

# Accepted Manuscript

Psychological effects of yoga nidra in women with menstrual disorders: A systematic review of randomized controlled trials

Sang-Dol Kim

PII: S1744-3881(16)30243-2

DOI: [10.1016/j.ctcp.2017.04.001](https://doi.org/10.1016/j.ctcp.2017.04.001)

Reference: CTCP 717

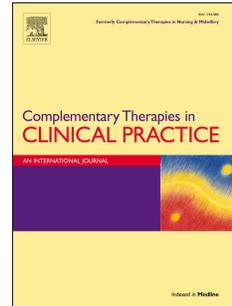
To appear in: *Complementary Therapies in Clinical Practice*

Received Date: 29 December 2016

Accepted Date: 3 April 2017

Please cite this article as: Kim S-D, Psychological effects of yoga nidra in women with menstrual disorders: A systematic review of randomized controlled trials, *Complementary Therapies in Clinical Practice* (2017), doi: 10.1016/j.ctcp.2017.04.001.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Psychological effects of yoga nidra in women with menstrual disorders: A systematic review of randomized controlled trials

Sang-Dol, Kim<sup>1)</sup>

*1) Department of Nursing, College of Health Science, Kangwon National University: 346 Hwangjo-gil, Dogye-eup, Samcheok-si, Gangwon-do 245-907, Republic of Korea  
Nu11110@kangwon.ac.kr*

Psychological effects of yoga nidra in women with menstrual disorders: A systematic review of randomized controlled trials

ACCEPTED MANUSCRIPT

**Abstract**

**Objective:** To assess the effects of yoga nidra on psychological problems in women with menstrual disorders.

**Methods:** A search was conducted using CINAHL, the Cochrane library, Embase, PsycINFO, and PubMed electronic databases, and using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), to identify randomized controlled trials (RCTs) published in any language up to and including July 2016, which reported the psychological effects of yoga nidra in women with menstrual disorders.

**Results:** Two potential trials were identified and both were included in the review. A significant difference was observed between experimental and control groups in that anxiety and depression were significantly decreased in the experimental group when compared with the control group.

**Conclusions:** There is evidence from two RCTs that yoga nidra may have favorable effects in terms of reducing psychological problems in women with menstrual disorders.

Keywords: yoga nidra, psychological problem, menstrual disorders

## 1. Introduction

Approximately 45-99% of reproductive women have suffered from menstrual disorders [1]. Menstrual disorders include dysmenorrhea, oligomenorrhea, polymenorrhea, pathological amenorrhea, metrorrhagia, and menorrhagia. These disorders have often been associated with various psycho-physiological problems [2-3]. Common physiological symptoms include nausea, headache, fatigue, diarrhea, lethargy, and breast tenderness [2-4], while common psychological problems include anxiety and depression [3]. In the present day, women with menstrual disorders are attracted to a variety of complementary and alternative therapies [2-5]. Amongst these complementary and alternative therapies, yoga nidra is increasingly gaining attention with regard to addressing psychological problems associated with menstrual disorders [2-3, 5]. Yoga nidra means “a psychic sleep” and is a specific relaxation practice within yoga therapy [6]. It generates not only physical and mental relaxation, but also mental discipline. Yoga nidra is different from ordinary sleep. During yoga nidra practice, the mind is in a deeper phase than during ordinary sleep, the consciousness maintains a “blissful awareness,” and an intensive state of relaxation is achieved [2]. The theory which has been reported to explain the mechanisms of yoga nidra is that it may play an important role in increasing parasympathetic nervous system activity, thus decreasing the intensity of psychological symptoms [7-8]. Yoga nidra may be a safe and simple intervention for managing psychological problems related to menstrual disorders [2]. As stated, it has been suggested that yoga nidra has benefits for women who experience psychological problems associated with menstrual disorders. Nevertheless, quality evidence is needed to confirm and support yoga nidra as a therapy for such women.

## 2. Objectives

The aim of this review is to assess the evidence for the effectiveness of yoga nidra in psychological problems associated with menstrual disorders.

## 3. Methods

### 3.1. Literature Search

The review was planned and conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the Consolidated Standards of Reporting Trials (CONSORT) guidelines for Reporting Parallel Group Randomized Trials [9-10]. The CINAHL, Cochrane Library, Embase, PsycINFO, and PubMed electronic databases were searched to identify randomized controlled trials (RCTs), which reported the psychological effects of yoga nidra in women with menstrual disorders published in any language up to and including July 2016. The search term for this review was “yoga nidra”. To identify any additional studies which were relevant to this review, the footnote chasing method was used. All of the articles identified in the course of this search that met the following selection criteria were reviewed.

### 3.2. Inclusion Criteria

To be eligible, studies had to meet the following conditions. These inclusion criteria were evaluated using the Cochrane Risk of Bias Tool [11]. Population: Women of reproductive age with menstrual disorders (dysmenorrhea, oligomenorrhea, polymenorrhea, pathological amenorrhea, metrorrhagia, and menorrhagia) were included; women who had surgery for gynecological neoplasms, who had pelvic inflammatory disease, or who were using an intra-uterine contraceptive device (IUD) were excluded. Intervention: RCTs that compared the use of yoga nidra as an intervention to manage psychological problems associated with menstrual disorders with no use of yoga nidra were included. Comparison: Any RCTs comparing yoga nidra for

menstrual irregularities versus no yoga nidra were included. Outcomes: RCTs which assessed levels of anxiety and depression were included.

### 3.3. Data extraction

In this review, we extracted data on the characteristics of participants, the interventions and the controls, outcome measures and results. This analysis excluded nonrandomized studies, case reports, letters, and comments, in line with CONSORT criteria.

### 3.4. Quality assessment

Quality appraisal was conducted using the Cochrane Risk of Bias Tool for RCTs, which was recommended by the Cochrane Handbook for systematic reviews of interventions [11]. The Cochrane Risk of Bias Tool is designed to assess bias in the following six items: random allocation, allocation concealment, blinding, incomplete outcome, selective reporting, and other bias [11]. For each item, a rating of “yes,” “no,” or “unclear” was recorded.

Trials included in this review were assessed as having one of three levels of risk as described in the Cochrane Handbook [11]. If the study design had no bias in any of the six items, it was evaluated as “Level A,” which means the risk of bias was low. If one or more criteria were only partly met, it would be designated “Level B”. If one or more criteria were not met, the study would be defined as “Level C,” implying that it carried a high risk of bias. Studies rated as Level C would be excluded according to the Cochrane Risk of Bias Tool. Only two studies met the criteria for inclusion in the systematic review of the evidence.

### 3.5. Data synthesis

No meta-analysis was performed because only two studies were identified. Data were presented descriptively so no usable data were available.

## 4. Results

### 4.1. Study description

A total of 94 titles related to the search terms of this review were screened. Among these, there were 12 potential trials identified from the CINAHL, 14 from the Cochrane Library, 28 from EMBase, 19 from PsycINFO and 21 from PubMed. After the titles were retrieved, a total of 88 studies were excluded either because they were duplicates or because they did not concern menstrual disorders. The remaining six abstracts were retrieved, and, after evaluating these, two studies were excluded because they did not assess psychological variables. Thus, four potential trials were identified in the search conducted in July 2016, and the four potentially relevant papers were retrieved for evaluation of the full text. After the full text of these four papers had been assessed, two further studies were excluded because they did not use randomized trial methods. Figure 1 depicts the literature retrieval process. Characteristics of the studies included are presented in Table 1.

### 4.2. Quality assessment

Assessments of the quality of each methodological item for both included trials are described in Table 1. Of the two trials, one trial was identified as being of Level A quality; the other trial was designated as quality Level B.

#### 4.3. *Participants and settings*

Both RCTs originated in India. Studies were conducted at two different university hospitals. Participants were recruited by senior consultants' interviews at two obstetrics and gynecology departments. Sample sizes in the two studies ranged from 100 to 150 participants and totaled 250 participants. Participants' mean age ranged from 18.0 years to 45.0 years with a median of 26.5 years. Participants in both RCTs had menstrual disorders such as pathological amenorrhea, dysmenorrhea, oligomenorrhea, polymenorrhea, menorrhagia, metrorrhagia, and hypomenorrhea.

#### 4.4. *Design and intervention*

Two RCTs were identified in this review. The yoga tradition used in both RCTs was yoga nidra. Yoga nidra was developed by Swami Satyanada Saraswati in India. The yoga nidra protocol included resolve; rotation of consciousness; awareness of the breath, feeling, and sensation; visualization; and ending the practice with resolve. The first trial involved one 35-minute session per day, five days per week for six months; similarly, the other trial involved one 30-35 minute session per day, five days per week for six months. Yoga was performed under the guidance and supervision of a yoga therapist or instructor in both trials. Both RCTs compared yoga nidra with conventional medication to conventional medication only.

#### 4.5. *Outcomes*

Significant differences were observed between the experimental and control groups in levels of anxiety and depression ( $p < 0.05$ ). Anxiety and depression were significantly decreased in the intervention group compared with the control group. The intervention had no adverse effects in either trial.

## 5. **DISCUSSION**

The aim of this review was to assess the evidence for the effectiveness of yoga nidra in alleviating psychological problems associated with menstrual disorders. Data were reported descriptively in the only two studies identified. Both trials reported that there was a significant decrease in anxiety and depression in the yoga nidra group. Although both groups in each trial received medication, there was a greater reduction in psychological problems in the groups that also practiced yoga nidra than in the control groups. Given that menstruation depends on the proper functioning of the hypothalamus-pituitary-ovarian-uterine axis, anxiety in the menstrual phase is generally thought to be associated with an increased hypothalamic response and sympathetic activity [2, 4, 6, 12]. It has been reported that yoga nidra increases parasympathetic activity and keeps psychic and vital energies in balance [4]. Previous findings have suggested that yoga nidra increases dopamine release and can be as efficacious as imipramine in the treatment of patients with depression [13-15]. The results of this present review also support yoga nidra as a useful method for treating psychological problems such as anxiety and depression. Furthermore, these results

support research findings demonstrating that relaxation training is an effective treatment for menstrual disorders, and present review recommends that yoga nidra could be an effective program for relaxation. As stated, the evidence from the two RCTs included in this review suggests that yoga nidra is effective in treating patients with menstrual disorders.

The two trials included in this review were homogeneous in that the participants suffered from menstrual irregularities, the intervention was yoga nidra, interventionist and the duration of the intervention delivery were the same, and the outcome measures were similar. The rate of drop out was also similar in the two RCTs. In one trial, 13 (13.0%) women were lost to the analysis for several reasons, such as problems with scheduling follow-up, because they were unwilling to continue as a research subject, or because they experienced non-restorative sleep. In the other trial, 24 (16.0%) participants did not complete the study because they did not come to the second follow-up appointment, could not follow the time schedule, or were unwilling to continue the study.

The trials in this review both reported that the intervention had no adverse effects, concluding that yoga nidra is a safe and simple treatment for psychological problems associated with menstrual disorders.

The quality rating of the two trials included in this review suggested that they had a low or moderate risk of bias. One of the two trials was single blind and the other did not clearly mention blinding. Blinding is important in randomized controlled trials to minimize the effect of bias in the research findings. Both trials included in this review had a methodological flaw in that double blinding was not used. Because of the small number of trials included, as well as methodological considerations, no strong conclusions can be drawn from this review.

Nevertheless, the strengths of this systematic review were that strict methodological criteria were used, the studies included were RCTs, and the quality assessment tools used were rigorous. This may be the first comprehensive review of yoga nidra for menstrual disorders.

Limitations were also identified: All menstrual disorders were included together in the same trial, and the sample sizes were not large enough to analyze the subgroups separately; information on the participants' menstrual cycles was based on their subjective reports rather than on ultrasound scans; neither trial in this review had double blinding, which may have affected their results; generalizability of the findings is limited because of the small number of trials and limitations in their quality. Future research should consider these limitations [16-17]; however, this review provides a strong basis for future studies and suggests that yoga nidra could provide a safe and effective therapy for the growing problem of psychological issues associated with menstrual irregularities. Furthermore, this review contributes to the development of knowledge in complementary therapy regarding how women with menstrual disorders might manage their own conditions.

## **6. Conclusion**

In conclusion, findings from the two trials included in the review suggest that yoga nidra can effectively alleviate psychological problems associated with menstrual irregularities; however, further high-quality RCTs that address the issue of insufficient blinding are needed to confirm and aid the understanding of the effects of yoga nidra in managing psychological problems associated with menstrual disorders.

### **Financial support and sponsorship**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit

sectors.

### Disclosure statement

Conflicts of interest: none.

### REFERENCES

- 1) Osayande A, Mehulic S. Diagnosis and initial management of dysmenorrhea. *Am Fam Physician* 2014;89:341-346.
- 2) Rani K, Tiwari SC, Kumar S, Singh U, Prakash J, Srivastava N. Psycho-biological changes with add on yoga nidra in patients with menstrual disorders: a randomized clinical trial. *J Caring Sci.* 2016 Mar 1;5(1):1-9. doi: 10.15171/jcs.2016.001. eCollection 2016 Mar.
- 3) Rani K, Tiwari S, Singh U, Singh I, Srivastava N. **Yoga nidra** as a complementary treatment of anxiety and depressive symptoms in patients with menstrual disorder. *Int J Yoga.* 2012 Jan;5(1):52-6. doi: 10.4103/0973-6131.91715.
- 4) Rani M, Singh U, Agrawal GG, et al.: Impact of Yoga nidra on menstrual abnormalities in females of reproductive age. *J Altern Complement Med*, 2013, 19:925-929.
- 5) Rani K, Tiwari S, Singh U, Agrawal G, Ghildiyal A, Srivastava N. Impact of **Yoga nidra** on psychological general wellbeing in patients with menstrual irregularities: A randomized controlled trial. *Int J Yoga.* 2011 Jan;4(1):20-5. doi: 10.4103/0973-6131.7817
- 6) Satyanada SS: *Yoga nidra. In Practices; Outline of the Practice, General Suggestions, Yoga Nidra I. India: Bihar Yoga Bharati Yoga Publication Trust, 2006, pp 69-89.*
- 7) Kanojia S, Sharma VK, Gandhi A, Kapoor R, Kukreja A, Subramanian SK. Effect of yoga on autonomic functions and psychological status during both phases of menstrual cycle in young healthy females. *J Clin Diagn Res* 2013;7:2133-2139.
- 8) Beets MW, Mitchell E: Effects of yoga on stress, depression, and health-related quality of life in a nonclinical, bi-ethnic sample of adolescents: a pilot study. *Hisp Health Care Int*, 2010, 8: 47-53.
- 9) Moher, D., Liberati A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine*, 151(4), 264-269.
- 10) Schulz KF, Altman DG, Moher D, et al. CONSORT 2010 statement: updated guidelines for reporting parallel group randomized trials. *J Clin Epidemiol* 2010;63:834-840.
- 11) Higgins JPT, Green S. *Cochrane Handbook for Systematic Reviews of Interventions. Version 5.1.0 (updated March 2011)* ed: The Cochrane Collaboration, 2011.
- 12) Rani K, Tiwari SC, Singh U, Agrawal GG, Srivastava N. Six-month trial of **Yoga nidra** in menstrual disorder patients: Effects on somatoform symptoms. *Ind Psychiatry J.* 2011 Jul;20(2):97-102. doi: 10.4103/0972-6748.102489.
- 13) Jensen, P. S.; Stevens, P. J.; Kenny, D. T.. Respiratory patterns in students enrolled in schools for disruptive behaviour before, during, and after Yoga Nidra relaxation. *Journal of Child and Family Studies* 21.4 (Aug 2012): 667-681.

- 14) Janakiramaiah, N., Gangadhar, B. N., Naga Venkatesha Murthy, P. J., Harish, M. G., Subbakrishna, D. K., & Vedamurthachar, A. (2000). Antidepressant efficacy of Sudarshan Kriya Yoga (SKY) in melancholia: A randomized comparison with electroconvulsive therapy (ECT) and imipramine. *Journal of Affective Disorders*, 57(1–3), 255–259.
- 15) Kjaer, T. W., Bertelsen, C., Piccinni, P., Brooks, D., Alving, J., & Lou, C. L. (2002). Increased dopamine tone during meditation induced change of consciousness. *Cognitive Brain Research*, 13(2), 255–259.
- 16) Parker S, Bharati SV, Fernandez M. Defining yoga-nidra: traditional accounts, physiological research, and future directions. *Int J Yoga Therap*. 2013;23(1):11-6.
- 17) BenBenavides S, Caballero J. Ashtanga yoga for children and adolescents for weight management and psychological welling: an uncontrolled open pilot study, *Complement Ther Clin Pract* 2009; 15(2):110-114.

**Table 1.** Characteristics of the included randomized controlled trials

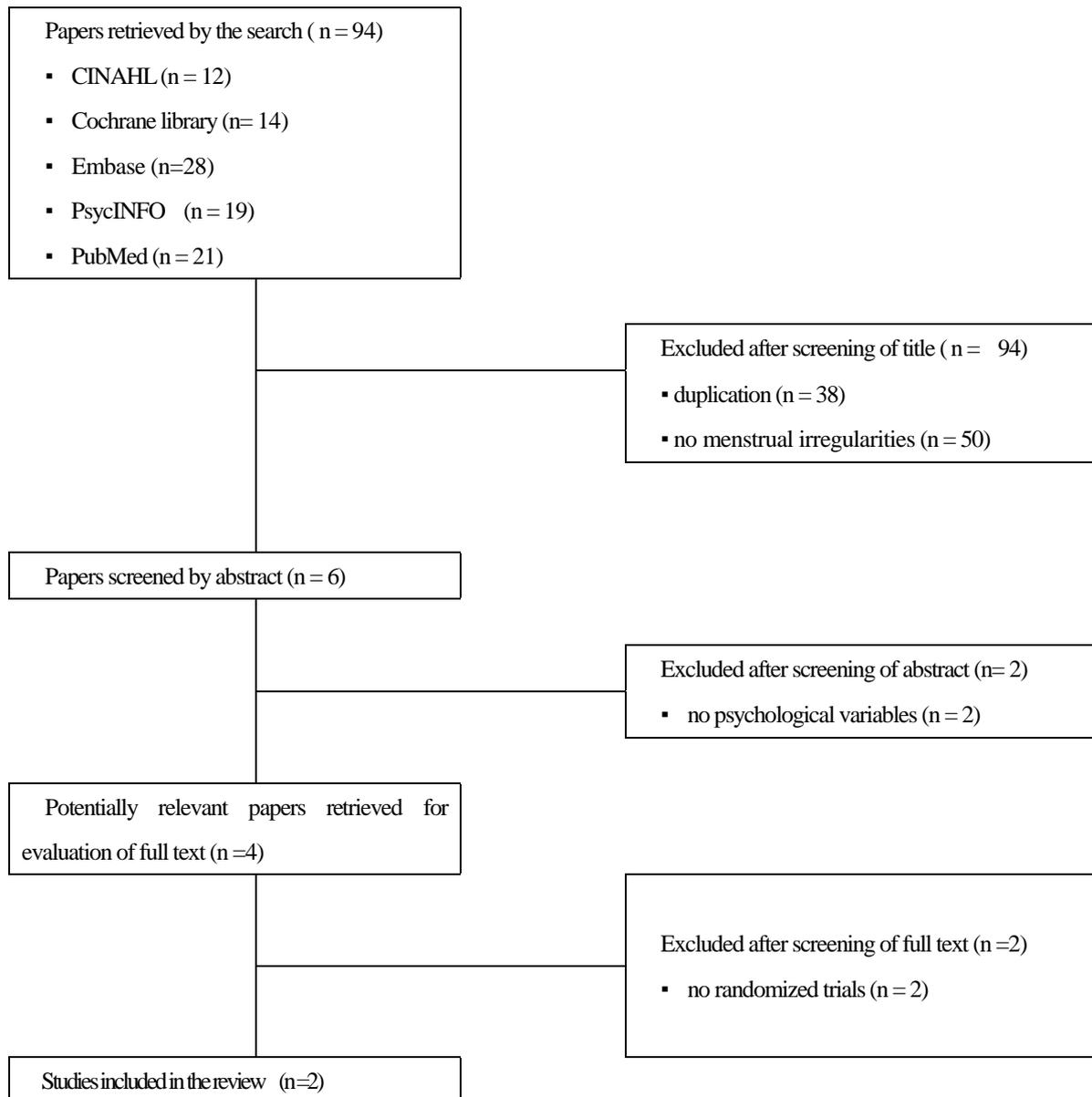
Study, year, location	Participants	Interventions		Outcome measures	Main results	Adverse events	Limitations
		Experimental group	Control group				
	Population Sample size (N;EG, CG) Mean age (age range) Drop out n (%)	Interventions Delivery method Duration Interventionist					
Rani et al., 2016, India/Uttar Pradesh	Menstrual irregularities 100 (50, 50) 26.5 (18-45) 13 (13.0)	Yoga nidra with medication 30-35 min per day, 5 days per week 6 months Yoga therapist	Only medication	Anxiety Depression	$p < 0.01$ $p < 0.02$	None	All menstrual disorders were included. Small sample size. Selection of participant's self-reports.
Rani et al., 2011, India/Uttar Pradesh	Menstrual irregularities 150 (75, 75) - (18-45) 24 (16.0)	Yoga nidra with medication 35 min per day, 5 days per week 6 months Yoga instructor	Only medication	Anxiety Depression	$p < 0.003$ $p < 0.01$	None	No mention.

CG, control group; EG, experimental group

**Table 2.** Quality appraisal of all included studies.

<i>Study, year</i>	<i>Random allocation</i>	<i>Allocation concealment</i>	<i>Blinding</i>	<i>Incomplete outcome</i>	<i>Selective reporting</i>	<i>Other bias</i>	<i>Quality level</i>
Rani et al., 2016	Yes	Yes	Yes	Yes	Yes	Yes	A
Rani et al., 2011	Yes	Yes	Unclear	Yes	Yes	Yes	B

Yes, criteria met; no, criteria not met; unclear, unclear whether criteria were met.



**Figure 1.** Flowchart of included studies through the literature searches.