

Aromatherapy: a systematic review

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SUMMARY

Aromatherapy is becoming increasingly popular; however there are few clear indications for its use. To systematically review the literature on aromatherapy in order to discover whether any clinical indication may be recommended for its use, computerised literature searches were performed to retrieve all randomised controlled trials of aromatherapy from the following databases: MEDLINE, EMBASE, British Nursing Index, CISCOM, and AMED. The methodological quality of the trials was assessed using the Jadad score. All trials were evaluated independently by both authors and data were extracted in a pre-defined, standardised fashion. Twelve trials were located: six of them had no independent replication; six related to the relaxing effects of aromatherapy combined with massage. These studies suggest that aromatherapy massage has a mild, transient anxiolytic effect. Based on a critical assessment of the six studies relating to relaxation, the effects of aromatherapy are probably not strong enough for it to be considered for the treatment of anxiety. The hypothesis that it is effective for any other indication is not supported by the findings of rigorous clinical trials.

Keywords: aromatherapy; complementary medicine; alternative medicine; clinical trials; systematic review.

Introduction

AROMATHERAPY is the use of concentrated essential oils extracted from herbs, flowers, and other plant parts to treat various diseases.¹ The proponents of aromatherapy lay claim to an ancient tradition of herbal medicine practised in countries such as Egypt and India thousands of years ago. However, the term was initially used by the French chemist Gattefossé in a book first published in 1936.² It is now commonly administered by massaging into the skin, and the term aromatherapy usually implies massage with a range of aromatic plant extracts known as essential oils.³ It is practised in the United Kingdom by practitioners with a variety of qualifications. The Aromatherapy Organisations Council (AOC) acts as an umbrella organisation for 12 professional aromatherapy associations;⁴ there is no single recognised qualification. About 7000 individuals are registered with one of the member organisations of the AOC.⁵ Clients and practitioners of aromatherapy perceive it to be effective^{6,7} but physicians are often sceptical of this claim.

This review aims to summarise the randomised intervention studies that have been carried out on the use of aromatic plant extracts (essential oils) for a variety of conditions. It also examines systematically the use of aromatherapy massage for anxiety in a health care setting.

Method

We sought to identify all randomised clinical trials of the therapeutic use of aromatherapy. Computerised literature searches were performed to identify published studies of aromatherapy. We searched MEDLINE, EMBASE, British Nursing Index, CISCOM, and AMED using the terms 'alternative medicine', 'massage', 'essential oils', and 'aromatherapy'. The searches were carried out in June 1999 and went back to the dates of origin of each database. We also searched our own files and consulted a number of colleagues with knowledge of the subject area to identify further research published outside the indexed literature.

Clinical trials were included if they were randomised, described as a trial of aromatherapy by the authors, and included human patients. They were excluded if they had no control group or were not randomised,⁸ or if they pertained to studies of local effects, such as the antiseptic effects of tea tree oil,⁹ or pre-clinical studies of healthy volunteers. Trials for indications for which no other trials treating the same problem were identified (e.g. studies with no independent replication) are listed in Table 1 but are not included for detailed discussion. There were no restrictions as to language of publication. All papers were read by both authors and data extracted into tables independently by both authors in a standard, pre-defined fashion. Characteristics of the studies which met the above criteria and their main findings are summarised in Table 2.

Jadad¹³ proposed a scoring system to assess the methodological quality of clinical trials. Essentially it evaluates randomisation, blinding, and the mention of drop-outs. Jadad scores for the included studies are shown in Table 3. Scores in the range one to five are possible, with higher scores implying higher quality.

Results

Six studies (Table 1) for which no independent replications exist were located.^{14,15-19} With one exception,¹⁸ they are all positive, i.e. suggesting a benefit of aromatherapy over control. Six further studies (Table 2) for which independent replications exist were located.²⁰⁻²⁵ With one exception,²⁰ they also all suggest positive effects of aromatherapy. The latter considered the use of aromatherapy massage in hospital settings and investigated its effects on anxiety and general well-being on cancer patients, post-operative patients (following cardiac surgery), and a mixed group of patients in an intensive therapy unit. Important aspects of their design and methodological quality are shown in Table 3.

The methodology of these studies varies substantially. They were all carried out by members of the nursing profession as part of the nursing care of patients in a hospital setting. The outcomes evaluated were similar: anxiety, well-being, symptom scores, and stress. The measuring instruments were questionnaires, such as the Spielberger State-Trait Anxiety Inventory,²⁶ a popular tool²⁷ used for studies of this type, or the Rotterdam Symptom Checklist,²⁸ which was developed to assess the symptoms of cancer patients.

The interventions varied from whole-body massage to massage confined to the feet. The frequency and duration of interventions also varied between studies. The most popular control intervention was massage with a bland oil. One study compared two similar oils, and three studies had control groups that received no intervention as well as placebo groups receiving massage with bland oils.

All the studies concluded that aromatherapy was better than

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Table 1. Six 'one-off' trials of aromatherapy with no independent replication.

Reference	Condition under investigation	Sample	Interventions	Main conclusion
Cohen 1982 ¹⁵	Small airways resistance	24 healthy adults with common cold	Inhalation of vaporised: 1: proprietary aromatic mixture; 2: water.	Small improvement in pulmonary function.
Ferley 1989 ¹⁶	Prophylaxis of bronchitis	182 chronic bronchitis patients	Oral administration of: 1: proprietary aromatic liquid; 2: placebo.	A small tendency towards fewer relapses in the treatment group.
Rose 1993 ¹⁷	Smoking withdrawal symptoms	48 male smokers	Dummy cigarette with: 1: black pepper smell; 2: menthol smell; 3: nothing.	Pepper seems to reduce craving for cigarettes.
Dale 1994 ¹⁸	Perineal discomfort after childbirth	635 post-partum women	Bath-water with: 1: natural lavender oil; 2: synthetic lavender oil; 3: another synthetic compound with a smell.	No statistically significant differences between groups.
Morris 1995 ¹⁹	Anxiety	36 healthy volunteers	Inhalation of: 1: steam plus aroma; 2: steam.	Inhalation of geranium oil reduces reported anxiety.
Hay 1998 ¹⁴	Alopecia areata	86 patients	Daily massage of carrier oil into scalp plus: 1: mixture of essential oils; 2: no additives.	Topical treatment of alopecia areata with the oils used is more effective than placebo.

Table 2. Characteristics of six studies of aromatherapy for reduction of anxiety and increase in well-being.

Reference	Condition under investigation	Interventions (n)	Aromatherapy better than control?	Statistically significant?
Buckle 1993 ²⁰	Anxiety	Massage with almond oil plus: 1: English lavender oil (12); 2: spike lavender oil (12). (Two 20-minute treatments on consecutive days limited to feet, legs, hands, arms, and forehead.)	Yes	No
Stevensen 1994 ²¹	Anxiety	1: Foot massage with plain oil plus orange blossom oil (25); 2: foot massage with plain oil (25); 3: 20-minute chat (25); 4: routine care only (25). (One 20-minute treatment.)	Yes	Yes
Corner 1995 ²²	Well-being	1: Massage with oil plus aroma (17); 2: massage with oil (17); 3: nothing (18). (Eight weekly treatments lasting 30 minutes each.)	Yes	Yes
Dunn 1995 ²³	Anxiety, mood	1: Massage plus lavender oil (43); 2: massage alone (41); 3: undisturbed rest (38). (One to three treatments lasting 15–30 minutes each, limited to areas of the body 'available to the therapist'.)	Yes	Yes, for anxiety
Wilkinson 1995 ²⁴	Anxiety, tension, quality of life	Full body massage with: 1: bland oil plus chamomile oil (26); 2: bland oil alone (25). (Three treatments over a three-week period. Duration not specified.)	Yes	Yes, for some measurements but not all
Wilkinson 1999 ²⁵	Anxiety, symptom scores	Full body massage with: 1: bland oil plus chamomile oil (46); 2: bland oil alone (57). (Three treatments over three consecutive weeks. Duration not specified.)	Yes	Yes, for some measurements but not all

Table 3. Methodological characteristics of six aromatherapy massage studies.

Reference	Randomisation	Double-blind?	Description of dropouts and withdrawals	Findings	Jadad ⁷ score (out of 5)
Buckle 1993 ²⁰	Yes	Yes	Partial	Not significant	2
Stevensen 1994 ²¹	Yes	No	No	Positive	1
Corner 1995 ²²	Partial	No	No	Weakly positive	0
Dunn 1995 ²³	Yes	No	Partial	Weakly positive	1
Wilkinson 1995 ²⁴	Yes	No	No	Weakly positive	1
Wilkinson 1999 ²⁵	Yes	No	Yes	Weakly positive	2

the control intervention at reducing anxiety scores immediately after the treatment session. Five out of the six studies reported statistically significant findings. However, the reductions in symptom scores and anxiety were transient. Wilkinson made a typical comment: 'It would seem that massage and aromatherapy have an immediate effect in reducing anxiety, but that this may not be sustained over time'.²⁴

The studies were too heterogeneous and had no common denominator in terms of end-point evaluated for meta-analysis to be attempted. The highest Jadad score achieved in any of these trials was 2 (out of a possible 5).

Discussion

The findings of this systematic review must be viewed with caution because the original studies were all small and suffered from methodological flaws. Of course, trials of aromatherapy meet formidable methodological problems. For instance, the smell of the oils is difficult to mask and patient blinding can therefore be difficult. Yet none of these studies offers a clearly stated hypothesis at the outset, and the general tone of the reports is one of documenting, assessing or evaluating (rather than testing) the 'established' effects of aromatherapy by using questionnaires administered before and after an intervention. One author²⁰ did discuss hypothesis testing but only implied that her hypothesis was that her two treatments were the same, and improvement criteria were not defined. The choice of oil was generally stated without any referenced justification.

There was a prior assumption that the patients in these studies suffered from a degree of anxiety or distress that warranted intervention. Some of these patients were sedated, but there is no suggestion that they were candidates for conventional anxiolytic therapy (such as benzodiazepines). The patients were not seeking relief from a symptom and then being offered entry into a randomised controlled therapeutic trial of an established treatment for that symptom. They were not recruited into the studies because they were complaining of anxiety, but because the investigators believed that they were potential subjects with a level of anxiety or other symptoms that would respond satisfactorily to aromatherapy massage. This may of course be true, but the scientific rigour of this approach in effectiveness research is questionable.

Nevertheless, the results seem to support a belief that aromatherapy massage can be helpful for anxiety reduction for short periods. The data do not undermine a hypothesis that aromatherapy massage is pleasant, slightly anxiolytic, and often enjoyable for patients in stressful situations. However, the data do not support a hypothesis that there may be legitimate clinical indications for the prescription of aromatherapy massage in a health care setting; it seems to have no lasting effects, good or bad.

Five of these studies²¹⁻²⁵ compared massage with and without the addition of essential oils. They all reported a tendency for aromatherapy massage to be slightly more effective than 'placebo'. However, the differences were modest and could all have

been attributable to flaws in the study design. A double-blind design to compare aromatherapy treatments is probably impossible to achieve. Thus the question of whether we are dealing with specific or non-specific effects may never be resolved completely satisfactorily. And as there was no attempt to differentiate between the effects of any transdermal absorption of the oils and the effects of smell, it is not clear what the mechanisms of action might be. It is also unclear to what extent psychological factors may be important — pleasant memories triggered by particular smells may be enough to account for any differences observed.

Aromatherapy is pleasant and relatively safe compared with many other ways of spending an hour or so and £20 to £45. The undoubted popularity of aromatherapy and the enthusiasm of some health care professionals has led to its introduction in several health care settings, notably cancer care and midwifery. To date, the evidence that this approach may be cost-effective is insufficient to advocate the use of aromatherapy on a broader basis.

The studies reviewed here are all sufficiently flawed to prevent firm conclusions from being drawn. The effects under investigation are not easy to measure, and their size seems likely to be small. If the costs of aromatherapy, either to the patient or to a health care system, are brought into consideration, then the integration of aromatherapy begins to lose some of its initial appeal.

There is no published literature that provides a sound rationale for the use of aromatherapy massage as a medical intervention. In the absence of hard efficacy data for lasting and relevant health effects, it is probably best considered as a pleasant diversion for those who can afford it and are prepared to pay for it. It would be of considerable interest to know exactly how much aromatherapy is being practised in National Health Service establishments and how much it is costing the service. National guidance on the use of aromatherapy and other complementary therapies within the health service is needed to inform purchasing decisions and to offer a rationale that can be passed on to our patients.

Key points

- Aromatherapy is a popular complementary therapy.
- Its use is becoming more common within the health service.
- There are very few published trials on aromatherapy.
- Aromatherapy appears to have a transient effect in the reduction of anxiety but there is no evidence of a lasting benefit from its use.
- There is no central guidance available about the introduction and use of aromatherapy in routine healthcare.

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