

Effect of simultaneous inhalation of Lavender, Roman Chamomile and Naroli aromas on anxiety of acute Coronary syndrome patients

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ABSTRACT

Aim and background: Patients with acute coronary syndrome are faced with numerous psychological problems such as depression and anxiety. These disorders have led to several problems in the lives of these people. The present study was conducted with the aim of determining the impact of inhaling combination of lavender, chamomile and naroli aromas on anxiety of acute coronary syndrome patients. **Method:** This study is a single blind clinical trial possessing a control group performed on 75 acute coronary syndrome patients in educational-curative center of Imam Sajad, Shahriar. With the help of triple blocking, the patients were randomly divided into three groups: intervention, placebo and control. In the intervention group, two drops of lavender, chamomile and naroli essential oils were dropped on an eye-pad at 7-8 pm; then the patients were asked to hold the pad on their palms at 5-cm distance from their nose and inhale deeply for 10 times. The same pad was then placed beside the pillow of the patients during the night. In the placebo group, the same procedure was followed with distilled water; while no actions were taken for the control group. The anxiety of the patients was measured half an hour before the intervention, one and twelve hours after intervention by standard tool Spielbergers State-Trait Anxiety inventory. The collected data were analyzed by Chi square, even-T and analysis of variance via application of SPSS 22 software. **Findings:** Results showed that although the state-trait anxiety had no significant difference among the three groups before intervention, but the average anxiety score was significantly different among the three groups 1 hour after the intervention ($P < 0.001$). However, this difference was not significant 12 hours after intervention ($P > 0.05$). Moreover, the anxiety level one and 12 hours after the intervention showed significant difference in the intervention and placebo groups when compared with control group ($P < 0.001$). **Conclusion:** Application of aromatherapy as one of the methods of alternative medicine can decrease the anxiety of acute coronary syndrome patients. Regarding the low side effects and easy access to lavender, Roman chamomile and naroli essential oils, the results of this study can be employed by the nurses of coronary care unit (CCU) or the family of the mentioned patients to reduce their anxiety.

Keywords: acute coronary syndrome, aromatherapy, anxiety.

Introduction

Acute coronary syndrome (ACS) is among the symptoms of coronary cardiovascular diseases and can range from symptom-free ischemia to chronic stable angina, unstable angina, acute

myocardial infarction, ischemic cardiomyopathy and sudden cardiac death. This disease has physical-psychological symptoms, and in addition to pain, perspiration and nausea, the patients may suffer from stress and anxiety ^[1]. Coronary vascular disease will always result in personal, family, social and economic problems and can lead to psychological disorders such as anxiety, depression, frustration, fatigue and decline of self-confidence ^[2]. Among the mentions complications, anxiety is one of the common psychological symptoms of acute coronary syndrome patients; anxiety is an ambiguous feeling accompanied with lack of confidence, inconvenience, isolation and insecurity ^[3]. High levels of anxiety can lead to loss of control and feeling of fear. The symptoms could be problematic verbal communication, restlessness, trembling, weak motor control, perspiration,

Access this article online

Website: www.japer.in

E-ISSN: 2249-3379

How to cite this article: R. Rahmani, J. Mohammad Aliha, T. Najafi Ghezeljeh, F. Agha Hosseini, M. Maleki. Effect of simultaneous inhalation of Lavender, Roman Chamomile and Naroli aromas on anxiety of acute Coronary syndrome patients. *J Adv Pharm Edu Res* 2020;10(S4):44-48. Source of Support: Nil, Conflict of Interest: None declared.

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tachycardia, dyspnea, and chest pain ^[4]. It is believed that the prevalence of anxiety ranges from 15% to 50% among the cardiovascular disease patients ^[5]. Unfamiliar environment, loss of family support, costs of therapy, fear of death and undetermined diagnosis results and therapy procedure are among the main factors of anxiety in cardiovascular patients ^[6]. On the other hand, the CCU- hospitalized patients may experience a severe anxiety due to facing with various stressors at the first 48 hours; this can result in 4.9% increase in disease complication in comparison with the patients with lower levels of anxiety ^[7].

Alternative medicine such as aromatherapy has been considered for control of these symptoms among acute coronary symptom patients. Aromatherapy includes application of aromatic essential oils for therapy purposes. In addition to inhaling, aromatic essential oils can be used by different methods such as massage, fumigation and compression ^[8]. Roman chamomile (*Chamaemelum nobile*) has antinociceptive, anti-anxiety, anti-spasmodic, vasoconstrictor, blood pressure lowering and diluent effects. Neroli oil has also some therapeutic effects on nervous system and can be used as relaxing and anti-excitement agent of nervous system; it can also decrease irregular heart beat and anxiety ^[9]. Lavender is another herbal with anti-anxiety and relaxing effects. Linalool is the main constituent of lavender which is effective on GABA receptors of central nervous system ^[10]. Previous studies have shown positive impacts of lavender on anxiety of patients undergoing coronary angiography ^[11], pre-surgery anxiety ^[12] and enhancement of sleep quality among women with sleep difficulties ^[13]. However, there are some conflicts as well; for instance, it has been reported that neroli oil failed to reduce the anxiety of patients before colonoscopy ^[14]. Study of Seifi *et al* (2014) also revealed that lavender essential oil has no specific effect on anxiety of patients undergoing coronary by-pass surgeries ^[15].

Popularity of comprehensive methods of alternative medicine during the last two decades among receivers of health service has changed the approaches of health system. This change has been well manifested in nursery methods as the nurses are the most important members of therapy team and play a key role in protecting from the physical and mental health of the patients including resolving their anxiety ^[16]. As a component of non-pharmaceutical, low-cost and effective therapies, aromatherapy can be applied for treatment of disease and resolving their undesirable side effects, education of patients and nurses and also health management to decrease the costs and optimize the therapy procedure and clinical trials in nursery field. Studies show that limited researches have been dedicated to register and confirm the effects of a combination of aromatic essential oils on cardio diseases. In this regard, this study was conducted with the aim of investigating the effect of inhaling a combination of lavender, roman chamomile and neroli essential oils on anxiety reduction of ACS patients.

Method

Type of study

This study is a single blind randomized controlled clinical trial conducted after being approved by ethical committee of research vice of Iran university of medical science (IR.IUMS.REC.1394.26598), followed by obtaining signed consent of research participant.

Sampling

The samples of this study were 75 ACS patients including unstable angina and myocardial infarction patients. Regarding the confidence level of 95%, 80% test power and prediction of 10% drop in the samples, the final volume of each sample group was considered 25 patients according to below formula:

The patients having the inclusion criteria were classified into three groups (intervention, placebo and control) by means of triple randomized blocking allocation. A represented the aromatherapy group, B denoted the placebo group and control group was shown by letter C. The possible states were written on carts, and a cart was chosen for each three-member group of patients by the researcher, in this way, the patients were categorized into the three mentioned groups.

Research tool

Demographic forms and Spielbergers State-Trait Anxiety (STAI) questionnaires were employed for data collection. Demographic form included background variables such as gender, age, occupation, marital status, education state, economic state, type of medical insurance, previous history of hospitalization in CCU, family history of cardiovascular disease, application of tranquilizers, morphine, history of smoking, having well known background disease and suffering from anxiety or psychological disorders which were recorded by investigation of patients' files or interviewing with the patient or patient's family. The reliability of this form was confirmed by several academic board members of nursery and midwifery faculty of Iran medical science university.

Intervention

The intervention was carried out by the researcher and the patients were not aware of the type of intervention. In a typical procedure, the demographic form was filled up by the patient. Then the level of anxiety was evaluated by Spielbergers State-Trait Anxiety inventory, half an hour before the intervention in the A and B groups. The intervention in aromatherapy group involved dropping two drops of lavender, Roman chamomile and neroli essential oils (with the ratio of 6-2-0.5; according to ^[16] on an eye-pad at 7-8 pm (these hours were selected based on the routine of the unit and sleeping time of the patients). The patients were then asked to hold the pad on their palms at 5-cm distance from their nose and inhale deeply for 10 times. Then the same pad was placed beside their pillow overnight. The same procedure was repeated for placebo group except that this time

distilled water was used instead of essential oils. The anxiety level was measured in both groups by Spielbergers State-Trait Anxiety tool, one and 12 hours after the intervention. In the third group (control group), anxiety was investigated similar to the intervention and placebo groups but this time, no intervention was carried out. It must be noted that the patients in all three groups received the routine cares of the unit.

Findings

This study investigated the data of 75 ACS patients. Based on the results, there was no statistically significant difference between the three groups (intervention, placebo and control) in terms of gender, marital state, age, disease diagnosis, education level, occupational state, number of children, economic state, medication, smoking, previous history of hospitalization (Table 1).

As Table 2 suggests, half of the patients in all three groups (intervention, placebo and control) reported medium anxiety before the research onset. The results of chi-square test indicated that the three groups had no significant difference in terms of state-trait anxiety ($p=0.084$). Results of Table 3 also show that the state-trait anxiety of the three groups exhibited significant difference one hour after the intervention ($p=0.014$). It must be mentioned that, none of the patients in intervention group reported severe anxiety one hour after intervention. According to Table 4, the anxiety level of the three groups showed no significant difference 12 hours after intervention ($p=0.181$). Anxiety investigation throughout the time in any of the groups showed that the average score of the anxiety was significantly decreased one and 12 hours after the intervention in the intervention and placebo group as compared with their values before the intervention ($p<0.001$) (Figure 1).

Table 1- demographic data of the patients in the intervention, placebo and control groups

Demographic data		intervention		placebo		control		Chi-square
		frequency	%	frequency	%	frequency	%	
gender	Female	9	36	15	60	11	44	$X^2=3.00$ $P=0.223$
	male	16	64	10	40	14	56	
Age (yr)	25-42	2	12	3	12	7	28	$X^2=2.068$ $P=0.280$
	45-64	14	56	18	72	12	48	
	65-80	8	32	4	16	6	24	
education	Illiterate	2	8	2	8	5	20	$X^2=4.602$ $P=0.799$
	Primary school	9	36	9	36	7	28	
	High school	5	20	8	32	7	28	
	College	5	20	3	12	2	8	
occupation	university	4	16	3	12	4	16	$X^2=2.80$ $P=0.393$
	Jobless	8	32	12	48	9	36	
	Worker	2	8	2	8	1	4	
	Clerk	3	12	8	24	5	20	
Marital status	Free job	28	7	20	5	32	8	$X^2=2.8$ $P=0.833$
	retired	5	20	0	0	2	8	
	Single	1	4	1	4	2	8	
diagnosis	Married	21	84	19	76	20	80	$X^2=3.671$ $P=0.452$
	Divorced	0	0	1	4	0	0	
	widow	3	12	4	16	3	12	
History of hospitalization in CCU	Myocardial infarction	17	68	14	56	13	52	$X^2=0.480$ $P=0.787$
	Unstable angina	0	0	3	12	3	12	
	ACS	8	32	8	32	9	36	
	yes	7	28	9	36	9	36	
	no	18	72	16	64	16	64	

Table 2- state-trait anxiety of the patients before intervention in the three groups

State-trait anxiety	Intervention (n=25)		Placebo (n=25)		Control (n=25)	
	frequency	%	frequency	%	frequency	%
mild	1	4	7	28	5	20
medium	15	60	15	60	16	64
severe	9	36	3	12	4	16
sum	25	100	25	100	25	100
Chi-square	$X^2=8.266$		$P=0.084$			

Table 3- state-trait anxiety of the patients one hour after the intervention in the three groups

State-trait anxiety	Intervention (n=25)		Placebo (n=25)		Control (n=25)	
	frequency	%	frequency	%	frequency	%
mild	16	64	13	52	5	20
medium	9	36	10	40	19	76
severe	0	0	2	8	1	4
sum	25	100	25	100	25	100
Chi-square	$X^2=12.495$		$P=0.014$			

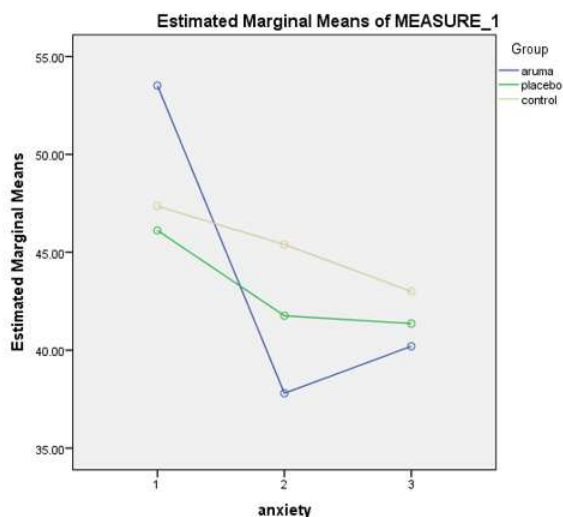


Figure 1- variation of state-trait anxiety in the three studied groups throughout the time

Results and Discussions

The aim of this study is to determine the effect of inhaling a combination of lavender, Roman chamomile and naroli essential oils on the anxiety level of ACS patients. According to the obtained results, most of the patients had medium levels of anxiety before the intervention. In the study of Snezana (2014) on anxiety of ACS patients, 81% of the patients had mild anxiety and 37.5% of them suffered from medium anxiety^[15]. Ghaleiha et al (2010) studied the frequency of depression and anxiety among the hospitalized ACS patients of Ekbatan Hospital in Hamedan^[17]. They reported the rate of medium anxiety as 54% which is in agreement with the results of present study. However, Debra (2007) investigated the effect of anxiety in cardiovascular disease patients and reported medium to severe anxiety rates of 46%, 35%, 43%, 52% and 50% in Australia, England, Japan, South Korea and USA, respectively. The results of the mentioned study do not coincide with the present study as Debra's study indicated different levels of anxiety in different countries with different cultures.

The findings of this study are not in agreement with the study of Holm & Fitzmaurice (2008) and Muzzarelli (2006) and Seifi (2014)^[15, 18, 19]. Study of Holm was aimed to determine the effect of music therapy along with aromatherapy on the anxiety of patients' companions in emergency pediatrics department. It showed that aromatherapy has no impact on anxiety. The reason of such ineffectiveness was attributed to inadequate diffusion of the essential oil into the space due to type of application and air conditioning of the hospital and also application of only one type of essential oil (naroli). Study of Muzzarelli did not show any statistically significant difference in state-trait anxiety of the patient undergoing endoscopy surgery after inhalation of lavender and placebo neither. The concentration of the applied essential oil (10% lavender in grape oil) and using one type of

essential oil may contribute in obtaining non-significant results in this study. Seify et al (2014) conducted a study on the effect of lavender essential oil on anxiety of patients experiencing coronary by-pass in Ekbatan Hospital of Hamedan^[15]. They reported that lavender essential oil has no specific impact on anxiety of these patients; the reason for the contrast of this study with the mentioned research could be the difference in type and method of application and also the duration of essential oil usage. According to the obtained results, the level of pre-intervention anxiety is significantly different with the state-trait anxiety one and 12 hours after the intervention by placebo. Analysis of the results indicates that the effect of suggestion and attention to the patient managed to decline the anxiety level of the patients in this group.

Acknowledgement

This paper is a part of MSc thesis in the field of CCU nursery conducted in Iran University of Medical Science. The authors truly appreciate the help of patients and nurses of Imam Sajad Hospital in this study.

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