

The use of aromatherapy to treat behavioural problems in dementia

Quynh-anh Nguyen* and Carol Paton

Oxleas NHS Foundation Trust, Dartford, Kent, UK

SUMMARY

Objective Behavioural and psychological symptoms in dementia (BPSD) are common and distressing to both patients and carers. The use of antipsychotics to treat BPSD is associated with a high burden of side-effects and alternative strategies are required. Aromatherapy is an option that has been recommended for use in dementia. We aimed to review the evidence supporting the use of aromatherapy in BPSD.

Methods We searched Medline, Cochrane and EMBASE for randomised controlled trials of aromatherapy in patients with dementia.

Results Eleven prospective randomised studies of aromatherapy in BPSD were identified. The aromatherapy oils tested, method of administration and outcome measures used varied widely across the studies. Most of the studies included very small numbers of patients and were designed in such a way that made interpretation of the findings difficult.

Conclusion Data supporting the efficacy of aromatherapy are scarce; available studies reported positive and negative consequences for both people with dementia and their carers. The side-effect profile of commonly used oils is virtually unexplored. Although a potentially useful treatment for BPSD, the expectations of clinicians and patients with respect to the efficacy and tolerability of conventional medicines should equally apply to aromatherapy. Copyright © 2007 John Wiley & Sons, Ltd.

KEY WORDS — aromatherapy; dementia; agitation; BPSD

BACKGROUND

Five percent of people over 65 years and 20% of those over 80 years have dementia; in the UK alone there are 700,000 sufferers (Holmes *et al.*, 2002). Between 18 and 65% will experience 'behavioural and psychological symptoms in dementia' (BPSD) at some point in the course of their illness; the most frequent and persistent manifestations are aggression (verbal and/or physical) and restlessness (Ballard *et al.*, 2002). BPSD is a major stressor for carers and may result in failure to cope and institutional care. Patients are often referred to specialist services for advice about the management of BPSD.

Problems with current treatment

Typical antipsychotics were traditionally used to manage symptoms of physical aggression, agitation and psychosis, but these drugs are associated with extra-pyramidal side-effects (EPS) (Lonergan *et al.*, 2001). Their use was empirical; the supporting evidence base is poor. Concerns about EPS and a much-publicised association between typical antipsychotics and increased cognitive decline (McShane *et al.*, 1997) led clinicians to look elsewhere for treatments.

When the atypical antipsychotics were introduced for the treatment of schizophrenia, their improved side-effect profile with respect to EPS and tardive dyskinesia (TD) meant that they quickly replaced the typicals for the management of patients with BPSD. The magnitude of the effect of olanzapine, risperidone and quetiapine however, is very modest. In the Clinical Antipsychotic Trial of Intervention Effectiveness in

*Correspondence to: Q.-A. Nguyen, Oxleas NHS Trust, Pinewood House, Pinewood Place, Dartford, Kent, DA2 7WG, UK.
E-mail: Quynh-Anh.Nguyen@oxleas.nhs.uk

patients with Alzheimer's disease (CATIE) study (Schneider *et al.*, 2006), all three failed to differentiate from placebo in terms of efficacy. For every nine patients treated with an active drug, one was rated as at least minimally improved on the CGI-I. Almost double this number, one in five patients, discontinued treatment because of intolerable side-effects.

In 2004, the Committee on Safety of Medicines (CSM, 2004) issued warnings of an association between risperidone and olanzapine, and increased risk of cerebrovascular events in elderly patients with dementia. This guidance came after a review of safety data revealed a three-fold increase (from 1.1% to 3.3%) in stroke risk for risperidone over placebo and a similar risk with olanzapine. Prescribing moved away from risperidone and olanzapine towards quetiapine and aripiprazole; drugs for which little efficacy or safety data existed. As trial data became available, it became increasingly clear that these drugs were associated with the same risks as those they replaced (Schneider *et al.*, 2005).

The use of antipsychotics to manage BPSD is clearly problematic. Safer alternative forms of treatment are required. One such treatment that is suggested in the NICE guideline for the treatment of dementia (NICE, 2006) is aromatherapy. Is this recommendation evidence-based or does it simply move practice yet again away from treatments associated with known harm towards those whose efficacy and potential for harm are unknown?

What is aromatherapy?

Aromatherapy is one of the most commonly used complementary therapies. Aromatherapists believe that illness is the result of imbalance in mental, emotional and physical processes and that aromatherapy restores this balance. There is no standard dose; oils are not purified as the many natural components are thought to be essential to guard against side-effects. Treatment is selected according to the individual characteristics of the patient; the same oil may be used for a range of unrelated conditions. Aromatherapy oils can be vaporised into the air or soaked into pillows but the most common mode of administration is by massage onto the skin, which is known to relieve pain and tension, increase circulation and aid relaxation. These properties may be beneficial in BPSD. Indeed, aromatherapy has shown benefits in people with dementia; promoting sleep (Wolfe and Herzberg, 1996), increasing motivational behaviour (MacMahon and Kermodé, 1998) and improving disturbed behaviour (Brooker *et al.*, 1997).

Mechanisms of action of aromatherapy oils

The exact mechanism of action of aromatherapy remains unknown, however, it is considered likely that the pleasant odour and the volatile constituents in the essential oils exert both psychological and physiological effects respectively, the latter as a result of systemic absorption through the skin and/or respiratory system (Ballard *et al.*, 2002).

Psychological

There is a possible psychological link between the fragrant odours of aromatherapy oils and the individual's perception of whether a particular odour is pleasant or unpleasant; past experience with an odour will introduce inter-individual variability and consequently influence treatment outcomes. The association of odours with response is due to links from the olfactory bulb to the amygdala, where emotional significance is attached to incoming stimuli (Holmes and Ballard, 2004). The relevance of this in people with dementia is unclear as many have at least partial anosmia (Holmes and Ballard, 2004).

Pharmacological

The active components of aromatherapy oils are thought to be the terpenes. There is evidence that suggests gamma-aminobutyric acid (GABA) augmentation may be the mode of action for linalool, the main terpenoid in lavender oil (Holmes and Ballard, 2004). Other terpenes, such as those found in Lemon Balm (or Melissa oil) have been found to displace nicotine from nicotinic acetylcholine receptors and scopolamine from muscarinic receptors. There is, however, considerable variation in cholinergic actions, which may be explained by the extracts varying in quality and composition (Holmes and Ballard, 2004).

The efficacy of conventional medicines is required to be demonstrated in double-blind placebo controlled studies. Only then can any benefits over placebo be quantified and common side-effects systematically evaluated. The use of blinded placebo arms in aromatherapy studies is clearly challenging, but possible.

METHOD

We searched Medline, Cochrane, EMBASE and the reference lists of all relevant papers up to March 2007. Only English language papers were retrieved. Due to the limited number of papers available, all randomised

studies of aromatherapy in patients with BPSD were included.

RESULTS

Eleven prospective randomised studies of aromatherapy in BPSD, that included data for 298 patients, were identified. The design, treatments used, and outcomes of these studies are shown in Table 1.

The aromatherapy oils tested, method of administration and outcome measures used varied widely across the studies. Only three individual RCTs were powered to detect even a large treatment effect; eight of the 11 published studies each had less than 25 participants. Nine studies used lavender oil and the most common method of administration was by touch or massage. There was no clear association between the oil used or method of administration/delivery and study outcome.

A variety of measures to assess changes in behaviour were used. This included validated quantitative scales for symptoms of agitation (Ballard *et al.*, 2002; Holmes *et al.*, 2002; Snow *et al.*, 2004; Lin *et al.*, 2007), other quantitative measures such as duration of sleep (Henry *et al.*, 1994) or time to administer medicines (Gray and Clair, 2002), to qualitative measures such as the opinions of family carers and staff obtained through focus groups and logbooks (Kilstoff and Chenoweth, 1998). There was no clear relationship between the type of measure used and study outcomes. Side-effects were not systematically evaluated.

The quality of data analysis was variable. For example, Burleigh and Armstrong (1997) and Mitchell (1993) did not use any statistical analysis despite collecting quantitative data and Snow *et al.* (2004) employed complex statistical techniques to analyse data for seven patients. It was often not clear what steps, if any, had been taken to blind raters to treatment allocation and the use of many different raters without addressing issues around inter-rater reliability was common. Due to methodological differences between studies, meta-analysis was not possible.

DISCUSSION

Methodological quality of studies

The methodological quality of published prospective aromatherapy studies is variable. The use of multiple outcome measures makes the data unsuitable for combining in a meta-analysis and the small sample size in the majority of studies, increases the risks of

both Type 1 error and publication bias. An example of the former is the study by Smallwood *et al.* (2001) with a sample size of 21 which reported that aromatherapy and massage was superior to aromatherapy and conversation, when in fact this only held true for one of four time-points measured; a likely chance finding.

The blinding of raters in aromatherapy studies is clearly challenging as the smell of the 'active treatment' is immediately apparent; this may falsely inflate effect sizes in treatment arms through a positive expectation effect. This problem is particularly apparent in the study by Henry *et al.* (1994), where, not only were the raters not blinded to treatment allocation but the study protocol was also altered while the trial was in progress; increasing the duration of the study due to the enthusiasm of the staff. Problems with maintaining the blind can, however, be overcome by the use of video recordings of behaviour as used by Smallwood *et al.* (2001) and Gray and Clair (2002).

Adherence to the principles of aromatherapy

One of the main principles of aromatherapy is individualisation of treatment where oils are selected according to the characteristics of each patient. Of the 11 RCTs identified, only one (Burleigh and Armstrong, 1997) adopted this principle. In this study challenging behaviours were reduced in five out of seven patients, and six patients required less assistance with their activities of daily living. Two patients had an increase in challenging behaviours. It is of note that other studies where either one or a blend of oils was used as blanket treatment also produced positive results (Henry *et al.*, 1994; Holmes *et al.*, 2002; Lin *et al.*, 2007). It is therefore unclear if individualised treatment offers any benefits over standardised treatment.

Types of aromatherapy oil used

The oils studied were selected based on their claimed properties. For example, the most commonly used oil in the studies was lavender, chosen because of its perceived calming and sedative properties. Lemon Balm (Ballard *et al.*, 2002) is claimed to be useful in excitability, restlessness, stress and insomnia, and marjoram (Bowles *et al.*, 2002) is thought to have sedative properties and be useful for nervous tension.

Lavender was used in the studies either as a lone treatment or blended with other essential oils. When used in a blend, lavender does not appear to produce

Table 1. Randomised Controlled Trials of Aromatherapy in BPSD

Study	Aromatherapy oil	Study design	Outcomes	Side effects	Comments
Ballard <i>et al.</i> , 2002	Lemon Balm <i>n</i> = 72 (treatment = 36, placebo = 36) Subjects had severe dementia with clinically significant agitation	Double blind placebo-controlled Aromatherapy oil/placebo combined with a base lotion, applied topically to face and both arms twice daily Activities were recorded every 5 min over a 6 h period, and assessed weekly for 4 weeks Symptoms of agitation were quantified using the Cohen-Mansfield Agitation Inventory (CMAI) scale	60% of active and 14% of placebo group experienced reduction (30%) of CMAI score Overall improvement was 35% in active, and 11% in placebo group Quality of life indices (characterised by decreased social withdrawal and increased engagement in constructive activities) also improved significantly in subjects receiving active treatment	One subject receiving active treatment died during study (unrelated to the study treatment) One patient receiving active treatment experienced 2 days of diarrhoea. No other side-effects reported	Concurrent medication was allowed without restriction during the course of the study Three (8%) of the people receiving placebo, and two (6%) of those receiving active were prescribed additional psychotropic medication due to increased agitation
Lin <i>et al.</i> , 2007	Lavender <i>n</i> = 70 (group A = 35, group B = 35) Subjects had dementia with clinically significant agitation	Placebo controlled; cross-over design Two groups: A: treatment oils for 3 weeks, then 2 weeks washout, then 3 weeks placebo B: placebo for 3 weeks, then 2 weeks washout, then 3 weeks treatment Essential Oil was applied to cotton and then placed in a specially designed aroma diffuser. Two aroma diffusers were placed either side of the subject's pillow during night-time sleep for at least 1 h Severity of agitated behaviours was assessed using CMAI and the Chinese version of Neuropsychiatric Inventory (CNPI) at weeks 0, 3, 5 and 8	Mean CMAI total scores decreased from 24.68 to 17.77, and mean CNAI scores decreased from 63.17 to 58.77 after receiving lavender treatment	No adverse effects were reported from either staff or patients during the treatment period	Concurrent medication was allowed without restriction during the course of the study but any change over the course of the study was monitored Raters were not blinded to the treatments offered

<p>Bowles <i>et al.</i>, 2002</p>	<p>Blend of oils including: lavender, sweet marjoram, patchouli and vetiver <i>n</i> = 56 Most subjects had severe dementia</p>	<p>Cross-over design: raters and data collectors were not blinded to the purpose of the trial Essential oils blended into a cream, and massaged onto the back, shoulders, neck and arms of each subject 5 times daily Two groups: Group A: Touch and oils in weeks 3–6 Touch and no oils in weeks 7–10 Group B: Touch and no oils in weeks 3–6 Touch and oils in weeks 7–10 MMSEs were carried out before and after essential oil treatment was started Nursing staff recorded the frequency and severity of occurrence of resistance to nursing care procedures and other dementia-related behaviours at the end of each shift</p>	<p>Completion of MMSE only possible for eight of the 56 participants; seven of these eight showed an improvement. Resistance to nursing care procedures: A: Most subjects receiving aromatherapy had increased frequency x severity scores for resistive behaviours compared to baseline to aromatherapy. There was no significant difference in scores between oil treatment and 'no oils' B: no significant difference in frequency x severity scores for resistive behaviours between any of the treatment periods Other dementia-related behaviours: There was a significant decrease in frequency x severity scores for other dementia-related behaviours in both groups, although group B showed a trend towards returning to baseline mean</p>	<p>Each subject was tested for possible allergy to the essential oil cream by skin test No mention of any side-effects experienced</p>	<p>Number of patients in each group not specified, and patients with incomplete data sets were not identified by group A range of nursing staff recorded data—no training in recording of behaviours. No inter-rater reliability rather than variability Complete datasets for only 36 out of 56 participants. Baseline scores for group A was calculated from week 2 data as there were errors in week 1 data. Baselines for group B was calculated from week 3–6. Measures for both groups were significantly different at baseline, therefore the two groups were considered separately throughout analysis</p>
<p>Smallwood <i>et al.</i>, 2001</p>	<p>Lavender <i>n</i> = 21 (Aromatherapy & Massage = 7, Plain Oil & Massage = 7, Conversation & Aromatherapy = 7) Subjects had severe dementia</p>	<p>Single blind Aromatherapy vs placebo oil massage vs aromatherapy disseminated by diffuser + conversation Behaviours were video recorded for 2 × 15 min during four periods of the day. Intervention was then given twice weekly, after which subjects behaviour was re-recorded</p>	<p>Aromatherapy and massage superior to aromatherapy and conversation at one time point only (3 pm–4 pm)</p>	<p>One subject (treatment allocation unknown) dropped out because of an unspecified deterioration in health. Side effects not systematically assessed.</p>	<p>Counted frequency of behaviours but not severity. Concurrent medication remained constant throughout the trial period. Unclear how long treatment phase went on for. Large number of statistical tests performed on a very small number of subjects.</p>

(Continued)

Table 1. (Continued)

Study	Aromatherapy oil	Study design	Outcomes	Side effects	Comments
Kilstoff <i>et al.</i> , 1998	Combination of oils including: Sweet almond, lavender, geranium and mandarin essential oils <i>n</i> = 16 Subjects had moderate to moderately severe symptoms of dementia	Within subject design Oils were applied (via a hand cream) to the fingers, back of hands and wrists of each subject using gentle massage Data was collected through pre and post treatment interviews, focus group discussions, client observation logbooks (quantified using a four-point Likert Scale) and the Revised Elderly Persons' Disability Scale (REPDS) Study took place over an 18-month period	Quantified results were not reported The findings indicate a positive strengthening of the relationship between the person with dementia and their family carer, and an improvement in feelings of health and well-being for both	Side-effects not systematically assessed	No evidence of statistical tests being applied. Unknown how often the subjects were treated No blinding of the subjects, carers or investigators took place
Holmes <i>et al.</i> , 2002	Lavender <i>n</i> = 15 Subjects had severe dementia	Placebo controlled with blinded rater Oil was diffused for 2 h between 4 pm and 6 pm, and in the second hour a trained independent rater assessed behaviour using the Pittsburgh Agitation Scale. Five treatments each of placebo and intervention were given over a 2-week period	60% showed modest improvement, 33% showed no improvement and 7% showed worsening of agitated behaviour during aromatherapy compared with placebo	Side-effects not systematically assessed	Concomitant drug therapy was allowed throughout trial—no changes were made to medication regimen
Gray <i>et al.</i> , 2002	Lavender Sweet Orange Tea Tree <i>n</i> = 13 Subjects had 'difficult to manage behaviours' as identified by nursing staff	Placebo controlled Aromatherapy oil soaked in cotton ball and attached to the lapels of each subject (Dissemination by cotton ball) Each subject exposed to four aroma interventions during medication administration Subjects were videotaped and rated according to how long	No statistically significant differences across all four aroma interventions	Side-effects not systematically assessed	Counted frequency of resistive behaviours but not severity Unclear if raters were blinded or not Video camera turned on as administration process started and turned off once medication was rejected or accepted, therefore did not take into account behaviours before and after medication administration Duration of study unclear

<p>it took to administer medication and frequency of resistive behaviours during each administration</p>	<p>Number randomised to each group not mentioned No statistical tests applied Unclear whether the raters/observers were trained Prescribed medication continued to be given where necessary Severity of dementia of the participants was not specified</p>	<p>Side-effects not systematically assessed</p>	<p>No decrease in restlessness No difference between treatments</p>	<p>Observations were between 11:00pm and 7:30am. Sleep time before/after this was not assessed Trial continued for an extra week than initially planned due to enthusiasm of staff at the facility Raters were not blinded to the design of the study Prescribed medication was not altered during the study period Not clear how they accounted for disturbed sleep, i.e. if patient woke up in between</p>
<p>Mitchell, 1993</p>	<p>Lemon balm & Lavender <i>n</i> = 12 Subjects were from a residential and day care unit</p>	<p>Placebo controlled with blinded rater using cross-over design Two groups: A: treatment oils for 2 weeks, then 1 week washout, then 2 weeks control B: control for 2 weeks, then 1 week washout, then 2 weeks treatment Lemon Balm applied to subjects skin (on the chin) and lavender applied in subjects immediate environment (in bath, wash basin or on the pillow) Weekly ratings (based on six criteria chosen to reflect functional disabilities and behavioural difficulties experienced by patients and carers)</p>	<p>Without lavender patient's slept an average 7.69h (range 0.5–9h). SD = 1.26h With lavender, average length of sleep was 8.14h (range 1–9h). SD = 1.1h</p>	<p>In the initial phase of the trial, ward staff experienced headache and nausea. Effects subsided after the amount of oils used increased. Night staff also complained of drowsiness Patient's side-effects were not systematically assessed</p>
<p>Henry <i>et al.</i>, 1994</p>	<p>Lavender <i>n</i> = 9 Subjects had severe dementia</p>	<p>Placebo controlled; crossover design Essential oil diffused in the air using electric aroma steam fan 7 week trial – 2 weeks baseline and intervention between weeks 3 (for the female dormitory) and 4 (for the male dormitory). In weeks 5 to 7 diffusion was in both dormitories. Subjects were observed for duration of sleep between 11.00 pm and 7.30 am</p>	<p>Without lavender patient's slept an average 7.69h (range 0.5–9h). SD = 1.26h With lavender, average length of sleep was 8.14h (range 1–9h). SD = 1.1h</p>	<p>Observations were between 11:00pm and 7:30am. Sleep time before/after this was not assessed Trial continued for an extra week than initially planned due to enthusiasm of staff at the facility Raters were not blinded to the design of the study Prescribed medication was not altered during the study period Not clear how they accounted for disturbed sleep, i.e. if patient woke up in between</p>

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Study	Aromatherapy oil	Study design	Outcomes	Side effects	Comments
Snow <i>et al.</i> , 2004	Lavender Thyme N = 7 Subjects had moderate dementia with significant agitation	Placebo controlled using within subject design All subjects received the same interventions in the following order ABCBA, where A = lavender, B = thyme, C = unscented grape seed oil Oil was placed on an absorbent sachet and pinned on patients shirt near the collarbone every 3 hours Measurements of frequency and severity of agitation were based on Cohen-Mansfield scores, dementia severity was assessed based on Severe Impairment Rating Scale and Mini-mental State examination. Olfactory functioning was tested through several approaches	Neither lavender or thyme produced reductions in agitation No treatment effects specific to lavender or non-specific smelling substances There was no difference between participants with more and less intact olfactory abilities	Not systematically assessed	Analysis was done using the split-middle data analytic approach for single case evaluations Small number of participants No mention of whether concomitant medication was used Unclear whether or not blinding of patient's or investigators took place
Burleigh <i>et al.</i> , 1997	Combination of oils including: lavender, Roman camomile, Rosemary and marjoram n = 7 Subjects had severe dementia	Within subject design Each subject received their own individualised oil treatment. The study was conducted over a 12 week period: Weeks 1–3: Essential oils in the bath/footbath five times per week and oils applied to the pillows at night Weeks 4–6: Three weeks oil free Weeks 7–9: Oils in the bath/footbath/basin and applied to pillows. Subjects were massaged with oils on their hands, neck, face and shoulders five times per week Weeks 10–12: Oils discontinued Behaviour was assessed using the Behaviour Assessment Scale of Later Life (BASOLL) at the end of weeks 3 and 12	Challenging behaviours were significantly reduced in five female subjects. The 2 male subjects had an increase in challenging behaviour Observations of self care abilities showed that six subjects needed less assistance with activities of daily living	Unspecified number of patients experienced allergic reactions despite skin tests being carried out beforehand One patient became drowsy	No statistical tests applied No mention of concomitant medication Data collection was done by care staff Unclear whether or not blinding of patient's or investigators took place

any more positive outcomes (Burleigh and Armstrong, 1997; Kilstoff and Chenoweth, 1998; Bowles *et al.*, 2002). In the largest study (Ballard *et al.*, 2002), Lemon Balm was superior to placebo; patients receiving active treatment showed an overall improvement in agitation of 35% compared with 11% in placebo treated patients. From the available studies, it is not clear how critical the choice of aromatherapy oil is.

Method of administration of oils

Aromatherapy oils can be utilised in a variety of ways, but the most common mode of administration is by application onto the skin. The role of massage is of relevance here; various theoretical models have been proposed to explain the effects massage and touch may have on people with dementia. These include physiological models involving oxytocin production resulting from stimulation by touch; neurological models involving activation patterns of memory and meanings, and; psychological models which view touch and massage as a means for retaining a sense of meaningful, reassuring communication despite verbalisation not being possible (Viggo Hansen *et al.*, 2006). It is therefore possible that touch and massage may aid cognitive abilities if deficits are at least partially attributable to lack of meaningful stimulation.

Given the fact that anosmia is common in people with dementia, it remains unclear whether the method of administration influences response. Only one study (Snow *et al.*, 2004, $n = 7$) tested olfactory functioning. Identification of different oils, differentiation of smells and participant reactions to particular smells was assessed. The study found that there were no differences between participants with more and less intact olfactory abilities. The question remains over the effectiveness of aromatherapy oils in anosmic patients. This may be reduced if the mechanism of action is through smell and the psychological response to this, but may be irrelevant if the effect is mediated through a direct pharmacological effect of oil after it has been absorbed through the skin or lungs.

Overall, there was no clear association between the method of administration/delivery of aromatherapy and study outcome.

Side-effects

The side-effect profiles of aromatherapy oils when used in controlling BPSD have been poorly assessed in systematic prospective studies. Lavender oil is

considered to be one of the mildest of known plant essential oils, yet there have been increasing concerns about the potential for irritant or allergenic skin reactions, and it has been found to be cytotoxic to human skin cells *in vitro* (Prashar *et al.*, 2004).

Given the potential toxicity of these oils, it is important to be vigilant for side-effects if aromatherapy is to be recommended as an adjunct or even an alternative to conventional medicines. Potentially serious but unusual side-effects are unlikely to be seen in small studies, even when side-effects are systematically assessed. The association between atypical antipsychotics and stroke is a case in point.

CONCLUSION

The history of the treatment of BPSD has followed a repeated pattern of an unevaluated treatment being incorporated into routine clinical practice, systematic-assessment identifying problems with this treatment, recommendations being made to avoid it only for another unevaluated treatment to take its place.

Current guidelines from the Royal College of Psychiatrists (2004) recommend that, before prescribing an antipsychotic for BPSD, clinicians must balance the risks and benefits of treatment in each individual's case, and all factors considered in making this decision should be documented.

Aromatherapy is a potentially useful treatment for BPSD but data supporting efficacy are scarce. Much remains to be understood about the choice of aromatherapy oil, the optimum method of administration, and the efficacy and side-effect profile. Given the limitations of the evidence base, clinicians should apply caution when recommending the use of aromatherapy in BPSD. Otherwise, it is possible that one treatment with a poor risk-benefit ratio will be replaced by another.

KEY POINTS

- The risk-benefit ratio for antipsychotic drugs in the treatment of BPSD is poor.
- Aromatherapy has been suggested as an alternative treatment.
- Evidence supporting efficacy is scarce and side-effects are largely unevaluated.
- When considering efficacy and tolerability, the same standards should be applied to aromatherapy as to conventional medicines.

CONFLICT OF INTEREST

None.

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