



Auricular acupressure relieves anxiety and fatigue, and reduces cortisol levels in post-caesarean section women: A single-blind, randomised controlled study



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ABSTRACT

Background: Anxiety and fatigue adversely affect women's postpartum recovery, but few effective non-pharmacological interventions are known to relieve these two common and unpleasant symptoms.

Objectives: To examine the efficacy of an auricular acupressure intervention provided during early postpartum in reducing anxiety, fatigue levels, cortisol levels, blood pressure, and heart rate.

Design: A single-blind, randomised controlled trial.

Setting: A 40-bed postpartum unit.

Participants: Women who underwent caesarean section were randomly allocated to two groups: intervention (auricular pressure, $n = 40$), and control (usual care, $n = 40$).

Methods: The intervention group received auricular acupressure on the shenmen acupoint twice a day (9 AM and 5 PM), and the control group received usual postpartum care. Serum cortisol levels were assessed by immunochemiluminescence, with blood pressure and heart rate assessed by electric sphygmomanometer. Anxiety and fatigue symptoms were assessed using the State Anxiety subscale of the State-Trait Anxiety Inventory and the Fatigue Continuum Form, respectively.

Results: Of the 76 women who completed the study, those who received auricular acupressure had significantly lower mean cortisol levels (mean difference = $4 \mu\text{g/dl}$, $p < 0.05$), heart rate (mean difference = 9.2 beats/min , $p < 0.001$), anxiety symptoms (mean difference = 3.8 , $p < 0.01$), and fatigue symptoms (mean difference = 7.1 , $p < 0.01$) than women in the control group at 5 days postpartum.

Conclusions: Auricular acupressure is an effective non-pharmacological method for reducing cortisol levels, heart rate, anxiety, and fatigue in early postpartum after caesarean section.

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What is already known about the topic

- Anxiety and fatigue adversely affect women's postpartum recovery, but few effective non-pharmacological interventions are known to relieve these two common and unpleasant symptoms.
- Auricular acupressure tends to be less invasive and much easier to use than acupuncture, particularly for mothers who need to take care of a newborn in the postpartum period.
- Auricular acupressure has been suggested for anxiety and pain management, with inconsistent evidence for their effectiveness.

What this paper adds

- In this randomised controlled trial, we found that early postpartum mothers who received auricular acupressure had significantly lower mean cortisol levels, heart rate, anxiety symptoms, and fatigue symptoms than women in the control group.
- Auricular acupressure did not reduce blood pressure in early postpartum for women after caesarean section.

1. Introduction

Anxiety and fatigue are the most common distressing symptoms that adversely impact mothers' recovery (Ebnesahidi and Mohseni, 2008; Groër et al., 2005; Lai et al., 2015; Rychnovsky, 2007) and breastfeeding (Ebnesahidi and Mohseni, 2008; Groër et al., 2005; Lai et al., 2015; Rychnovsky, 2007) in the early postpartum period after both vaginal delivery and caesarean section (Ebnesahidi and Mohseni, 2008; Lai et al., 2015). Compared to women after vaginal delivery, post-caesarean section mothers often experience more anxiety symptoms (Andersen et al., 2012), higher levels of depressive symptoms (Yang et al., 2011), more pain discomfort (Declercq et al., 2008), and are less likely to breastfeed in the first 3 months postpartum (Wiklund et al., 2007). Given the worldwide increase in the rate of caesarean section (Souza et al., 2010) and its great impact on maternal and neonatal health, it is clinically important to identify effective measures for relieving anxiety symptoms of post-caesarean section women.

Relieving these symptoms with pharmacological methods may affect postpartum recovery and breastfeeding (Ross et al., 2006). An alternative, non-pharmacological approach to relieving postpartum anxiety may be auricular acupressure, a noninvasive method that involves applying pressure to the auricle (outer ear). Indeed, auricular acupressure has been shown to reduce anxiety during ambulance transport before emergency hip surgery (Barker et al., 2006), improve sleep quality (Barker et al., 2006; Lo et al., 2013), and severity of hot flashes (Zhou et al., 2011). However, no studies could be found on the effectiveness of auricular acupressure on the postpartum anxiety and fatigue levels of post-caesarean section mothers.

For mothers undergoing caesarean section, early postpartum is a stressful and painful period characterised by elevated anxiety and fatigue because of the surgical

process and surgical wound pain (Kuguoglu et al., 2012; Paul et al., 2013; Smith and Kroeger, 2010). Growing evidence suggests that postpartum women's anxiety, fatigue and depression are closely related (Kuo et al., 2014; Paul et al., 2013; Skouteris et al., 2009) and linked to adverse maternal physiological and psychological adjustment (Forster et al., 2008). Anxiety symptoms often activate the stress response, i.e. increased sympathetic nervous system activity (Spielberger, 2010) and decreased parasympathetic activity, which are linked to a variety of cardiovascular responses, including increased blood pressure and heart rate (Friedman, 2007). These changes may contribute to postpartum energy consumption as they have been suggested lead to more fatigue symptoms during labour (Tzeng et al., 2008). In addition, the co-occurrence of anxiety and fatigue may be due to dysregulation of the hypothalamic–pituitary–adrenal axis, notably by elevated cortisol levels (Brummelte and Galea, 2010). However, most previous studies on maternal anxiety measured anxiety symptoms by self-report scales (Britton, 2008; Grant et al., 2008) and few studies measured biological stress responses, e.g. cortisol levels, blood pressure, and heart rate, which are activated by anxiety.

Increasing numbers of women have been adopting alternative therapies during their pregnancies because they are perceived as having fewer side effects than standard therapies and medications (Strouss et al., 2014). However, mind-body interventions, e.g. yoga, biofeedback, hypnotherapy, imagery, meditation, and prayer, in a review of eight randomised controlled studies were not found to be very effective in managing perinatal anxiety (Marc et al., 2011). In addition, alternative medicine practices, such as acupuncture and auricular acupressure, have been suggested for anxiety and pain management, with inconsistent evidence for their effectiveness (Karst et al., 2007; Pilkington, 2010; Yeh et al., 2014).

Auricular acupressure tends to be less invasive and much easier to use than acupuncture, particularly for mothers who need to take care of a newborn in the postpartum period. Auricular acupressure involves applying pressure to an acupoint in the auricle (outer ear) so that a person's energy or *qi* can link to specific organs or body systems by channels or meridians (Oleson, 2013). The acupoint of the outer ear is called the shenmen acupoint, meaning a heavenly or spirit gate in Chinese. Applying pressure to the shenmen acupoint has been shown to have a calming effect, promoting relaxation and sedation, as well as regulating and stabilising emotions (Frank and Soliman, 1999, 2006). For example, shenmen auricular acupuncture or acupressure decreased preoperative anxiety in patients undergoing elective ambulatory surgery (Wang et al., 2001), reduced the need for sedatives and anti-anxiety medications in postmenopausal women with anxiety (Kao et al., 2012), and alleviated anxiety in elderly patients before hip-fracture surgery (Barker et al., 2006).

Although auricular acupressure has been shown to manage anxiety in many clinical situations, its effectiveness in managing early postpartum anxiety and fatigue in post-caesarean section women remains to be studied. Since anxiety and fatigue symptoms are strongly correlated in

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