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# Nonspecific Low Back Pain in a Group of Young Adult Men

## *Genç Erişkin Erkek Grubunda Bel Ağrısı*

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**ABSTRACT**

**AIM:** Low back pain (LBP) is a common symptom that causes enormous social, psychological, and economical problems. We studied LBP occurrence in a group of young adults referred to an army hospital for a planned health check and evaluated possible causative factors by prospective questionnaires.

**MATERIAL and METHODS:** This article is based on a prospective study of 871 novice soldiers of the Turkish Army. Studied factors were combined in the form, which was filled by 5 doctors on the basis of self-reports, interview and physical examination of the participants. They were evaluated by factors; low back pain episodes, monthly income, smoking habits, BMI, labor conditions, and educational status.

**RESULTS:** The median age of the studied population was 21.14±1.4. Complains regarding LBP were observed in 325 (37%) of participants. Twelve participants had pain episodes up to 10 points. 83.69% of the participants with LBP had psychological problems. Heavy lifting and driving for long periods were determined as serious risk factors.

**CONCLUSION:** Determining the impact factors of LBP in primary care groups can help to prevent development of more serious problems.

**KEYWORDS:** Low back pain, Epidemiology, Young adult men

**ÖZ**

**AMAÇ:** Bel ağrısı ciddi sosyal, psikolojik ve ekonomik problemlere yol açan yaygın bir semptomdur. Bu çalışmada, dejeneratif değişikliklerin nadir izlendiği genç erişkin dönemdeki askerlik görevini yapmak için başvuran erkeklerin ilk muayeneleri sırasında prospektif olarak hazırlanan anket ile bel ağrısı epidemiyolojisi ve belirleyici nedenleri değerlendirilmiştir.

**YÖNTEM ve GEREÇ:** Bu çalışmada askerlik görevini yapmak için başvuran yaşları 20-32 arasında arasında değişen 871 erkek çalışmaya alınmıştır. Çalışma için adaylara yaş, boy, kilo, eğitim durumu, ekonomik geliri, kullandıkları sigara sayısı, bel ağrısı olup/olmadığı veya bel ağrısı atağı geçirip geçirmedikleri, bel ağrısı olanlarda ağrının şiddeti, daha önceden yardım almasını gerektiren psikolojik rahatsızlık ve çalışma koşulları parametrelerini içeren formlar hazırlandı. Bu formlar 5 doktor tarafından asker adayları ile bire bir görüşülerek doldurulmuştur.

**BULGULAR:** Çalışılan popülasyonun yaş ortalaması 21,14±1,4/ yıl. 325 (%37) kişide bel ağrısı vardı. 12 katılımcının ağrı skoru 10 puana çıkıyordu. Ciddi bel ağrılı bu olgularda %83,69 psikolojik sorunlar gözlendi. Bunun yanında, ağır yük kaldırma, ağır sigara, uzun süre araç kullanılması belirleyici risk faktörü olarak bulunmuştur.

**SONUÇ:** Genç erişkin grup bel ağrılı olgularda; rol oynayan etkili faktörlerin erken belirlenmesi ciddi problemlerin önlenmesini sağlayabilir.

**ANAHTAR SÖZCÜKLER:** Bel ağrısı, Epidemiyoloji, Genç erişkin erkek

### INTRODUCTION

Low back pain (LBP) is an enormous social, psychological, and economic problem. It is estimated that 15% to 20% of adults may have an attack of back pain in a single year, and 50% to 80% experience at least one episode of back pain during their lifetime. Low back pain affects all ages, from adolescents to the elderly, and is a major cause of disability in the adult working population. Risk factors for spine pain are multidimensional: physical attributes, socioeconomic status and the general medical health and psychological state, and occupational environmental factors all contribute to the possibility of experiencing this type of pain (19, 21).

In general, LBP is manifested at the beginning of an adult's active social life (20–24 years), reaching its peak in those aged over 40. Early recognition of the causes of LBP is important for the prevention of further problems (2, 4). In this study, we investigated the occurrence of LBP in a group of young adults admitted to an army hospital for scheduled health checks and,

through the use of a prospective questionnaire, examined the possible causative factors of LBP.

## MATERİAL and METHODS

This article is based on a prospective study of 871 novice soldiers, aged 20–32 years (median age 21.14 ± 1.4 years), at a Turkish army base. The factors listed in Table I were included in the form, which was completed on the basis of self-reports, interviews, and physical examinations of the patients. Episodes of LBP occurring over the past year, with duration of more than one week, were considered to be substantial and were assessed by a visual analogue scale (VAS). The educational status of the participants was coded according to the stages of the educational system in Turkey: elementary school, high school, and university. Monthly income was coded as 0–500 TL – Group 1; 500–999 TL – Group 2; 1000 TL and more – Group 3. The first two groups were considered low income groups, while the third group was considered high income. Smoking was categorized as: non-smokers; those who smoke less than 20 cigarettes per day; and those who smoke more than 20 cigarettes per day. The body mass index was determined for each participant using the following formula: BMI = weight/height$^2$. The working conditions of the participants were classified as shown in Table II. The first three categories indicate low spinal stress and the last three groups indicate heavy spinal stress.

Statistical analysis was performed with the Statistica 6.0 (StatSoft Inc.) program. Medians were counted for continuous variables and Fisher's exact and correlation indexes were used for matched pairs. The Kolmogorov-Smirnov test was used to determine normal values for the variables.

## RESULTS

Low back pain was reported by 325 of the 871 (37%) study participants. Among the study population, there was no distinct difference in LBP between age groups (p>0.05) or BMI (p>0.05). In the general population, the normal BMI value is 20–25.9 kg/m$^2$. An increase of this index is accepted as a risk factor for LBP. In our study, 50 responders had high BMI values; in those with BMI <30 kg/m$^2$, there was no clear relation between BMI and LBP (p>0.05) (Table III).

Analysis of the VAS data indicates that 12 participants had experienced pain episodes assessed at 10 points, 4 participants – 9 points, and 2 participants – 8 points, all of which are considered quite severe. In our study, 325 (83.69%) participants with LBP had experienced psychological problems (p<0.05).

Comparison of the groups by Fisher's test revealed significant differences between the two groups.

Educational level (p>0.05) and monthly income (p>0.05) of the participants had no correlation with the occurrence of pain, as there was no reliable difference between the values in the group of responders with LBP and the group without LBP.

Regarding participants with smoking habits, we noted that smoking up to 20 cigarettes per day did not result in a reliable difference; however, among heavy smokers, 23% of participants experienced LBP and 17% of the group of participants free of LBP had a reliable difference by Fisher's exact test (p>0.05).

**Table II:** Coding of Work Activity

| | |
|---|---|
| Group 1 | Easy work |
| Group 2 | Sitting for extended periods |
| Group 3 | Standing and walking for extended periods |
| Group 4 | Heavy workload |
| Group 5a | Driving for extended periods |
| Group 5b | Track driving for extended periods |

**Table I:** Studied Factors

| Name of factor | Coding of factor |
|---|---|
| Age | Years |
| Sex | Male |
| Weight | Kg |
| Height | Cm |
| BMI | Kg/m$^2$ |
| Labor status | 6 groups: based on physical activity |
| Education | 3 groups: elementary school, secondary school, and high school |
| Financial status | 3 groups: based on monthly income for the last 3 months |
| Low back pain severity | VAS 10 points coding |
| Smoking habits | Average daily number of cigarettes smoked for the last 6 months |
| Psychological status | No psychological problems, or experiencing psychological problems (has visited psychologist) |

**Table III:** Fisher's Test for Age and BMI Variables

| Variable | Experiencing LBP | Not experiencing LBP | p value |
|---|---|---|---|
| Age | 21.14 ± 1.41 | 21.15 ± 1.41 | 0.98 |
| BMI | 22.92 ± 1.84 | 22.99 ± 1.91 | 0.46 |

**Table IV:** Chi-square Test for the Influence of Factors on LBP Occurrence

| Factor | Values | Experiencing LBP n=325 | Not experiencing LBP n=546 | Chi- square | p value |
|---|---|---|---|---|---|
| Psychological problems | Yes<br>No | 53 (6.08%)<br>272 (31.22%) | 26 (2.98%)<br>520 (59.7%) | 32.93 | 0.00* |
| High education | No<br>Yes | 307 (35.24%)<br>18 (2.06%) | 514 (59.01%)<br>32 (3.67%) | 0.04 | 0.84 |
| Monthly income | Low<br>High | 311 (35.95%)<br>14 (1.61%) | 513 (59.30%)<br>27 (3.12%) | 0.22 | 0.64 |
| Smoking more than 20 cigarettes/day | No<br>Yes | 250 (28.7%)<br>75 (8.61%) | 453 (52%)<br>93 (10.67%) | 4.78 | 0.028* |
| Heavy workload | No<br>Yes | 126 (14.46%)<br>199 (22.84%) | 196 (22.50%)<br>350 (40.18%) | 0.72 | 0.39 |

** - p<0.05*

The influence of labor conditions on LBP did not show a significant difference between the two groups as to the occurrence of LBP (p>0.05) (Table IV).

## DISCUSSION

Leboeuf-Yde and Kyvik investigated the development of LBP problems in 29,424 Danish twins and found that the pattern for the one-year prevalence of LBP was very similar to that for lifetime prevalence; both started at 7% (95% confidence interval, 5–9%) for 12-year-old individuals and reached 56% (95% confidence interval, 53–59%) and 67% (95% confidence interval, 62–71%), respectively, for 41-year-old individuals. The authors concluded that steps toward the prevention of LBP need to be focused during childhood and adolescence (13).

Our results showed that yearly occurrence of LBP episodes for a population of 21.4-year-old men was 37%, which is quite close to the average rate found in data in the literature.

A study on the impact of obesity on musculoskeletal system diseases by Tsuritani et al. showed that LBP (occasionally or frequently) was the most common symptom in 40.3% of the subjects. The pain score for legs and difficulty of daily activity score increased significantly with age. Higher BMI was related to increased prevalence of frequent leg pain and difficulty score (>3), but there were no significant associations between age or BMI and scores for back pain (20).

In our study, no individual had a BMI over 30 kg/m$^2$. Fifty participants had BMIs between 25 and 30 kg/m$^2$; this borderline data was not a reliable risk factor for LBP problems. We consider that this is related to the age of the studied group, as obesity and resulting cardiovascular problems become more significant factors after the age of 40 (15).

Educational level rarely changes after 20–25 years of age. We could not find any reliable difference in LBP according to educational status. The results of a study by Hestbaek et al. supported our data; they concluded that there are no or very weak indications of possible relationships between social factors in adolescence and LBP at baseline and at follow-up (9).

Interestingly, Hagen et al. concluded on the basis of their study that education level has a strong and unexplained effect on back pain disability pensioning, and is not mediated by occupational class, working conditions, or individual lifestyle (7). We note that this fact may differ by country and even among various population groups (city versus village) and may depend on manual labor in production or manufacturing facilities. People in low socioeconomic groups mostly work under toxic, risky, non-hygienic conditions and often claim health certification benefits for "false long standing disease."

Regarding the influence of smoking on LBP, various investigators have postulated that: 1) coughing from smoking increases internal abdominal pressure and intradiscal pressure and thus strains the spine (14); 2) nicotine reduces

vertebral blood flow in the body, reducing disc nutrition and promoting disc degeneration (5); 3) smoking may be associated with anxiety and depression, which exacerbates or prolongs back pain (1).

Our study revealed that the actual influence of smoking on LBP is dose-dependent. Seventy-five (23.07%) of the participants had a habit of heavy smoking (more than 20 per day), which showed reliable interrelation to LBP occurrence and severity.

Psychological problems are prominent factors in LBP and related issues. As shown in the results of Hagg et al.'s study, patients with chronic LBP selected as candidates for surgery differed significantly from the control subjects free of back pain by demonstrating more smoking behaviors, general morbidity, and depressive symptoms as well as heavier occupational and self-assessed workloads (8).

In our study, 272 out of 325 (83.69%) participants had psychological problems. There were positive and negative significant effects between the two groups related to this issue. Among the factors studied, we consider that the impact of psychological problems has the most influence over the further development of LBP signs and symptoms. Piko and Noemi demonstrated that fatigue was the most frequent psychosomatic symptom in both sexes, followed by headache and LBP, in a group of teenagers (17). A prospective cohort study by Power et al. provides evidence that psychological distress more than doubles later risk of LBP (18).

Bearing heavy physical loads is one of the main causative factors for the development of LBP. In their study, Hellsing and Bryngelsson revealed that the prevalence of LBP increased from 38% to 74% during a 20-year period; the odds ratio for frequent back/neck/shoulder problems at follow-up evaluation was 2.2 (95% confidence interval, 1.57-3.24) if the subject had been performing heavy work (10). The job condition may be a consequence of low educational profile, psychological problems, and/or a smoking habit, so all factors are interrelated.

In our study, we revealed that physical work (load carry, driving, truck driving) was not a reliable risk factor in the population studied. We consider that age might make the difference as changes in the spine related to occupation may develop after the age of 40.

The results of a study by Erginoz et al. show that Turkish adolescents (9–11th grade) are in a risk group for experiencing LBP problems as they perceive themselves as not very healthy and experience psychosomatic symptoms (3). More serious back problems occur later in life (at the age of 26–45) as proven in the studies of Gilgil et al. (6) and Oksuz (16). Izci et al. evaluated 865 patients with LBP and analyzed the outcomes of surgical treatment versus medical treatment. They showed that LBP is one of the major causes of lost work days in young recruits (11). Our study focused on an age group between teenagers and adults and showed, under conditions of the existence of predisposition to LBP, which factors could contribute to the development of symptoms in the future.

As stated by Leboeuf-Yde, we should look for populations at risk, rather than determining risk factors. Populations at risk would consist of those with weak psychological and physiological constitutions, who may readily develop chronic LBP (12).

We can conclude that certain factors (psychological, smoking, low educational status) of daily living lead predisposed persons to the development of musculoskeletal problems.

## CONCLUSİONS

Determining the factors impacting LBP in young adults can help to prevent the future development of more serious problems.

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