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Original Article

Is low back pain asociated with working condition ?

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Abstract

Aim: Low back pain (LBP) is a common musculoskeletal disorder with high lifetime prevalence worldwide. Heavy work and improper sitting conditions during the work hours are among the contributing occupational risk factors. In this study, we aimed to evaluate the incidence and intense of LBP in two different groups working in a hospital setting.

Materials and Methods: This is a cross-sectional study that the participants were consisted of 44 porter and 49 desk workers employed full time in a private university hospital at İstanbul. The demographic variables of the participants were evaluated, and they were asked to answer the Oswestry Low Back Pain Disability Questionnaire. Participants are scored on a total score,and the variations between the two groups were evaluated.

Results: The mean age of the heavy lifters was 41.32 ± 7.15 years, whereas mean age in desk workers was 33.76 ± 5.19 years. The overall scores did not differ between the groups according to age, gender, smoking status. Total disability score was significantly different between the age and disability groups.

Conclusion: The prevalence of LBP is high among hospital employees irrespective of the occupational measures and work load. Orientation of possible occupational risk factors might have a reducing effect on the incidence of LBP and related complications.

Keywords: Hospital employees; low back pain; occupational hazards; occupation related pain

INTRODUCTION

Low back pain (LBP) is a common global health problem with a lifetime prevalence of 80% that disrupts daily life and creates disability (1). The proportion of physician visits due to LBP varies worldwide and is 67% in the USA, 47% in the UK and 48% in Europe (2). 4-20% of the individuals with LBP complain of a chronic form of the condition and health issues that can lead to sleep disorders (3).

Important determinants for low back pain include age, gender, body mass index, and smoking (4). Uncomfortable sitting and lack of back support, psychological stress, the distance of body to the computer screen, duration of sitting position longer than six hours can also be associated with LBP, and regular physical activity was suggested to be protective (4-7). Thus, occupational factors might be accepted as the most important etiology, as a result of the increasing rate of people in the work environment, and time spent daily in the working area. Every year, 20-50% of working individuals experience LBP, and about 60% of patients with acute LBP can return to work within one month whereas 90% start working within 3 months (7).

There is a wide range of studies including nurses, physicians, office workers, bus drivers that focus on the relationship between LBP and work-related ergonomic and stressor factors (4-6,8). Diagnosis, treatment, and follow-up of LBP that affects the majority of the society, and causes serious loss of labor and increased medical and financial costs require a multidisciplinary approach. It is essential to inform the individuals about posture, especially in sitting position, weight control, and exercise in terms of preventive medicine.

In this study, we aimed to compare the LBP scores between porters who spends most of the work hours by carrying load or physical effort and desk workers whose work depends on a sitting posture during the day. We also evaluated the effects of working conditions on LBP in the individuals.

MATERIAL and METHODS

This cross-sectional study was carried out in February 2020 in Istanbul. Participants consisted of 44 porter and 49 desk workers working full time in a private university hospital. Written consent of patients was obtained and then, the participants were given a semi-structured interview form questioning the variables such as age, gender, marital status, working time and year, smoking. Oswestry Low Back Pain Disability

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Questionnaire was employed as the data collection tool. Participants responded to the questionnaire themselves within approximately 10-15 minutes in their work areas. Ethics committee approval and necessary permissions were obtained for the study. This study was made in accordance with the Helsinki Declaration 2008 principles

Oswestry Low Back Pain Disability Questionnaire is the most established tool to evaluate disability and functional impairment related to low back pain (9). Its validation and verification studies were performed by Yakut et al. (10). It is a self-administered questionnaire conducted by selecting one of five choices related to the topics of pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social life, traveling and changing the degree of pain. Score 0 indicates the minimum discomfort during the activities of the question, whereas score 6 is for the highest degree of disability.

Participants are scored on a total score, and a total score of 0% to 20% is related to a minimal disability; 21%-40% to moderate disability; 41%-60% to severe disability. Scores equal to or higher than 61% are evaluated as crippled or are either bed-bound or exaggerating their symptoms (11).

Statistical analysis

The data were analyzed with SPSS 24.0 software (IBM Corp, Chicago, IL, USA). Kurtosis and skewness coefficients were analyzed to evaluate the normal distribution. Student's t-test and ANOVA test were used to analyze the scale score according to the demographic characteristics. The t-test was used for the analysis of demographic variables between two groups, while the ANOVA test was used for the analysis of k (k>2) group variables.

RESULTS

The response rate of heavy lifters for questions 3 (lifting), 7 (sleeping), 9 (social life), and 10 (traveling) was significantly higher than the desk workers ($p<0.05$).

The mean age of the heavy lifters was 41.32 ± 7.15 SD years with a range of 27 to 54 years. The mean age in desk workers was 33.76 ± 5.19 SD years with a range of 28 to 56 years. Seventy-one (77.2%) were married, and seventy (75.3%) were female. 43.8% of the respondents were habitual smokers. 25.3% of the responders had daily working hours between 8-9 hours, and 51.6% were working 10-11 hours per day. Participants with more than 12 hours of works days were 23.1% of the study group.

The detailed analysis results in terms of age, gender, smoking status and degree of disability for the study groups are given in Table 1.

The overall questionnaire average score of desk workers and heavy lifters were 8.48 and 12.93, respectively ($p<0.05$) (Table 2). The overall scores did not differ between the groups according to age, gender, smoking status. On the other hand, when all responders were evaluated, the total score was significantly different between the age and disability groups (Table 3). The variations between the study groups per question were further shown in Figure 1.

Table 1. Demographic data of the study subjects

		Heavy Lifters (n=44)		Desk Workers (n=49)		Total	
		n	%	n	%	n	%
Age	≤30 years	4	9.1%	16	32.7%	20	21.5%
	31-35 years	5	11.4%	18	36.7%	23	24.7%
	≥36 years	35	79.5%	15	30.6%	50	53.8%
Gender	Female	38	86.4%	32	65.3%	70	75.3%
	Male	6	13.6%	17	34.7%	23	24.7%
Marital status	Married	38	88.4%	33	67.3%	71	77.2%
	Single	5	11.6%	16	32.7%	21	22.8%
Daily working hours	8-9 hours	20	47.6%	3	6.1%	23	25.3%
	10-11 hours	9	21.4%	38	77.6%	47	51.6%
	≥12 hours	13	31.0%	8	16.3%	21	23.1%
Degree of disability	1	35	79.5%	42	85.7%	77	82.8%
	2	8	18.2%	7	14.3%	15	16.1%
	3	1	2.3%	0	0.0%	1	1.1%

Table 2. Comparison of the questionaire scores between the groups

	Heavy Lifters (n=44)		Desk Workers (n=49)		Comparison	
	Mean	SD	Mean	SD	t	p
Q1 (Pain intensity)	0.80	0.79	0.88	0.95	-0.449	0.654
Q2 (Personal care)	0.20	0.55	0.08	0.34	1.270	0.208
Q3 (Lifting)	1.23	1.12	0.69	1.06	2.383	0.019*
Q4 (Walking)	0.45	0.70	0.27	0.53	1.459	0.148
Q5 (Sitting)	0.70	1.00	0.59	0.73	0.623	0.535
Q6 (Standing)	0.77	0.64	0.78	0.82	-0.018	0.985
Q7 (Sleeping)	0.77	0.60	0.20	0.46	5.077	0.000*
Q8 (Social life)	0.31	0.52	0.17	0.59	1.101	0.274
Q9 (Travelling)	0.64	0.99	0.27	0.57	2.182	0.033*
Q10 (Changing degree of pain)	0.52	0.59	0.24	0.43	2.561	0.012*
Total score	12.93	9.17	8.48	7.42	2.586	0.011*

*p<0.05

Table 3. Distribution of total scores according to the demographic variables

		Heavy Lifters (n=44)		Desk Workers (n=49)		Total	
		Mean	SD	Mean	SD	Mean	SD
Age	≤30 years	4.65	3.11	6.74	6.50	6.33	5.97
	31-35 years	11.20	9.34	8.46	7.79	9.06	8.00
	≥36 years	14.12	9.23	10.34	7.93	12.99	8.95
	p value	0.133		0.412		0.007*	
Gender	Female	12.86	9.33	9.23	7.70	11.20	8.75
	Male	13.37	8.86	7.06	6.86	8.70	7.75
	p value	0.902		0.335		0.226	
Degree of disability	1	9.60	6.43	6.16	4.97	7.72	5.90
	2	24.10	3.58	22.37	2.97	23.29	3.32
	p value	0.000*		0.000*		0.000*	

*p<0.05

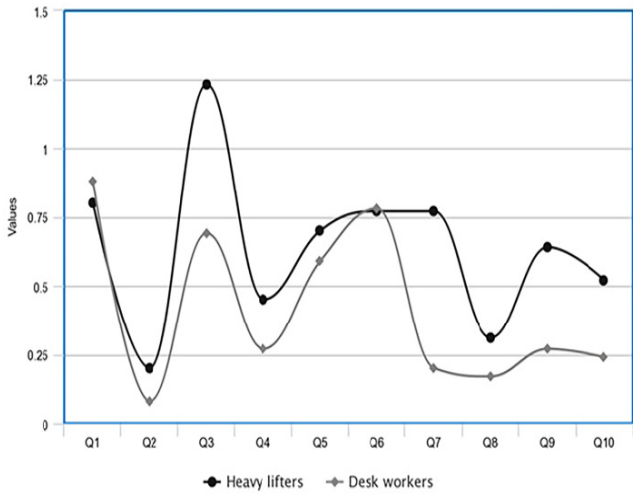

Figure 1. The variations between the study groups per question

DISCUSSION

This study aimed to assess the prevalence and contributing factors of LBP among employees working in the same compound for occupations with different physical requirements. As a result, the total score of LBP questionnaire among heavy lifters was found to be significantly higher compared to the desk workers.

In this study also demonstrated that age is strongly associated with LBP as supported by previous other studies since tissue degeneration is a contributing factor of predisposition to LBP (12). The overall score in the ≥36 years' group was higher in both study groups, which is consistent with the literature (13).

Although LBP is not related to increased mortality, it is a disturbing factor in terms of social outcomes and life quality. The etiology underlying the LBP is occupational factors in the 37% of the individuals, and in favor of the

male population globally (14). In general, since men are most likely to expose heavy lifting during work hours, they are expected to have a higher rate of LBP and related complaints and injuries. The female ratio of heavy lifters was higher in our study group. It is a well-known fact that pain perception is higher in women than that of men (15). Thus, the reported Oswestry Low Back Pain Disability Questionnaire score would be different whether the male/female ratio was higher in the heavy lifter group. However, the total scores in both study groups and the overall population did not differ between males and females.

Body axis linearity and hence whole-body vibration and mechanical pressure during the physical activities also contribute to the development of LBP. A large cohort study on truck drivers revealed the 65% LBP incidence identifying the contributing factors as improper sitting posture while driving, frequent lifting or carrying heavy objects, and perceived job stress (1). Chronic manifestations of LBP relatively increase with the intensity of the workload. In a study among the coal miners, the self-reported incidence of LBP was 64.9% within one year period (16). In a hospital-based study among clinical staff pulling, pushing, carrying the patients and office workers, there was no significant difference between the two groups in terms of chronic LBP (17).

While supported with improper lifting and impaired ergonomic conditions, frequent lifting of heavy loads during the work hours are associated with a higher incidence of LBP and disc herniation. It should also be noted that individual physical factors including work pace, motion patterns, and body postures cause musculoskeletal disorders and LBP. Repetitive moves, a higher amount of physical involvement, extreme bending positions throughout the day are the main occupational factors associated with LBP (14). The degree of disability did not differ between two groups, indicating that desk working might result in LBP and disability, as a result of improper posture and ergonomics during the work hours.

Data suggested that the educational level is a strong independent factor for pain perception and disability from LBP (18). Since educational level might be an indicator of social and economic status, questioning of education level is essential in self-reported surveys.

The association between work-related exposure and LBP differs from mild to strong among the studies. Although workplace modification interventions are requested in various studies, there is limited evidence regarding the use of chair backrests and reducing the flexion of the seated hip flexion in preventing low back discomfort and pain. Furthermore, computer workplace adjustments, task modifications, physical workplace changes, and training programs did not reduce LBP incidence in one year follow-up period. Specific strengthening and endurance exercises of abdominal and back extensor muscles combined with education reduced the risk of LBP episode during short term follow-up; the efficacy of exercise in the prevention of LBP was lower during a long-term follow-up duration (19).

One limitation of this study was the lack of follow-up. Taking the first response to the questionnaire as a baseline measure, the addition of a follow-up period would result in alterations in the study parameters. Secondly, the information on physical activity at work and LBP was self-reported in the context of our study. Detailed observations and recording of the daily activities would yield a more objective evaluation of occupational workload.

CONCLUSION

In conclusion, the prevalence of LBP is high among hospital employees irrespective of the occupational measures and work load. Adjustment of possible occupational risk factors might have a reducing effect on the incidence of LBP and related complications.

Competing interests: The authors declare that they have no competing interest.

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Ethical approval: This study was approved by the Institutional Ethics Committee and conducted in compliance with the ethical principles according to the Declaration of Helsinki.

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