



ARAŞTIRMA MAKALESİ

RESEARCH ARTICLE

CBU-SBED, 2024, 11 (4): 615-619

## The Effect of Facial Massage on Anxiety and Cognitive Function in University Students

### Üniversite Öğrencilerinde Yüz Masajının Anksiyete ve Kognitif Fonksiyona Etkisi

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Gönderim Tarihi / Received: 23.05.2024

Kabul Tarihi / Accepted: 14.10.2024

DOI: 10.34087/cbusbed.1488409

#### Öz

**Giriş ve Amaç:** Bu çalışmada yüz masajının anksiyete ve dikkat üzerine akut etkilerinin incelenmesi amaçlanmıştır.

**Gereç ve Yöntemler:** Rastgele seçilen 59 üniversite birinci ve ikinci sınıf klasik yüz masajı uygulandı ve masajın akut etkileri kaydedildi. Değerlendirmede Burdon Dikkat Testi, Beck Anksiyete Testi ve nabız ölçüm yöntemleri kullanıldı.

**Bulgular:** Elde edilen sonuçlara göre klasik masajdan hemen sonra nabız ( $p=0,001$ ) ve kaygı düzeyinde ( $p=0,001$ ) anlamlı bir azalma gözlemlendi.

**Sonuç:** Klasik yüz masajı nabız, kaygı üzerinde etkilidir. Bilişsel işlev üzerindeki etkisine ilişkin elde edilen sonucun bundan sonraki çalışmalara yol gösterici olacağını umuyoruz.

**Anahtar kelimeler:** Anksiyete, kognitif fonksiyon, yüz masajı, üniversite öğrencileri

#### Abstract

**Aim;** This study aimed to examine the acute effects of facial massage on anxiety and attention.

**Method;** Classical facial massage was applied to 59 randomly selected first- and second-year university students, and the acute effects of the massage were recorded. Burdon Attention Test, Beck Anxiety Test and pulse measurement methods were used for evaluation.

**Results;** According to the results obtained, a significant decrease in pulse ( $p=0.001$ ) and anxiety level ( $p=0.001$ ) was observed immediately after the classical massage.

**Conclusion;** Classic facial massage is effective on pulse, anxiety. We hope that the result obtained on the effect on cognitive function will guide subsequent studies.

**Keywords:** Anxiety, cognitive function, facial massage, university students

## 1. Introduction

Psychological problems are increasingly being recognized as a problem among university students [1]. Due to psychological problems such as stress and anxiety, the sympathetic nervous system is activated [2]. Constant worry causes several physical, mental, and social difficulties, which threatens an individual's health. Anxiety increases muscular tone and reduces blood flow to the brain [3]. These changes, along with anxiety, negatively affect cognitive function. Attention deficit, which is a disorder caused by cognitive function problems, can be seen together with anxiety [4]. Numerous variables, including housing conditions, puberty problems, interpersonal problems, and academic problems, may lead to anxiety and cognitive dysfunction in university students [5]. Although pharmaceutical treatments are often utilized for the treatment of anxiety and cognitive functions, non-pharmacological treatments also attract significant attention [6]. The effect of massage therapy on anxiety and cognitive functions has recently come to the forefront [7].

Massage is the application of hand patterns to the skin for therapeutic purposes. It has been used for thousands of years in many parts of the world [8]. Massage therapy has a variety of biomechanical, physical, neurological and psychosocial effects [9]. It is thought that hand contact during massage sends a stimulus to the proprioceptors, and it was reported that this has an effect on psychological relief and reduction of pain in humans [10]. Body massage, which addresses large muscles in the upper extremities, shoulders, and back, has numerous psychological and physiological effects, such as decreasing anxiety and depression, boosting concentration, reducing stress and pain, and lowering blood pressure [11].

Since the beginning of the 20th century, facial massage has gained popularity [12]. Massage is an easy-to-learn, low-risk and low-cost treatment method [13]. Facial massage, a common cosmetic treatment favored by women, has been reported to enhance relaxation similarly to body massage [11]. It is one of the ways that may decrease mental and physical fatigue rapidly [14]. This method can relax facial muscles, relieve tension headaches, increase concentration, reduce fatigue, reduce nervous tensions and stress, improve mood, and increase blood circulation [15]. It is also known that the persistent tactile stimulation of facial massage lowers sympathetic nervous system activity and thus creates a sedative effect. In addition, massage therapy has been found to alleviate pain, reduce anxiety, and promote sleep [16].

Considering the positive effects of facial massage, it seems useful to investigate its effects on cognitive functions. Several studies have investigated the effects of facial massage on cognitive function [17-19]. However, as far as we have researched, no study

examining the effects of facial massage on cognitive function was found in the literature. Therefore, our study aimed to examine the effect of facial massage on the anxiety and attention level of university students in the acute period by utilizing the effect of massage on blood flow and autonomic system.

## 2. Material and Method

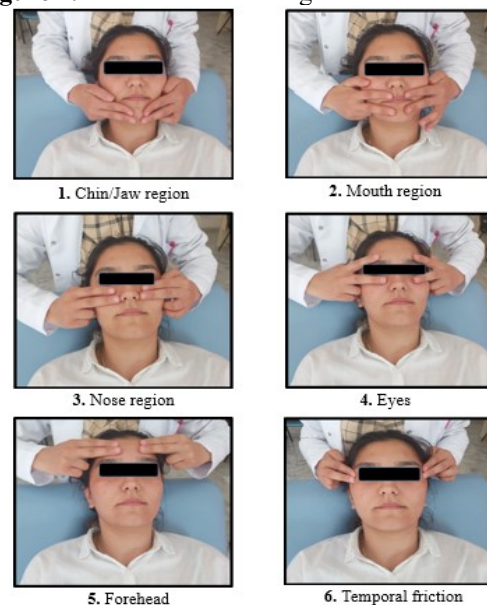
A total of 59 participants, 6 male and 53 female, aged between 18-20, who were students of the Department of Physiotherapy and Rehabilitation, were included in the study. Students diagnosed with any psychiatric disease and those using medication on the day of the study were not included in the study. Participants were informed about the study before starting it, and those who agreed to participate voluntarily were included in the study after obtaining written consent.

Before beginning the classic facial massage, heart rate was measured manually over the brachial artery. "Beck Anxiety Scale" was used to determine anxiety level, and "Burdon Attention Test" was utilized to evaluate cognitive function. After a single 15-minute facial massage, the participants' pulse, anxiety, and cognitive function were measured again. The classic facial massage was performed by a specialist physiotherapist with 5 years of professional experience.

### 2.1 Classic Facial Massage

The participants were positioned supine, with the physiotherapist standing at their bedside. The chin, mouth, nose, eyes, and forehead were treated with three strokes. The same areas were subsequently kneaded three times. These five places were then stroked again, and the massage was terminated (1-5). Friction was applied to the temporal region in each stroke and kneading application (6). Powder was used as an intermediate [1].

Figure 1. Classic facial massage



## 2.2 Pulse Assessment

When the participants were in the supine position, pulse assessment was performed before and immediately after massage. The tips of the middle and ring fingers were placed in the radial artery. The fingertips were pressed onto the artery until pulse was felt. When pulses were clearly felt, the pulse rhythm within 1 min was assessed.

## 2.3 Bourdon Attention Test

In this test, designed by Benjamin Bourdon in 1955, the individual is asked to find the letters "a, b, d and g" in existing words by allowing 5 minutes. Test letters can be made for anyone who cooperates regardless of age. In the evaluation of the Bourdon attention test, time, number of correct or number of errors can be taken into account [2].

## 2.4 Beck Anxiety Scale

This scale, which assesses the severity of anxiety symptoms, is rated by giving a score of 0-3 to 21 items. A total score of 0-7 corresponds to normal anxiety, 8-15 for mild anxiety, 16-25 for moderate anxiety, and 26-63 for severe anxiety [3]. The Turkish validity and reliability study of the scale was conducted [4].

## 2.5 Statistical analysis

Statistical analysis was performed with IBM SPSS "Statistical Package for Social Sciences" (version 22.0; IBM Corp., Armonk, NY, USA). Descriptive information about the subject group is presented in tables as percentage (%), arithmetic mean ( $\bar{x}$ ), standard deviation (SD) values and significance level ( $p$ ). The normality assumption of the groups was tested with the Kolmogorov-Smirnov test. Paired Samples t-test was used to determine the pretest-posttest difference of normally distributed data, and Wilcoxon test was used to determine the pretest-posttest difference of data that did not show normal distribution. The level of significance was accepted as  $p < 0.05$ .

## 3. Results

Data on the descriptive characteristics of the participants are given in Table 1. 89.8% of the participants were female, their mean age was 19.71, and the mean Body Mass Index (BMI) was 21.74 (Table 1).

**Table 1.** Data on the descriptive characteristics of the participants

		<b>X</b>	<b>SD</b>
<b>Age</b>		19.71	0.45
<b>BMI</b>		21.74	3.22
		<b>N</b>	<b>%</b>
<b>Gender</b>	Male	6	10.2
	Female	53	89.8

\* Frequency analysis, X; Mean, SD; Standard deviation, BMI; Body Mass Index BT; Before treatment, PT; Post treatment. N: Number of participants

Anxiety levels of university students before and after treatment are given in Table 2. The table shows that there is a statistically significant difference between the pretest and posttest measures of university

students' anxiety levels ( $z = -6.045$ ,  $p < 0.001$ ). After the facial massage, the anxiety levels of the students decreased (Table 2).

**Table 2.** University Students' Beck Anxiety Scale Pre-Test and Post-Test Scores

<b>Posttest - Pretest</b>	<b>N</b>	<b>Rank mean</b>	<b>Rank Sum</b>	<b>z</b>	<b>p</b>
Negative Rank	57	29.56	1685	-6.045*	0.001**
Positive Rank	32	42.50	85		
Equal	0	-	-		
Total	59				

\* Wilcoxon Signed Ranks Test, Based on Negative Ranks, N: Number of participants z: Z value \*\* $p < 0.001$

The attention levels of the participants before and after the treatment are shown in Table 3. It is shown that there is no statistically significant difference

between the pretest and posttest measurements of the attention levels of university students ( $z = -1.770$ ,  $p = 0.077$ ) (Table 3).

**Table 3.** University Students' Bourdon Attention Test Pre-Test and Post-Test Scores

<b>Posttest - Pretest</b>	<b>N</b>	<b>Rank mean</b>	<b>Rank Sum</b>	<b>z</b>	<b>p</b>
Negative Rank	31	34.97	1327	-1.770	0.077
Positive Rank	27	23.22	51		
Equal	1	-	-		
Total	59				

\* Wilcoxon Signed Ranks Test, Based on Negative Ranks, N: Number of participants z: Z value  $p < 0.05$ \*

Table 4 shows that the arithmetic mean of the pre-test result of university students' pulse values is  $80.56 \pm 8.27$ , and the arithmetic mean of the post-test result is  $73.02 \pm 8.99$ . As a result of the dependent t-test for university students' pre-test and post-test scores, the difference between the scores

was found to be statistically significant in terms of heart rate [ $t= 12.86, p< 0.001$ ]. The pulse values of the students decreased after the facial massage (Table 4).

**Table 4.** Comparison of the pretest-posttest scores of the heart rate values of university students

	<b>N</b>	<b>X</b>	<b>SD</b>	<b>DF</b>	<b>t</b>	<b>p</b>
Pulse Pretest	59	80.56	8.27	58	12.86	0.001*
Pulse Posttest	59	73.02	8.99			

\*paired t test, N: Number of participants, X: Mean, SD: Standard deviation, DF: Degrees of freedom, t: value

#### 4. Discussion

This study tested the physiological and cognitive effects of classic facial massage on university students. As a result of the single-session application, the anxiety and pulse values of the participant students decreased statistically significantly. However, there was no significant difference in their cognitive functions.

Massage creates a series of reactions that take place in the form of a response to the touch applied to the body. The degree of these responses varies depending on the kind and intensity of the massage. Massage has psychological and physiological effects on both internal and external organs [5]. Classic massage reduces the impact of disorders such as anxiety and depression on a person's everyday life by stimulating the parasympathetic system and lowering the amount of stress hormones [6].

A study investigating the effects of facial and head massage on delirium in geriatric women treated in a coronary care unit examined 88 individuals. In this study, a total of 4 sessions of massage were applied every other day and twice a day. In this randomized study, a significant improvement was reported in the delirium scores of the massaged group compared to the control group [7]. In our study, which was applied on a single group, massage was applied in a single session and the anxiety level improved significantly ( $p<0.001$ ). The result obtained supports the literature.

The relevant literature reports that the pulse decreases significantly as a result of the massage stimulating the parasympathetic system and creating relaxation in the person [8, 9]. Some studies show that the mean heart rate decreases after body massage applied to intensive care patients [10, 11]. The study of Hajbaghery et al. with coronary intensive care patients showed that there was a statistically significant decrease in the mean pulse values of the patients as a result of the evaluations made before and after the whole body massage [12]. Working with a similar patient group, Jamaati et al. also found that there was a statistically significant decrease in the mean pulse values of the participants after body massage. In the study by Çınar et al., in which they gave back massage to individuals in nursing homes for 3 days, the patients were

evaluated before, immediately after the massage, at the 15th and 30th minutes. At the end of the study, it was determined that there was a statistically significant decrease in the mean pulse values of the patients every 3 days [13]. It is strongly supported by the literature that massage applications to different body parts reduce the heart rate [11, 12]. In our current study, after a single session of facial massage, the pulse values of the participants who were massaged decreased statistically significantly. This decrease shows that facial massage is effective on the autonomic nervous system and increases the parasympathetic effect. Parasympathetic activation is required in the healing processes of diseases [14]. Therefore, facial massage can be especially effective in the healing processes of chronic diseases.

A large part of the problems in schools in our age are problems of attention. If these problems continue for a certain period of time, a feeling of failure begins to occur in the person [15]. In order for the individual to fulfill his educational tasks, he must solve the concentration problem [16]. It can be argued that the presence of such cognitive disorders in students due to intense exam marathons in our age can significantly affect the success of the person. Among the factors affecting the level of attention, psychological and emotional factors have an important place [17, 18]. From this point of view, the effect of relaxing massage on the attention level of the person should be examined. The study revealed that there was an increase in the scores of the participants in the Burdon attention test before and after the massage. This result shows that massage has a positive effect on attention. Other factors affecting attention include gender and age [19]. According to the results of Lee S.C.'s study, a significant relationship was found between age and attention [20]. Some studies have stated that one of the factors affecting the level of attention is whether a person sees the stimulus as appropriate for his or her own purposes [21, 22]. The fact that no significant increase in cognitive function was observed in our study may be related to the fact that the students were not motivated to complete the Burdon attention test.

In conclusion, the study showed that classic facial massage had a significant positive effect on acute

anxiety and heart rate. Today, pharmacotherapy is widely used in the acute treatment of mental problems. However, these drugs can be addictive. Therefore, classic facial massage can be used alternatively as a non-pharmacological treatment option in the treatment of anxiety patients. In addition, the fact that no other studies have been found about the effect of massage on cognitive function makes our result even more important. We think that the results we have obtained will shed light on future studies on this subject.

#### Limitations

The lack of a control group was one of the limitations of this study. In addition, the short time between measurements may have caused a learning effect in the participants, especially on the Burdon Attention Test.

#### Conflict of Interest

The authors declare that they have no conflict of interest.

#### Thanks

We would like to thank Zilan Kaya and Tekgöl Yılmaz, students of Kırşehir Ahi Evran University School of Physical Therapy and Rehabilitation, who helped to take the pictures.

#### Ethics Approval

The study was approved by the local ethics committee (Date: 09/01/2022 and No: 35233) and was performed in accordance with the Declaration of Helsinki.

#### 5. References

1. Yüksel, İ. and S. Baltacıoğlu, *Klasik masaj teknikleri*. İçinde: İnci Yüksel (editör). Masaj Teknikleri, 2010. **4**: p. 15-160.
2. PIŞKIN, N.E. and C.B. ALPAY, *ÇOCUKLARDA 8 HAFTALIK KORT TENİS ANTRENMANININ DİKKAT DÜZEYİ ÜZERİNE ETKİSİNİN İNCELENMESİ ÖZ*.
3. Beck, A.T., et al., *An inventory for measuring clinical anxiety: psychometric properties*. Journal of consulting and clinical psychology, 1988. **56**(6): p. 893.
4. Ulusoy, M., N.H. Sahin, and H. Erkmen, *Turkish version of the Beck Anxiety Inventory: psychometric properties*. Journal of cognitive psychotherapy, 1998. **12**(2): p. 163.
5. Nozawa, A. and Y. Takei, *Comparative discussion on psychophysiological effect of self-administered facial massage by treatment method*. IEEE Transactions on Electronics, Information and Systems, 2012. **132**(5): p. 706-712.
6. Field, T., *Massage therapy research review*. Complementary therapies in clinical practice, 2016. **24**: p. 19-31.
7. Makinian, M., T. Mirzaei, and A. Ravari, *The effects of head and face massage on delirium among elderly women hospitalized in coronary care units*. Iran J Crit Care Nurs, 2015. **8**(3): p. 125-132.
8. Najafi Ghezeljeh, T., H. Salehzadeh, and F. Rafii, *Comparison of the effect of Swedish massage and preferred music intervention on anxiety in patients with chronic heart failure*. Iranian Journal of Cardiovascular Nursing, 2016. **5**(1): p. 36-43.
9. Prato, C.A. and C.B. Yucha, *Biofeedback-assisted relaxation training to decrease test anxiety in nursing students*. Nursing education perspectives, 2013. **34**(2): p. 76-81.

10. Adib-Hajbaghery, M., et al., *The effects of massage therapy by the patients relative on vital signs of males admitted in critical care unit*. Nurs Midwifery Stud, 2012. **1**(1): p. 16-21.
11. Vahedian-Azimi, A., et al., *Effect of massage therapy on vital signs and GCS scores of ICU patients: a randomized controlled clinical trial*. Trauma monthly, 2014. **19**(3).
12. Adib-Hajbaghery, M., A. Abasi, and R. Rajabi-Beheshtabad, *Whole body massage for reducing anxiety and stabilizing vital signs of patients in cardiac care unit*. Medical journal of the Islamic Republic of Iran, 2014. **28**: p. 47.
13. Çinar, Ş., İ. Eşer, and L. Khorshid, *The Effects of Back Massage on the Vital Signs and Anxiety Level of Elderly Staying in a Rest Home*. Hacettepe University Faculty of Health Sciences Nursing Journal, 2009. **16**(2).
14. Lataro, R.M., et al., *Increase in parasympathetic tone by pyridostigmine prevents ventricular dysfunction during the onset of heart failure*. American Journal of Physiology-Regulatory, Integrative and Comparative Physiology, 2013. **305**(8): p. R908-R916.
15. Cicekci, M.A. and F. Sadik, *Teachers' and Students' Opinions about Students' Attention Problems during the Lesson*. Journal of Education and Learning, 2019. **8**(6): p. 15-30.
16. SÜRÜCÜ, A. and E. KULA, *Dikkat becerisinin geliştirilmesi*. EGİTİFİ ve PSIKOLOJİDEN YANSIMALAR, 2016: p. 135.
17. Gustems-Carnicer, J., C. Calderón, and D. Calderón-Garrido, *Stress, coping strategies and academic achievement in teacher education students*. European Journal of Teacher Education, 2019. **42**(3): p. 375-390.
18. Henning, C., L.J. Summerfeldt, and J.D. Parker, *ADHD and Academic Success in University Students: The Important Role of Impaired Attention*. Journal of attention disorders, 2022. **26**(6): p. 893-901.
19. Yaycı, L., *İlkokul dördüncü sınıf öğrencilerinde seçici ve yoğunlaştırılmış dikkat becerilerini grup çalışması yoluyla geliştirme*. OPUS International Journal of Society Researches, 2018. **8**(15): p. 1638-1668.
20. Lee, S.-C., *Relationship of visual dependence to age, balance, attention, and vertigo*. Journal of physical therapy science, 2017. **29**(8): p. 1318-1322.
21. Aydın, A., *Gelişim öğrenme psikolojisi*. Anı yayınları, Ankara. Bacanlı, H., İlhan, T., & Aslan, S.(2017). Beş faktör kuramına dayalı bir kişilik ölçeğinin geliştirilmesi: sıfatlara dayalı kişilik testi (SDKT). Türk Eğitim Bilimleri Dergisi, 1999. **7**(2): p. 261-279.
22. Sünbül, A. and M. Çelik, *Başarılı ve başarısız öğrencilerin dikkat düzeylerinin karşılaştırılması*. S. Ü Eğitim Bilimleri Bölümü 7. Eğitim Bilimleri Kongresi, 1998. **1**: p. 437-447.

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