





Evaluation of Students Self-Joint Cracking Habits: A Cross-Sectional Study

Öğrencilerin Kendi Eklemlerini Çıtlatma Alışkanlıklarının Değerlendirilmesi: Kesitsel Bir Çalışma

 Muhammet Mustafa Gulacti¹,  Mehtap Sahingoz Tahta²,  Yahya Tahta³,  Fatma Nur Tiyek⁴

¹Osmaniye Korkut Ata University, Vocational School of Health Services, Department of Therapy and Rehabilitation. Osmaniye, Türkiye

²Niğde Ömer Halisdemir University, Zübeyde Hanım VSHS, First and Emergency Aid Program, Niğde, Türkiye

³Republic of Türkiye Ministry of Health, Emergency Service, Niğde Altunhisar State Hospital, Niğde, Türkiye

⁴Republic of Türkiye Ministry of Health, İbn-i Sina Public Health Center Sivas, Türkiye

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Sorumlu Yazar/Corresponding Author:

Yahya Tahta,

Dr. Health Ministry, Niğde Altunhisar State, Hospital, Emergency Service, Niğde, Türkiye

e mail: yahyatahta@gmail.com

Açıklama/Disclosure: Yazarların hiçbiri, bu makalede bahsedilen herhangi bir ürün, aygıt veya ilaç ile ilgili maddi çıkar ilişkisine sahip değildir. Araştırma, herhangi bir dış organizasyon tarafından desteklenmedi. Yazarlar çalışmanın birincil verilerine tam erişim izni vermek ve derginin talep ettiği takdirde verileri incelemesine izin vermeyi kabul etmektedirler.

ÖZET

Amaç: Eklem gerginliğinin anında ortadan kalkması ve eklem hareket açıklığının artması nedeniyle eklem çıtlatma davranışı alışkanlık haline gelebilir. Bu doğrultuda çalışmada bir üniversitenin Sağlık Hizmetleri Meslek Yüksekokulu'nda öğrenim gören öğrencilerin kendi eklemlerini çıtlatma alışkanlıklarının değerlendirilmesi amaçlandı.

Yöntemler: Tanımlayıcı tipte olan bu çalışmanın evrenini bir üniversitenin Sağlık Hizmetleri Meslek Yüksekokulunda öğrenim gören 203 gönüllü öğrenci oluşturmuştur. Araştırma verileri anket formu aracılığıyla toplanmış olup, verilerin analizinde tanımlayıcı istatistikler ve Ki-kare testi kullanılmıştır.

Bulgular: Çalışma grubundaki öğrencilerin %72,9 'u kadın olup yaş ortalaması 20,21±2,16 yıldır. %68,5'i eklemlerden gelen sesi çıtlama olarak tanımlıyor ve en çok parmak eklemlerini (%44,3) ve boyun eklemlerini (%26,6) çıtlatıyorlar. Kadınların %52,5'i, erkeklerin ise %19,5'i boyun eklemlerini günde 3 ve daha fazla kez çıtlattıklarını belirtti ve aradaki fark istatistiksel olarak anlamlı bulundu ($p<0,001$). Kadınların %77'si, erkeklerin ise %92,7'si eklemlerinin çıtlamasından korkmadıklarını belirtti ($p<0,001$). Parmak eklemlerinin çıtlamasından korkanların %50'si, korkmayanların ise %87,9'u günde 3 veya daha fazla kez parmak eklemlerini çıtlattığını belirtti ($p<0,001$). Parmak eklemlerini çıtlatmaktan korkan öğrencilerin %55,6'sı parmak eklemlerini çıtlattıktan sonra duyulan ses hissini kötü, %57,1'i ise başkasının parmak eklemlerini çıtlatma hissini kötü olarak tanımladı (sırasıyla; $p<0,001$, $p<0,001$).

Sonuç: Çalışmamızda literatürden farklı olarak eklem çıtlatma korkusunun bireyin kendi eklemine çıtlama sesini duyması ve başkasının eklemine çıtlaması hissi üzerine etkisi incelenmiş ve her ikisinde de etkili olduğu görülmüştür.

Anahtar Kelimeler: Eklem, çıtlama, eklem çıtlaması, alışkanlık

ABSTRACT

Aim: Joint cracking behavior can become habitual due to the immediate release of joint tension and increased joint range of motion. Accordingly, this study aimed to evaluate the self-knuckle cracking habits of students studying at a university's Vocational School of Health Services.

Methods: The population of this descriptive cross-sectional study consisted of 203 volunteer students from a university's Vocational School of Health Services. Study data were collected with a survey form and descriptive statistics and Chi-square test were used to analyze the data.

Results: 72.9% of the students in the study group are female and the average age is 20.21±2.16 years. 68.5% of them describe the sound coming from the joint as cracking, and they mostly crack the finger joints (44.3%) and neck joints (26.6%). 52.5% of women and 19.5% of men stated that they cracked their neck joints 3 or more times a day, and the difference was found to be statistically significant ($p<0.001$). 77% of women and 92.7% of men stated that they were not afraid of cracking their joints ($p<0.05$). 50% of those who were afraid of cracking their finger joints and 87.9% of those who were not afraid stated that they cracked their finger joints 3 or more times a day ($p<0.001$). Of the students who were afraid of cracking their knuckles, 55.6% described the feeling of the sound after cracking their knuckles as bad, and 57.1% described the feeling of cracking someone else's knuckles as bad (respectively; $p<0.001$, $p<0.001$).

Conclusion: In our study, unlike the literature, the effect of fear of cracking joints on the individual's feeling of the sound of cracking his own joints and the feeling of cracking someone else's joints was examined and it was seen that it was effective on both.

Key words: Joint, cracking, joint cracking, habit

INTRODUCTION

The union of two or more bones forms joints, one of the basic elements that make up the movement system. The bones and surrounding tissues that make up the joints determine the joint types. These joint types are fibrous, cartilaginous and synovial joints. Synovial joints are joints with articular cartilage, fibrous membrane, synovial membrane, articular capsule, articular ligaments, synovial fluid and synovial cavity (1-4).

Joint cracking behavior may become habitual due to the immediate relief of joint tension and increased joint range of motion (5). In general, cracking the joints of the body is an audible sound that relaxes people who have a habit of cracking. This sound is described in the literature with words such as cracking, cracking, popping, clicking, clicking, crepitus or crackling (6, 7). The cracking sound heard when joints crack is caused by tendons or muscles moving over the joint or by the bursting of nitrogen bubbles normally found in the joint space. A person cannot fracture a joint twice at the same time because it takes some time for gas bubbles to form in the joint again (8-12). Joint cracking deaths are common in society and the prevalence is between 25 - 54% (13). Joint cracking behavior varies depending on age, gender and race. In society, this rate is lower in women than in men (13, 14). Studies on joint cracking date back to the early 20th century. While there are studies reporting that the joint cracking mechanism is related to pathological (osteoarthritis, psychosocial) factors (6, 15), there are also studies that cannot determine whether it is related to joint diseases (7). There is no study in the literature on the awareness of students in the young age group of joint noises and joint problems that may occur in later life. With this in mind, this study was conducted to assess the self-cracking habits of students studying at a university's Vocational School of Health Services.

MATERIAL AND METHODS

This descriptive cross-sectional study was conducted prospectively to evaluate the self-knuckle cracking habits of students of a university's Vocational School of Health Services. No sample was selected from the study population, and the study was completed with 203 students who studied at the Vocational School of Health Services and volunteered between 01.03.2021-31.05.2021. The study was started after obtaining Ethics Committee approval and written permission from the school where the study would be conducted.

Information Form; A survey form consisting of questions prepared in line with the literature to determine the individual characteristics of the students and their opinions about articulation sounds was used to collect the data.

Survey information

A survey form consisting of questions prepared in line

with the literature to determine the individual characteristics of the students and their opinions about articulation sounds was used to collect the data.

Statistical analysis

The data obtained from the study were analysed using the SPSS 22.0 package. In the analysis of the data, descriptive statistics (number, percentage, mean) and Chi-square test were used in the comparison of categorical parameters and Fisher Exact test was used if the expected frequencies were not met. The results were evaluated at 95% confidence interval and significance at $p < 0.05$ level.

RESULTS

In the study group, 72.9% of the students were female, 27.1% were male, and the mean age was 20.21 ± 2.16 years. It was found that 68.5% of the students expressed the sound coming from the joints as cracking and cracked the joints of the fingers (44.3%) and neck (26.6%) the most (Figure 1).

40.9% of the students saw the neck joint, 88.7% the mandible joint, 78.8% the shoulder joint, 84.7% the elbow joint, 57.6% the wrist joint, 54.2% the back joint, 58.6% the waist joint. 89.7% cracked the hip joint, 80.8% cracked the knee joint, 68% cracked the ankle joint and 65% cracked the toe joint once a day; 80.8% of them stated that they cracked their finger joints 3 or more times a day (Figure 2).

When the number of joint cracking was compared according to gender; 52.5% of women and 19.5% of men stated that they cracked their neck joints 3 or more times a day and the difference was found to be statistically significant ($p < 0.001$). The difference between the number of neck joint and finger joint cracking according to the fear of joint cracking was found to be statistically significant (respectively; $p < 0.001$, $p < 0.001$). The neck joint was cracked once a day by 71.1% of those who were afraid of joint cracking and 33.9% of those who were not afraid, and the finger joint was cracked 3 or more times a day by 50% of those who were afraid of joint

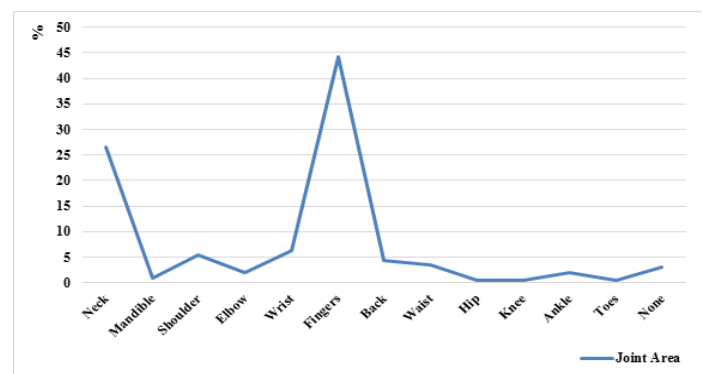


Figure 1. Distribution of students' answers to the question "Which joint do you crack the most?" (n:203)

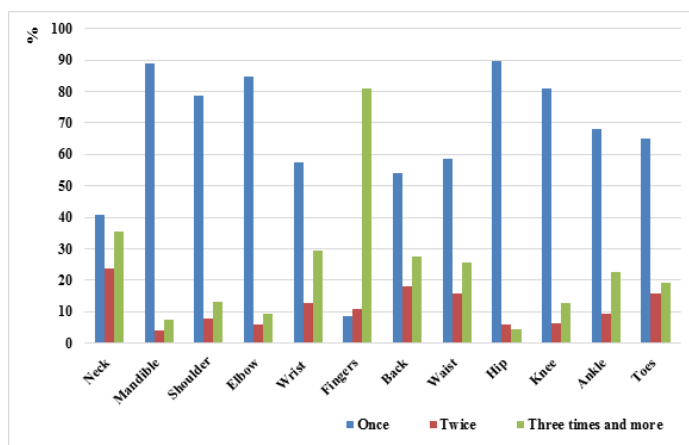


Figure 2. Distribution of students' answers to the question "Which joint do you crack the most?" (n:203)

cracking and 87.9% of those who were not afraid (respectively; $p < 0.001$, $p < 0.001$).

According to the feeling of the sound after cracking the joint, the difference between the number of cracks in the neck joint, finger and back joint was found to be statistically significant. (respectively; $p < 0.05$, $p < 0.05$, $p < 0.05$). Of those who stated that the feeling after cracking the joint was very good, 57.6% stated that they cracked their neck joint, 45.5% stated that they cracked their back joint, and 90.4% of those who said that it reduced their stress stated that they cracked their fingers 3 or more times a day. The difference between the number of neck joint, finger, back joint and waist joint cracking according to the sensation of cracking other people's joints was found to be statistically significant (respectively; $p < 0.001$, $p < 0.05$, $p < 0.001$, $p < 0.05$). Among those who stated that the sensation of cracking other people's joints was very

good, 72.7% of them stated that they cracked the neck joint, 87.9% the finger, 54.5% the back joint and 51.5% the waist joint 3 times or more daily.

It was found that 87.7% of the students cracked their joints and 81.3% of them were not afraid of cracking their joints. 85.9% of the women who cracked their joints and 90% of those in the age group of 20 years and below stated that they were not afraid of cracking their joints (Table 1). The difference between joint cracking status according to gender was not found to be statistically significant ($p = 0.394$). However, the difference between fear of cracking joints was found to be statistically significant ($p < 0.05$). 77% of women and 92.7% of men stated that they were not afraid of cracking their joints. The difference between cracking joints and fear of cracking joints according to age was not statistically significant (respectively; $p = 0.734$, $p = 0.836$).

It was found that 39.4% of the students thought that too much sound coming from the joints would lead to calcification at a later age, 36% of them stated that the sound coming after cracking the joint reduced their stress, 22.2% stated that it was a good feeling to crack other people's joints, and 54.7% had no idea about the sound coming spontaneously from the joints. According to gender, the difference between the problems that excessive sound from the joints may cause in later ages and the sensations caused by cracking other people's joints was found to be statistically significant (respectively; $p < 0.001$, $p < 0.05$). 16.7% of men and 83.3% of women stated that the sound coming from the joints would cause a decrease in joint fluid in later ages, 45.5% of women and 54.5% of men stated that it was a very good feeling to crack someone else's joint (Table 2).

Of the students who were afraid of cracking their joints, 55.6% said that the feeling of the sound after cracking their joints and 57.1% said that the feeling of someone else cracking their joints was bad, and the difference between the groups was found to be statistically significant (respectively; $p < 0.001$,

Table 1. Comparison of students' answers to questions about joint cracking and fear of cracking joints according to gender and age

Questions	n	Gender		Age	
		Male n (%)	Female n (%)	20 years and under n (%)	21 years and over n (%)
Total	203	55(27.1)	148(72.9)	136(67.0)	67(33.0)
Do you crack your joints?					
Yes	178	50(28.1)	128(71.9)	120(67.4)	58(32.6)
No	25	5(20.0)	20(80.0)	16(64.0)	9(36.0)
p value		0.394		0.734	
Are you afraid of cracking your joint?					
Yes	38	4(10.5)	34(89.5)	26(68.4)	12(31.6)
No	165	51(30.9)	114(69.1)	110(66.7)	55(33.3)
p value		0.011		0.836	

Table 2. Comparison of students' answers to questions about joint cracking according to gender

Questions	n	Gender		p value
		Male n(%)	Female n(%)	
What kind of problems do you think the excessive noise coming from your joints will cause in later ages?				
No problem	47	25(53.2)	22(46.8)	
Calcification	80	18(22.5)	62(77.5)	<0.001
Decrease in joint fluid	72	12(16.7)	60(83.3)	
Osteoporosis	4	0(0.0)	4(100.0)	
What do you think about the feeling of the sound that comes after you crack your joint?				
Bad	18	3(16.7)	15(83.3)	
No opinion	28	5(17.9)	23(82.1)	0.451
Good	51	17(33.3)	34(66.7)	
Very good	33	8(24.2)	25(75.8)	
Reduces my stress	73	22(30.1)	51(69.9)	
How does it make you feel to crack someone else's joints?				
Very bad	14	3(21.4)	11(78.6)	
Bad	28	3(10.7)	25(89.3)	<0.001
No opinion	83	22(26.5)	61(73.5)	
Good	45	9(20.0)	36(80.0)	
Very good	33	18(54.5)	15(45.5)	
What do you think about the spontaneous sound coming from your joints?				
No opinion	111	35(31.5)	76(68.5)	0.298
Calcification	26	4(15.4)	22(84.6)	
Decrease in joint fluid	36	10(27.8)	26(72.2)	
There is a cavity in the joint	30	6(20.0)	24(80.0)	

Table 3. Comparison of Students' Responses to Questions Related to Joint Cracking

Questions	Are you afraid of cracking your knuckle?			p value
	n	Yes n (%)	No n (%)	
What do you think about the spontaneous sound coming from your joints?				
No opinion	111	22(19.8)	89(80.2)	0.597
Calcification	26	5(19.2)	21(80.8)	
Decrease in joint fluid	36	8(22.2)	28(77.8)	
There is a gap in the joint	30	3(10.0)	27(90.0)	
What do you think about the feeling of the sound that comes after you crack your knuckle?				
Bad	18	10(55.6)	8(44.4)	<0.001
No opinion	28	10(35.7)	18(64.3)	
Good	51	6(11.8)	45(88.2)	
Very good	33	3(9.1)	30(90.9)	
Reduces my stress	73	9(12.3)	64(87.7)	
How does it make you feel to break other people's fingers?				
Too bad	14	8(57.1)	6(42.6)	<0.001
Bad	28	9(32.1)	19(67.9)	
No idea	83	12(14.5)	71(85.5)	
Good	45	6(13.3)	39(86.7)	
Very good	33	3(9.1)	30(90.9)	

p<0.001), (Table 3).

DISCUSSION

Views about joint cracking behaviors in society are traditional, but defining whether this repetitive behavior causes wear and tear on the joints is still a matter of debate. Joint cracking behavior, which provides physical and mental relaxation, is especially common among adolescents and adults. However, despite scientific studies, the exact pathophysiology has not been defined yet, although some mechanisms have been suggested to explain joint sounds. Therefore, it remains largely a mystery to the general population and insights into articulatory sounds have rarely been explored in the literature (16). Matsuo A et al reported in their case report that finger cracking occurs when the lateral bands are tense due to hyperextension or hyperplasia, making the MP joint hyperextended and making finger flexion difficult. In addition, the cracking phenomenon occurs when the tense lateral band moves from the dorsal to the palmar side of the MP joint. They also suggested that the cracking phenomenon occurs when the tense lateral band moves from the dorsal to the palmar side of the MP joint. In our study to examine students' opinions about joint sounds, the average age of the students is 20.21±2.16 years and the majority of them (87.7%) crack their joints. In studies conducted in the literature on the prevalence of joint cracking, it was found to be 25% in adults over 45 years of age (8), 34% in 11-year-old children, and 54% in nursing home residents with an average age of 78 years (13). The reason why it is higher in our study compared to other studies may be the effect of stressor factors such as the fact that all of the participants are students and actively continue their education, course intensity and anxiety of failure. In a study by, the prevalence of joint cracking was compared between the geriatric population and the 11 years old population and it was found to be similar (13). In our study, individuals aged 20 years and younger and individuals aged 21 years and older were compared, but their cracking habits were found to be similar. These findings show that age has no effect on joint snapping habits.

Unlike our study, studies in the literature examined the prevalence of joint cracking and osteoarthritis, but no relationship was found (13, 14, 17). In the study conducted by Castellanos and Axelrod, it was observed that swelling in the hand was more and grip strength was less in people who cracked their finger joints. In our study, unlike the literature, the effect of joint cracking on joint degeneration was not examined, and the effect of gender, age and the number of daily joint cracking on the sensation caused by joint cracking was examined. It was observed that the number of neck joint and finger joint cracking was effective on the fear of joint cracking and the feeling caused by another individual's joint

cracking. However, it was observed that the number of back joint cracking was not effective on the fear of joint cracking, but it was effective on the feeling caused by the cracking of another individual. We can say that this finding is related to the feeling of relaxation in the individual after cracking the back joint.

Study Limitations

Our study was applied to students studying at a university and a school affiliated with the university. Therefore, since our study was conducted in a single center, its generalizability was limited.

CONCLUSION

In our study, the effect of the number of joints of the mandible, shoulder, elbow, hand, hip, knee, foot and ankle was also analyzed, but no correlation was found. We can say that the difference in the findings according to the joint may be due to the habit of cracking the neck joint and finger joint more than the other joints in the society. In our study, unlike the literature, the effect of the fear of cracking joints, the sensation caused by the sound of cracking one's own joint and the sensation caused by cracking other people's joints were examined and it was found to be effective in both.

Studies in the literature have investigated the sound produced by joint cracking and its effect on joint degeneration. Our study was the first to investigate the effect of the habit of joint cracking on the sensation of the individual. As joint cracking is common in society and awareness of the issue is low, many new studies are needed.

Etik Kurul: Ethics Committee Approval: For the study, approval was obtained from Osmaniye Korkut Ata University Ethics Committee on 04.09.2020 with protocol number 2020/09-12.

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Sorumlu Yazar: Yahya Tahta, Dr. Health Ministry, Niğde Altunhisar State, Hospital, Emergency Service, Niğde, Türkiye
e-mail: yahyatahta@gmail.com

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