Aromatherapy May Reduce Menstrual Pain in Women With Primary Dysmenorrhea

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Level 2 (mid-level) evidence

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Dysmenorrhea is the most common gynecologic problem in women with an estimated prevalence of 16.8−81%.[1,2] It is defined as recurrent and painful lower abdomen cramps that occur with menstruation.[2] Morbidity can be significant and can be associated with anxiety and depression.[3] Current pharmacologic therapies include non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives. However, while both have been shown to be effective for dysmenorrhea, they have significant adverse effects and contraindications that may preclude their use in many patients.[4−6] Oral supplements such as vitamin B1, fish oil, and zinc may be of some benefit, but evidence is limited.[7] Aromatherapy is the use of essential oils, which are naturally extracted aromatic essences from plants to balance, harmonize, and promote the health of body, mind, and spirit.[8] Aromatherapy has been used in United States academic centers as minimally invasive primary or adjunctive interventions to manage pain and other symptoms.[9,10] Essential oils that have been used to treat dysmenorrhea include lavender, rosemary, peppermint oil, cinnamon, clove, rose, clary sage, nutmeg, fennel, marjoram, thymus vulgaris, zataria multiflora, and rosaceous extract. Two recent systematic reviews and meta-analyses found that aromatherapy was effective in the management of dysmenorrhea.[11,12] However, both reviews were limited by methodologic flaws and lacked inclusion of several relevant studies. To address these concerns a newer systematic review was performed, which included several additional studies and a comprehensive meta-analysis.[13]

The focus of this systematic review was to assess the efficacy and safety of the most common forms of aromatherapy including oral, inhalational, and massage. Eleven major English and Korean databases were independently searched for randomized or quasi-randomized trials. The references of all identified articles were reviewed to identify any additional relevant material. The search strategy was broad and included both keyword and subject heading searches to appropriately identify trials related to the therapeutic use of aromatherapy in patients with dysmenorrhea. A total of 19 trials were included for meta-analysis. A funnel plot of included trials was asymmetrical, which may have been due to publication bias or heterogeneity of the interventions. Overall, risk of bias across the trials was considered moderate and primarily related to issues of allocation concealment and the challenges of participant blinding. The quality of all included trials was considered moderate.

Seven trials examined inhalational aromatherapy, eleven trials assessed aromatherapy with massage with or without inhalation, and 2 trials examined aromatherapy using oral extracts. Included studies employed parallel group or cross-over study designs. There was high variability in methodology between studies including type and number of essential oils used, dosing, method of delivery, and number of treatments. Most trials used lavender or rose oil alone, in combination with one another, or with other essential oils. One study compared diclofenac to diclofenac plus aromatherapy while the others compared to placebo and it was unclear whether other analgesics or anti-inflammatories were permitted during the study period. The outcome measures for pain varied among studies, although most used a 0−10 point visual analog scale. To allow for pooling of data, results were reported using standardized mean differences (SMD). Typically, an SMD of 0.2 is considered a small difference between the experimental and the control group; 0.5, a moderate difference; and 0.8, a large difference.[14] Pooled data from 1787 women from all trials demonstrated a statistically beneficial effect of aromatherapy on pain with a SMD of 0.91 (95% CI 0.64−1.17) lower than the placebo group. Sub-analysis by type of aromatherapy modality-inhalational, massage, and oral aromatherapy each demonstrated efficacy with SMDs of 1.02 (95% CI 0.44−1.59), 0.87 (95% CI 0.6−1.14), and 0.61 (95% CI 0.3−0.91), respectively. Of note, there was a high degree of heterogeneity with $I^2 = 88\%$ for all types of aromatherapy, except aromatherapy using oral extracts.

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Only two trials assessed adverse effects, and none were reported.

This meta-analysis expanded on the existing body of evidence to provide support for the use of aromatherapy in the management of primary dysmenorrhea. The overall merits of this study included the broad search criteria including multiple commonly utilized aromatherapy agents, the strict inclusion of randomized controlled trials, and the assessment of bias.

While there was a meaningful reduction in pain and overall benefit demonstrated by this meta-analysis suggesting that it may benefit patients with dysmenorrhea, there are several issues that must be considered. First, the quality of the included trials was hampered by methodologic heterogeneity including variability in ingredient, dose, delivery route, and duration of use. This leads to poor reproducibility and decreased validity of the obtained results. Next, there was a moderate risk of bias in key areas including blinding and allocation. Admittedly, blinding is inherently challenging in the study of aroma-based interventions, but nonetheless may lead to exaggerated effects in subjective ratings.

Another key piece of information demonstrated by the review was that only two of the included studies assessed for adverse effects and no studies assessed for residual effects despite known potential complications and cumulative effects of long term cutaneous aromatherapy use.[15–17] Lastly, due to the lack of restrictions on retrospective study registration in addition to inconsistent and unclear outcome measures, the validity of the data may be suspect.

In summary, this study strengthens the argument for aromatherapy as an alternative in the management of primary dysmenorrhea. However, the potential long-term effects of the regular use of essential oils is unknown, and there is no comparative data with the currently mainstream accepted treatments including NSAIDs. Therefore, the role of aromatherapy at this time may be considered for those intolerant of current conventional therapies or those interested in a non-pharmacologic approach.

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