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## **EFFECTS OF AROMATHERAPY MASSAGE ON ANXIETY AND SELF-ESTEEM IN KOREAN ELDERLY WOMEN: A PILOT STUDY**

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This study investigated the effects of aromatherapy massage on the anxiety and self-esteem experienced by Korean elderly women. A quasi-experimental, control

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group, pretest–posttest design was used. The subjects comprised 36 elderly females: 16 in the experimental group and 20 in the control group. Aromatherapy massage using lavender, chamomile, rosemary, and lemon was given to the experimental group only. Each massage session lasted 20 min, and was performed 3 times per week for two 3-week periods with an intervening 1-week break. The intervention produced significant differences in the anxiety and self-esteem and no significant differences in blood pressure or pulse rate between the two groups. These results suggest that aromatherapy massage exerts positive effects on anxiety and self-esteem. However, more objective, clinical measures should be applied in a future study with a randomized placebo-controlled design.

**Keywords** anxiety, aromatherapy, elderly, self-esteem

## INTRODUCTION

The most frequently occurring mood disorders in the elderly are depression, anxiety, and mood fluctuation. The deaths of friends and family, physical debilitation, changes in living arrangements, institutionalization, lack of support networks, and decreases in hearing, memory, and vision may all contribute to mental health problems in the elderly. Studies of the prevalence of depression and anxiety in elderly people in Korea indicate that 26% of city dwelling and 19% of rural community elderly suffer from depression and anxiety, with the rates being higher in women than in men (Yi & Kim, 2000). The elderly who suffer from depression and anxiety worry about health promotion, visual function, cognition, pain, social function, oral health, and falls. Moreover, anxiety and depression have been shown to be associated with chronic illness in the elderly.

Aromatherapy is the therapeutic use of essential oil from plants. Essential oils can be absorbed into the body via the skin or the olfactory system (Dye, 1997; Lavabre, 1990; Tisserand, 1996). Commercially available essential oils have been used for several hundred years and are regularly used for stress management and minor ailments (Halcon, 2002). Many studies have found that olfactory stimulation produces immediate changes in physiological parameters such as blood pressure (BP), muscle tension, pupil dilation, blink magnitude, skin temperature, skin blood flow, electrodermal activity, pulse rate, and brain activity (Diego et al., 1998; Field et al., 2005; Lorig & Schwartz, 1988; Schwartz, 1979; Tisserand, 1996; Torii et al., 1988; Van Toller et al., 1993). However, the therapeutic effects of aromatherapy are not well supported by clinical studies. This study was conducted to investigate if lavender, chamomile, rosemary, and lemon applied with massage would reduce anxiety and improve self-esteem in elderly women.

## **MATERIALS AND METHODS**

### **Participants**

Elderly women subjects were recruited through bulletin board advertising to participate in an 7-week aromatherapy program as subjects for the present study. An individual was eligible to participate in the program if she (a) was between 65 and 85 years of age, (b) was able to read and complete study questionnaires, (c) could attend group sessions over 7 weeks, (d) exhibited no impairment of cognition ability (Korean version of the Mini Mental State Examination: score >25), and (e) agreed to the use of aromatherapy.

A total of 36 subjects volunteered to participate in the study. They were assigned to either an aromatherapy group ( $n = 20$ ) or a control group ( $n = 16$ ) according to their place of residence so as to avoid the contamination that could occur if subjects living close to each other discussed their participation in the study.

The study received institutional approval from the Human Investigation Ethics Committee and administrative approval from the Human Subjects Review Board of the University Hospital and School of Medicine before the subjects were approached and their written consent was obtained.

### **Measurement of Blood Pressure**

After a 10-min preintervention rest, BP was measured by the auscultatory method with a contact microphone secured over the left brachial artery. Assistants measured the BP twice in each subject, and the values were averaged.

### **State Anxiety Inventory**

State anxiety was measured with the Spielberg's State-Trait Anxiety Inventory (STAI)-X1, which includes 20 items to measure the acute level of anxiety. The items were rated on the following four-point scale: "not at all" (1), "somewhat" (2), "moderately so" (3), and "very much so" (4). The STAI-X1 exhibits acceptable internal consistency and test-retest reliability. An abundance of correlation and experimental evidence supports the validity of the inference that scores on the STAI-X1 reflect anxiety levels (Spielberger, 1972). Cronbach's  $\alpha$  value for internal consistency was reportedly 0.87 for the Korean version of the STAI-X1, and was 0.865 for the present study.

### **Self-Esteem**

The individual level of self-esteem was measured using the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). The RSE consists of 10 statements

dealing with a person's general beliefs about him- or herself. Each item is answered on a four-point scale, from "strongly agree" to "strongly disagree," with five items being reverse scored so that a higher score indicates higher self-esteem. The RSE was originally validated in a large sample of high school students (Rosenberg, 1965), because when it has been used in both nonpsychiatric and psychiatric adults (Blascovich & Tomaka, 1991) and has been shown to exhibit high reliability: test-retest correlations are typically in the range of .82 to .88, and Cronbach's  $\alpha$  for various samples are in the range from .77 to .88 (Blascovich & Tomaka, 1991). The present study also exhibited good reliability and validity (Cronbach's  $\alpha = .765$ ).

### **Intervention**

The experimental treatment in this study involved providing aromatherapy to the experimental group in a treatment room in 20-min sessions 3 times per week for two 3-week periods separated by a 1-week break, giving a total of 18 treatments. The aromatherapy was provided in the form of massage with essential oils of lavender, chamomile, rosemary, and lemon in a 4:3:2:1 ratio and diluted in jojoba oil at 3%. The treatment room for massage received no natural light and was equipped with beds warmed by heat pads. Each 20-min massage began with the foot, leg, and knee, followed by the abdomen, with light and heavy rubbing and vibration at a speed of 20 times/min. No treatment was provided to subjects in the control group, who continued their usual daily routines.

### **Statistical Analysis**

Data were analyzed using SPSS software. Chi-squared and *t*-tests were used to compare the homogeneity of general characteristics and categorical variables between the control and aromatherapy groups. Unpaired *t*-tests were used to evaluate differences in the demographic data and other variables between the control and aromatherapy groups. Paired *t*-tests were used to analyze the differences between the baseline and 7-week values. Where a statistical difference was present between the groups at baseline, repeated-measures ANCOVA were applied.

## **RESULTS**

The groups did not differ significantly in the demographic characteristics of age, education level, economic status, and marital status (data not shown). The anxiety and self-esteem scores in the aromatherapy and control groups are presented in Figure 1. There was a significant difference in the mean baseline

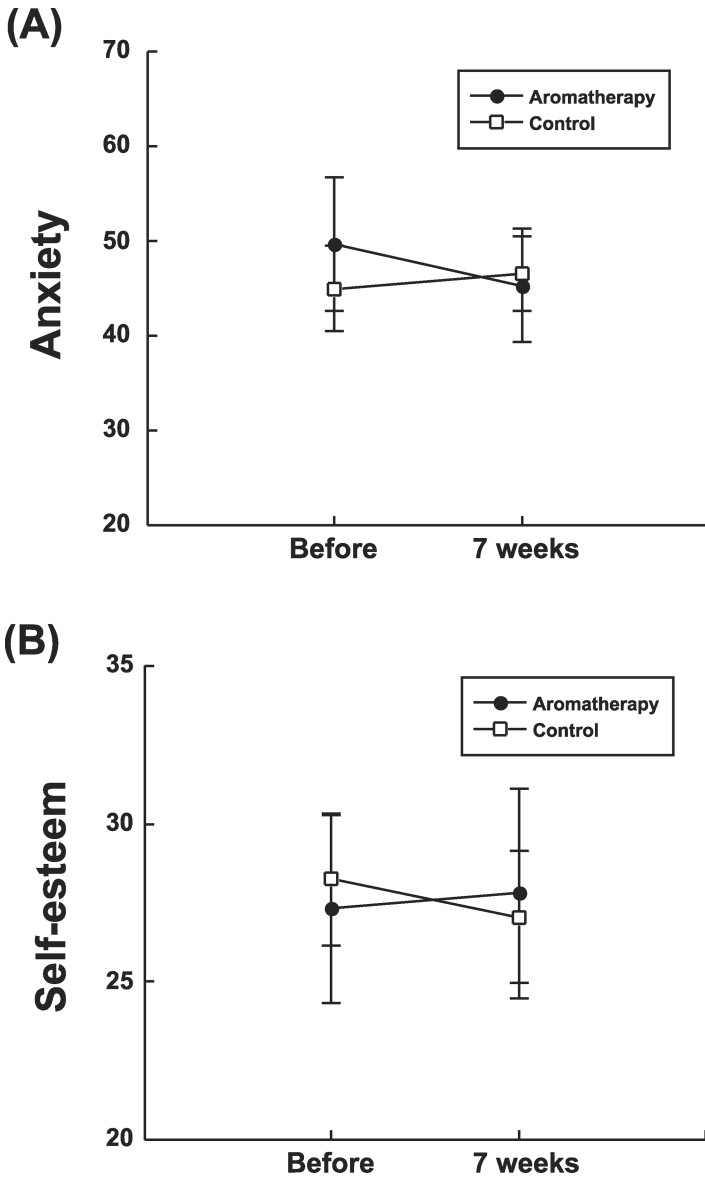


Figure 1. Changes of (A) state anxiety and (B) self-esteem (with SD) by 7 weeks aromatherapy.

levels of anxiety, and ANCOVA revealed that changes in anxiety differed significantly between the two groups ( $-4.38 \pm 5.99$  for aromatherapy group and  $1.60 \pm 3.60$  for control,  $p < .05$ ).

The mean baseline values of self-esteem did not differ between the two groups. After 7 weeks of intervention, the difference scores (postintervention minus preintervention) of the aromatherapy group differed significantly from the changes in the control group ( $0.50 \pm 5.26$  for aromatherapy group and  $-1.20 \pm 2.67$  for control,  $p < .05$ ). There were also significant changes in self-esteem in the aromatherapy group after 7 weeks ( $p < .05$ ).

## DISCUSSION

In this study, subjects who received aromatherapy massage 3 times a week for 6 weeks showed a greater reduction in anxiety level and improvement of self-esteem than those in the control group. However, there were no significant differences in BP or pulse rate.

From the results obtained for the psychological states, it may be considered that 6 weeks of aromatherapy has beneficial effects on self-esteem and anxiety. In previous studies, the aromatherapy group reported feeling less depressed (as assessed using the Profile of Mood States) and more relaxed after each session (Diego et al., 1998; Dunn et al., 1995; Field et al., 2005; Lopes da Silva, 1991; Millot & Brand, 2001; Morris et al., 1995; Ray & Cole, 1985). Aromatherapy also reportedly reduces anxiety in young and middle-aged women (Kang & Kim, 2002; Lee, 2002). Many investigations into the relationship between self-esteem and health have focused on the influence of self-esteem on health-related behaviors (Hurst et al., 1997; Lyons & Chamberlain, 1994; Rodin & McAvay, 1992). The well-established relationship between self-esteem and psychological well-being (e.g., depression, social anxiety, loneliness, and alienation) may be an important factor in understanding the self-esteem–health relationship (Blascovich & Tomaka, 1991). Bernard et al. (1996) found high correlations among self-esteem, self-efficacy, ego strength, hardiness, optimism, and maladjustment, and all of these constructs were significantly related to health. Studies have shown that increasing anxiety decreases self-esteem (Parson et al., 1968; Taylor & Del Pilar, 1992). The increases in self-esteem and reduction in anxiety level found in the present study indicate that aromatherapy may influence subjects' feelings about their health promotion and willingness to improve. Aromatherapy may affect health behavior by helping subjects to maintain self-care.

There have been discrepancies in the reported effects of aromatherapy on BP. Oh et al. (2000) found that aromatherapy reduced the pulse rate and respiratory rate in normal healthy subjects, although having no effect on BP. Another study found that aromatherapy modulates the systolic BP (SBP), but not the diastolic BP (DBP), pulse rate, or respiratory rate in the healthy women (Tweed, 1999). Yi (2002) reported that SBP, DBP, and pulse rate differed significantly between aromatherapy and control group in presurgery patients. The different results for physiological modulation may be attributable to the type of odors, massaged regions, and application duration. In the present study, although the BP and pulse rate did not change significantly over time, they did tend to improve compared to baseline.

In conclusion, the results from the present study suggest that aromatherapy massage may reduce anxiety levels and improve self-esteem in Korean elderly women. However, it is acknowledged that this was a preliminary study with several limitations, such as small sample size and lack of an equivalent placebo-control group to estimate an expectation effect. It cannot be completely shown whether the positive effects were due to the aromatherapy, massage, or both (e.g., identical results may have been achieved by using only massage without aromatherapy, or possibly even vice versa). Future randomized studies that include more objective measures, larger samples, measurements after multiple sessions, and long-term follow-up are needed unequivocally to determine the effects of aromatherapy on well-being or other psychological variables in the elderly. Future studies should include four groups: (1) aromatherapy alone, (2) massage alone, (3) aromatherapy and massage together, and (4) neither aromatherapy nor massage.

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