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Evaluation of Low Back Pain and Its Effects in Health Employees

Sağlık Çalışanlarında Bel Ağrısı ve Etkilerinin Değerlendirilmesi

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ABSTRACT

Background: It is reported that more than 80% of the world's population experience low back pain at any time in their lives. Low back pain is a common cause of morbidity among health employees. Health employees are a high-risk group in terms of low back pain due to difficult physical workload and ergonomic problems. The aim of our study was to evaluate low back pain and its effects in health employees.

Materials and Methods: The study was conducted in April 2017 at Şişli Hamidiye Etfal Research and Training Hospital. The questionnaire form designed by the researcher and the Oswetry Scale were applied to the participants by face to face inquiry method. The statistical program SPSS was used to analyze data.

Results: Of the participants, 39.16% (n=103) had low back pain. Participants were divided into two groups as those with and without back pain. Age, gender, mean body mass index (BMI), BMI classification, educational status, smoking status and working time in the profession were found to be statistically significant between the two groups ($p<0.005$). The mean Oswestry Scale score of individuals with low back pain was 19.38±11.17. Participants were divided into two groups according to their level of exposure as mild (0-40%) and severe (≥40%), and related factors were examined. A significant relationship was found with the mean BMI, BMI classification and profession ($p<0.005$).

Conclusion: Two-fifths of the healthcare professionals had low back pain. During the periodic examinations of healthcare personnel, low back pain should be questioned. These groups should be examined in more detail and exercise recommendations should be made for smoking cessation, weight loss and muscle strengthening, since they are common in women, those with high school or lower education, those who spend a longer time in the profession, and those who are smokers, overweight and obese.

Keywords: Low back pain, hospital personel, risk factors

ÖZ

Amaç: Dünya nüfusunun %80'inden fazlası hayatlarının herhangi bir anında bel ağrısı bildirmektedir. Bel ağrısı, sağlık çalışanlarında yaygın bir morbidite nedenidir. Sağlık çalışanları, zorlu fiziksel iş yükleri, ergonomik sorunları nedeni ile bel ağrısı açısından yüksek riskli bir gruptadırlar. Bu çalışmada, sağlık çalışanlarında bel ağrısı ve etkilerinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Çalışma 2017 Nisan ayında Şişli Hamidiye Etfal Eğitim ve Araştırma Hastanesi çalışanlarına yapılmıştır. Katılımcılara tarafımızca hazırlanan anket formu ve Oswetry Skalası yüz yüze sorgulama yöntemi ile uygulanmıştır. İstatistiksel analizde SPSS programı kullanılmıştır.

Bulgular: Katılımcılardan bel ağrısı olanların oranı %39,16 (n=103) idi. Katılımcılar bel ağrısı olan ve olmayan olarak iki gruba ayrılmıştır. Yaş, cinsiyet, beden kitle indeksi (BKI) ortalaması, BKI sınıflama, eğitim durumu, sigara içme durumu ve meslekteki çalışma süresi açısından her iki grup arasında istatistiksel anlamlı fark bulunmuştur ($p<0.005$). Bel ağrısı olan bireylerin Oswestry Skalası puan ortalaması 19,38±11,17 idi. Katılımcılar etkilenim düzeyine göre hafif etkilenim (%0-40) ve ciddi etkilenim (≥%40) olarak gruplara ayrılarak ilişkili faktörler incelenmiştir. Ortalama BKI, BKI sınıflama, meslek ile anlamlı ilişki saptanmıştır ($p<0.005$).

Sonuç: Sağlık çalışanlarının beşte ikisinde bel ağrısı saptanmıştır. Sağlık personellerinin periyodik muayeneleri esnasında bel ağrısı sorgulanmalıdır. Kadın cinsiyette, lise ve altı eğitim düzeyine sahiplerde, meslekte daha uzun süre geçirenlerde, sigara içenlerde, fazla kilolu ve obezlerde sık olması sebebiyle bu gruplar daha ayrıntılı incelenmeli ve sigara bırakma, kilo verme ve kas güçlendirmesi için yapılabilecek egzersiz önerilerinde bulunulmalıdır.

Anahtar Kelimeler: Bel ağrısı, hastane personeli, risk faktörleri

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Introduction

Low back pain is located in the lumbar region between the last costal rib and the gluteal curve (1). It is reported that more than 80% of the world's population experience low back pain at any time in their lives (2,3). However, as most low back pain resolves within the first two weeks without any treatment, individuals with low back pain lasting longer than 2 weeks and/or requiring treatment are affected by low back pain as a result of functional incapacity (4,5).

Epidemiological studies show that there are a variety of risk factors affecting the incidence and prevalence of low back pain. Personal risk factors for low back pain may be listed as age, gender, occupation, body mass index (BMI), family history, smoking, alcohol intake and physical activity levels (6). A person's occupation and working conditions may cause the occurrence of low back pain.

Low back pain is a common cause of morbidity among health employees (2). Health employees constitute a high-risk group in terms of low back pain due to difficult physical workload (long working hours, shift work, being on call, etc.) and ergonomic problems (transferring patients, repositioning patients, frequent bending, lifting heavy loads, pulling and pushing, remaining in the same position for long periods, repeated movements) (7,8,9).

The aim of our study was to evaluate low back pain and its effects in health employees.

Material and Methods

Research Population and Sample

The research was a single-center descriptive study. The study was performed with employees in Şişli Hamidiye Etfal Training and Research Hospital from April 01, 2017 to April 30, 2017. At the time of the study, the hospital employed a total of 2,318 people, with 694 doctors, 790 nurses (nurses, midwives, emergency medicine technicians), and 834 other personnel (data entry, security, cleaning). Layered sampling was applied with 95% confidence interval and the sample size was calculated as 263 people (doctors: 79, nurses: 89, others: 95). Participants were included in the study after obtaining verbal consent.

Those with congenital hip dislocation, spine fracture history, known psychiatric or neurologic disease increasing low back pain risk, different length legs for any reason or inflammatory low back pain were not included in the study. Ethics committee permission was granted by Şişli Hamidiye Etfal Research and Training Hospital Ethics Committee (date: 07 March 2017, decision number: 1436).

Data Collection Tools

Socio-demographic data for participants, BMI calculations and the presence of low back pain were questioned. Individuals with low back pain lasting longer than 2 weeks and/or requiring treatment were assessed as having low back pain, and participants were divided into two groups as those with and without low back pain. Moreover, relevant factors were evaluated.

Oswestry Scale

Participants with low back pain were applied the Oswestry Scale (OS) to determine effect levels. This scale was published by Fairbank and Pynsent (10) with the aim of assessing functional capacity of individuals. Turkish validity and reliability were examined by Yakut et al. (11) and the scale was prepared for use by Akbay (12). The OS comprises ten subgroups (pain intensity, self-care, lifting-carrying, walking, sitting, standing, sleep, traveling and social life). Points vary from 0 to 50 and the patient score is assessed with the formula: Total score = (points received by participant/maximum possible points) x 100. Levels of effect increase as total score increases.

Accordingly, results are grouped as;

- 0-20% low back pain does not cause a significant problem in the patient's life.
- 20-40% low back pain mildly restricts the patient's daily life.
- 40-60% low back pain significantly restricts the patient's daily life.
- 60-80% low back pain fully restricts the patient's daily life.
- 80-100% bedridden.

Participants in the study were divided into two groups as those with mild level of effects (0-40%) and those with serious effects (≥40%), and associated factors were investigated.

Statistical Analysis

The SPSS 20.0 program was used in the study. Descriptive statistics were given as number and percentage for categoric variables and as mean, standard deviation, minimum and maximum for numerical variables. Numerical variables were compared in two independent groups with the Student's t-test when normal distribution conditions were present and with the Mann-Whitney U test when normal distribution conditions were not present. Rates in independent groups were compared with the chi-square analysis. Values of $p<0.05$ were accepted as statistically significant.

Results

The ages of the 263 people participating in the study varied from 20 to 65 years, with the mean age of 33.89±9.04

years. Of participants, 58.55% were women (n=154) and 41.45% were men (n=109). Participants comprised higher rates of married individuals (51.33%, n=135). The mean BMI of participants was 38±4.12 (15.62-45.72) and 9.3% were obese (n=22). There were 145 participants who did not smoke (55.13%). For all participants, the mean working duration in their profession was 9.16±7.91 years (1-36).

Among the participants, 39.16% had low back pain (n=103). Participants were divided into two groups as those with and without low back pain, and relevant factors were investigated (Table 1). Accordingly, there were statistically significant differences found between the two groups in terms of age, gender, mean BMI, BMI classification, educational status, smoking habit and professional working duration (p=0.002, p=0.049, p=0,001, p<0.001, p=0.019, p=0.003, and p=0.007, respectively). As age, weight, mean BMI, and professional working duration increased, the experience of low back pain increased. Additionally, educational level lower than high school, smoking rate and the rate of being female gender were significantly higher.

The mean OS points of individuals with low back pain were 19.38±11.17 (1-48). The effect status according to OS is given in Figure 1, with most people (31.09%, n=32) experiencing mild limitation of daily life. Investigation of related factors when participants were divided into two groups according to mild effect (0-40%) and severe effect (≥40%) is shown in Table 2. There were significant associations identified for mean BMI, BMI classification and profession (p=0.013, p=0.017, and p=0.029, respectively).

Discussion

Health employees were identified to experience low back pain in any period of life at rates of 46.30-84% in the

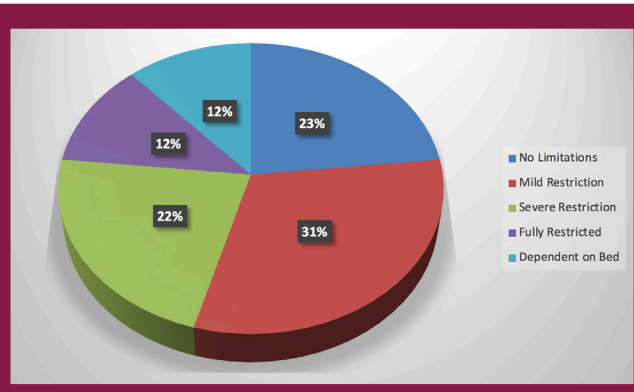

Figure 1. Affected states according to the Oswestry Scale

Table 1. Participants' low back pain status and evaluation of related factors

		With low back pain (n=103)		Without low back pain (n=160)		
		n	%	n	%	p
Gender	Female	68	44.20	86	55.80	0.049
	Male	35	32.10	74	67.90	
Age (years) Mean ± SD		35.95±9.51		32.56±8.49		0.002
Weight (kg) Mean ± SD		71.50±13.96		68.51±14.22		0.106
Height (cm) Mean ± SD		167.35±8.77		169.43±8.65		0.086
BMI (kg/m^2) Mean ± SD		25.40±4.26		23.72±3.91		0.001
BMI classification	Normal and underweight	46	29.67	109	70.32	<0.001
	Overweight and obese	57	52.77	51	47.22	
Marital status	Married	57	42.22	78	57.77	0.297
	Single	46	35.93	82	64.06	
Education status	Under high school	26	54.16	22	45.83	0.019
	High school and over	77	35.81	138	64.18	
Smoking status	Smoking	57	49.13	59	50.86	0.003
	Non-smoking	46	31.29	101	68.70	
Occupation	Physician	25	31.64	54	68.35	0.207
	Nurse	40	44.94	49	55.05	
	Other staff	38	40	57	60	
Working time in the occupation mean ± SD		10.78±8.07		8.07±7.65		0.007

BMI: Body mass index, SD: Standart deviation, kg: Kilogramme, cm: Centimeter

Table 2. Evaluation of the affected participants with low back pain and related factors

		Those with mild level of effects (0%-40%) (n=56)		Those with serious effects (≥40%) (n=47)		
		n	%	n	%	p
Gender	Female	34	50	34	50	0.215
	Male	22	62.9	13	37.1	
Age (years) Mean ± SD		35.39±9.72		36.62±9.33		0.466
Weight (kg) Mean ± SD		70.89±16.02		72.23±11.14		0.222
Height (cm) Mean ± SD		168.95±9.27		165.45±7.82		0.056
BMI (kg/m^2) Mean ± SD		24.69±4.43		26.25±3.92		0.013
BMI classification	Normal and underweight	31	55.4	15	44.6	0.017
	Overweight and obese	25	31.9	32	56.1	
Marital status	Married	27	48.2	30	63.8	0.112
	Single	29	51.8	17	36.2	
Education status	Under high school	10	38.5	16	61.5	0.060
	High school and over	46	59.7	31	40.3	
Smoking status	Smoking	32	56.1	25	43.9	0.688
	Non-smoking	24	52.2	22	47.8	
Occupation	Physician	19	76	6	24	0.029
	Nurse	21	52.5	19	47.5	
	Other staff	16	42.1	22	57.9	
Working time in the occupation mean ± SD		10.21±8.58		11.47±7.30		0.130

BMI: Body mass index, SD: Standart deviation, kg: Kilogramme, cm: Centimeter

literature (9,13,14,15,16,17,18,19). The rate in our study was 39.16%, which may be due to the fact that our study only questioned individuals with low back pain lasting more than 2 weeks and/or requiring treatment and not in any period of life.

In the literature, low back pain can be observed in any age group, though it is stated to be higher in the group with active working life aged from 20 to 55 years (9,20). In the study, the mean age of individuals with low back pain was compatible with this age group and higher than those without low back pain. The identification of low back pain at significantly higher rates in the female gender is consistent with the literature; women may be exposed to higher rates than men due to lifelong hormonal variations (pregnancy, menopause, etc.) (9,13,21). The observation of higher rates of low back pain in those with educational level of high school or lower may be due to increased awareness of the use of body mechanisms and protective precautions as a part of healthy life and movement in accordance with this in those with increased educational level (20).

In our study, experience of low back pain with longer duration in the profession was statistically significant. As the duration of working in a profession increases, this may cause increased duration of exposure to risk factors involved in the profession. In fact, Arasan et al. (15) found lifelong and point prevalence of low back pain was increased duration of employment in a profession. Deksisa Abebe et al. (22) observed that health employees working longer than 12 years had higher prevalence of low back pain compared to those employed for durations less than 12 years.

Health employees are reported to smoke at different rates from 13.9 to 46.3% (13,14,23). In this study, the smoking rate was 38%. In the literature, just as there are studies showing a correlation between smoking and low back pain (21,23,24,25), there are studies showing no correlation (15,20,26). Studies proposing no effect of smoking on low back pain give reasons such as nicotine's analgesic effect and depression-reducing effects of nicotine; studies stating that there is an association indicate that smoking increases the risk of low back pain incidence due to disrupting nutrition of the vertebral disk, making the disk more susceptible to external factors, and reducing blood perfusion in the spine and muscles due to vasoconstriction caused by nicotine in cigarettes (23). In

our study, a significant association was identified between smoking and experience of low back pain and there is a need for advanced research about this topic.

A meta-analysis revealed a significant correlation between BMI and low back pain (27). In the study, low back pain had significantly higher rates in overweight and obese participants and the mean BMI of the group with low back pain was identified to be higher. Due to the additional weight carried by overweight and obese individuals, they may have weak back and abdominal muscles (28). This situation increases stress in the musculo-skeletal system (28,29). Additionally, obesity causes higher compressive forces on the lumbar spine during a variety of movements, which may cause increased mechanical load on the spine (22,28,29).

In the study, most health employees with low back pain had mild degree of restriction of daily life activities according to the mean OS; however, a considerable portion (9.60%) was bedridden. A study by Güzel and Altındağ (30) found 41.7% of participants had no limitation, while 5.5% had severe restriction. Solak Kabataş et al. (31) identified the rate of 40.0% for mild effect and the rate of 3.3% for severe effect. This situation illustrates that low back pain may affect health employees to different degrees and at a variety of rates; in fact, the reality is that it may cause severe functional incapacity leading to being bedridden. In terms of profession, other personnel being more affected may be due to the excess of bodily labor.

In the study, those severely affected by low back pain had higher mean BMI; the rate of severe effect among overweight and obese participants was identified to be significantly high. Obesity on its own is related to increased production of cytokines and acute phase reactants and activation of proinflammatory pathways, which may lead to delayed healing in this situation (32,33).

Conclusion

In conclusion, two out of five health employees were identified to have low back pain. Low back pain was observed more frequently in those who had female gender, education level of high school or lower, and longer duration in their profession, who smoked, and who were overweight or obese. It was revealed that being overweight and obese and working as other health personnel caused severe degree of effect of low back pain.

In light of these results, it may be concluded that it is necessary to inquire about low back pain during periodic examinations of health personnel. We think it is necessary to investigate groups who have female gender, high school or lower educational level, longer period in the profession, who are smokers, and those who are overweight and obese in more detail due to higher incidence and to recommend quitting smoking, losing weight and exercises for muscle strengthening.

Ethics

Ethics Committee Approval: Ethics committee permission was granted by Şişli Hamidiye Etfal Training and Research Hospital Ethics Committee (date: 07 March 2017, decision number: 1436).

Informed Consent: Participants were included in the study after obtaining verbal consent.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: İ.D., G.Z.Ö., Concept: İ.D., G.Z.Ö., Design: İ.D., G.Z.Ö., Data Collection or Processing: İ.D., Analysis or Interpretation: İ.D., G.Z.Ö., Literature Search: İ.D., G.Z.Ö., Writing: İ.D., G.Z.Ö.

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