

Effect of Aromatherapy on the Treatment of Psychological Symptoms in Postmenopausal and Elderly Women: A Systematic Review and Meta-analysis

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Objectives: To critically assess the effect of aromatherapy on the psychological symptoms as noted in the postmenopausal and elderly women.

Methods: Three following databases were systematically searched: MEDLINE, Scopus and Cochrane Library (Cochrane Central Register of Controlled Trials) from inception to January 2018. The search keywords included 'menopause' AND (aromatherapy), without language restrictions.

Results: In this study, 4 trials were included which fit into our systematic review. The findings demonstrated that the aromatherapy massage have significantly improved psychological symptoms in menopausal and elderly women as compared to the control group (standardized mean difference [SMD] = -1.24; 95% confidence interval, -0.188 to -0.606; $P < 0.001$ random effect model; 3 trials, moderate to high heterogeneity, $I^2 = 0.76$; $P = 0.028$). According to 1 of the trials, the aromatherapy oil massage was no more effective than the untreated group regarding their experience of symptoms such as nervousness.

Conclusions: The aromatherapy may be beneficial in attenuating the psychological symptoms that these women may experience, such as anxiety and depression, but it is not considered as an effective treatment to manage nervousness symptom among menopausal women. This finding should be observed in light of study limitations. (**J Menopausal Med 2018;24:127-132**)

Key Words: Anxiety · Aromatherapy · Depression · Menopause

Introduction

Depression as a common and serious mood disorder impose huge socioeconomic burden, so that can be developed in about 1 per 5 people in the USA. Females, particularly peri- and postmenopausal women, experience the depressive disorders more than the males.¹

The peri- and postmenopausal women are suffering from several stressful situations related to family, social behaviors, occupation, sexuality, and healthcare and economic, resulting in high risk of mood disorders.^{2,3} Menopausal symptoms can significantly impact on quality of life.⁴

According to the previous studies, the main possible reason for mood variations is decrease in estradiol level and its

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relationship with the monoamineoxidase level of platelet.⁵⁻⁷

Hormone replacement therapy is reportedly widely used treatment to alleviate the depression symptoms.⁸⁻¹⁰

In 2004, in follow-up 6.8 years, the side effect of conjugated equine estrogen (CEE) compared to placebo. The Women's Health Initiative reported hazard ratios of 0.91 for coronary heart disease (CHD), 0.77 for cancer breast and 1.39 for stroke. Based on the result, the administration of CEE can lead to an increased risk of stroke. However, it did not impact CHD incidence. In addition to, potential decreased risk of breast cancer need to further research works.¹¹

Also, some medications such as benzodiazepines and antidepressants are employed to heal the mood disturbances but they give adverse effects.⁸ Benzodiazepines are associated with side effects such as anterograde amnesia, physical dependence and also in long term may cause physical dependence.¹² Antidepressant may indicate side effects such as weight gain, sexual dysfunction and suicidality.¹³⁻¹⁵

Due to public misunderstanding of issues "cancer and hormone therapy" and concern about side effect of benzodiazepines and antidepressant, many health care provider and people has been has interested in complementary and alternative medicine.¹⁶⁻¹⁸

The aromatherapy is defined as an essential oil therapy, referring to science of utilizing aromatic essential oils naturally extracted from plants that penetrate into the body through the skin or the olfactory system. Consequently, many changes can occur in the physiological indices like blood pressure, muscle tension, pupil dilation, blink magnitude, skin temperature and blood flow, pulse rate, and cerebral function.¹⁹

In this regard, we found only one meta-analysis focusing on the effect of aromatherapy on perceived stress and depression in middle-aged women. Three reasons can justify the necessity for a new comprehensive meta-analysis. First, 2 related studies were detected that were not included in the previous meta-analysis. Second, the previous meta-analysis has not considered the elderly population. Third, all of those studies included in the depression meta-analysis had been extracted from the Korean database. Hence, the aim of this study is to assess the effect of aromatherapy on the treatment of the psychological symptoms among the postmenopausal and elderly women.

Materials and Methods

1. Search strategy

Three following databases were systematically searched: MEDLINE, Scopus and the Cochrane Library (Cochrane Central Register of Controlled Trials) from inception to January 2018. The search keywords included 'menopause' AND (aromatherapy), without language restriction.

2. The inclusion criteria

(1) Randomized Controlled Trials (RCTs) that compared the effect of aromatherapy massage either in mono/combined preparations with placebo or treatment group as control.

(2) Trials should report at least one psychological symptom such as anxiety and depression.

3. Data extraction

Two reviewers using predefined checklist independently extracted the following data from each study: year of publication, first author, menopausal status, sample size, duration of treatment, the dose and the outcome for both the intervention and control groups including the mean and standard deviation of pre- and posttreatment or mean difference with the baseline (Table 1).

4. Quality assessment of the included studies

Two independent reviewers assessed the RCT quality using Cochrane Collaboration's tool for achieving the risk of research bias, including random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting and other sources (Table 2).

5. Standardized difference mean (SMD)

The SMD of each study was calculated as the main effect in our analysis. Due to high heterogeneity, the random-effects model was applied to pool the aromatherapy effect on the psychological symptoms. Cochrane Q test and I^2 index were used to calculate the degree of heterogeneity and significance level. Comprehensive meta-analysis version 2 calculated the SMD and other statistical analysis. Sensitivity analysis were carried out to detect the potential resource of heterogeneity.

Table 1. Characteristics of 4 studies included to the psychological symptoms meta-analysis

References	Year	County	Length of intervention	Design of study	Age of subjects	Menopausal/Elderly status	Levels of compliant	Measurement outcome	Aroma oil	No. of intervention/control	Drop out (%)	Main result
Rho et al. ¹⁹	2006	Korea	20 minutes three times a week for two 3 weeks periods separated by a 1 week break	Randomized clinical trial	-	Elderly	-	STAI-X1	Lavender, chamomile, rosemary, and lemon	Aromatherapy group (n = 20), control group (n = 16)	0%	ANCOVA showed a significant difference between two groups
Lotfipour-Rafsanjani et al. ²⁰	2015	Iran	30 minutes once a week for 8 weeks	Randomized clinical trial	Aromatherapy massage (54.00), massage therapy (55.63), control (54.78)	Postmenopausal	BDI ≥ 14	BDI	Geranium oil (2%) in almond oil	Massage using geranium oil (n = 40), massage with sweet almond oil (n = 38), usual daily care (n = 40)	Massage therapy group (5%)	Paired t-test showed a significant improvement in both aromatherapy massage and massage therapy. However, aromatherapy massage and were found to be more effective than massage therapy
Taavoni et al. ¹⁶	2013	Iran	30 minutes twice a week for 4 weeks	Randomized clinical trial	Aromatherapy massage (53.35), massage therapy (52), control (53.70)	Postmenopausal	-	MRS, items four symptoms (depressed mood, irritability, anxiety, and physical)	Lavender, geranium, rose, and rosemary/ evening primrose oil	Aromatherapy massage (n = 30), massage therapy (n = 30), no treatment (n = 30)	Aromatherapy massage (13%), massage therapy (6%), no treatment (0%)	Paired t-test showed a significant improvement in both aromatherapy massage and massage therapy. However, aromatherapy massage and were found to be more effective than massage therapy
Hur et al. ²¹	2008	Korea	30 minutes once a week for 8 weeks	Pilot-controlled clinical trial	45-54	Climacteric women	Climacteric women, no clear definition	Item depression of KI	Lavender, rose geranium, rose, and jasmine	Aroma oil (n = 25), no treatment (n = 27)	0%	No statistical significant difference between groups regarding nervousness

BDI: Beck Depression Inventory, STAI: Spielberg's State-Trait Anxiety Inventory, MRS: Menopause Rating Scale, KI: Kupperman Index, ANCOVA: analysis of covariance

Table 2. The quality assessment using Cochrane Collaboration’s tool

References	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition)	Selective reporting	Other biases
Rho et al. ¹⁹	? [†]	- [†]	-	-	+ [*]	+	+
Lotfipour-Rafsanjani et al. ²⁰	-	-	-	?	+	+	+
Taavoni et al. ¹⁶	-	-	-	-	+	+	+
Hur et al. ²¹	-	-	-	-	+	+	?

*+: low risk of bias
 + -: high risk of bias
 †?: unclear risk of bias

Results

Figure 1 illustrates the selection process of studies to include into the current systematic review. As shown, 4 trials were included finally into our systematic review. Table 1 shows the summary of profiles related to the include studies. We found 3 trials^{16,19,20} matched with our objectives and also appropriately reported data to include in the meta-analysis. According to the searches, the aromatherapy massage improved significantly the psychological symptoms in the menopausal and elderly women compared to the control group (SMD = -1.24; 95% confidence interval [CI], -0.188 to -0.606; $P < 0.001$; random effect model; 3 trials, moderate to high heterogeneity, $I^2 = 0.76$; $P = 0.028$) (Fig. 2).

One trial²¹ had no appropriate data to include in the psychological aromatherapy meta-analysis. Therefore, we reported it as qualitative. Hur et al.²¹ assessed the effects of aromatherapy massage using mixture oil containing lavender, rose geranium, rose and jasmine in almond and primrose oils on the nervousness using Kupperman Index. Fifty-two Korean climacteric women were divided into 2 groups of aromatherapy (n = 25) and untreated (n = 27). The aromatherapy oil massage was no more effective than untreated group regarding nervousness. In addition, the comparison of results from pre- and posttreatment with aromatherapy oil showed no statistically significant difference between the 2 groups.

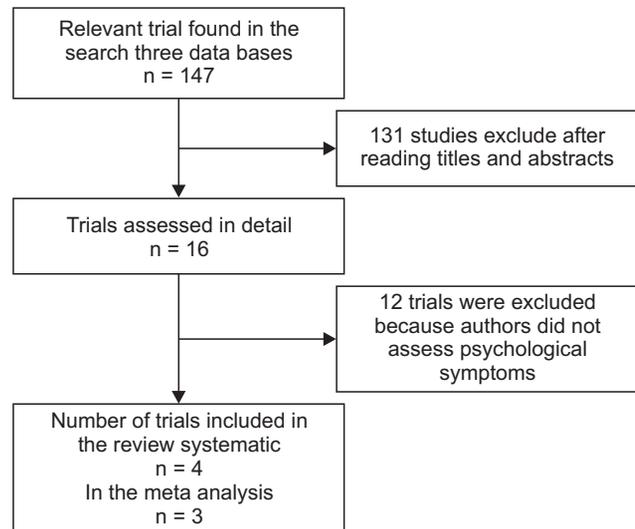
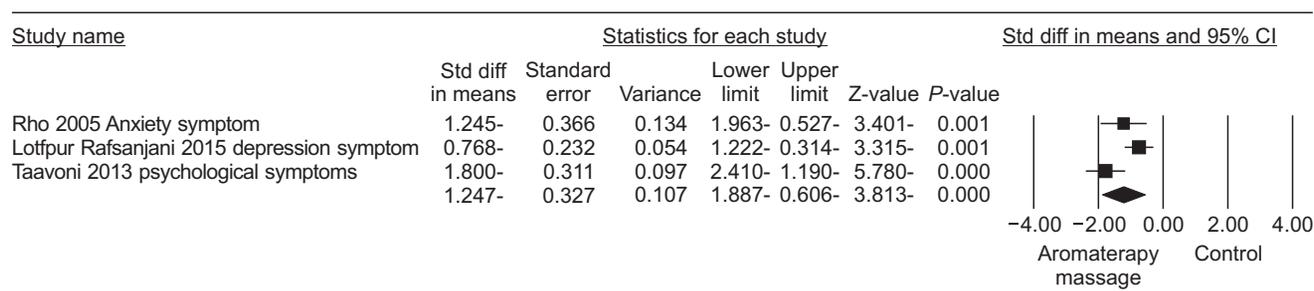


Fig. 1. The process of selection of studies.

Discussion

To the best of our knowledge, this is the first meta-analysis evaluating the effect of aromatherapy on the psychological symptoms. The meta-analysis showed the aromatherapy massage improved significantly psychological symptoms in and elderly and menopausal women compared to control group.

Kim et al.²² recently conducted a meta-analysis to assess the effect of the aromatherapy on the psychological symptoms of stress and depression among middle-aged females. The mean difference of depression was significantly lower in the aromatherapy massage group (SMD = -4.24; 95% CI, -12.61 to 4.12; heterogeneity, $I^2 = 80\%$ 2 trials) and inhala-



Meta Analysis

Fig. 2. Effect of the aromatherapy on the noted psychological symptoms, the horizontal lines denote the 95% confidence interval (CI), ■: point estimate (size of the square corresponds to its weight), ◆: combined overall effect of intervention.

tion of aromatherapy group (SMD = -7.44 , 95% CI, -10.87 to -4.01) compared to the control group these findings are consistent with our meta-analysis. The aromatherapy massage can attenuate depression through improving the blood flow in the frontal cortex of the brain, stimulating the body soft tissues causing metabolic balance and enhancing a sense of caring and expressing love to the patient.¹⁹

There are some limitations in the present review that should be taken into account in the future research. The 4 studies included in systematic review only reported short-term effect of aromatherapy on the psychological symptoms, and long-term effects remain unknown. The emotional supports of the patients received from researcher during aromatherapy might influence the treatment response, which were not provided for the control group. The methods of allocation were inappropriate or clearly descriptive, hereby the emergence of possible bias. There is need for future trials with high-quality methodology, more clear explanation, blinding and reporting the intent-to treatment analysis.

Conclusion

The aromatherapy may be beneficial in improving the psychological symptoms among menopausal women. This finding should be observed in the light of mentioned limitations.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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