Healing scents: An overview of clinical aromatherapy for emotional distress

Andrea Butje
Elizabeth Repede
Mona Shattell, DePaul University

Available at: http://works.bepress.com/mona_shattell/17/
ABSTRACT

Individuals in emotional distress are often treated with psychotherapeutic agents, but other treatment options exist. One safe and effective adjunct for the prevention and treatment of emotional distress is aromatherapy. This article describes the physiological effects of scent, reviews the research on aromatherapy, presents practical information on the use of clinical aromatherapy for emotional distress, and suggests resources for additional training and education.
Individuals in emotional distress are often treated with psychotherapeutic agents, but other treatment options exist (Hogan & Shattell, 2007). One safe and effective adjunct for the prevention and treatment of emotional distress is aromatherapy (Field et al., 2005; Kuroda et al., 2005; Lemon, 2004)—the therapeutic use of inhaled essential oils. Aromatherapy is one of the fastest growing modalities in complementary and alternative medicine (CAM) in the United States (d’Angelo, 2002), but research on aromatherapy is relatively scant, and few nursing programs offer courses in aromatherapy. This article describes the physiological effects of scent, reviews the research on aromatherapy, presents practical information on the use of clinical aromatherapy for emotional distress, and suggests resources for additional training and education.

BACKGROUND
The medicinal use of aromatic oils extends back to ancient Egyptian and Chinese cultures (Lis-Balchin, 2006), but the term aromatherapy was coined by Rene-Maurice Gattefossé, a French chemist who experimented with essential oils for wound healing during World War I (d’Angelo, 2002). However, it was not until the 1980s that aromatherapy began to develop as a serious discipline (Robins, 1999), when work on mind-body healing and the emerging field of psychoneuroimmunology stimulated interest in the use of aromatherapy to alleviate emotional and mental distress (d’Angelo, 2002).

Aromatherapy is currently taught in French medical schools, prescribed by European physicians, reimbursed by many European health insurers, and used in Japanese factories to enhance worker productivity and prevent the spread of airborne infectious diseases (Robins, 1999). Aromatherapy is often not prescribed by traditional U.S. medical practitioners; however, its use has increased among CAM and nursing practitioners (d’Angelo, 2002).

PHYSIOLOGICAL EFFECTS OF SCENT
The sense of smell is crucial for survival in mammals. Human beings have more than 1,000 different genes that regulate the production of specialized receptors in the nose (Buck, 2004). Each receptor cell is specific and able to detect only a few molecule odors. The responses to an odor are neurologically transmitted to the olfactory bulb in the brain. There the information from several olfactory receptors is combined, forming a pattern that is perceived as a distinct odor in multiple areas in the cerebral cortex and the limbic system (Buck, 2004). Even though

Andrea Butje, LMT; Elizabeth Repede, MS, APRN-BC, FNP, CMH; and Mona M. Shattell, PhD, RN

Journal of Psychosocial Nursing • Vol. 46, No. 10, 2008
nasal receptors are quite specific, human beings are able to differentiate up to 10,000 odors through a complex sensory-somatic cascade that instantaneously activates the autonomic nervous system, memory, and emotion through the amygdala and other limbic structures (Buck, 2004).

Olfactory stimulation causes immediate physiological changes in blood pressure, muscle tension, pupil size, blink magnitude, skin temperature, skin blood flow, electrodermal activity, heart rate, brain wave patterns, and sleep/arousal states (Kuroda et al., 2005). Inhaled odors activate the release of neurotransmitters such as serotonin, endorphins, and norepinephrine in the hypothalamic pituitary axis and modulate neuroreceptors in the immune system, altering mood, reducing anxiety, and interrupting the stress response (d’Angelo, 2002).

The sense of smell is related to daily functions such as alertness, relaxation, attention, performance, and healing, and these may be mediated purposefully with different aromas (Field et al., 2005). Lavender, for example, has been associated with parasympathetic stimulation of the autonomic nervous system, leading to increased beta power and decreased contingent negative variation on electroencephalogram; these in turn are associated with decreased anxiety, improved mood, and increased sedation (Moss, Cook, Wenes, & Duckett, 2003). Peppermint and rosemary have been associated with increased arousal, improved cognition and memory, and enhanced performance on cognitive assessment tests (Moss et al., 2003). Peppermint and rosemary have been associated with increased arousal, improved cognition and memory, and enhanced performance on cognitive assessment tests (Moss et al., 2003). Peppermint and rosemary have been associated with increased arousal, improved cognition and memory, and enhanced performance on cognitive assessment tests (Moss et al., 2003).

**TABLE 1**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Essential Oils</th>
<th>Carrier</th>
<th>Application</th>
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<tbody>
<tr>
<td>Anxiety, fear, panic attacks</td>
<td>Sandalwood: 5 drops&lt;br&gt; Lavender: 5 drops&lt;br&gt; Bergamot: 2 drops</td>
<td>Inhaler tube^a^</td>
<td>Inhale several times daily when the feelings arise</td>
</tr>
<tr>
<td>Chronic worry, overthinking</td>
<td>Sandalwood 10 drops&lt;br&gt; Lavender: 5 drops&lt;br&gt; Lemon: 3 drops</td>
<td>Inhaler</td>
<td>Inhale several times daily</td>
</tr>
<tr>
<td>Depression</td>
<td>Clary sage: 6 drops&lt;br&gt; Geranium: 6 drops&lt;br&gt; Lemon: 4 drops</td>
<td>4 oz spray bottle with water</td>
<td>Spray face (eyes closed), chest, and back of neck in the morning and evening</td>
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<tr>
<td>Grief, shock, depression</td>
<td>Rose otto: 6 drops&lt;br&gt; Clary sage: 5 drops&lt;br&gt; Lemon: 4 drops</td>
<td>2 oz unscented lotion or jojoba oil</td>
<td>Apply to chest, stomach, and lower back several times daily</td>
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<tr>
<td>Insomnia</td>
<td>Bergamot: 2 drops&lt;br&gt; Lavender: 10 drops&lt;br&gt; Roman Chamomile: 5 drops</td>
<td>2 oz unscented lotion or jojoba oil</td>
<td>Apply freely to chest and neck prior to bed</td>
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<tr>
<td>Stress, tension</td>
<td>Jasmine: 4 drops&lt;br&gt; Bergamot: 2 drops&lt;br&gt; Clary sage: 5 drops</td>
<td>2 oz bath salts (sea salts)</td>
<td>Use 1 oz in one bath at night; place in tub when water is full</td>
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</table>

^a An inhaler tube is a small plastic tube that comes with a cotton part onto which the oils are dropped. The oil-soaked cotton is then inserted into the tube. The oils are inhaled through a small hole in the top of the tube. It also comes with a cover.

These findings on the physiological effects of scent in human beings suggest a link to emotions and memory, both modulators of physical and mental health. The effect is immediate and works beyond the level of conscious awareness (Moss et al., 2003). Thus, certain aromas may be used to affect psychoneuroimmune functions to promote healing.

**RESEARCH ON AROMATHERAPY**

Aromatherapy studies have focused primarily on the physiological and emotional arousal effects of essential oils, which can be inhaled, ingested, or applied topically. Much of the research has evaluated aromatherapy in conjunction with other modalities such as massage and reflexology (Buckle, 2007; Louis & Kow-
In a study of 73 healthy college students, different scents produced different mood states following administration of an anxiety-provoking task (Burnett, Solterbeck, & Strapp, 2004). Students receiving inhaled rosemary scored significantly higher on measures of tension-anxiety and confusion-bewilderment than did those in lavender and control groups. Both rosemary and lavender were significantly associated with lower fatigue-inertia ratings. The groups did not differ on physiological parameters. These results suggest differences in the effects of aromatic oils on mood, independent of physiologically measurable parameters.

Evaluating the effect of aromatherapy on crisis management, Fowler (2006) found that 77% of a convenience sample of 43 adolescents in a residential mental health facility asked for aromatherapy when they felt agitated. Fowler used a blend of 3% ylang ylang, sweet marjoram, and bergamot in jojoba oil, either inhaled or topically applied using a modified hand massage technique. During the 3-month study, the number of pharmacological injections for agitation decreased from 43 to 31, the number of oral as needed medications for anxiety or agitation decreased from 631 to 397, and the number of seclusion and restraint events decreased from 29 to 20.

In a convenience sample of 200 adults awaiting dental procedures in Austria, those who received diffused ambient odors of orange or lavender while waiting had significantly less anxiety and better mood than did those exposed to music or controls, even controlling for dental pain (Lehrner, Marwinski, Lehr, Johren, & Debecke, 2005). However, among a convenience sample of 118 patients awaiting endoscopy in a same-day surgery center in the United States, no significant difference in anxiety was found before and after lavender inhalation (Muzzarelli, Force, & Sebold, 2006). In this acute care setting, mean anxiety scores were extremely high both before and after the intervention, suggesting that aromatherapy may be better for moderate anxiety than for severe anxiety. Even so, the authors noted that anecdotal reports from patients who received aromatherapy suggested continued use of this modality (Muzzarelli et al., 2006).

Louis and Kowalski (2002) examined physiological and emotional parameters in a convenience sample of 17 terminally ill cancer patients following treatment with humidified lavender. While physiological and psychological scores improved in the predicted direction, the differences were not statistically significant, perhaps because of the small sample. Interestingly, the patients’ caregivers reported increases in their own relaxation and sense of well-being during the lavender aromatherapy treatments.

Itai et al. (2000) compared the effects of lavender, hiba oil, and odorless conditions on depression and anxiety in a group of 14 hemodialysis patients. Hiba oil significantly decreased mean scores on both anxiety and depression, and lavender significantly decreased mean anxiety scores. The findings were significant independent of personality traits, psychological status, and psychotherapeutic medication for anxiety and sleep.

Lemon (2004) studied the effects of nine essential oils on anxiety and depression in 32 acute care psychiatric patients. The study compared levels of depression and anxiety in a control group receiving massage with carrier oil and an experimental group receiving essential oils diluted in carrier oil during massage. The group receiving massage with essential oils showed significantly more improvement in scores on depression, anxiety, and severity of emotional symptoms than did those receiving massage alone.

Clearly, the research continues to show mixed findings on the efficacy of aromatherapy. This may be due, in part, to study limitations, such as small and convenience samples, one-time or short-term interventions, and methodological issues. However, even in those studies in which aromatherapy interventions failed to achieve statistically significant improvements, continued use and study of this modality were encouraged by the researchers and participants (Louis & Kowalski, 2002; Muzzarelli et al., 2006). Significant improvements were most common in studies in which the aromatherapy was tailored to the client by an experienced and holistically trained aromatherapist (Itai et al., 2000; Lemon, 2004). Buckle (2007) reported clinically significant findings even in the absence of statistical significance in many studies and noted that institutional aromatherapy programs have been implemented for relaxation, emotional well-being, and agitation.

**The accessibility, low cost, and low side effect profile make aromatherapy attractive for managing emotional distress.**

**USE OF CLINICAL AROMATHERAPY**

**Essential Oils to Relieve Emotional Distress**

Essential oils can be applied in several ways. They can be added to a carrier, such as a vegetable oil or unscented lotion, and then applied to the skin, or they can be added to bath salts, room sprays,
or diffusers for inhalation. However, the most effective application route for decreasing anxiety and slowing an overactive mind is inhalation. Using a small blank inhaler tube, essential oils are added to a piece of cotton that is inserted into the tube. The oil is then available to smell.

Oils used by aromatherapists to reduce anxiety, improve mood, and reduce stress include (d’Angelo, 2002; Lis-Balchin, 2006):

- Bergamot (*citrus bergamia*).
- Lemon (*citrus limon*).
- Clary sage (*salvia sclarea*).
- Lavender (*lavandula angustifolia*).
- Roman chamomile (*chamaemelum nobile*).
- Geranium (*pelargonium graveolens*).
- Rose otto (*rosa damascene*).
- Sandalwood (*santalum album*).
- Jasmine (*jasminum officinales*).

The effects and dosing of these nine essential oils are shown in Table 1. Data on each of these oils, including uses, side effects, precautions, chemical and botanical information, and potential interactions can be found in Lis-Balchin’s (2006) aromatherapy text.

### Buying and Storing Essential Oils

Adulterated oils or oils that are synthetic and called *fragrance* or *perfume* oils will not offer the same therapeutic effects as pure plant-extracted oils, and they may actually cause allergies, headaches, and chemical sensitivities. Gas chromatography (GC) and mass spectrometry (MS) are methods of separating compounds in essential oils into individual components and identifying major components in the oil. These processes are used to identify any adulteration of an essential oil, which means the oil has had chemicals or other substances added or removed. GC/MS testing is also used to identify the exact chemical profile of an oil and assess its potential therapeutic uses. The breakdown of chemical components in individual oils is important because some of the therapeutic benefits of oils are determined by their chemical makeup. Reports of chemical components should be available to the buyer on request.

Factors that cause oxidation of essential oils include exposure to oxygen, heat, and light. Storage affects the shelf life of essential oils. When stored properly, their oxidation rate slows significantly. The potential for allergic reactions and skin irritation from essential oils increases when essential oils oxidize. Ideally, oils should be stored in a dark, cool room. Bottles should be dark-colored glass. Shelf life can range from 1 to 8 years, depending on the chemical makeup of the oil and the storage conditions. Handling of oils and possible problems in storage conditions are reduced when there is only one company between distiller and customer, so it is best to purchase essential oils from a company that buys directly from a distiller.

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<th>Organization</th>
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*Table 2: Aromatherapy and Essential Oils Resources*
Precautions

Like all medicinal products, essential oils can be toxic or incompatible with other compounds or treatments, or they can produce side effects or cause allergic reactions (Lis-Balchin, 2006). When recommending a therapeutic regimen of essential oils for a client, the appropriate dosing, the route of administration, and the client’s size, health status, and individual preferences should be taken into account (d’Angelo, 2002). Side effects can include exacerbation of asthma or respiratory disorders due to allergen load, and with topical application, contact dermatitis or irritation. Also, particular odors may be unpleasant or irritating to clients.

Some oils, such as bergamot or lemon, may cause photosensitivity. This can be avoided by limiting sun and ultraviolet light exposure for 12 hours after use (d’Angelo, 2002). Just as with allopathic medications, certain oils are contraindicated in certain health conditions, including epilepsy (lavender, rosemary), hypertension (rosemary), asthma (rosemary), and pregnancy (lemon balm). Practitioners must practice in an ethical and safe manner based on professional aromatherapy and nursing guidelines (Buckle, 2003; d’Angelo, 2002).

AROMATHERAPY EDUCATION

Safe use of essential oils requires an understanding of botany, biochemistry, physiology, and essential oil therapeutics, including dosing, administration, toxicity, interactions, and side effects (Buckle, 2003). Essential oils can be used by nurses, but advanced training should be obtained before clinical use. Continuing education programs in aromatherapy can be found through the American Holistic Nurses Association (AHNA) and the National Association for Holistic Aromatherapy (NAHA). A list of these programs is provided in Table 2. Courses to obtain certification in aromatherapy are also available.

The NAHA (2005) has issued national educational standards for aromatherapy certification. To be certified through the NAHA, an aromatherapist must have 200 hours of training from an approved school, which includes courses in the chemistry, botany, and anatomy and physiology of aromatherapy; the use of essential oils; extraction methods; oil quality and absorption; carrier oils; blending techniques; methods of application; clinical therapeutics; and ethics. Aromatherapy texts (Buckle, 2003; Lis-Balchin, 2006) and a variety of Internet resources available from AHNA and NAHA may also be helpful to nurses interested in using aromatherapy.

CONCLUSION

Clinical aromatherapy shows promise as a safe alternative or complement to traditional health care interventions to relieve stress, reduce anxiety, and improve mood; however, more research is needed. Suggestions for future research include intervention studies that isolate the effects of particular oils and combinations of oils on mood, memory, and sense of well-being; replication studies using rigorous study designs and appropriate sample sizes; studies on the use of aromatherapy in various populations (i.e., children, older adults, ethnic or cultural groups); and studies that combine aromatherapy with guided imagery, meditation, or hypnosis to augment the management of emotional distress.

The accessibility, low cost, and low side effect profile make aromatherapy attractive for managing emotional distress. In addition, its wide adaptability and ease of use make it easy to tailor to diverse inpatient and outpatient settings. Effective use requires adequate knowledge and skills and the ability to safely tailor interventions to the unique needs of each client. The art of nursing requires a balanced and integrative approach to healing. Aromatherapy is a healing practice that blends the “essence” of science with the holism inherent in the art of nursing.

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Ms. Butje is Clinical Aromatherapist; Aromatherapy Educator; Essential Oil Importer; Owner, Aromahead Institute (NAHA-approved Aromatherapy Institute); and Owner, Aromatics International (International Internet store for essential oils), Sarasota, Florida. Ms. Repede is a doctoral student, and Dr. Shattell is Assistant Professor, University of North Carolina at Greensboro, School of Nursing, Greensboro, North Carolina.

The authors disclose that they have no significant financial interests in any product or class of products discussed directly or indirectly in this activity, including research support.

Address correspondence to Mona M. Shattell, PhD, RN, Assistant Professor, University of North Carolina at Greensboro, School of Nursing, PO Box 26170, Moore Building 320, Greensboro, NC 27402; e-mail: mona.shattell@gmail.com.