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

Masoudeh Babakhanian¹, Masumeh Ghazanfarpour², Leila Kargarfard³, Nasibeh Roozbeh⁴, Leili Darvish⁴, Talat Khadivzadeh⁵, Fatemeh Rajab Dizavandi⁶

¹Social Determinant of Health Research Center, Semnan University of Medical Sciences, Semnan, Iran, ²Department of Midwifery, Razi School of Nursing and Midwifery, Kerman University of Medical Sciences, Kerman, Iran, ³Department of Fatemeh School Nursing and Midwifery, Shiraz University of Medical Science, Shiraz, Iran, ⁴Mother and Child Welfare Research Center, Hormozgan University of Medical Science, Bandar Abbas, Iran, ⁵Evidence-Based Care Research Center, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran, ⁶Department of Community Health and Psychiatric Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

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, I² = 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.¹³³ 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
relationship with the monoamine oxidase 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 con-
jugated 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 an-
tidepressants are employed to heal the mood disturbances
but they give adverse effects.8 Benzodiazepines are associ-
ated with side effects such as anterograde amnesia, physical
dependence and also in long term may cause physical de-
pendence.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 benzodi-
azepines and antidepressant, many health care provider and
people has been has interested in complementary and alter-
native medicine.16–18
The aromatherapy is defined as an essential oil therapy,
referring science of utilizing aromatic essential oils natu-
rally 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 mag-
nitude, 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 de-
pression 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 treat-
ment of the psychological symptoms among the postmeno-
pausal 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 Jan-
uary 2018. The search keywords included ‘menopause’ AND
(2) Trials should report at least one psychological symptom
such as anxiety and depression,

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,

3. Data extraction
Two reviewers using predefined checklist independently
extracted the following data from each study: year of publi-
cation, first author, menopausal status, sample size, dura-
tion 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 dif-
ference with the baseline (Table 1).

4. Quality assessment of the included studies
Two independent reviewers assessed the RCT quality us-
ing Cochrane Collaboration’s tool for achieving the risk of
research bias, including random sequence generation, allo-
cation 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 I² in-
dex 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 complaint | 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 |
| Lotfipur-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 (2%) (n = 40), massage with sweet almond oil (n = 38), usual daily care (n = 40) | Pair t-test showed a significant improvement in both aromatherapy massage and massage therapy. However, aromatherapy massage and were found be more effectiveness 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) | Pair t-test showed a significant improvement in both aromatherapy massage and massage therapy. However, aromatherapy massage and were found be more effectiveness than massage therapy |
| Hur et al.21 | 2008 | Korea | 30 minutes, once a week for 8 weeks | Pilot-controlled clinical trial | 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: Spielberger’s State-Trait Anxiety Inventory, MRS: Menopause Rating Scale, KI: Kupperman Index, ANCOVA: analysis of covariance
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 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, I² = 0.76; P = 0.028) (Fig. 2).

One trial had no appropriate data to include in the psychological aromatherapy meta-analysis. Therefore, we reported it as qualitative. Hur et al. 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.

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. 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, I² = 80% 2 trials) and inhal-
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Meta Analysis

| Study name | Std diff in means | Standard error | Variance | Lower limit | Upper limit | Z-value | P-value |
|------------|------------------|----------------|----------|-------------|-------------|---------|---------|
| Rho 2005 Anxiety symptom | 1.245-4.00 | 0.366 | 0.134 | 1.763- | 2.217- | 2.630- | 0.008 |
| Lotfpur Rafsanjani 2015 depression symptom | 0.768-1.800 | 0.232 | 0.054 | 1.222- | 3.314- | 3.570- | 0.000 |
| Taavoni 2013 psychological symptoms | 1.247-1.247 | 0.327 | 0.107 | 1.987- | 3.813- | -4.00 | -4.00 |

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.

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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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