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Original Research Article

The effect of aromatherapy on anxiety in patients before coronary artery bypass graft surgery

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ABSTRACT

Introduction: Given the importance of reducing anxiety in patients before coronary artery bypass grafting and the side effects that anxiety can have on the patient's recovery, the researchers decided to investigate the effect of aromatherapy on anxiety in patients before coronary artery bypass graft surgery. **Material and Methods:** This study was performed as a result of clinical experience in 2020 in Shahid Madani Hospital of Tabriz with the participation of 64 patients after coronary artery bypass graft surgery; Aromatherapy was used to reduce patients' anxiety and the results were reported. **Results:** Independent t-test showed that the mean anxiety score between the experimental and control groups before the intervention was not statistically significant ($p=0.984$); But after the intervention, the mean anxiety in the experimental group was significantly lower than the control group ($p=0.030$). Also, according to the paired t-test in the control group, the anxiety scores before and after the intervention were not significantly different ($p=0.509$); While in the experimental group, the anxiety score after the intervention showed a significant decrease compared to before the intervention ($p=0.007$). **Conclusion:** Considering the results of this study and the positive effect of lavender scent inhalation on reducing anxiety levels in patients undergoing coronary artery bypass graft surgery in the preoperative stage

Keywords: aromatherapy, anxiety, coronary artery bypass graft

Introduction

Unfortunately, today, due to changes in activity patterns, mental stress, physical inactivity and changes in nutritional patterns, we are witnessing an increasing prevalence of cardiovascular disease and its consequences in our world and society [1]. Coronary artery disease is one of the most common heart diseases and one of the leading causes of death in many countries around the world. Many of these patients do not respond to medical treatment and undergo coronary artery bypass graft surgery [2]. Although coronary artery bypass graft surgery is a common procedure with a low incidence and mortality rate and can alleviate the symptoms of angina in a desirable way, the presence of anxiety in surgeries of any kind is undeniable. In cardiac surgery, due to its risks, complications and prognosis, anxiety manifests itself on a larger scale and sometimes even defeats the patient. Anxiety is an unpleasant state of anxiety or stress caused by fear of illness, anesthesia, hospitalization, or surgery. It is highly prevalent before coronary artery bypass graft surgery and carries a high risk of mortality and morbidity in patients. Increases heart rate [3]. Patients who have a lot of anxiety before surgery will experience more pain, less relief, symptoms of angina, decreased capacity and physical endurance, dissatisfaction with treatment, readmission to the hospital, and lower quality of life after surgery [4]. Today, medication is no longer the best way to reduce patients' anxiety. Although medications reduce anxiety, they also have many side effects. For this purpose, there are many methods, including the methods available in complementary medicine, through which the nurse can help control patients' anxiety. Aromatherapy is one of the treatments that has grown significantly in most countries in recent years compared to other complementary medicine treatments. Nurses in more than 30 countries use complementary medicine therapies, including aromatherapy, in clinical nursing care[5]. Aromatherapy is the use of volatile oils or aromas extracted from aromatic plants for therapeutic purposes. One of the aromatic essential oils of the plant that is widely used in aromatherapy is the oil derived from the plant Lavender, which belongs to the genus Mint, is a herbaceous, aromatic and evergreen plant. This plant is one of the plants of arid and semi-arid regions; During its growth, it needs a lot of light and hot and humid air, and in most parts of the world, it goes into car mode [6]. So far, many studies have examined aromatherapy with lavender essential oil as a non-invasive nursing intervention in various conditions, including improving anxiety in patients undergoing angiography and stenting, hemodialysis, dentistry, general surgery, the effect of aromatherapy on reducing cortisol concentration. Cardiac parameters

including blood pressure and pulse rate were noted [7, 12-14]. Given the importance of reducing anxiety in patients before coronary artery bypass grafting and the side effects that anxiety can have on the patient's recovery, the researchers decided to investigate the effect of aromatherapy on anxiety in patients before coronary artery bypass graft surgery.

Material and Methods

Study design: The present study is a clinical trial and was conducted in 2020. The statistical population of the study were patients who were candidates for coronary artery bypass graft surgery referred to the cardiac surgery wards of Shahid Madani Hospital (Tabriz University of Medical Sciences). . In this regard, s is an estimate of the standard deviation of preoperative anxiety score in each group and d is the minimum difference between the mean postoperative anxiety score between the two groups, which shows a significant difference and s is considered 0.7.

Inclusion and exclusion criteria: Inclusion criteria include age 18 years and older, full consciousness (relative to place, time and surroundings), interested in participating in the study, able to understand and speak Persian, coronary artery bypass graft surgery for the first The burden and literacy was reading and writing. Exclusion criteria also included hospitalization for emergency surgery, patients with active mental illness and anxiety, patients with mental retardation, blindness and deafness, acute pain when completing the questionnaire, history of eczema and allergies to plants, history of migraine and Chronic headaches, olfactory disturbances, use of anti-anxiety and narcotics drugs, coronary artery bypass graft surgery with simultaneous valve replacement, and a history of severe mental stress around the time of surgery (such as death of loved ones).

Methodology: The intervention was performed in the evening of the day before the operation. The researcher interviewed the eligible patients and after informing the patients about the research process and obtaining their informed consent to participate in the study, the research units were selected by available sampling method. Patients were then asked to select cards with the number 1 or number 2 written on them from the box. Patients with card number 1 were in the experimental group and patients with card number 2 were in the control group. Data were collected through interviews and using a questionnaire. This questionnaire includes patient demographic information (age, sex, level of education and marital status), information about the

disease (history of hospitalization, history of surgery and duration of preoperative hospitalization), Spielberger situational anxiety assessment questionnaire and the section related to vital signs. Were systolic blood pressure, diastolic blood pressure, pulse rate, respiration rate and body temperature. To control the patient's systolic and diastolic blood pressure, an ALPK2 sphygmomanometer made in Japan was used, the accuracy of which was evaluated every day before the intervention using a sphygmomanometer in the ward. The patient's temperature was measured by CITIZEN thermometer made in Switzerland as axillary, the number of breaths was observed by observing the patient's chest movements and the number of pulses was recorded by radial pulse. Spielberger [5] situational anxiety questionnaire [5], has 20 questions that on average positive questions (questions 1-2-5-8-10-11-15-16-19 and 20) No option score 4, somewhat 3, on average 2, high 1 and in relation to negative questions (questions 3-4-6-7-9-12-13-14-17 and 18) the score of option 1 is 1, to some extent 2, on average 3 and high 4. A minimum score of 20 means no anxiety and a maximum of 80 means the highest level of anxiety. A score of 21-39 indicates mild anxiety, a score of 40-59 indicates moderate anxiety, and a score of 60-80 indicates severe anxiety. The Spielberger Anxiety Inventory is a valid questionnaire that has been widely used in research at home and abroad and its scientific validity has been evaluated. It is also stated that the Cronbach's alpha coefficient is equal to 0.91, which indicates the scientific reliability of this questionnaire. After completing the consent form, the demographic information and disease information section was completed and their level of anxiety was measured using the Spielberger situational anxiety questionnaire, and then the patient's vital signs were monitored and recorded. Then, according to which group the patient was in (test and control), the intervention was performed in such a way that in the experimental group, two drops of lavender essential oil (product of Kashan Barij Essential Oil Company) were sprayed on a cotton ball and pinned to the patient's collar. The patient was asked to breathe normally for 20 minutes. In the control group, 2 drops of distilled water were sprayed on a cotton ball and attached to the collar of the patient with a pin and the patient was asked to breathe normally for 20 minutes. The Spielberger situational anxiety questionnaire was then completed again and the patients' vital signs were recorded.

Data analysis: Finally, the data were entered in SPSS software version 20 to compare the mean of each variable before and after the intervention in each group of paired t-test and to compare the mean of each variable at any time between the two groups of the test. Independent t

was used. Wilcoxon non-parametric test was used to evaluate the severity of anxiety in each group and also to compare demographic variables between the two groups, depending on the type of variable, Mann-Whitney t-test, Chi-square and Fisher's exact test were used and the significance level in the tests was 0.05. / 0 was considered.

Ethical Considerations: It is worth mentioning that the whole process of the present study was carried out after the approval and approval of the ethics committee of Tabriz University of Medical Sciences (NO: IR.TBZMED.REC.1400.675).

Results

The research sample of this study consisted of 64 patients who were candidates for coronary artery bypass graft surgery in two equal groups of test and control. The experimental group was in the age range of 43-79 years and had a mean age of 59.32 ± 10.89 years and the control group was in the age range of 41-84 years and had a mean age of 60.14 ± 11.21 years. 18 patients in the experimental group (56.2%) and 19 patients in the control group (59.4%) were men. Also, the mean duration of preoperative hospitalization in the experimental group was 2.97 ± 1.52 and in the control group was 2.91 ± 1.23 days. Statistical tests did not show a significant difference between the two groups in terms of demographic characteristics and information about the disease ($p < 0.05$). Independent t-test showed that the mean anxiety score between the experimental and control groups before the intervention was not statistically significant ($p = 0.984$); But after the intervention, the mean anxiety in the experimental group was significantly lower than the control group ($p = 0.030$). Also, according to the paired t-test in the control group, the anxiety scores before and after the intervention were not significantly different ($p = 0.509$); While in the experimental group, the anxiety score after the intervention showed a significant decrease compared to before the intervention ($p = 0.007$). The majority of patients in the experimental and control groups had moderate anxiety before and after the intervention, but the greatest decrease in anxiety was in the severe anxiety level in the experimental group after the intervention, so that it was 18.8% before the intervention and this rate after the intervention. The intervention has reached zero. Wilcoxon non-parametric test showed that in the experimental group, the severity of anxiety after the intervention was significantly reduced ($p = 0.003$), but in the control group, the severity of anxiety before and after the intervention did not show a statistically significant difference ($p = 0.999$). The mean body temperature before the intervention

was 36.53 ± 0.53 in the experimental group and 36.52 ± 0.39 in the control group and 36.43 ± 0.61 and 36.63 ± 0.48 , respectively, after the intervention. The mean number of breaths before the intervention in the experimental group was 14.17 ± 3.96 and in the control group was 13.66 ± 1.17 and after the intervention were 13.72 ± 3.99 and 13.19 ± 1.07 , respectively. The mean heart rate before the intervention in the experimental and control groups was 79.65 ± 11.57 and 78.33 ± 8.45 , respectively, and after the intervention was 79.53 ± 9.43 and 78.71 ± 8.09 . The mean systolic blood pressure before the intervention in the experimental and control groups were 128.12 ± 21.05 and 124.72 ± 15.52 , respectively, and after the intervention were 125.54 ± 14.65 and 123.67 ± 15.96 , respectively. Diastolic blood pressure in the experimental and control groups was 78.74 ± 13.73 and 75.61 ± 9.52 , respectively, and after the intervention was 77.83 ± 8.99 and 75.08 ± 8.86 ($p < 0.05$). Based on independent t-test between mean vital signs (body temperature, pulse rate, respiration rate, systolic blood pressure and diastolic blood pressure) before and after the intervention between the experimental and control groups, as well as in the experimental and control groups before and after Intervention According to paired t-test, no statistically significant difference was observed ($p < 0.05$).

Discussion

According to previous studies of researchers and the effect of variables such as age, sex, level of education, marital status, history of hospitalization, history of surgery and duration of preoperative hospitalization on preoperative anxiety, these variables were evaluated in both groups. These variables and the level of anxiety before the intervention were homogeneous in both groups [8, 14-16]. The increase in the average anxiety scores of the present study, which was performed in one stage and the evening before the operation, compared to the results of the study, which was performed in two stages, may be due to the type of surgery in which major surgeries were associated with increased anxiety. The researchers studied general surgery patients (including laparotomy, cholecystectomy, hernia, laparoscopy), while the present study was performed on patients undergoing coronary artery bypass graft surgery. Heart surgery is a major source of stress for patients, and for clients, the heart determines life and death, and heart surgery is considered a serious violation of physical integrity and is often life-threatening. Also, the increase in the average anxiety in the second stage (morning of the operation) compared to the first stage (evening of the day before the operation) of the researchers' research can also be due to the patient's sleep disorder [9, 17-19]; Because anxiety undoubtedly causes sleep

disorders. Considering that most patients had anxiety in the evening before surgery, waking up early in the morning is justified, which in turn can have a reciprocal effect on anxiety and increase anxiety even more. Therefore, due to the effect of aromatherapy on reducing preoperative anxiety in patients who are candidates for coronary artery bypass graft surgery, it is possible to help prevent sleep disorders by reducing the level of anxiety in the evening before surgery, and thus reciprocally reduce patients' anxiety on surgery day [10, 20-22]. The results of the present study indicate a significant effect of aromatherapy on reducing anxiety in patients undergoing coronary artery bypass graft surgery. Over the past few years, aromatherapy with lavender essential oil has been considered, the effects of which on reducing anxiety in these patients have been disputed in various studies. In order to confirm the results of the present study, we can refer to the results of studies that showed that inhalation aromatherapy using lavender essential oil can reduce anxiety before angiography and coronary stenting, hemodialysis and dentistry, which is consistent with the results of the present study [11, 23-26]. The effects of aromatherapy are psychological and physiological in two ways. Scientific studies have shown that vegetable oils contain chemical components that have special effects on the mind and body. These compounds can enter the body through the skin or olfactory system, and by stimulating olfactory receptors and transmitting messages by the olfactory nerve from receptor cells in the upper nasal area to the olfactory bulb adjacent to the limbic system called the amygdala and hippocampus, cause the soul and Affect a person's feelings, emotions and memory [12, 27].

Conclusion

Considering the results of this study and the positive effect of lavender scent inhalation on reducing anxiety levels in patients undergoing coronary artery bypass graft surgery in the preoperative stage, it may be advisable to use lavender essential oil scent therapy in similar clinical situations to control surgical anxiety.

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