ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 9, Issue, 03, pp.47561-47565, March, 2017

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

EFFECTS OF LAVENDER TEA ON FATIGUE, SLEEP DISTURBANCE AND MATERNAL-INFANT ATTACHMENT IN POSTNATAL MOTHER

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ARTICLE INFO

Article History:
Received 19th December, 2016
Received in revised form
10th January, 2017
Accepted 15th February, 2017
Published online 31st March, 2017

Key words:

Lavender tea,
Postpartum fatigue,
Sleep disturbance,
Maternal-infant attachment.

ABSTRACT

Purpose: This study was conducted in New Delhi, India to evaluate the effectiveness of lavender tea in relieving fatigue, enhancing sleep quality and in improving maternal-infant attachment during the postpartum period.

Method: A total of 60 Indian postnatal women with no history of allergy to herbal teas, foods, or medicines were assigned systematically to either the experimental group (n=30) or the control group (n=30). The participants in the experimental group were instructed to drink one cup of lavender tea after spending time to appreciate and smell the aroma each day for a period of 2 weeks, whereas their control group received regular postpartum care only. The Lee fatigue scale, Postnatal sleep quality scale and Postpartum Bonding Questionnaire were used to assess outcomes.

Findings: Data gathered were analyzed and interpreted using descriptive and inferential statistics. The mean post fatigue score of the postnatal mothers in experimental group (38.93) was lower than the control group (119.5) with a mean difference of 80.57. The obtained 't' value of 21.5 was significant at 0.05 level. The mean post sleep quality level of the postnatal mothers in experimental group (3.93) was lower than the control group (15.86) with a mean difference of 11.93. The obtained 't' value of 26.5 was significant at 0.05 level and the mean post maternal infant attachment of the postnatal mothers in experimental group (28.72) was lower than control group (69.55) with a mean difference of 40.8. The obtained 't' value of 7 was significant at 0.05 level. This indicates that administration of lavender tea to postnatal mothers in experimental group for 14 consecutive days was to be effective in decreasing fatigue level, improving sleep quality and improving maternal infant attachment of postnatal mother whereas in control group regular postpartum care found not effective in improving maternal infant attachment.

Conclusion: This study supports the popular claim for the beneficial effects of lavender tea on fatigue, sleep quality, and maternal-infant attachment in postpartum women. The lack of reported side effects further supports lavender tea consumption as an alternative therapy that is safe, simple, cost-effective, and viable for all clients.

Citation: Rizu Negi, Manju Chhugani, Somibala Thokchom and Anju Hooda, 2017. "Effects of lavender tea on fatigue, sleep disturbance and maternal-infant attachment in postnatal mother", *International Journal of Current Research*, 9, (03), 47561-47565.

INTRODUCTION

The postpartum period is an important transitional phase for women. Sleep disturbance during this period is of particular concern because new mothers typically sleep less than normal and often experience fragmented sleep. Untreated sleep problems not only adversely affect a postnatal woman mentally and physically but may also affect adaptation to her new life role as a mother and her relationship with her infant prior research has found that 95% of postpartum women experience postpartum fatigue. However, despite their frequent occurrence and severity, sleep quality and fatigue are not acknowledged as serious problems or as issues that require nursing intervention.[1]

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Fatigue is a subjective experience that may cause a range of unpleasant symptoms from feeling tired to exhaustion, which affect the individual's physical and psychological health. Research has shown that 90-96% of postpartum mothers experience postpartum fatigue, mostly in the form of a physical-mental mix (Ko & Lu, 2003). There was a study conducted to assess Fatigue in postpartum women is a concern for maternal-child nurses because of the impact on the health and parenting ability of the mother. To determine fatigue levels and types, 35 women who vaginally delivered were surveyed at 2 days, 2 weeks, and 6 weeks postpartum. This sample was found to be mildly fatigued, with situational and/or psychological fatigue. Nurses can intervene by assessing postpartum fatigue and using teaching/counselling methods for knowledge preparation and for clients at risk.[i] According to the World Health Organization (WHO, 2003), in Europe,

North America and other industrialized regions, over 50% of the population and in Africa 80% uses some form of herbal medicine. Nonmedical methods that are used to improve sleep quality include massage, exercise, yoga, acupuncture, music therapy, and herbal tea. Constituents of essential oils, including acids, esters, coumarins, and monoterpenols, have been reported to produce hypnotic, sedative, or anti-anxiety effects. These constituents act on nerve cell function by antagonizing specified neuronal receptors or binding to other receptors.

Lavender covers about 28 native species and 300 hybrids in the Lamiaceae family of herbaceous plants (Buckle, 2003). Although all lavenders share similar ethnobotanical properties and major chemical constituents, there are some differences.[ii] Lavender Tea on Postnatal Fatigue and Maternal-Infant Attachment in the reported therapeutic uses for different species. Lavender oil is traditionally believed to be an antibacterial, antifungal, carminative (smooth muscle relaxing), sedative, and anti-depressive agent; and an effective treatment for burns and insect bites.[iii] The active ingredients of lavender are linalool and linalylacetate, which are rapidly absorbed through the skin and reach peak plasma levels after approximately 19 minutes.[iv] The metabolic time for using essential oils is about 2 hours. Linalyl acetate has narcotic actions, and linalool acts as a sedative. Linalool has an effect that is similar to Phenobarbital.[v] However, caution has been advised in the selection of lavender species because one case report noted that drinking Lavender stoechas (Buckwheat grass) tea triggered ant cholinergic syndrome and supraventricular tachycardia. The literature on nonpharmacological interventions indicates that lavender oil may have greater acceptability and be safe for treating mild to moderate sleep disturbances.[vi] Most studies on lavender focus on its aroma-therapeutic effect in terms of facilitating sleep. Some positive objective outcomes for lavender inhalation have been reported. Pleasant lavender odorant-modified respiration during sleep has reportedly improved sleep quality in younger people with mild insomnia[vii]in adult or midlife women with insomnia and in young healthy sleepers. Lavender increased stage 2 sleep and decreased rapid-eye movement sleep in women and had the opposite effect in men. (Hudson (1996) also found that lavender was effective in helping the long-term hospitalized elderly people to achieve better night times sleep quality and better alertness during the daytime. However, one study reported that administering lavender odorant during sleep successfully elevated mood, but had no other effects on sleep quality, cognitive function, or alertness[viii]

Lavender is a traditional herbal remedy that is believed to "strengthen the nervous system". A pilot study reported that lavender aromatherapy had a positive effect on mood disorders and decreased psychological distress on long-stay neurology inpatients. Clinical trials that compared the effect of lavender and antidepressants in the treatment of mild to major depression found that the combination of antidepressant and lavender (taken as a tincture, oil capsule, or mill infusion) was significantly more effective than using antidepressant alone, with no side effects reported among participant cases. However, essential oils contain chemicals that may harm physical functions if used improperly. These chemicals include ketones, a nerve toxin; phenols, a liver toxin; coumarin, a liver and kidney toxin as well as skin allergen; furocoumarin, a skin allergen; aldehydes; and esters (Tseng, 2005). Although it contains the same ingredients, herbal tea has milder effects than essential oil. Therefore, herbal tea carries a lower risk as a stimulant and as a cause of allergic reactions. For healthcare professionals, integrating scientific research results into clinical practice offers an effective method for resolving dilemmas in health care. The therapeutic effects of lavender tea have not previously been tested scientifically in health care, nursing, or epidemiological studies. This study tests the effects of single-ingredient lavender tea on postpartum fatigue, depression, maternal-infant attachment, and sleep quality. We hope this herbal treatment will gain greater attention among nursing and health management practitioners and encourage the development of a proper scheme for using herbal tea in health care.[ix]

Review of literature

This study was conducted in Taiwan to evaluate the effectiveness of lavender tea in relieving sleep quality, fatigue, and depression; and in improving maternal-infant attachment during the early postpartum period. A total of 80 Taiwanese postnatal women with poor sleep quality and with no history of allergy to herbal teas, foods, or medicines were assigned systematically to either the experimental group (n = 40) or the control group (n = 40). The participants in the experimental group were instructed to drink one cup of lavender tea after spending time to appreciate and smell the aroma each day for a period of 2 weeks, whereas their control group peers received regular postpartum care only. The result showed that experimental group participants perceived less fatigue ($F = 6.281$, $p = .014$) and depression ($F = 4.731$, $p = .033$) and showed greater bonding with their infant ($F = 4.022$, $p = .049$) compared with the control group[x]

Objectives

The objectives of the study were:

1. To assess the Fatigue, Sleep Quality and Maternal-Infant Attachment among postnatal mothers in both experimental and control group before administration of lavender tea.
2. To compare the effect of lavender tea on Fatigue, Sleep Quality and Maternal-Infant Attachment among postnatal mothers between experimental and control group after administration of lavender tea.

Method : Research approach: Quantitative research approach

Research design: Quasi-experimental pre-test post-test control group design

Sample: Postnatal mother

Sample size: 60

Sampling technique: Purposive sampling technique

Setting: Sangam Vihar community, New Delhi

Variables:

Independent Variable: In this study Independent variable is lavender tea.

Dependent Variable: The dependent variable in this study is fatigue, sleep disturbance and mother infant attachment among postnatal mothers.

Inclusion criteria:

- Mother with normal vaginal delivery and caesarean section with normal infant.
- Mother having 6 to 7 week of infant.
- Mother not having any postnatal complication.
- Mother willing to participate in the study.

Exclusion criteria:

- Postnatal women with history of allergy to any herbal tea, food, or medicine will be excluded.
- Mother who are on other treatment.
- Mother with postnatal complication.
- Mother who's Infant develops any problem during the intervention.

Data Collection Tools and Techniques

In order to achieve the following objectives, the following tools are prepared:

This tool consists of two parts

Part A: Structured questionnaire to assess Demographic data

Part B: This part consist of three sections
Section I:- Lee fatigue scale.
Section II:- Postpartum sleep quality scale.
Section III:- Postpartum bonding instrument

Part A: Structured Demographic data

It consists of 12 questions related to demographic data of subjects, that is Age (in years), Religion, mother education level, monthly income, parity, type of delivery, baby gender, mood during pregnancy, planned pregnancy, wanted gender of baby, regular feeding , postpartum BMI.

Part B:-Section I - Lee fatigue scale.

This is a standardized tool developed by K. Lee. This scoring has been used for 12 years and can be easily performed in a short time as this tool provides simple instruction. The Lee Fatigue Scale was originally a visual analog scale, but has recently been modified to incorporate a 0 to 10 numerical scale for ease of administration and analysis. Reliability of the instrument as a visual analog scale calculated using Cronbach's _ coefficient for each subscale has been reported between .91 to .96 for the fatigue scale (Lee & DeJoseph, 1992; Lee et al., 1991)

Section II – Postnatal Sleep Quality Index.

Postpartum sleep quality scale derived from Pittsburgh sleep quality index which is an effective instrument used to measure the quality and patterns of postnatal women. The PSQI consisted of 07 components. The questions were designed to assess the postnatal sleep quality of participants after the child birth, and items will scored on a four-point scale (0, 1, 2, 3) It differentiates "poor" from "good" sleep quality by measuring seven areas (components): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction after childbirth. The postpartum sleep quality index was found to have adequate internal consistency for the participants in this study (Cronbach's α = .76).

Section III –Postpartum Bonding Instrument.

This is a standardized tool developed by Brockington et al. This scoring has been used for 15 years and can be easily performed in a short time as this tool provides simple instruction. The PBQ is a 25-item, self-rating questionnaire with four scales designed to detect discrete mother-infant relationship impairments as perceived by the mother (Brockington et al., 2001). The 12-item Scale 1 is a general factor for the identification of some kind of mother-infant relationship impairment. The seven-item Scale 2 is designed to detect severe mother-infant relationship impairment in which the mother feels "rejection "of or "pathological anger" toward the infant. The four-item Scale 3 is used to identify "infant-focused anxiety." The two item Scale 4 is used to detect "incipient abuse" (Brockington et al., 2006). The response to each item is given on a six-point Likert scale ranging from 0 = always to 5 = never. Cronbach's α for the Postpartum Bonding Instrument in this study was 0.75.

Validity of the tools

In order to measure content validity of the tools, the tool was given to 7 experts from the field of Obstetrical and Gynaecological nursing to check their content, relevance, feasibility, organization, clarity and the suggestions from them were incorporated in the tools and all the tools were found valid.

Pilot Study

After obtaining formal approval from the concerned authority the pilot study was conducted in the Sangam Vihar, New Delhi on 3 postnatal mothers belonging to experimental group and 3 postnatal mothers belonging to control group were taken based on the inclusion and exclusion criteria and purposive sampling done to allocate them to the experimental and control group. Data was collected and analyzed based on the objectives. The study was found to be feasible. Plan for data analysis was found to be workable.

Intervention

Participants in the experimental group were instructed to drink one cup of lavender tea after smelling its aroma 1 hour before bedtime for a period of 2 weeks. Each cup of tea was made (TEA RAJA, LAVENDER BLACK TEA) from one teabag that will steep for 10–15 minutes in 300 mL of hot water. This study provides 14 teabags to each of the experimental group participants. The postnatal mother was followed by telephonic conversation and home visit. Tea chart was distributed to the experimental group and each day they have ticked the chart after having tea.

Data analysis

The Microsoft excel statistical software package was used to analyse the data. It can be concluded from Table 1, the p value of age category calculated using Fisher's – Exact test are less than 0.05, and are therefore significant difference found in this

aspect otherwise both the groups are equal in the above mentioned other aspects calculated using Fisher's – Exact test are more than 0.05, and are not significantly different.

RESULTS

A total of 60 postnatal women were enrolled in the study. As noted previously, a total of 30 experimental and 30 control subjects completed the 2-week post – test. The demographic characteristics of the participants are presented in table 1 and table 2. The Lee fatigue scale, Postnatal sleep quality scale and Postpartum bonding questionnaire were used to measure the outcome variables. Table 3 presents a comparison of the mean post-test score for each of component between experimental and control group. The t value for lee fatigue score was 21.5 (p=0.00), for PSQS was 26.5 (p=0.00) and for PBQ t value was 7 (p=0.00) This shows that the obtained mean difference between experimental and control group was a true difference. The participants reported no side effects from the treatment, in response to the open-ended questions, those who drank lavender tea reported that it effectively promoted relaxation, sleep quality and maternal infant attachment.

Table 1. Frequency percentage distribution of postnatal mothers by their age, religion, educational level and monthly income of the mothers and their comparability

n1+n2=60

S.No.	Demographic characteristics	Experimental group (n1=30)		Control group (n2=30)		df	Test value (test used)	p value
		F	%	F	%			
1.	Age							
	a)<20	04	13	08	27	3	0.183 (Fisher exact test)	0.001*
	b)20-29	19	63	14	46			
	c)30-35	06	20	03	10			
	d)>35	01	03	05	17			
2.	Religion							
	a) Hindu	15	50	18	60	3	0.023 (Fisher exact test)	0.062
	b) Muslim	09	30	09	30			
	c) Sikh	04	13	01	03			
	d) Christian	02	07	02	07			
3.	Mother education level.							
	a)Illiterate	10	33	08	27	4	0.14 (Fisher exact test)	0.76
	b)Primary education	11	37	12	40			
	c)Secondary education	06	20	03	10			
	d)Graduate	03	10	04	13			
	e)Post graduate	00	0	03	10			
4.	Family Monthly income							
	a)<10,000	16	53	13	43	3	0.18 (Fisher exact test)	0.0578
	b)10,000-30,000	07	23	12	40			
	c)30,000-50,000	03	10	03	10			
	d)>50,000	04	13	02	07			

*significant at 0.05 level

Table 2. Frequency percentage distribution of postnatal mothers by their gravida, type of delivery, baby gender, mood during pregnancy, planned pregnancy, wanted gender of baby and breast feeding of the mothers and their comparability

n1+n2=60

S. No.	Demographic characteristics	Experimental group (n1=30)		Control group (n2=30)		df	Test value (test used)	p value
		f	%	f	%			
1.	Gravida							
	a)Primi	14	47	13	43	1	0.32 (chi-square test)	0.56
	b)Multi	16	53	17	57			
2.	Type of delivery							
	a)Normal vaginal delivery	23	77	25	84	1	1.56 (chi-square test)	0.21
	b)Caesarean section	07	23	05	16			
3.	Baby gender							
	a)Male	17	57	18	60	1	1.56 (chi-square test)	0.21
	b)Female	13	43	12	40			
4.	Mood during pregnancy							
	a)Happy	28	93	29	97	1	1.68 (Fisher's Exact test)	0.19
	b)Depressed	02	07	01	03			
5.	Planned pregnancy							
	a)Yes	27	90	29	97	1	4.03 (Fisher's Exact test)	0.07
	b)No	03	10	01	03			
6.	Wanted gender of baby							
	a)Yes	27	90	27	89	1	0.053 (Fisher's Exact test)	0.81
	b)No	03	10	03	11			
7.	Breast feeding							
	a)Yes	25	83	24	80	1	0.298 (chi-square test)	0.584
	b)No	05	17	06	20			
8.	Postpartum BMI							
	a)Underweight (<18.5)	07	23	08	27			0.0692
	b)Normal (18.5-22.9)	15	50	18	60	3	0.396 (Fisher's Exact test)	
	c)Overweight (23-24.9)	07	23	04	13			
	d)Obese (>25)	01	03	0	00			

*significant at 0.05 level

Table 3. 't' test computed to compare post-test fatigue level, sleep quality level and maternal infant attachment in experimental and control group as evident by Lee Fatigue score, Postnatal Sleep Quality Index score and Postpartum Bonding Questionnaire score

n1+n2=60

Score	Group	Observation	Mean	Median	SD	SE	Mean D	df	't' value	P value
Lee Fatigue score	Experimental group	Post-test	38.93	36	19.85					0.00*
	Control group					1.52	80.57	58	21.5	
		Post-test	119.5	118.5	6.13					
Postnatal Sleep Quality Index score	Experimental group	Post-test	3.93	4	1.68					0.00*
	Control group					0.45	11.93	58	26.5	
		Post-test	15.86	16	1.87					
Postpartum Bonding Questionnaire score.	Experimental group	Post-test	28.724	28	12.27					
						5.83	40.8	58	7	0.00*
	Control group	Post-test	69.55	53	29.50					

*significant at 0.05 level

DISCUSSION

The result of this study suggest that lavender tea may be an effective nonpharmacological alternative for postnatal women with fatigue, sleep disturbance and maternal-infant detachment. Inconsistent with previous studies that indicated that lavender tea a very good effect of postnatal fatigue, depression in sleep disturbed postnatal mother The findings are supported by a research conducted by Chen SL, Chen CH was conducted a study in Taiwan to evaluate the effectiveness of lavender tea in relieving sleep quality, fatigue, and depression; and in improving maternal-infant attachment during the early postpartum period. The result showed that experimental group participants perceived less fatigue ($F = 6.281$, $p = .014$) and depression ($F = 4.731$, $p = .033$) and showed greater bonding with their infant ($F = 4.022$, $p = .049$) compared with the control group which was in line with the findings of the present study. Similarly, Mahnaz Keshavarz Afshar also conducted a study on 158 mothers in postpartum period (with certain inclusion criteria The fragrance of lavender was dropped on cotton balls, which were placed on a cylindrical container at mothers' disposal. Keeping the container at a projected distance of 20 cm, the participants inhaled 10 deep breaths and then the container was placed beside their pillow until morning. This procedure was done 4 times a week for 8 weeks. For the control group, the same intervention was done with the placebo Results showed that experimental group participants perceived good sleep. The finding matched with the improving in sleep quality. Jamie Lytle conducted a study to determine the effect of inhalation of 100% lavender oil on patients' vital signs and perceived quality of sleep in an intermediate care unit. Study was done on 50 patients. Control patients received usual care. The treatment group had 3 mL of 100% pure lavender oil in a glass jar in place at the bedside from 10 PM until 6 AM. Results shows mean overall sleep score was higher in the intervention group (48.25) than in the control group (40.10), but the difference, was not significant. Finding the conclusion that Lavender aromatherapy may be an effective way to improve sleep in an intermediate care unit. These findings supports the present study. Nurses can be taught about different natural hypnotics and sedative so that the health education can be imparted to the general public.

Women facing fatigue, sleep disturbance and maternal infant attachment problem can be given advice so that they make use of natural hypnotics and sedative which are readily available or which can be obtained in the homely premises and hence decreases their fatigue level, increases their sleep quality and improves their maternal infant attachment.

Conclusion

There was a significant difference in the level of fatigue, quality of sleep and maternal infant attachment of those postnatal mothers who were administered lavender tea. This study supports the popular claim for the beneficial effects of lavender tea on fatigue, sleep quality, and maternal-infant attachment in postpartum women. The lack of reported side effects further supports lavender tea consumption as an alternative therapy that is safe, simple, cost-effective, and viable for all clients.

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