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# Effects of hand massage on anxiety in patients undergoing ophthalmology surgery using local anesthesia

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**ABSTRACT**

***Introduction:*** Anxiety is a common disorder in patients before surgery. Inappropriately managed anxiety can cause psychological and physiological reactions and will affect the process of surgery and recovery. Therefore, this study examined the effects of hand massage on anxiety in patients undergoing ophthalmology surgery using local anesthesia. ***Methods:*** In this interventional study, 52 patients who were supposed to undergo ophthalmology surgery using local anesthesia were studied. Patients were randomly assigned to two groups of intervention, who received hand massage before surgery (n = 27) and control (n = 25). Massaging lasted for 5 minutes (2.5 minutes on each hand) before surgery. Stroking and scrubbing methods were performed by 2 trained researchers. Anxiety level, blood pressure, heart rate, and respiratory rate were measured before and after the intervention in both groups. Anxiety was evaluated using Spielberger State-Trait Anxiety Inventory. Data was analyzed by chi-square, independent samples t-test, and paired t-test. ***Results:*** There were no significant differences in mean anxiety, systolic blood pressure, diastolic blood pressure, heart rate, and respiratory rate between the two groups before the intervention ($p > 0.05$). However, there was a significant differenc in the mean stress level between the two groups after the intervention ($p < 0.05$). The two groups did not differ significantly in terms of physiological variables ($p > 0.05$). ***Conclusion:*** Our findings suggested that 5 minutes of hand massage before ophthalmology surgery (under local anesthesia) could reduce anxiety. Therefore, this method can be used to increase patient comfort and reduce anxiety before surgical interventions.

## Introduction

Every year tens of millions of people in the world undergo surgery.[1] They all experience a pervasive, vague, and unpleasant feeling of anxiety and stress.[2,3] Anxiety before surgery has been reported as agonizing for 60-80% of patients.[4] Pain, physical injury, isolation,[5] concerns about the outcome of the surgery and lack of control, being in an unfamiliar situation, feeling to be at risk of death,[6] changes in body image or function, increased dependency, and possible changes in lifestyle[7] are some of the various causes of preoperative anxiety. Unresolved stress can have several harmful effects on patients.[8] Such effects include unwillingness to undergo the procedure,[8] poor recovery, increased postoperative pain, reduced immunity to infection, increase in use of analgesics after surgery, delayed wound healing, negative impact on mood of patients, and increased hospitalization duration.[7] Moreover, physical and emotional energy expenditure during anxiety and pain can result in fatigue and a series of biochemical activities in the body which will in turn cause autonomic arousal, muscular stimulation, and increased production of corti-

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costeroids.[9] Increased blood glucose, muscle tone, heart rate, blood pressure, and peripheral vasoconstriction would be among the other consequences.[5] However, mentally and emotionally prepared patients would experience a comfortable surgery due to more relaxed bodies and less pain. They would thus need less medication[4] and be earlier discharged from the hospital. Postoperative symptoms and costs will be reduced ultimately.[7]

Today there are various methods for anxiety control. Nurses, as one of the groups directly responsible in this regard, learn these methods and study the latest achievements in this field. Among relaxation techniques, which are the best non-pharmacological methods to manage anxiety, massage therapy seems to be the optimum.[10] It is made up of supportive touch and muscle tone and helps the circulation of blood and lymph, decreases heart rate and blood pressure, increases mental and psychological peace,[5] increases the feeling of wellbeing, and enhances the mood.[11,12] A gentle massage helps the patients express their feelings more easily[13] and sleep better.[14] Moreover, it can facilitate the relationship between the nurse and the patient.[11] Therefore, researchers have studied the effects of massage therapy but have reached different and sometimes conflicting results.[15] While some studies have found massage to increase relaxation and decrease blood pressure and heart rate of the patient,[5,10,16,17] others have shown massage to be ineffective on physiological parameters.[18,19] However, most previous studies have evaluated pain control mostly in situations other than the operating room. In addition, the method and place of massage have been different. Considering the important role of nurses in using safe and low cost methods to reduce preoperative anxiety and necessity of access to local data, we decided to perform this research to assess the effects of hand massage on anxiety in patients undergoing ophthalmology surgery using local anesthesia.

## Materials and methods

This interventional study was performed on 60 patients who had ophthalmology surgery using local anesthesia. Patients aging 20-60 years were included. All surgeries were performed between 9 in the morning and 12 noon. Individuals were excluded if they were under hormone therapy, had received sedatives before surgery, had a disease which increases epinephrine, cortisol and blood glucose, had injuries, erythema, edema, or pain in their hands, were under treatment for mental illnesses, and had a history of untreated cardiovascular diseases. After receiving written consents from the patients, they were randomly allocated into intervention and control groups. The intervention group received hand massage before surgery. Both groups contained 30 patients in the beginning. However, 3 patients from the intervention group and 5 from the control group were excluded due to rapid transfer to the operating room, not having an appropriate postoperative status, and unwillingness to respond after the surgery. Finally, 27 patients in the intervention group and 25 in the control group (totally 52 patients) were studied. Massage was performed by 2 trained researchers, i.e. one man for male patients and one woman for female patients, using stroke and scrub methods. To develop proficiency in massage therapy, the two researcher learned massage procedures under the supervision of a physiotherapist, practiced many times, and were finally approved by 2 physiotherapists in terms of accuracy and identicalness. Before the surgery, the hands of the intervention group were massaged for 5 minutes (2 minutes and 30 seconds for each hand) by rubbing olive oil. The massaging procedure included scrubbing movements from the wrist to the fingers and rotational stroking movements on the palm and back of the hand.

Touching, pulling, and rotating movements were all in the fingers' range of motion. All study parameters, i.e. blood pressure, pulse, respiratory rate, and anxiety level of patients, were measured and recorded before and after massaging. Spielberger State-Trait Anxiety Inventory (STAI) was used to

 

determine anxiety. STAI has been vastly used in clinical activities and studies since and most people have no difficulty answering its questions in a certain situation or time. It is used in stressful situations and shows situational anxiety of a person at a certain point in their life.[20] It is constituted of 20 short phrases with 4 options of very low, low, high, and very high. The participants are asked to choose the option which best describes the intensity of their feeling toward the given phrase. Each phrase receives a score based on the answer of the patient. The highest level of anxiety is scored as 4. Phrases which show lack of anxiety are scored in reverse order. Then, the total score of anxiety for each participant is calculated by summing up the scores of the 20 phrases. Finally, scores of 20-31, 32-42, 43-53, 54-64, and 65-75 are interpreted as low, below average, above average, relatively severe, and severe anxiety levels, respectively. In 1993, STAI was standardized in Iran with reliability of 0.91 and concurrent validity of 99%.[21]

To record the vital signs, as physiological measures of anxiety, systolic and diastolic blood pressure (using an Apple digital sphygmomanometer), heart rate, and respiratory rate were measured and recorded. This study was undertaken in 2010 in Hefdahe Shahrivar Hospital (Amol, Iran) after being approved by the university research council, and gaining permission from the hospital and written consents from the patients.

Data was analyzed by $SPSS_{16}$ (SPSS Inc., Chicago, IL, USA). Chi-square test was used to show that the two groups were homogenous in terms of general characteristics (age, gender, and education level). For the comparison of psychological and physiological criteria of anxiety between the two groups and also within each group before and after the intervention, independent t-test and paired t-test were used, respectively.

## Results

In this study, 63% of the intervention group and 72% of the control group were women. The mean (SD) age of patients were 44.96 (15.49) and 45.72 (19.93) in the intervention and control groups, respectively. A history of surgical operations was reported by 10 patients (37%) from the intervention group and 12 patients (48%) from the control group. There was no significant difference between the two groups in terms of their general variables (gender, age, education, and history of surgery) ($p > 0.05$). Results of the STAI showed that although some patients experienced severe and relatively severe anxiety before the intervention, the number was reduced to zero after the intervention. In fact, the level of anxiety in most patients was low (22.2%) or below average (66.7%) (Table1). Table 1 also shows the distribution of subjects according to anxiety level.

**Table 1.** Frequency distribution of anxiety levels before and after the intervention

| | Before the Intervention | | After the Intervention | |
|---|---|---|---|---|
| **Anxiety Level** | **Intervention Group** | **Control Group** | **Intervention Group** | **Control Group** |
| Low | 1 (3.7) | 3 (12) | 6 (22.2) | 6 (24) |
| Below Average | 9 (33.3) | 9 (36) | 18 (66.7) | 10 (40) |
| Over Average | 8 (29.6) | 10 (40) | 3 (11.1) | 7 (28) |
| Relatively Severe | 6 (22.2) | 1 (4) | 0 (0) | 2 (8) |
| Severe | 3 (11.1) | 2 (8) | 0 (0) | 0 (0) |
| Very Severe | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| Total | 27 (100) | 25 (100) | 27 (100) | 25 (100) |

Values are expressed as n (%).

**Table 2.** Anxiety levels, respiratory rate, heart rate, and blood pressure before and after the intervention in the intervention and control groups

| | | Intervention Group(n=27) | Control Group(n=25) | Mean Difference | t | p |
|---|---|---|---|---|---|---|
| Anxiety | Before | 48.10 (10.34) | 42.68 (11.18) | 5.32 | 1.82 | 0.84 |
| | After | 35.18 (6.36) | 39.32 (9.97) | -4.14 | -1.79 | 0.01 |
| Systolic Blood Pressure | Before | 131.80 (18.6) | 135.32 (22.64) | -3.52 | -0.61 | 0.80 |
| | After | 121.70 (11.7) | 125.08 (14.62) | -3.38 | -0.92 | 0.12 |
| Diastolic Blood Pressure | Before | 79.22 (19.99) | 83.52 (12.51) | -4.30 | -0.92 | 0.52 |
| | After | 74.41 (7.94) | 73.40 (10.43) | 1.01 | 0.39 | 0.16 |
| Heart Rate | Before | 83.07 (14.69) | 76.70 (10.51) | 6.37 | 1.78 | 0.85 |
| | After | 74.18 (10.24) | 68.44 (11.49) | 5.74 | 1.91 | 0.59 |
| Respiratory Rate | Before | 17.70 (2.5) | 17.76 (2.97) | -0.06 | -0.74 | 0.37 |
| | After | 15.70 (4.4) | 19 (10.93) | -3.30 | -1.45 | 0.27 |

Values are expressed as mean (SD).

Before the intervention, the two groups were not significantly different in mean values of apparent anxiety, systolic and diastolic blood pressure, and heart and respiratory rates ($p > 0.05$). After the intervention however, there was a significant difference between the two groups in terms of anxiety levels ($p < 0.05$). Nevertheless, differences in other physiologic variables remained insignificant ($p > 0.05$) (Table 2).

Paired t-test was used to compare the mean of these variables before and after the intervention in the two groups. The results showed significant differences in mean scores of anxiety, systolic blood pressure, heart rate, and respiratory rate in the intervention group. In the control group were differed significantly in the mean diastolic blood pressure and heart rate ($p < 0.05$).

## Discussion

The findings of this study showed that 5 minutes of hand massage before ophthalmologic surgery using local anesthesia caused a significant decrease in anxiety level of patients. Along with other reports, our findings prove the effectiveness of hand massage as a non-pharmacological method to reduce anxiety.[5,10,22,23] Despite differences in massaging methods and patient characteristics in previous studies, massage (which is more effective than a simple touch) stimulated and calmed tissues and muscles, increased blood flow, and improved cell nutrition.[5] It thus caused the patient to feel better and experience less anxiety.[15] Preoperative stress, is usually due to fear of the outcome of surgery, anesthesia, and probable symptoms of surgery. This type of stress is more severe in patients under local anesthesia since they are conscious during the surgery. As an unfavorable feeling, stress is caused by the stimulation of the sympathetic nervous system which in turn increases epinephrine and norepinephrine secretion. Therefore, in addition to psychological effects, it results in physiological changes such as increased cardiac output, increased blood glucose level, dilation of the bronchi, peripheral vasoconstriction, increased blood pressure, and paleness.[24]

A number of researches have thus considered blood pressure and heart rate as relaxation criteria. In the current study, 3 physiological indexes, i.e. systolic blood pressure, diastolic blood pressure, and heart rate, were evaluated and compared before and after massage. Assessments showed significant reductions in the studied parameters in the intervention group after massaging. Likewise, Kim et al. reported the reduction of measured indexes after massaging.[5] Wang and Keck studied sympathetic responses and

 

suggested that only heart rate and respiratory rate had significantly decreased.[25] Combron et al. on the other hand, stated that massaging could cause the systolic blood pressure to decrease, but increased diastolic blood pressure.[26] On the contrary, the studies by Hattan et al.[18] and Taylor et al.[27] showed no significant differences in sympathetic responses. Using different drugs, which was not considered in these studies, might have been the cause of inconsistencies.

Our results showed that after the intervention the mean systolic and diastolic blood pressure, heart rate, and respiratory rate had no significant differences between the two groups. It seems that termination of the surgery in both groups had resulted in decreased indexes.

The limitations of this study were the unavailability of a number of patients with the inclusion criteria, lack of a separate room for massage therapy, limited time of massaging due to vague estimations of the time between entrance of the patient into the operation room and initiation of the surgery, and the fact that the majority of the patients with the inclusion criteria were women. Moreover, there were few available studies, and the majority of published studies focused on the effects of massaging on pain control especially in non-surgical situations. In addition, the place and method of massaging differed between various researches. However, the findings of this study showed that hand massage, which only lasts for 5 minutes before the surgery, can be a safe, inexpensive, simple, and acceptable and yet effective method to increase patient comfort and decrease the level of anxiety under local anesthesia experience. As a result, a better outcome would be achieved after the surgery. Since massaging can be learnt and the hand is an easily accessible area accepted by both the patient and the nurse, nurses can use this method in their care before surgery.

## Conclusion

This study assessed psychological and physiological indexes and suggested that a hand massage before an ophthalmology surgery using local anesthesia decreased anxiety levels among patients. Therefore, nurses are recommended to use this safe intervention in their preoperative care. Nevertheless, further studies should be undertaken on the use of this method in other therapeutic situations.

## Ethical issues

None to be declared.

## Conflict of interest

The authors declare no conflict of interest in this study.

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## References

1. Ghardashi F. Factors affecting preoperative anxiety. Koomesh 2007; 8(3): 123-9 [Persian].
2. Haugen AS, Eide GE, Olsen MV, Haukeland B, Remme AR, Wahl AK. Anxiety in the operating theatre: a study of frequency and environmental impact in patients having local, plexus or regional anaesthesia. J Clin Nurs 2009 Aug; 18(16): 2301-10.
3. Mitchell M. Patient anxiety and conscious surgery. J Perioper Pract 2009 Jun; 19(6): 168-73.
4. Tayebi V. Familiar music, the other kind of treatment for anxiety before surgery. Journal of Urmia Nursing and Midwifery Faculty 2009; 7(1): 27-35 [Persian].
5. Kim MS, Cho KS, Woo H, Kim JH. Effects of hand massage on anxiety in cataract surgery using local anesthesia. J Cataract Refract Surg 2001; 27(6): 884-90.
6. Bassampour SH, Nikbakht Nasrabadi A, Mehran A, Poresmaeil Z, Valiee S. Effect of Acupressure on Patients' Anxiety and Vital Sign before Abdominal Surgeries. Hayat 2008; 14(2): 23-34 [Persian].
7. Babashahi M, Fayazi S, Aghel N, Haghighizadeh MH. Effect of Aromatherapy on Anxiety Level among Preoperative patients. Sci Med J Ahwaz

Jundishapur Univ Med Sci 2010; 9(5): 507-16. [Persian].
8. Shenefelt PD. Relaxation strategies for patients during dermatologic surgery. J Drugs Dermatol 2010; 9(7): 795-9.
9. Shabanaiyan GH, Pouria Mofrad E, Akhlaghi M. Comparison of the effect of Citrus uranium and diazepam on preoperative anxiety. J Shahrekord Univsity of Medical Sciences 2008; 10(4): 13-18 [Persian].
10. Yeganekhah MR, Mohammadi Shahbolaghi F, Khankeh HR, Rahgozar M. The Effects of Slow-Stroke Back Massage on Anxiety in Elderly. Rehabilitation 2007; 8(3): 14-20 [Persian].
11. Hajihosseini F, Avazeh A, Elahi N, Shariati A, Sori H. The effect of massage on comatose patients, vital signs hospitalized in intensive care units. Arak Medical University Journal 2006; 9(3): 26-35 [Persian].
12. Castro-Sanchez AM, Mataran-Penarrocha GA, Granero-Molina J, Aguilera-Manrique G, Quesada-Rubio JM, Moreno-Lorenzo C. Benefits of massage-myofascial release therapy on pain, anxiety, quality of sleep, depression, and quality of life in patients with fibromyalgia. Evid Based Complement Alternat Med 2011; 2011: 561753.
13. Yaghoobi M, Amini K, Fathi M, Ahmadi F, Mohamadi I, Salehnejad Gh. Effects of Massage on Pain Due to Cramp Muscle During Hemodialysis. J Ilam Univsity of Medical Sciences 2009; 17(1): 39-46 [Persian].
14. Nerbass FB, Feltrim MI, Souza SA, Ykeda DS, Lorenzi-Filho G. Effects of massage therapy on sleep quality after coronary artery bypass graft surgery. Clinics (Sao Paulo) 2010; 65(11): 1105-10.
15. Labrique-Walusis F, Keister KJ, Russell AC. Massage therapy for stress management: implications for nursing practice. Orthop Nurs 2010 Jul- Aug; 29(4): 254-7.
16. Smith MC, Stallings MA, Mariner S, Burrall M. Benefits of massage therapy for hospitalized patients: a descriptive and qualitative evaluation. Altern Ther Health Med 1999; 5(4): 64-71.
17. Holland B, Pokorny ME. Slow stroke back massage: its effect on patients in a rehabilitation setting. Rehabil Nurs 2001; 26(5): 182-6.
18. Hattan J, King L, Griffiths P. The impact of foot massage and guided relaxation following cardiac surgery: a randomized controlled trial. J Adv Nurs 2002; 37(2): 199-207.
19. Cox C, Hayes J. Physiologic and psychodynamic response to the administration of therapeutic touch in critical care nursing. Intensive Crit Care Nurs 1999; 15(6): 363-8.
20. Behdani F, Sargolzaei MR, Ghorbani E. Relationship between lifestyle and prevalence of depression and anxiety in the students of Sabzevar universities. J Sabzevar Univ Med Sci 2000; 7(2): 27-37 [Persian].
21. Mahram B. The guideline for state and trait anxiety test of Spielberger and the instruction for its explanation based on normality test research in Mashhad [MSc Thesis]. Tehran: Allameh Tabatabaiee University; 1993. 126 p [Persian].
22. Mokhtari Noori J, Sirati Nir M, Sadeghi Shermeh M, Ghanbari Z, Haji Amini Z, Tayyebi A, Javadinasab M. Effect of foot reflexology massage and Bensone relaxation on anxiety. Journal of Behavioral Science 2009; 3(2): 159-65[Persian].
23. Hulme J, Waterman H, Hillier VF. The effect of foot massage on patients' perception of care following laparoscopic sterilization as day case patients. J Adv Nurs 1999; 30(2): 460-8.
24. Sanders R, Ahmed S, Craig EW, Young JD. Comparison of catecholamine and pressor effects in peribulbar and retrobulbar anaesthesia in cataract surgery. Eye (Lond) 1997; 11 (Pt 5): 644-8.
25. Wang HL, Keck JF. Foot and hand massage as an intervention for postoperative pain. Pain Manag Nurs 2004; 5(2): 59-65.
26. Cambron JA, Dexheimer J, Coe P. Changes in blood pressure after various forms of therapeutic massage: a preliminary study. J Altern Complement Med 2006; 12(1): 65-70.
27. Taylor AG, Galper DI, Taylor P, Rice LW, Andersen W, Irvin W, et al. Effects of adjunctive Swedish massage and vibration therapy on short-term postoperative outcomes: a randomized, controlled trial. J Altern Complement Med 2003; 9(1): 77-89.

 