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Randomised controlled trial of the effectiveness of using back massage to improve sleep quality among Taiwanese insomnia postpartum women

Yi-Li Ko, RN, EdD (Associate Professor)^{a,*}, Hsiu-Jung Lee, RN, MSN (Vice Head Nurse)^b

^a Department of Nursing, College of Medicine, Catholic Fu-Jen University, Taiwan

^b Department of Nursing, Taipei City Hospital-Heping Fuyou Branch, Taiwan

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ABSTRACT

Objective: to examine the effectiveness of using back massage to improve sleep quality in postpartum women.

Design and setting: randomised controlled trial, conducted at a postpartum centre in Northern Taiwan. **Participants:** sixty postpartum women reporting poor quality of sleep were recruited from February 2012 to May 2012.

Interventions: participants were assigned randomly to either an intervention or a control group. Participants in both groups received the same care except for back massage therapy. The intervention group received a single 20-minutes back massage session at the same time each evening for 5 consecutive days. Sessions were administered by a certified massage therapist.

Measures and finding: the outcome measure was the Pittsburgh Sleep Quality Index (PSQI), which was administered pre- and post-test. Using a generalised estimation equation to control several confounding variables, the changes in mean PSQI were significantly lower in the intervention group ($B = -3.97$, standard error = 0.43, $p < 0.001$) than in the control group.

Conclusions: an intervention involving back massage in the postnatal period significantly improved the quality of sleep.

Implications for practice: midwives should evaluate maternal sleep quality and design early intervention programs to improve the quality of sleep, to increase maternal health. Midwives interested in complementary therapies should be encouraged to obtain training in back massage and to apply it in postpartum care.

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Introduction

During the postpartum period, the majority of women experience alterations in the quality of sleep (QOS). Changes in sleeping patterns and sleep duration are commonly reported, as are sleep complaints associated with wound discomfort, uterine contraction pain, or breast-feeding pain. The physiological and hormonal changes that postpartum women experience place them at risk of decreased maternal performance (Lancel et al., 2003; Dennis and Ross, 2005; Chien et al., 2009; Hunter et al., 2009).

Although Taiwan is a Westernised country, traditional Chinese cultural rituals still deeply influence postnatal practice. They are referred to as 'doing the month' (zuo yeuzi, sitting in for the first month of the postnatal period) to rebuild a normal, balanced state

* Correspondence to: Nursing Department, Jhongjheng Road, Sinjhuang Branch, New Taipei City 242, Taiwan.

E-mail address: 071462@fju.edu.tw (Y.-L. Ko).

(Cheung, 1997; Wang et al., 2008). Postnatal women are asked to stay indoors, rest for one full month, and follow many restrictive practices that are believed to aid recovery and facilitate future health (Chien et al., 2006). The postpartum period is one of fragmented sleep for new mothers, who often sacrifice their sleep to adapt to the new routines and responsibilities of breast feeding the newborn (Goyal et al., 2009). Hung et al. (1993) and Hung (2006) indicated that postpartum mothers identify insufficient sleep as the primary stressor during the early postpartum period. Huang (2002) classified most (95.4%) postpartum women in her study as poor sleepers. The mothers in that study reported that the degree of perceived sleep debt during the early postpartum period was approximately 3 hours each night.

The history of back massage spans more than 1000 years to Ancient China and India (Blunt, 2006). The use of this technique has grown in popularity recently, and many institutes currently provide massage services and products in Taiwan. Massage is a safe, non-intrusive, and complementary therapy that involves the

application of direct skin contact to specific acupressure points. The benefits of massage include increasing blood circulation, tension relief, and improved function of the autonomic nerve system, and relief of lumbar pain and insomnia (Harris and Richards, 2010).

Previous literature published on the relationship between back massage and QOS is scant. However, Huang's study has reported clinical effectiveness of relieving fatigue and anxiety of cancer patients (Huang et al., 2001).

In summary, back massage is an easy, non-pharmacological therapy. Although the effectiveness of back massage has been studied in medical populations, no studies have previously targeted postpartum women with poor QOS. Therefore, the purpose of this study was to evaluate the efficacy of back massage in improving QOS in poor sleepers during the doing the month postpartum period.

Methods

Study design

This study was a randomised controlled trial that assigned subjects randomly into intervention (back massage) and control groups. The researcher produced a computer-generated un-repeated randomisation list using Microsoft Excel 2007 so that participants were distributed evenly to the groups. Participants in the intervention group received 20 minutes of back massage once a day for five consecutive days from 5:00 PM to 9:00 PM. Sessions were administered by a certified massage therapist. Participants in the control group received only routine care with no back massage. These two groups received the same care, except for back massage therapy.

Power Analysis and Sample Size for Windows (NCSS, Kaysville, Utah, USA; PASS version 6.0) software was used to estimate the required sample size. A pilot study of 16 subjects revealed that the mean and standard deviation (SD) of the Pittsburgh sleep quality index (PSQI) scores for the experimental and control groups were 4.0 (SD 1.3) and 6.13 (SD 2.1), respectively. Given a true difference in PSQI score of 2.13 between the experimental and control groups, and a statistical power of 0.8 to reject a null effect at the 0.05 significance level, results show that 24 subjects would be needed in each group. Considering a possible attrition rate of 25%, the authors set the target sample size at 60.

Sample and setting

All participants were selected from one postpartum centres (zuo yuezi centres or doing the month centres) in Northern Taiwan. Because of the increasing size of the nuclear family in Taiwan, zuo yuezi centres have offered a commercial-style service, instead of the traditional way of 'doing the month' at home, since 1982 (Heh, 1999). These centres provide services for postpartum women to ensure that they can follow the Chinese traditional custom of 'doing the month' and enjoy complete rest after childbirth (Tseng et al., 1994). There are two types of postpartum centres in Taiwan: free-standing and hospital-affiliated postpartum centres. Postpartum women discharged from hospitals (mostly on the third day after a vaginal birth) are directly admitted to the centres. There is no insurance coverage for this service, and postpartum women must pay the fee themselves. The fees range from NT\$5000 to NT\$10,000 (US\$1 is equal to NT\$30) per day. The women decide the length of stay at the centres, and this typically ranges from 10 to 30 days.

This study chooses a hospital-affiliated postpartum centre because this type of centre has several advantages: (1) the postpartum women are all located in the same place, facilitating the PI to

assess all potential participants at a period in the evening; (2) the centres are accredited by the Taiwanese 'Doing the Month' Centres Committee, and follow their rules for care standards and personnel regulations; and (3) centres have a sufficient number of residents, approximately 30–35 per centre daily. There are approximately two to three new admissions per centre each day. Inclusion criteria include the following: (1) mother aged over 20, (2) term delivery and newborn bodyweight over 2500 g, (3) poor sleep conditions (as defined by a score of ≥ 5 on the PSQI), and (4) having given birth vaginally without postpartum complications (Tseng, 2004; Blunt, 2006).

Measures

Personal information on each participant, including demographic data, physical conditions, postpartum data, and sleep-related factors, was obtained during the initial interview.

Postpartum sleep was measured using the PSQI (Buysse et al., 1989), which consists of seven components of sleep: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleeping medication, and day-time dysfunction. Items were measured using a 4-point Likert-like scale ranging from 0 to 3. The sum of the seven component scores formed a global PSQI score (range 0–21), with higher scores correlating with a poorer QOS. A cutoff score of five was used to demarcate good sleepers from poor sleepers. The PSQI was previously shown to be a reliable and valid method of measuring QOS (Buysse et al., 1989). The PSQI was translated into Chinese and back-translated into English by bilingual people with bicultural experience to establish content and semantic equivalence (Su, 2000). Internal consistency (Cronbach's alpha) for the Chinese PSQI was previously rated at 0.75–0.84 (Tsay, 2003; Lee, 2005), and assessed at 0.71 in this study.

Data collection procedures

A consecutive sample was solicited from one postpartum centre in Northern Taiwan. The PI contacted each participant at the centre and explained the purposes and procedure of the study on the sixth day (to ensure that the participants were familiar with the environment and the bed) after admission to the postpartum centre. Once permission was obtained, mothers were assessed by the PSQI and their physical health conditions (back skin assessment and taking medical history) to determine if they met the study criteria. Back skin assessment includes back skin integrity which without any wound or acute inflammatory area. If the mothers met the inclusion criteria, they were randomly assigned to either an intervention group or a control group. The baseline data were collected on post partum Day 9 (the sixth day after admission to the postpartum centre). A post-test of the PSQI was administered five days later, on post partum Day 14.

To ensure that the postpartum women enjoyed complete rest after childbirth, the centres assigned the mothers to live in single rooms. Most of the mothers stayed indoors and had no social interaction with other residents. Therefore, the probability of the control group participants communicating with the intervention group participants was low.

Enrolment and data collection lasted for approximately three months, from February 2012 to May 2012. Data collection occurred six days per week. Five participants (including experimental group and/or control group) were assessed on an average day.

Intervention

Fig. 1 shows the participant flow and analysis. An intervention protocol was developed following the back massage manual by Chaitow and Fritz (2007), which is based on fundamental nursing

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