and this is considered a limitation for the generalizability of the findings in the study.

Conclusıon: In conclusion, it was found that the nurses who suffer from LBP have significantly lower score averages on each of the SF-36 subscales except for Emotional Role Difficulty when compared with the nurses without LBP, majority of the nurses experience a mild disability and there is negative correlation between SF-36 and ODI score averages. In line with these results; it may be suggested that nurses, who play an important role in protecting, maintaining and improving individuals' health, should attach importance to applying protective and improving actions for their own health, so that they can provide nursing care quality, be productive, and administer patient care without interruption. Also, organizing exercise programs and creating exercise rooms at hospitals in order to strengthen low back muscles and prevent obesity in nurses; taking necessary precautions in order to ensure the protection of nurses against mechanic traumas during care practices; improving nurses' working and economic conditions in order to facilitate satisfaction about their occupational life are recommended.

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