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Effect of Rosa Aromatherapy on Anxiety before Cardiac Catheterization: A Randomized Controlled Trial

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Abstract

Background and Objectives: Most patients experience moderate to severe anxiety before cardiac catheterization. This study aimed to investigate the effect of Rosa aromatherapy on anxiety before cardiac catheterization.

Methods: In this randomized controlled trial, 60 patients who met the inclusion criteria were conveniently sampled and randomly allocated to the experimental and control groups. Patients in the control group received routine care. In the experimental group, patients received routine care and Rosa aromatherapy for eighteen minutes. The level of anxiety was measured immediately before, and after the treatment.

Results: In the stages before and after the study, there were no significant differences between the two groups in the terms of the mean scores of state and total anxiety. However, the mean score of trait anxiety in the experimental group was significantly lower than the control group. Furthermore, there was no significant difference between pre- and post-treatment in both groups.

Conclusion: Most of the patients experience moderate to severe anxiety before cardiac catheterization. The findings of this study demonstrate that aromatherapy, as administered in this study, is not beneficial.

Keywords: Aromatherapy, Cardiovascular system, Anxiety, Cardiac catheterization.

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Introduction

Anxiety is a feeling of worry, nervousness, or uneasiness about something with an uncertain outcome (1). Studies show that hospitalization and treatment environment are important causes of anxiety. When the patients are hospitalized for diagnosis methods including cardiac catheterization, the anxiety increases (2). Most of the patients experience moderate to severe anxiety before cardiac catheterization (3, 4). Anxiety increases blood levels of epinephrine and norepinephrine, resulting in increased blood pressure, heart rate, and myocardial oxygen demand (5, 6). Therefore, improving anxiety in these patients is a matter of great importance. Many strategies such as sedative-hypnotic agents have been developed for improving anxiety (7). However, these pharmacological agents are usually associated with adverse effects such as bradycardia, hypotension, gut dysmotility,

weakness and delirium (8-11). Furthermore, despite protocols provided by clinicians, patients still experience significant levels of anxiety (12, 13). Therefore, the new non-pharmacological treatments are taken into account instead. Complementary therapies including massage therapy, therapeutic touch, relaxation, aromatherapy, muscle relaxation, and music therapy are effective in reducing anxiety while reducing medication administration (14-17).

The aromatherapy is one of the complementary therapies that could improve patients' anxiety. Aromas can increase patients' calmness through affecting the limbic system (18). However, research findings about the effectiveness of aromatherapy in improving anxiety are conflicting. Wilkinson et al. found that the aromatherapy does not benefit anxiety in patients with cancer (19). Graham et al. also found that the aromatherapy could not be effective in reducing anxiety in patients during radiotherapy. However, Kanani et al. found that the Orange oil aromatherapy can reduce state and trait anxiety in hemodialysis patients (20). Sahebalzamin et al. also found that the inhalation of mixture of essential oils of Lavender and Rose could reduce female students' anxiety (21).

To the best of authors' knowledge, there have been numerous studies, conducted in the area of the effect of aromatherapy on patients' anxiety, amongst which there is a controversy still. But only a limited number specifically evaluate the effect of Rosa aromatherapy on patients' anxiety. As such, this study was conducted with the aim of investigating the effect of Rosa aromatherapy on anxiety before cardiac catheterization.

Methods:

This non-blind randomized controlled trial was conducted in March-April 2015. The study setting was the Cath Lab ward of Beheshti Hospital, Qom, Iran. Sixty patients were conveniently sampled and randomly allocated to the experimental and control groups using a table of random numbers. The study sample size was calculated using the results of a local study conducted by Kanani et al. Based on the results of Kanani et al. d, and σ equaled 7.8, and 7, respectively. Accordingly, with a type I error probability of 0.05 and a power of 0.80, the sample size was determined to be fifteen patients for each group (20).

The study population comprised all patients hospitalized in the study setting, waiting for cardiac catheterization. The inclusion criteria were being oriented to time, place, and person, no impaired sense of smell, having no history of asthma, having no allergy to flowers, aromas, and herbal essences, no known anxiety diseases, no history of resolving psychological drugs, no history of catheterization in each organ and no diseases of the thyroid, adrenal, or pituitary glands (including underactive or overactive). The exclusion criteria included the patient's reluctance to remain in the study, decreased consciousness, cardiac arrest and using tranquilizers or hypnotic-sedative agents during the study.

The data collection instrument consisted of two parts. The first part included the demographic and clinical information (age, job, living arrangement, educational status, and income) and the second part included the State-Trait Anxiety Inventory (STAI). The STAI has 40 items. This scale assesses two subscales of trait anxiety and state anxiety which each have 20 subjects. Each subject is scored based on 4 points Likert scale (1 = almost never to 4 = almost always). The total score for each subscales of STAI will be between 20 and 80. Higher scores represent higher anxiety and vice versa individual. The categories given by the total score of state and trait anxiety are: 20-39 for low anxiety; 40-59 for moderate anxiety; and 60-80 for high anxiety. Furthermore, the categories given by the total score STAI are: 40-79 for low anxiety; 80-119 for moderate anxiety; and 120-160 for high anxiety. (22, 23). In this study, a Persian version of STAI was utilized. Validation of the Persian version has yielded satisfactory results. The cronbach's alpha coefficient of 0.89 and 0.90 was calculated for the Persian version of STAI by Rabiee et al. and Roohy et al. respectively (24, 25).

At first, the researcher explained the objectives and methodology of the study to hospital administration, physicians, nurses and the head

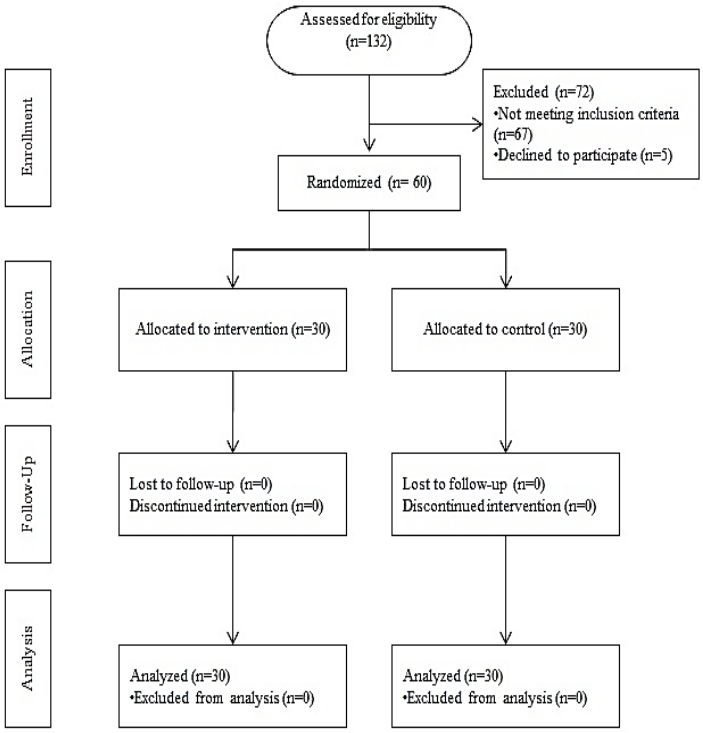

Figure 1: Sampling

of the Cath Lab of Beheshti Hospital, Qom, Iran and obtained their consent. Then, the researcher attended this unit every day from 7:00 to 19:00 and randomly allocated the patients- who had met the inclusion criteria and had signed the consent form- to the experimental and control groups. There are associations between gender and lifestyle with levels of anxiety. Since the patients who are male or live with their family have a low degree of anxiety, they were matched according to gender and marital status (26-28).

After allocating the patients to the experimental and control groups, the researcher obtained all the patients' demographic and clinical information and entered them into the first part of the instrument. The patients in the control group routinely rested during the study. Patients in the experimental group received routine care as well as aromatherapy. Four hours before cardiac catheterization, three drops of Rosa essence were applied to a piece of paper towel and the towel was attached to the each patient's dickey. The towel remained in place for eighteen minutes. In this study a 10%, concentration of Rosa essence was used which is made by the Barijessence Co., Kashan, Iran. The level of anxiety was measured in the stages immediately before, and after the intervention and entered into the second part of the instrument.

Data were analyzed by the Statistical Package for Social Sciences (SPSS, v. 11.5). The results of KolmogoroveSmirnov test showed that the age and the scores of anxiety had a normal distribution. Therefore, we used parametric tests for comparison of these variables within and between groups. The difference between two groups regarding demographic and clinical data was assessed using the independent-samples t-test and the Chi-square tests. The independent-samples t-test and paired t-test were used to assess the effects of aromatherapy on level of anxiety. A p value less than 0.05 was considered statistically significant for all tests.

The Ethics Committee of Qom University of Medical Sciences approved the study. In addition, permissions were obtained from the hospital and Cath Lab authorities. Patients were informed of the aims and the process of the

Table 1. Patients' demographic characteristics

Variable		Experimental group [N (%)]	Control group [N (%)]	P value
Job	Employed	18 (60)	14 (46.70)	0/301
	Unemployed and retired	12 (40)	16 (53.30)	
Marriage	Married	21 (70)	25 (83.30)	1/000
	Single, divorced, widowed	9 (30)	5 (16.70)	
Education	Illiterate	18 (60)	15 (50)	0/694
	Primary school	8 (26/70)	9 (30)	
	High school or higher	4 (13/30)	6 (20)	
Income	Low	7 (23/30)	6 (20)	0/546
	Moderate	15 (50)	12 (40)	
	High	8 (26.70)	12 (40)	

Table 2. Level of trait and state anxiety in the experimental and control groups

Variable	Groups	Before			After		
		low	Moderate	severe	low	Moderate	severe
State anxiety	Experimental	0 (0)	28 (93.3)	2 (6.7)	3 (10)	23 (76.7)	4 (13.3)
	Control	0 (0)	28 (93.3)	2 (6.7)	0 (0)	29 (96.7)	1 (3.3)
Trait anxiety	Experimental	3 (10)	22 (73.3)	5 (16.7)	0 (0)	24 (80)	6 (20)
	Control	0 (0)	29 (96.7)	1 (3.3)	0 (0)	30 (100)	0 (0)
Total	Experimental	0 (0)	29 (96.7)	1 (3.3)	2 (6.7)	25 (83.3)	3 (10)
	Control	0 (0)	29 (96.7)	1 (3.3)	0 (0)	30 (100)	0 (0)

study, deciding willingly either to participate in the study or to withdraw from it at any time, and confidentiality of personal information. Also, a written informed consent was obtained from each participant.

Results

Thirty patients were enrolled in each group (Fig. 1). The mean age of participants in the experimental and the control groups were 53.63±9.99 and 56.96±7.89 years, respectively. Most of the patients were employed (53.3%), lived with spouse (81.8%), illiterate (55%), and had a moderate income (45%). The results of Chi-square test showed no significant differences in age, job, living arrangement, educational status, and income between the two groups (P > 0.05; Table 1).

The results of this study showed that in the stages before and after the treatment most of the patients in the both experimental and control group had moderate to severe state and trait anxiety (Table 2). The results of paired t-test showed that in the experimental and control groups, there was no significant difference between pre- and post- treatment in terms of the mean score of state and trait anxiety as well as the mean scores of total STAI (P value > 0.05; Table 3).

The results of the independent t-test for between-group comparison showed that in the stages before and after the study, there was no significant difference between the study groups in terms of the mean score of state anxiety as well as the mean scores of total STAI (P value > 0.05). However, the mean score of trait anxiety in the experimental group was significantly lower than the control group in the stages before and after the study (P value < 0.05; Table 3).

Discussion:

This study investigated the effect of Rosa aromatherapy on anxiety before cardiac catheterization. Based upon the results of current study, before the cardiac catheterization most of the patients in the experimental and control group have moderate to severe state and trait anxiety. Tahmasbi et al. found that about 55% of patients experience state and trait anxiety before cardiac catheterization (3). Hanifi et al. also found that the incidence of moderate and severe anxiety in patients waiting for cardiac catheterization were 64% and 24%, respectively (4). Anxiety is an inevitable phenomenon but if it exceeds the usual amount, it will cause many physical and mental tensions

Table 3. Trait and state anxiety in the experimental and control groups

Variable	Groups	Before	After	Paired t-test
State anxiety	Experimental	50.10±5.61	49.76±8.40	P=0.749 t=0.324
	Control	49.80±5.87	50.43±5.63	P=0.100 t=-1.698
	Independent t-test	P=0.840 t=0.202	P=0.719 t=-0.361	
Trait anxiety	Experimental	49.66±6.76	50.46±6.40	P=0.273 t=-1.116
	Control	53.96±3.22	53.36±3.14	P=0.368 t=0.914
	Independent t-test	P=0.003 t=-3.142	P=0.030 t=-2.226	
Total	Experimental	99.76±11.57	100.23±14.05	P=0.770 t=-0.295
	Control	103.76±7.85	103.80±6.75	P=0.967 t=-0.041
	Independent t-test	P=0.123 t=-1.566	P=0.215 t=-1.253	

for the individual and can have significant negative effects on various body organs, especially the heart. Therefore, improving the anxiety in these patients it very important (2).

The findings of the current study showed that the aromatherapy could not improve the participants' state and trait anxiety before cardiac catheterization. This is in line with the findings of studies conducted by Wilkinson et al. and Graham et al. (19, 29).

Wilkinson et al. found that the aromatherapy does not benefit anxiety in patients with cancer (19). Graham et al. also found that the aromatherapy could not be effective in reducing anxiety in patients during radiotherapy. However, Kanani et al. found that the Orange oil aromatherapy can reduce state and trait anxiety in hemodialysis patients (20). Sahebalzamin et al. also found that the inhalation of mixture of essential oils of Lavender and Rose could reduce female students' anxiety (21).

The difference between the results of Kanani and Sahebalzamin and the current study may be related to differences in methodology of the study. In the current study the essence of Rosa was used. However, in the Kanani and Sahebalzamin's study, the Orange oil and the mixture of essential oils of Lavender and Rose were used, respectively. The duration of intervention in Kanani and Sahebalzamin's study was more than that in the present study (four weeks vs. one day). Therefore, it seems that if the time of intervention was more than one day or we used other essence, the patients' anxiety could be improved. Of course, since most of the patients are hospitalized in the morning of cardiac catheterization, it is recommended to start the aromatherapy for a few days before the hospitalization (at home) for controlling the patient's anxiety before cardiac catheterization. Furthermore, no effect of aromatherapy on the anxiety in this study can be attributed to the absorption of some of the aroma by paper towel and reducing the effective dose of aromatherapy.

Conclusion:

The findings of this study indicate that most of the patients experience moderate to severe state and trait anxiety before the cardiac catheterization. The findings of this study demonstrate that the aromatherapy, as administered in this study, is not beneficial. Conducting further long-term, large-scale studies on patients undergoing cardiac catheterization as well as other patient populations is necessary for providing ample evidence regarding the effectiveness of the aromatherapy in improving the anxiety. Furthermore, comparing the effects of aromatherapy with sedative-hypnotic drugs on patients' anxiety is also recommended.

Conflict of interest

The authors declare no conflict of interest.

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