

Upper Extremity Problems in Doner Kebab Masters

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Abstract. [Purpose] Doner kebab is a food specific to Turkey; it is a cone-shaped meat placed vertically on a high stand. The doner kebab chefs stand against the meat and cut it by using both of their upper extremities. This work style may lead to recurrent trauma and correspondingly the upper extremity problems. The aim of this study was to investigate the upper extremity disorders of doner chefs. [Subjects and Methods] Doner kebab chefs were selected as the study group, and volunteers who were not doner kebab chefs and didn't exert intense effort with upper extremities their business lives were selected as the control group. A survey form was prepared to obtain data about the participants' ages, working experience (years), daily work hours, work at a second job, diseases, drug usage, and any musculoskeletal (lasting at least 1 week) complaint in last 6 months. [Results] A total of 164 individuals participated in the study, 82 doner chefs and 82 volunteers. In 20.6% of the study group and 15.6% of the control group, an upper extremity musculoskeletal system disorder was detected. Lateral epicondylitis was more frequently statistically significant in the work group. [Conclusion] Hand pain and lateral epicondylitis are more frequent in doner chefs than in other forms of business.

Key words: Doner kebab master, Cumulative trauma disorders, Upper extremity problems

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INTRODUCTION

Cumulative trauma disorders (CTDs) are defined as muscle, nerve, tendon, joint, cartilage, and spinal disc damages or disorders due to exposure to risk factors in the work environment¹⁾. The common characteristics of CTDs are that they arise or increase due to working and that they may lead to limitations on activities in the business environment or nonbusiness activities²⁾. These disorders, which do not include injuries due to accidents, generally develop in the musculoskeletal system over a long term¹⁾. CTDs are basically classified into two groups as upper extremity disorders (UE-CTD) and waist disorders. These disorders create negative effects in business life on productivity, costs, and the quality of the lives of employees. The frequency of UE-CTD is getting higher, and because the losses of labor it causes, economic losses, and decreases in quality of life of employees, it has become a serious public health problem³⁾.

A doner kebab chef or doner chef is a person with the skills needed to marinate the meats to be used in a doner kebab, place a doner in a cooker, cook it, cut it in leaf form, and serve it in the desired portions. The job of doner chef is specific to Turkey, and their upper extremities are used in performance of this business. Especially when cutting a

doner, they frequently repeatedly perform upper shoulder flexion and extension and wrist flexion and extension movements. The doner knife, which is longer and heavier than a normal knife, makes this work harder, and this leads to problems in the elbows and wrists. In this study, we examined the frequency of UE-CTD in doner chefs, and whether it increases in comparison with individuals who do not need to perform repetitive, forceful upper extremity movements in their jobs.

SUBJECTS AND METHODS

Volunteers who did not need to perform repetitive, forceful upper extremity movements in their jobs and doner chefs were selected for this study. Those having systemic diseases (diabetes, rheumatic diseases, muscle diseases, neuropathy, etc.) leading to upper extremity problem or congenital or acquired upper extremity damages (deformity, torticollis, scoliosis, loss of sense, nerve damage, etc.) were excluded from this study. All of the participants were informed about the study, and written consent was obtained from them. Permission for this study was obtained from the ethics council of our hospital.

Face-to-face interviews were performed by visiting the cases in their workplaces. A survey form containing questions about demographic information, age, occupational experience (years), daily working duration, height, weight, any second job, and diseases was provided. The doner chefs were asked about any upper extremity pain they had experienced. All of the participants were also asked about any musculoskeletal system complaints (lasted for at least

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1 week) in last 6 months, and both of their upper extremity musculoskeletal systems were physically examined. In the physical examination, the subjects were examined for deformity, color change, pannicula, atrophy, and hypertrophy through inspection of the neck and upper extremity. Temperature increase and painful points were investigated through palpation of bones, joints, and soft tissues. Measuring the active-passive movement gap of all of the joints, the subjects were examined for any limitation, crepitation, or mobility-induced pain. The manual muscle test and a neurologic examination for the upper extremity were carried out. Then a definitive diagnosis was made via special tests specific to upper extremity problems. The special tests performed were the Spurling test, Neer test (subacromial impingement test), Speed test, Cozen test (tennis elbow test), golfer's elbow test, Finkelstein test, Tinel test, and Phalen test⁴⁻⁸). The diagnoses were made by assessing the cases in this way.

Statistical assessments were carried out by using the Statistical Package for Social Sciences (SPSS, Inc., Chicago, IL, USA) 16.0 software. Besides the definitive statistical methods (average, standard deviation) during assessment, intergroup comparisons of age, experience (years), and daily work duration were carried out via the independent t test, while comparisons of complaint and disorder rates were carried out via the χ^2 test. All results are stated as means $\pm$ standard deviation. Results were accepted as statistically significant if the p value was lower than 0.05.

RESULTS

Eighty-two individuals working as doner chefs and 82 individuals not working as doner chefs participated into the study voluntarily. All of the participants were male, and there was no difference among groups in terms of age, experience (years), daily work hours, and body mass index (Table 1).

Upper extremity musculoskeletal system complaints were detected in 44.8% of the study group and 34.7% of the control group, while upper extremity musculoskeletal system disorders have been detected in 20.6% of the study group and 15.6% of the control group. There was no statistical difference among the two groups in terms of rates of upper extremity musculoskeletal system complaints and disorders ($p>0.05$).

The doner chefs having lateral epicondylitis had 17.66 ± 8.01 years of work experience, while doner chefs not having lateral epicondylitis had 10.40 ± 8.71 years of work experience ($p=0.005$). Comparisons of groups in terms of the upper extremity complaints and in terms of the diagnosis of the upper limbs are presented in Tables 2 and 3.

DISCUSSION

One of the most important complaints of working people is work-related upper extremity disorders (UEDs)⁹. The main complaint in UE-CTD is pain in the upper extremities, neck, shoulder, elbows, wrists, and waist. Exclusive usage of extensor muscles leads to lateral epicondylitis, and two of its results are inflammation and irritation of the ten-

Table 1. Comparison of age, BMI and duration of work between the two groups

	Study group (n=82)	Control group (n=82)
Age	34.46 $\pm$ 6.75	32 $\pm$ 8.86
BMI	26.05 $\pm$ 2.94	26.08 $\pm$ 4.78
Work experience (years)	13.05 $\pm$ 5.46	10.40 $\pm$ 8.71
Duration of work (hours/day)	9.89 $\pm$ 1.76	10.48 $\pm$ 1.75

Table 2. Comparison of upper extremity complaints between groups

	Study group (n=82)	Control group (n=82)
Hand pain	10 (12%)	1 (1.2%)
Hand numbness	1 (1.2%)	1 (1.2%)
Elbow pain	13 (15.8%)	4 (4.8%)
Shoulder pain	7 (8.5%)	7 (8.5%)
Neck pain	6 (7.3%)	11 (13%)

Table 3. Comparison of diagnosis of the upper limbs between groups

	Study group (n=82)	Control group (n=82)
Carpal tunnel syndrome	1 (1.2%)	1 (1.2%)
De Quervain's disease	1 (1.2%)	3 (3.6%)
Lateral epicondylitis	12 (14.6%)	2 (2.4%)
Medial epicondylitis	1 (1.2%)	2 (2.4%)
Biceps tendinitis	1 (1.2%)	0 (0%)
Rotator cuff tear	1 (1.2%)	0 (0%)

don insertion¹⁰.

One of the most important results of our study is that lateral epicondylitis occurs less frequently in doner chefs than in other members of society. Also, the working durations of doner chefs with lateral epicondylitis were longer than in those not having lateral epicondylitis. Lateral epicondylitis is seen frequently in people working in meat factories (6.4%), sausage makers (11.3%), packers (7%), nursery school cooks (10.5%), and people working in manufacturing (5.8%), fish processing (14.3%), and textile production. The frequency of lateral epicondylitis increases as the exposure duration increases¹¹⁻¹⁴.

The rate of lateral epicondylitis was 14.6% in doner chefs in our study, while the rate of hand pain was 12%. The frequency of lateral epicondylitis or tennis elbow varies between 1% and 3% among the general population¹⁵, while it varies between 2% and 23% among the working population¹⁶. It has been revealed in earlier epidemiologic articles that lateral epicondylitis occurs due to forceful movements of the elbow¹⁷⁻¹⁹. On the other hand, the results reported on the relationship between lateral epicondylitis and arm movement are inconsistent²⁰.

Epicondylitis risk was defined by job title in a review by Palmer et al.²¹⁾ On the other hand, in a more recent article, the term “epicondylitis” was subdivided into lateral and medial epicondylitis. The studies that reported only results concerning epicondylitis were excluded from that article. Palmer et al. found that the risk of epicondylitis significantly increases in working people exposed to vibration, such as workers, foresters, pipe fitters and water/gas suppliers, meat cutters, packers, and Japanese nursery school cooks. In parallel with these findings, the findings of the present study indicate an increased lateral epicondylitis risk in male meat cutters. The present study improves the existing knowledge by providing quantitative information for exposure-response relationships between work-related factors and the occurrence of four specific elbow disorders. But many different exposure studies and different diagnoses for specific elbow complaints have been reported, and so study pooling is not suitable in this field.

When the employees are exposed to combined risk factors, such as force and repetition, or either force or repetition and extreme non-neutral arm postures, the relationship between workload factors and epicondylitis reaches its maximum point^{11, 22)}. We have revealed that lateral epicondylitis is significantly related to work tasks requiring a combination of repetitive and forceful activities and also with a longer exposure durations.

The exposure to physical loads during work is generally evaluated and investigated by self-report in epidemiologic articles. This method has the advantage of affording the possibility to study cumulative exposure over time, but its reliability or validity may be questionable²³⁾. The most difficult parts are the assessments of the weights of handled loads and the exerted forces.

The revealed relationships were found to be stronger among physical factors rather than psychosocial ones. Low social support, one of the psychosocial factors, remains significant only for men, even after adjustment, and other factors became nonsignificant for both genders, but some other authors have revealed significant associations between psychosocial factors and elbow disorders^{24, 25)}. For assessing the links between psychosocial factors and physical ones, further research is required^{26, 27)}. The monthly income level and their educational statuses are low.

The frequency of upper extremity tendinitis has been found to be higher in obese subjects²⁸⁾. In our study, the BMIs of doner chefs classified them as obese.

The risk of elbow pain and epicondylitis increases statistically significantly as age increases. It has been shown in a cross-sectional study that the effect of aging cannot be separated from the cumulative effect of current and earlier deleterious exposure. On the other hand, in parallel with the theory about the aging affect associated with tissue degeneration²⁹⁾, in the present study, the effect of age remained significant among employees working in the same job for more than 10 years. As stated in the previous articles about elbow disorder^{30, 31)}, elbow pain and epicondylitis are associated with other musculoskeletal disorders. This reveals the complexity of movements and consequently the pain in different body parts. Because the mean age of our study

group was 34.46±6.75 years, our 12 subjects with lateral epicondylitis cases were advanced-aged patients.

In conclusion, our study shows that lateral epicondylitis in the elbow is a common work-related upper limb disorders among doner chefs. Low socioeconomic level, age, obesity, and complex hand-wrist movements increase this risk.

In occupational groups such as doner chefs, employees should not perform the same tasks repetitively, the durations of breaks should be modified, and wearing splints should be ensured if possible to decrease the risk of lateral epicondylitis.

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