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Effects of an intervention with drinking chamomile tea on sleep quality and depression in sleep disturbed postnatal women: a randomized controlled trial

Shao-Min Chang & Chung-Hey Chen

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Correspondence to C.-H. Chen:
e-mail: chunghey@mail.ncku.edu.tw

Shao-Min Chang MS RN
Lecturer
Department of Nursing, Fooyin University, Kaohsiung, Taiwan

Chung-Hey Chen PhD RN
Professor
Institute of Allied Health Sciences and Department of Nursing, College of Medicine, National Cheng Kung University, Tainan, Taiwan

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Abstract

Aim. The purpose of this study was to evaluate the effects of chamomile tea on sleep quality, fatigue and depression in postpartum women.

Background. Sleep quality is a significant issue for postnatal women. Chamomile is widely used as a folk remedy for its presumed sedative-hypnotic effects.

Design. A pretest–post-test randomized controlled trial was used.

Methods. A total of 80 Taiwanese postnatal women with poor sleep quality (Postpartum Sleep Quality Scale; PSQS score ≧16) were recruited from November 2012-August 2013. They were systematically assigned, with a random start, to either the experimental group ($n = 40$) or the control group ($n = 40$). The participants in the experimental group were instructed to drink chamomile tea for a period of 2 weeks. The participants in the control group received regular postpartum care only. The PSQS, Edinburgh Postnatal Depression Scale, and Postpartum Fatigue Scale were used to assess outcomes. Two-sample *t*-tests were used to examine the mean differences in outcome variables between the two groups.

Results. Compared with the control group, the experimental group demonstrated significantly lower scores of physical-symptoms-related sleep inefficiency ($t = -2{\cdot}482$, $P = 0{\cdot}015$) and the symptoms of depression ($t = -2{\cdot}372$, $P = 0{\cdot}020$). However, the scores for all three instruments were similar for both groups at 4-week post-test, suggesting that the positive effects of chamomile tea were limited to the immediate term.

Conclusion. Chamomile tea may be recommended to postpartum women as a supplementary approach to alleviating depression and sleep quality problems.

Keywords: chamomile tea, clinical trial, complementary therapy, depression, fatigue, nursing, randomized controlled trial, sleep quality, women's health

Why is this research needed?

- Sufficient rest and good-quality sleep is a foundation of postpartum health care.
- Chamomile is widely used as a folk remedy for its presumed sedative-hypnotic effect and mood stabilizer.
- Knowledge about the effects of chamomile tea on its uses in treating insomnia and improving mood for postnatal women are limited.

What are the key findings?

- Postnatal women drinking German chamomile tea for 2 weeks can significantly improve their physical symptoms associated with sleep inefficiency and depression symptoms.
- The positive effects of chamomile tea were limited to the immediate term. The benefits of improving the sleep inefficiency and depression symptoms did not continue after ceasing the tea-drinking therapy.

How should the findings be used to influence policy/practice/research/education?

- Chamomile tea may be recommended to postpartum women as a supplementary approach to alleviating sleep quality problems and the symptoms of depression.
- Increase healthcare professionals' awareness of the correct and positive use of herbal therapy in postpartum health care.

Introduction

Women must adjust physically and psychologically after giving birth to take care of their newborn. Getting adequate rest and sleep are critical to the success of this postpartum adjustment process. Swain *et al.* (1997) found that postpartum women spent 1·12 hours more awake during the night than women in general. Hedman *et al.* (2002) studied 325 pregnant women in Finland and found that the average sleep duration for these women at 3-month postpartum was one hour less than during pregnancy and that 20·5% self-reported experiencing restless sleep. Huang *et al.* (2004) found that the average primipara postpartum daily sleep time in Taiwan was 4·83 ± 1·63 hours, including about two hours of nap time during daylight hours. Teng *et al.* (2007) found that Taiwan postpartum women slept an average of 5·99 ± 1·47 hours. Other research has pointed out that postnatal women need to take naps or daytime sleep (Swain *et al.* 1997, Gay *et al.* 2004). Most Taiwanese postpartum women, while following traditional confinement practices, do not have good night-time sleep quality. Because of the role of the mother in Taiwan as the primary caregiver, improving the sleep quality of puerperal women is a key health concern. Although the factors that may predispose postnatal women to sleep disorders have been previously identified, few studies have been conducted to test sleep-disorder-related intervention protocols.

Background

Sleep disturbances are an important health issue that affects physical, mental, and emotional health and well-being. Sleep quality is a critical factor of influence on quality of life. Sufficient rest and good-quality sleep is a foundation of postpartum health care. Researchers have reported that postpartum women experience more sleep disturbance, less total sleep time, less sleep efficiency (time asleep vs. time in bed), and lower rapid eye movement than either pregnant women or their non-postpartum peers (Lentz & Killien 1991, Swain *et al.* 1997, Shinkoda *et al.* 1999, Lee *et al.* 2000, Gay *et al.* 2004, Dørheim *et al.* 2009, Ko *et al.* 2010). Most report the highest levels of exhaustion during the first 3 postpartum months, especially for primiparae (Lee *et al.* 2000, Teng *et al.* 2007). In a subjective evaluation of sleep quality in 325 3-month postnatal women in Finland, Hedman *et al.* (2002) found that 20·5% reported experiencing restless sleep. Two studies in Taiwan reported finding higher incidences of restless sleep postnatal women (67·4%; Ko *et al.* 2014 and 87·5%; Teng *et al.* 2007). Several studies proposed that parental sleep patterns in the postpartum period may be associated with the development of their infant's circadian sleep-wake rhythm and his/her feeding habits (Campbell 1986, Quillin 1997, Gay *et al.* 2004, Yamazaki *et al.* 2005, McGuire 2013). However, mode of delivery and parity showed no significant impact on maternal night-time sleep (Quillin 1997, Lee *et al.* 2000). In addition, research has shown that continuously disrupted sleep during the postpartum period may negatively affect a mother's daytime functions and lead to fatigue and depression, which may hinder the healthy development of the mother-infant relationship (Bei *et al.* 2010, Insana *et al.* 2011).

Research has shown that interrupted sleep and increased wake time at night may lead to poor sleep efficiency and less the total sleep time in postpartum women (Poitras *et al.* 1973, Campbell 1986, Lentz & Killien 1991, Swain *et al.* 1997, Gay *et al.* 2004). Known causes of sleep disturbance include physical discomfort, infant crying, disturbance by bed partners, and perceived stress, among others. Postpartum women thus face increased risk of depression

(Eberhard-Gran *et al.* 2004, Munk-Olsen *et al.* 2006, Dørheim *et al.* 2009, Bei *et al.* 2010). Shinkoda *et al.* (1999) demonstrated that postpartum women experience increased irregular wake-cycle sleep and increased wake time at night during their first 5 postpartum weeks. Lee *et al.* (2000) pointed out that even 3~4 week-old babies still significantly impact the sleep patterns of their mothers. Hedman *et al.* (2002) found that only 4·7% of 3-week-postpartum women do not perceive interrupted nocturnal sleep. Some studies identified infant awakenings at night as the main cause of the interrupted nocturnal sleep experienced by mothers (Dharamraj *et al.* 1981, Yamazaki *et al.* 2005, Teng *et al.* 2007).

A variety of herbal teas have long been consumed as sleep aids, such as St. John's wort, passion flower, chamomile, valerian, and Kava (Beaubrun & Gray 2000). The World Health Organization estimates that 80% of the world's population relies on herbal medicine (Cass 2004). The best studied of above herbs as a folk remedy is chamomile. Chamomile has been used as a medicine for thousands of years, with records of use by the ancient Egyptians, Greeks, and Romans. Chamomile has historically been used as a remedy for colds, sore throats, abscesses, gum inflammation (gingivitis), anxiety, insomnia, acne, eczema, minor burns, inflammatory bowel disease (ulcerative colitis), ulcers and childhood ailments such as chickenpox, diaper rash and colic (Beaubrun & Gray 2000). However, little experimental evidence has been published to support the efficacy of this herb. One study on mice showed that chamomile has anti-inflammatory and anti-oxidant effects (Bhaskaran *et al.* 2010). In the United States, Amsterdam *et al.* (2009) found that oral chamomile extract capsules reduced mild to moderate generalized anxiety disorder (GAD) symptoms in patients. In the United Kingdom, Wang *et al.* (2005) found that the benefits to healthy individuals of consuming 5 cups of commercially prepared chamomile tea for 2 weeks lasted for up to 2 weeks after stopping consumption.

Chamomile spread to Europe from Egypt German chamomile and Roman chamomile belong to the chamomile family of plants, with German chamomile currently more widely used in tea. German chamomile tea contains apigenin, a flavonoid known to have a mild sedative effect. Chamomile flowers contain a large number of therapeutically active compounds that are often categorized according to their polarity. The most important bioactive components are the flavonoids (Tschiggerl & Bucar 2012). The anti-inflammatory effect of German chamomile is used to increase immunity to cancer; to treat gastritis, chronic digestive symptoms, anxiety disorders and intestinal diarrhoea; and to facilitate sleep (Viola *et al.* 1995, Gyllenhaal *et al.* 2000, Srivastava *et al.* 2009).

Chamomile combined valerian is a traditional herbal remedy that has been used since ancient times to treat insomnia and a wide range of other health complaints (Ying 2002). Chamomile is sold as a tea, an extract, and a topical ointment. In Europe today, chamomile is commonly used as an anti-inflammatory agent and mood stabilizer. German chamomile is also a natural hypnotic agent because it contains the flavonoid apigenin, which has an affinity for benzodiazepine receptors (Cherniack 2006). While studies have noted the sedative effects of chamomile, there have been few studies published on its use in treating insomnia. The present study is the first study known to the authors to explore the effects of chamomile tea on sleep quality, fatigue, and depression in postnatal women.

The study

Aims

The purpose of this study was to evaluate the effects of singe-ingredient chamomile tea on sleep quality, fatigue, and depression in postpartum women.

Design

A single-blinded, randomized controlled two-group pretest and repeated post-tests design was used to investigate the immediate (8 weeks postpartum) and long-term (10 weeks postpartum) effects of the chamomile tea therapy on maternal outcomes, namely sleep quality, fatigue and depression.

Participants

A convenience sample of 80 women in their sixth postpartum week was recruited from a teaching hospital in southern Taiwan between November 2012–August 2013. The inclusion criteria were: (1) normal childbirth; (2) no postnatal complications; (3) Postpartum Sleep Quality Scale ≧16; and (4) informed consent to participate. Postnatal women who reported having a history of allergy to any herbal tea, food, or medicine were excluded.

The sample size was calculated using power analysis for independent *t*-test. Extrapolating for a medium-high size effect of 0·70, a minimum sample size 64 (32 per group) was needed to achieve a power of 0·80 with an alpha of 0·05 (Polit & Beck 2011). A dropout rate of 20% was originally expected for this study, so the eventual sample size was 80 in total, with 40 postnatal women in each group.

Intervention

At 6 weeks after childbirth, the participants in the experimental group were instructed to drink one cup of chamomile tea (origin: Germany) per day for weeks. Each cup of tea was prepared by steeping one teabag that contained 2 g of dried flowers in 300 ml of hot water for 10-15 minutes. Researchers provided a total of 14 teabags to each experimental-group participant. Women in the control group did not receive any intervention.

Outcome measures

A demographic data form was used to collect information on participant demographics (age, education, occupation, socioeconomic status [SES]) and obstetric variables (type of delivery, parity, incidence of prematurity, feeding format, neonate gender). We used the index of status position to determine SES (Lin 1978).

We used the 14-item Postpartum Sleep Quality Scale (PSQS) (Yang *et al.* 2013) to measure subjective sleep quality. The PSQS contains two domains: infant night-care-related daytime dysfunction (seven items address how taking care of infants at night affected the postpartum woman's sleep quality and competency to manage daytime activities) and physical-symptom-related sleep inefficiency (seven items address the woman's physiological interference factors affecting sleep and sleep inefficiency symptoms). Women were asked to score the incidence of sleep problems during the previous 2-week period on a 5-point Likert scale (never = 0, few = 1, sometimes = 2, often = 3, almost always = 4). The total possible scores ranged from 0 to 56, with higher scores correlating with poorer sleep quality. The PSQS had adequate internal consistency (Cronbach's α of 0·81), test-retest reliability (r = 0·81), construct validity, and convergent validity with the Pittsburgh Sleep Quality Index (Buysse *et al.* 1989) in Taiwanese postpartum women (Yang *et al.* 2013). Furthermore, the PSQS was found to have adequate internal consistency for the participants in the present study (Cronbach's α = 0·76).

We used the 10-item Edinburgh Postnatal Depression Scale (EPDS) (Cox *et al.* 1987) to measure postpartum depression. The statements on the EPDS are designed to assess postpartum depressive symptoms during the past 7 days, with answers rated from 'not at all' (0) to 'yes, most of the time' (3). Total possible scores for the EPDS range from 0-30. The Cronbach's α was 0·87 (Cox *et al.* 1987). The Chinese version of the EPDS was altered somewhat from the original during the process of translation to reflect the appropriate linguistic and cultural contexts. Heh (2001) used this Chinese-version EPDS to assess maternal postpartum depression and achieved an internal consistency Cronbach's α of 0·87 and concurrent validity with the Beck Depression Inventory (r = 0·79). The Cronbach's α for the EPDS in this study was 0·84.

We used the 12-item Postpartum Fatigue Scale (PFS; Yang 1998) to measure subjective fatigue. Women were asked to score their self-perceived level of fatigue during the previous 1-week period on a 4-point Likert scale (none = 0, mild = 1, moderate = 2, severe = 3). The total possible scores ranged from 0-36, with a higher score indicating higher postpartum fatigue. According to the work of Ko and Lu (2003), the PFS earned an internal consistency Cronbach's α of 0·85 and a score for relationship significance with the Yoshitake Fatigue Symptom Checklist of r = 0·7, which indicates criterion validity. The Cronbach's α for the PFS was 0·93 in this study.

Data collection

Eighty women who met the inclusion criteria and returned their consent documents were assigned systematically from a random starting point with a week as a unit to either the experimental group (n = 40) or the control group (n = 40). The participants in both groups were asked to complete the Demographic Data Form, PSQS, EPDS, and PFS questionnaires at three time periods: before the intervention and at 2 and 4 weeks postintervention. The latter two sets of questionnaires were mailed with postage-paid, pre-addressed envelopes to all of the participants to be filled out and returned. Thirty-five in the experimental and 38 in the control group completed the 2-week post-test questionnaires (immediate effect); 35 participants in the experimental and 37 in control group completed the 4-week post-test questionnaires (longer term effect). The CONSORT diagram of this study is shown in Figure 1.

Validity and reliability

Validated instruments with good reliability were used to measure the outcomes to enhance the validity and reliability of the data. Research assistant had prior experience of intervention implementation and data collection and was available for the entire data collection period. Standardized instruction and procedure were used under the guidance of the lead researcher CHC. All data were inspected carefully before data were entered and double entry of data was performed to eliminate data entry inaccuracies. The baseline data from both the control and experiment group were tested for initial equivalence between the groups to control confounding factors.

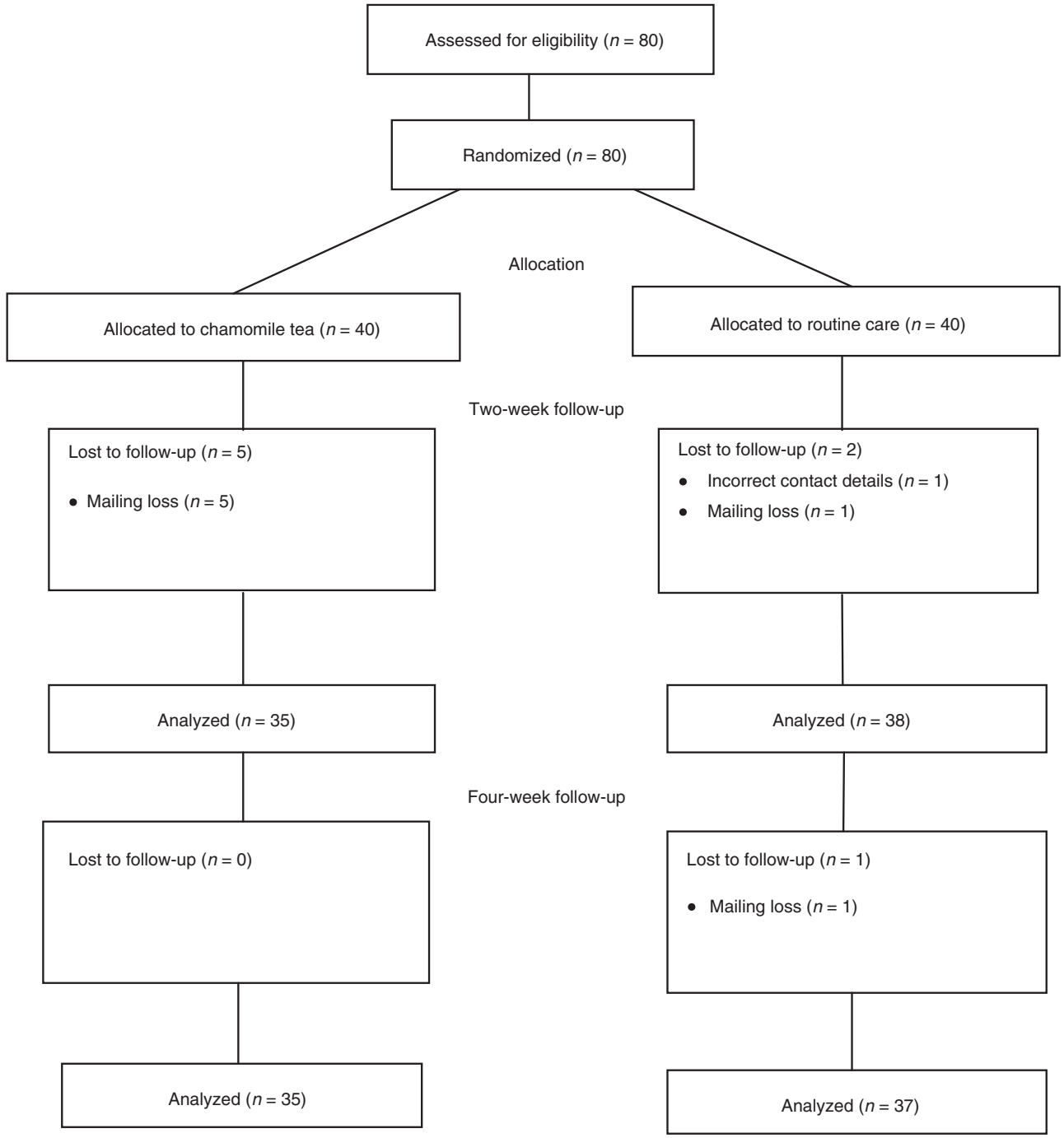

Figure 1 Flow diagram of this study.

Ethical considerations

This study was approved by the appropriate institutional review board. On visiting the postnatal clinic for a routine examination, potential participants were given a written explanation of the study. We emphasized that participation in this study was voluntary and that refusing to participate would not affect their rights in any way. Those who agreed to participate signed a consent form.

Data analysis

The SPSS (version 17.0 for Windows) statistical software package was used to analyse the data. Demographic char-

acteristics and questionnaire data were summarized using descriptive statistics, including percentage, mean and standard deviation. Two-sample *t*-tests were used to examine the mean differences in sleep quality, depression and fatigue between the two groups. By applying Bonferroni correction for three comparisons, statistically significant differences between the experimental and the control group for the PSQS, EPDS and PFS at the two different time points were determined by $P < 0{\cdot}025$ (Munro 2004).

Results

A total of 80 postnatal women were enrolled in this study. Valid data were obtained from 35 participants in the experimental group (age range: 24-43 years; mean: 33·20 years) and 38 participants in the control group (age range: 25-40 years; mean: 32·68 years). No significant differences were identified between the groups in terms of demographic characteristics (Table 1).

The PSQS, EPDS and PFS scores for these two groups prior to the chamomile tea intervention were similar (Table 2). A two-sample *t*-test was performed to compare the effectiveness of the intervention. The comparisons of the two groups that were conducted at 2 and 4-week post-test indentified significant differences at the 2-week post-test in the PSQS subscale 'physical-symptoms-related sleep inefficiency' ($t = -2{\cdot}482$, $P = 0{\cdot}015$) and in the EPDS ($t = -2{\cdot}372$, $P = 0{\cdot}020$). Results identified that the benefits to postnatal women of drinking German chamomile tea for 2 weeks include significant improvements in the physical symptoms associated with sleep inefficiency and the symptoms of depression. However, there were no significant differences between the groups on the 4-week post-test in terms of scores for the three indices.

The participants reported no side effects from the treatment. In response to the open-ended questions, the experimental-group participants reported that drinking German chamomile tea effectively promoted sleep quality (40%),

Table 1 Demographic and obstetric characteristics of the experimental and control groups.

Variable	Experimental ($n = 35$)	Control ($n = 38$)	χ^2	*P*
Education level				
High school	4 (11·4%)	2 (5·2%)	5·175	0·075
College	20 (57·1%)	31 (81·6%)		
Graduate	11 (31·5%)	5 (13·2%)		
Occupation				
Housewife	10 (28·6%)	10 (26·3%)	0·047	0·829
Employed	25 (71·4%)	28 (73·7%)		
Social class				
High	19 (54·3%)	18 (47·4%)	0·910	0·634
Middle	12 (34·3%)	17 (44·7%)		
Low	4 (11·4%)	3 (7·9%)		
Type of delivery				
Vaginal	23 (65·7%)	25 (65·8%)	0·000	0·955
Caesarean	12 (34·3%)	13 (34·2%)		
Parity				
Primiparous	18 (51·4%)	23 (60·5%)	0·613	0·434
Multiparous	17 (48·6%)	15 (39·5%)		
Gender of newborn				
Male	17 (48·6%)	20 (52·6%)	0·120	0·729
Female	18 (51·4%)	18 (47·4%)		
Gestational age of newborn				
Term	29 (82·9%)	30 (78·9%)	0·180	0·672
Preterm	6 (17·1%)	8 (21·1%)		
Type of infant feeding				
Breast	21 (60·0%)	16 (42·1%)	4·317	0·115
Bottle	0 (0·0%)	3 (7·9%)		
Mixed	14 (40·0%)	19 (50·0%)		

Table 2 Two-sample *t*-tests for outcome variables, experimental and control groups.

Scales	Experimental Mean (SD)	Control Mean (SD)	*t*	*P*
PSQS Factor 1				
Pretest	18·20 (3·612)	18·13 (4·425)	0·072	0·943
2-week post-test	15·09 (4·686)	16·47 (5·182)	−1·197	0·235
4-week post-test	13·91 (4·507)	14·27 (5·216)	0·309	0·758
PSQS Factor 2				
Pretest	6·29 (4·004)	7·50 (3·391)	−1·402	0·165
2-week post-test	6·11 (2·867)	8·08 (3·787)	−2·482	0·015
4-week post-test	6·34 (3·038)	6·95 (3·756)	−0·746	0·458
EPDS				
Pretest	7·86 (4·577)	9·71 (4·274)	−1·789	0·078
2-week post-test	7·86 (4·864)	10·47 (4·560)	−2·372	0·020
4-week post-test	7·26 (4·361)	9·51 (4·154)	−2·248	0·028
PFS				
Pretest	13·77 (6·297)	14·74 (7·748)	−0·581	0·563
2-week post-test	13·43 (6·473)	15·58 (8·265)	−1·230	0·223
4-week post-test	12·11 (5·138)	12·95 (7·524)	−0·545	0·588

PSQS Factor 1: infant night-care-related daytime dysfunction.
PSQS Factor 2: physical-symptom-related sleep inefficiency.
Pretest: at 6 weeks postpartum; 2-week post-test: at 8 weeks postpartum; 4-week post-test: at 10 weeks postpartum.

emotional stability and relaxation (37·1%) and that the tea was fragrant (11·4%).

Discussion

We found that postpartum women who drank German chamomile tea once each day for weeks realized significant improvements in their physical-symptoms-related sleep inefficiency and postpartum depression (immediate effect). However, these effects were short-lived, with no effects found over the longer term, after the tea-drinking intervention had ceased. German chamomile has been previously used to treat sleep disorders. This herb contains apigenin, which exerts a slight sedative effect due to its affinity for central benzodiazepine receptors (Viola *et al.* 1995, Cherniack 2006, Tschiggerl & Bucar 2012). This is the first study to confirm the positive effects of drinking this tea on the physical-symptoms-related sleep inefficiency of postnatal women. However, we did not identify any effect on infant night-care-related daytime dysfunctions. The present study also found that, while drinking German chamomile tea for two consecutive weeks had an immediate effect on alleviating postpartum depression, the effect did not last long after the intervention ceased. Since the experimental group demonstrated lower scores of the symptoms of depression than control group ($t = -2{\cdot}248$, $P = 0{\cdot}028$), larger sample size is needed to examine its longer term effect. Our study partially echoes Wang *et al.* (2005), who found that the metabolic effects of consuming chamomile persisted during the 2-week postdosing period. However, the mechanism behind these effects of chamomile tea on postpartum depression remains unclear and merits the further analysis of the biological profile of chamomile. A possible interpretation may be related to chamomile's reportedly having a mechanism of action similar to that of non-steroidal, anti-inflammatory drugs (Srivastava *et al.* 2009).

Teng *et al.* (2007) found that postpartum depression and sleeping with an infant may explain 28% of the variation in sleep quality and that postpartum depression is a very important factor in predicting sleep quality. Our study results found that drinking German chamomile herbal tea effectively buffers postpartum depression. In the experimental group, the value of the PSQS subscale of 'physical-symptoms-related sleep inefficiency' was significantly lower than that of the control group ($P < 0{\cdot}05$). Although there were no significant differences between the two groups in the overall PSQS and the PSQS subscale 'Infant night-care-related daytime dysfunction', the mean post-test scores of the experimental group were lower than those of the control group, especially in the 2-week post-tests. German chamomile calms and relieves mood, which helps improve sleep quality. Research has shown that postpartum sleep disturbances significantly affect the health of new mothers. Taiwanese women have reported a 90-96% incidence of postpartum fatigue, with their levels of fatigue, encompassing both physical and psychological dimensions, ranging from mild to moderate and decreasing over time (Ko & Lu 2003). Fatigue negatively has an impact on maternal tasks. The results of the present study did not confirm that using German chamomile herbal tea improved postpartum fatigue.

The experimental group in this study considered benefits of drinking German chamomile tea to be: facilitating emotional stability and relaxation and having an aromatic fragrance. For postpartum women, drinking German chamomile tea before bedtime may help calm restlessness, facilitate the postnatal paternity relationship, and alleviate postpartum fatigue. Other strategies proposed to improve the sleep quality of postpartum women include participation in sports activities, yoga, and massage. Each has demonstrated varying degrees of efficacy. In addition to continually caring for her newborn, a postpartum mother typically must finish other household work and may be required to return to her daytime job. All of these tasks exacerbate postpartum tiredness and fatigue. Therefore, consuming a suitable herbal tea that helps women relax physically and mentally and contributes to improved sleep quality should be considered a feasible and effective intervention.

This study found that the participants who consumed German chamomile tea for two consecutive weeks showed significant improvement in physical-symptoms-related sleep inefficiency and postpartum depression. However, after stopping the treatment, these positive effects did not last long enough to have a detectable effect at the 4-week follow-up (at 10 weeks postpartum). Multiple daily consumptions or larger sample size may be recommended to test its lasting effect in the future. Another possible reason for the lack of a longer term effect is that at 8 weeks postpartum (2-week post-test) the employed women had completed their 2-month maternity leave and returned to their regular jobs. Therefore, additional measurement points with shorter intervals between each point may be necessary to confirm the actual duration of the therapeutic effects of chamomile tea.

Limitations

One of the limitations of this study is our use of single-ingredient chamomile tea that was brewed from dried chamomile flowers; these results may not be generalizable to chamomile teas that are blended with other herbs/ingredients. Second, because chamomile tea is widely believed to have

sedative-hypnotic effects, future research could use a placebo tea or compared with other tea to effectively exclude the placebo effect. Third, the periods from 6 weeks (pretests) after birth to 10 weeks (4-week post-tests) are important for infants to obtain their circadian rhythm which influence mothers' sleep (Nishihara *et al.* 2002); it is suggested that parameters related to obtaining circadian rhythm process, e.g. longest sleep period and number of feeding at night, could be collected in future research. Finally, the present study only included Taiwanese postnatal women; future studies could duplicate it in other countries to enhance the generalization of chamomile tea therapy.

Conclusion

These findings support that drinking single-ingredient chamomile tea once each day for a 2-week period has positive and significant effects on the sleep quality and mental health of postpartum women with poor sleep quality. The lack of reported side effects further supports chamomile tea consumption as an alternative therapy that is safe, simple, cost-effective, and viable for postnatal women. The numerous physiological and psychosocial adjustments and changes that women experience during the postpartum period make their physical and mental health important issues of concern to the healthcare community. Chamomile tea may be recommended to postpartum women as a supplementary approach to alleviating sleep quality problems and the symptoms of depression. In addition, we hope that healthcare professionals will reference these findings to increase their awareness of the correct and positive use of herbal therapy in postpartum health care.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

All authors have agreed on the final version and meet at least one of the following criteria [recommended by the ICMJE (http://www.icmje.org/recommendations/)]:

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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