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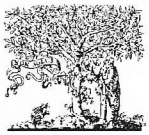

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Aromatherapy and massage for antenatal anxiety: Its effect on the fetus

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Summary Antenatal anxiety has been linked to maternal hypothalamic–pituitary–adrenal axis changes which can affect fetal development and may have lasting effects on the child's psychological development. Treatments for anxiety have hitherto focused on psychotherapy techniques or antidepressant drugs but these do not always effect long term improvement. Aromatherapy and massage have successfully been used to produce significantly greater improvement in reduction of anxiety. Midwives may highlight anxiety in some of the mothers in their care and can incorporate the holistic approach of aromatherapy and massage into their practice. However, further research is required to establish the efficacy and cost-effectiveness of aromatherapy and massage in the antenatal period.

Introduction

A degree of anxiety during pregnancy is normal for most women, particularly in the first trimester,[1] as they adjust to its physical and pyschosocial impact. As pregnancy progresses altered body image can increase anxiety,[2] and external factors, such as stress at work, financial, social or relationship difficulties may also contribute.[3–6]

Anxiety is a complex phenomenon which may increase between 18 and 32 weeks gestation, a period which coincides with various antenatal screening tests,[7] and can easily be exacerbated by an over-zealously supportive professional structure and excessive medicalisation.[8–10] Antenatal testing for fetal abnormalities can increase anxiety in pregnancy and if women are confronted with a positive malformation scan the levels of anxiety are unchanged.[11] Studies have confirmed that women's fears of pregnancy, childbirth, previous loss of a baby, lack of support, financial and unrealistic work expectations manifest as symptoms of anxiety.[5,12,13] It is important that midwives allow women time to express their anxieties, as pressures of a busy clinic can create constraints and essential information missed.[14–16]

Identifying, a reliable screening anxiety scale could help the midwife to clarify the nature and relationship of the anxiety, but many screening tools are not suitable for pregnancy.[17] Scales to measure antenatal anxiety have been validated,

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but in order to obtain an adequate evaluation of anxiety; it may be necessary to measure the influences of psychological and body changes at different stages of pregnancy.[18–22] It is important that these anxiety scales are interpreted correctly, as professionals may see that the benefits of antidepressants outweigh the risks in pregnancy and could encourage their use in late pregnancy.[23] Although the risks of teratogenesis is low, there is no conclusive evidence on the safety of antidepressants in late pregnancy.[24,25]

Parent education classes provide opportunities for women to express their fears and worries and these opportunities can go some way towards alleviating the severity of anxiety,[26–28] although classes may have little effect on those more severely affected.[4] Treatments for anxiety principally focus on psychotherapy techniques, but these do not always result in long term improvement and have resourcing implications, as they are facilitated by trained professionals.[29]

Bio-psycho-social effects of anxiety on the fetus

Anxiety is a complex phenomenon but the current clinical definition is as a psychosocial condition in which worry, fear, and apprehension are combined with physical symptoms (Box 1,[30]). A mothers' response to anxiety is determined by the hypothalamus, which acts on the autonomic nervous system and the endocrine system resulting in physiological changes.[31] Prolonged anxiety (more than three weeks and up to six months' duration) without intervention may result in a maladaptive response to pregnancy.[32]

Box 1 Symptoms of anxiety.

- Palpitations, accelerated heart rate
- Trembling or shaking
- Difficulty in breathing
- Chest pain or discomfort
- Feeling dizzy, faint, light headed
- Fear of losing control, passing out
- Sweating
- Dry mouth
- Feeling of choking
- Nausea or abdominal discomfort
- Feeling that objects are unreal
- Fear of dying
- Numbness or tingling sensations
- Hot flushes or cold chills[30]

Recent studies have attempted to disentangle the different environmental and genetic factors, and to link specific exposures to specific effects.[33–35] Antenatal anxiety has been linked with changes to the maternal hypothalamus–pituitary–adrenal axis (HPA). During pregnancy the corticotrophin releasing hormone (CRH) increases substantially before delivery, with placental CRH relating to the duration of pregnancy.[36,37] Antenatal anxiety increases CRH and has been associated with premature labour.[38,39] Mancuso et al.[40] demonstrated that women, who delivered prematurely had significantly higher levels of CRH compared with women who delivered at term and may predispose the mother to spontaneous abortion.[41] Gitau et al.[42] found a potential link in pregnant women between clinically-indicated fetal blood sampling and acute fetal distress, suggesting that the increase in CRH derives from the placenta rather than the fetus in response to stress.

It is increasingly apparent that antenatal anxiety can have lasting effects on the psychological development of the child.[43] The changes in the functioning of the HPA axis are linked to antenatal anxiety and the subsequent disturbances in offspring account partly for cognitive and neurological development.[44] In a cohort study of 10,000 pregnant women, O'Connor et al.[45] identified a link between maternal anxiety in the third trimester and behavioural/emotional problems in the resulting children at four years. The researchers found that self-reported antenatal anxiety at 32 weeks predicted severe behavioural/emotional problems in both sexes, but anxiety in late gestation appears to be significantly associated with hyperactivity/inattention in boys.[45] Mixed handedness, dyslexia and autism may also result.[46]

It is interesting to note that anxiety occurring at different gestations produces variable fetal effects.[47] For example, severe life events in the first trimester has been shown to result in a 50% increase in neural tube abnormalities[48] and other anomalies, such as cleft palate.[49] In contrast, anxiety in late pregnancy, when neural connections are being made in the brain, produces behavioural/emotional outcomes.[46]

Massage and aromatherapy for anxiety in pregnancy

It is known that massage improves self-image during pregnancy, and may aid acceptance of

physical changes in the mother.[50] The well-researched relaxation effects also extend to the fetus.[51,52] Massage stimulates production of endorphins and decreases blood pressure, through its effect on the parasympathetic nervous system,[53,54] which may reduce the severity and prognosis of pregnancy-induced hypertension[55,56] and potential maternal and fetal morbidity and mortality. With these claims of transiently reducing blood pressure midwives should be mindful of supine hypotension and the woman's position when performing massage.[57] Massage has been found to reduce anxiety in labour[58] and may be more effective than breath coaching,[59] although it is difficult to extrapolate from these studies whether the reduction in anxiety arose from the massage or the use of essential oils.[60,61]

Massage facilitates absorption of essential oils via the skin,[62] and aromatherapy is one of the primary complementary therapies used for the treatment of anxiety.[63] Although essential oils are known to cross the placental barrier and can be transferred to the infant in breast milk,[64,65] aromatherapy is largely non-interventionist when compared to the side-effects and long-term complications of anxiolytic drugs. As the pregnant woman's body mass increases, it would be prudent of the therapist to reduce the area massaged (e.g. back or feet and hands), as the penetration of the essential oils will increase, due to their affinity with the cellular membranes.[66]

Essential oils are partly absorbed through the process of olfaction by stimulating areas associated with smell in the limbic system of the brain and evidence that odours effect emotions and cognition have received empirical support,[67] although odour memories can sometimes heighten women's anxieties and fears.[68,69] It may be significant that olfaction is the first of the senses to develop in utero: many connections from the olfactory nerve to the higher brain centres are made before the baby is delivered.[70–72] However, the hyperosmic state of many women during pregnancy, caused by vascular congestion as a result of increased circulating oestrogen, suggests judicious use of essential oils.[73] Studies have demonstrated the choice of area to treat a woman could increase her anxieties, especially in the hospital environment.[74,75]

Certain essential oils, such as lavender and rosemary, have been investigated repeatedly for their effects on anxiety in general,[51,74,76,77] and specific chemical constituents, for example, linalool and linalyl acetate, have been identified as having anxiolytic actions.[78–80]

There have been very few studies using essential oils specifically in pregnancy, therefore it is necessary to apply the findings from animal studies and from human studies in which aromatherapy has been used both for healthy volunteers and for ill patients. However, animal studies should be viewed with caution, as short-term, low-dose applications, given for therapeutic reasons to pregnant women, are noticeably different from tests performed on rats or mice given excessively large doses.[81,82] In clinical studies, cancer patients found that their anxiety levels were reduced when given massage with citrus sinensis oil[74] and it is interesting to note a gender-related issue, with citrus oils appearing to have a greater effect on women than on men.[83–85]

There are few empirical studies that demonstrate the efficacy and safety of essential oils with humans, but there are studies relating to anxiety in labour, palliative care, dementia, but not pregnancy.[74,75,86–95,108] The complexity of anxiety as a variable is not suitable to be analysed statistically, as fall in blood pressure does not necessarily imply fall in anxiety levels.[96] Researchers have suggested that patients who received aromatherapy reported significantly greater improvement in their level of anxiety for short periods, and a better quality of life.[77] The largest maternity-specific study was conducted by Burns et al.[97] who offered aromatherapy to 8058 women in labour using ten essential oils, with no detrimental effects on mother and baby. The effect of aromatherapy reduced fear and anxiety by 62%, as well as relieving physical symptoms such as pain and nausea; lavender and frankincense oils being the most frequently used.

The use of aromatherapy can be perceived as a non-interventional therapy in contrast to anoxiolytic drugs and there is insufficient evidence to support their safety in pregnancy, due to the possibility of teratogenic and mutagenic effects on the fetus.[64,65] On investigation benzodiazepines and cannabis have been found in breast milk, and been associated with sedation and hypothermia in babies.[32,98–100] Likewise, Menella et al.[101] established when pregnant women ingested garlic it altered the odour of the amniotic fluid, which suggests that essential oils cross the placenta. A working knowledge of essential oil toxicology is required and crossing the placenta does not necessarily mean that there is a risk of toxicity to the fetus, as each component of the essential oil depends on the toxicity and the plasma concentrations of the compound.[102,103] Mothers see aromatherapy, which does not have the stigma associated with psychiatric drugs, as a treatment

with nice smelly oils and having another option of aromatherapy, instead of prescription drugs could empower women.[104]

Anxiety can magnify minor discomforts of early pregnancy, but many of the essential oils are contraindicated during early fetal formation due to there abortifacient and emmenagogic effects and the challenge for midwives is to apply the same principles of prescribing essential oils, as they do to conventional pharmaceuticals.[102] For example, high doses of citral administered orally to rats resulted in intrauterine growth retardation and bone abnormalities.[105] In view of the higher than normal circulating levels of melanocytic hormone, women's skin sensitivities are increased in pregnancy and the phototoxic effects of citrus oils may be potentiated, therefore patch testing would be advised.[106,107]

Conclusion

Although pregnancy is a normal physiological life event, high levels of anxiety increase physiopathological complications and adversely affect maternal and fetal outcome.

Midwives could be pivotal in identifying women who are anxious and reduce anxiety by introducing aromatherapy to a maternity unit. The evidence indicates that the pharmacological activity of essential oils facilitates optimal health in anxious pregnant women thus benefiting the fetus. Researchers have intimated that essential oil components are able to cross the placenta and reach the fetus, but this does not mean there is a risk of toxicity, as studies have demonstrated the safe use of essential oils has no detrimental effects on mother and baby.

The greatest challenge that lies before us involves adapting the scientific method, so that it can accurately test and explore the complexity of human variables, and midwives need to draw on both the data from science and the wisdom from their human experience. The current concept of benefit is often limited to clinical benefits, but considerations to social and lifestyle benefits needs to occur and these medical decisions should include costs effectiveness to decrease adverse neonatal outcomes. Audit and evaluation of the aromatherapy is important to identify costs for future research and to evaluate the effectiveness and safety. Patients perceive it as reducing anxiety levels, but what is not known is for how long the reduction in the level of anxiety is maintained. We need to integrate aromatherapy more fully into midwifery practice, as it would be a great disservice for the future of mother and baby by limiting and narrowing our view.

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