Effect of Yoga nidra on hematological variables in women of reproductive age group suffering from menstrual disturbances

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Abstract

Since yoga is currently enjoying widespread popularity in both Indian and western cultures, and has gained acceptance amongst the wider group of 'mind body' interventions in alternative medicine,[1] yogic techniques are increasingly being sought out by those with medical and psychological problems.

Objective: - To study the effect of Yoga Nidra on hematological parameters (Hb%, TLC, DLC and ESR) in the patients of menstrual disturbances.

Design: - In this study fifty (50) subjects having menstrual irregularities were selected from the department of obstetrics and gynecology. Subjects were divided randomly in to two groups in yoga group and non-yoga group, twenty five (25) in each group. Out of these (50 subjects), forty one (41) completed the study protocol.

Intervention: - The yogic intervention consisted of yoga nidra practice for 35-40 minutes/day, five days in a week for six months in the department of physiology CSMMU UP Lucknow.

Outcome: - Determination of Hb%, TLC, DLC, and ESR were done in all the subjects at zero time and after six months of yogic intervention in yoga group and without yogic intervention in non yoga group.

Results: - The base line characteristics (mean±sd) of the control group was, age = 29.24±7.94 years, Body Mass Index (BMI) = 22.23±4.65 kg/m^2. Yoga group, age = 29.08±8.22 years, Body Mass Index (BMI) = 24.17± 5.41 kg/m^2. In present study, Hb% ($p<0.001$), TLC ($p<0.03$), were increased significantly after six months of yoga therapy in yoga group when compared with non yoga group.

Conclusion: - These observations may help in managing the problems of reproductive age group women.

Abbreviations: - Hb %, Haemoglobin percentage; TLC, Total Leukocyte Count; DLC, Differential Leukocyte Count; ESR, Erythrocyte Sedimentation Rate.

Inroduction

Yoga nidra is a practice which can be widely applied in the modern world to improve the quality of human life. It is a systematic method of inducing complete mental, emotional and physical relaxation. The physical body is composed of a number of interrelated systems. These include the involuntary functions of the body such as the digestive, respiratory, reproductive and endocrine systems. These are directly under the control of the subconscious mind acting through the brain. When the mind is calm and harmonious the physical organs will also function efficiently. Yoga Nidra gradually releases emotional tensions that are embedded in the mind. Yoga Nidra gives maximum relaxation to the mind and body in the minimum time. Most of the beneficial effects of

Yoga Nidra cannot be measured with scientific instruments. It can be used to calm patients and aid in recovery from various types of diseases by encouraging activation of the self-curative functions of the body. The human body is a self-regulating mechanism that is constantly adjusting itself in tune with its own needs and capacities. The menstrual cycle is a sequence of events that occurs once in a month in a sexually mature female. Menstrual disorders have become widespread over the last few generations so that menstrual difficulties causes as much wretchedness as the common cold and medical insight into this problem is equally limited. The menstrual disorders are known to have cause effect relationship with hormonal and pathophysiological status of body and sum of the effects can be studied by simple hematological parameters like Hb%, TLC, DLC and ESR. Yoga Nidra is an ideal way for relieving the tension that disturbs female's physical and emotional harmony and thereby may correct the menstrual abnormalities and improve her physiological state.

Objective: To see the effect of yoga nidra on Hb%, TLC, DLC, and ESR in patients of menstrual distrubances.

Methodology:

Study population: Subjects having menstrual irregularities, who fulfilled the inclusion criteria and were willing for compliance were invited to participate in the yogic interventional prospective study, from the Department of Gynecology, C.S.M. Medical University Uttar Pradesh, Lucknow, India. Yoga Nidra was led by well educated and trained Yoga instructors selected by a selection committee. Yoga nidra was also approved by a screening committee of department of AYUSH New Delhi before the study. Fifty (50) subjects (patients with menstrual irregularities) were randomly selected for the study.

Subjects were randomly divided in yoga (n = 25) and non yoga (n = 25) group. All the patients were referred by a senior gynecologist after examining their physical health and medication status. After six months 41 subjects completed study protocol, yoga (n=20) and non yoga (n=21). Before study all the subjects were asked to maintain their routine activities and not initiate any new physical activities for this duration.

Patients registered from March to April 2009 were 50; this study was approved by the institutional Research ethics-Committee. After signed informed consent by the subjects, anthropometric measurements were taken. Height was measured with the participants standing without shoes and was recorded to the nearest of 0.5 cm. Weight was measured using a digital scale, with the participants wearing light cloths, and was recorded to the nearest 100 grams.

Sample Collection/Procedure
Five milliliters of peripheral fasting blood was collected from all the subjects before yogic intervention and after six months of yogic intervention in yoga group and with out intervention in non yoga group. For estimation of Hb%, TLC, DLC and ESR 2 ml blood was collected in K3 EDTA (1.8 mg/ml) vials. Serum was separated by centrifuge machine (3500-4000 rotations/minute) at room temperature. Hb%, TLC, DLC and ESR were measured after overnight fasting (12 hours after meal).

Haemoglobin percentage was determined by haemoglobinometer. Cell counter was used for the measurement of TLC & DLC, and ESR was determined by the wintrobe method in the department of Pathology of the university.

Yogic Intervention
Under the guidance and supervision of Yoga experts and faculty, subjects performed Yoga Nidra practice. Total duration of this practice was 35 – 40 minutes/day, five days in week till six months in the department of physiology C.S.M. Medical University Uttar Pradesh, (erstwhile KGMU) Lucknow, India.

Statistical Analysis
Statistical analysis was conducted using InStat3 software version 3.05, 32, Year 2000. Data are expressed as numbers and percentages for discrete variables and as mean ± SE for continuous variables. Baseline differences between cases and controls were examined by a Student *t* test for continuous data.

Results

Table 1: Frequency distribution of Demographic profile of 50 patients with and without Yoga Nidra practices. The p value <0.05 considered as significant.

	Total Patients	**Yoga Group**	**Control Group**	**p Value**
Demographic Profile	N = 50	N = 25	N = 25	
Age	29.16±7.99 Yrs.	29.08±8.22 Yrs.	29.24±7.94 Yrs.	0.94
Height	153.12±8.3 cm	154.88±4.03 cm	151.36±5.51 cm.	0.01
Weight	54.55±13.00 Kg.	58.09±13.72 Kg.	51.01±11.44 Kg.	0.05
BMI	23.19±5.09 Kg/m^2	24.17± 5.41 Kg/m^2	22.23±4.65 Kg/m^2	0.18
WC	79.18±13.67 cm.	80.56±12.69 cm.	77.8±14.71 cm.	0.48
HC	95.1±12.02 cm.	98.00±12.25 cm.	92.2±11.29 cm.	0.08
WHR	0.83±0.07	0.82±0.05	0.84±0.07	0.31

* There was no significant difference between Yoga Group and Control Group at the baseline data.

Base line values	**Non Yoga Group N=25**	**Yoga Group N=25**	**p Value**
Clinical Variables	**Base line Values**	**Base line Values**	
SBP	125±10.10 mmHg	124.8±11.23 mmHg	0.95
DBP	79.4±6.01 mmHg	78±8.42 mmHg	0.52
Hb%	11.78±0.87 gm%	11.80±0.80 gm%	0.93
TLC	7212±1547.4 /mm^3.	7440±1134.3 /mm^3	0.55
Neutrophils	67.4±4.86 %	68.0±6.21 %	0.71
Lymphocytes	31.0±4.79 %	29.8±6.33 %	0.45
Eosinophils	1.4±1.15 %	1.52±0.87 %	0.68

Monocytes	0.6±0.70 %	0.64±0.64 %	0.83
ESR	18.56±6.79 Mms	21.96±8.04 Mms	0.11

Table 2: Tables of different groups before and after yoga nidra with their p values.

Non Yoga Group **After six months**	**N=25**	**N=21**	**p Value**
Demographic Variables			
BMI	22.23±4.65 Kg/m^2	21.41±3.39 Kg/m^2	0.51
WC	77.8±14.71 cm.	72.76±9.69 cm.	0.19
HC	92.2±11.29 cm.	88.14±9.98 cm.	0.21
WHR	0.84±0.07	0.83±0.07	0.55
Clinical Variables	**Pre Values**	**Post Values**	**p Value**
SBP	125±10.10 mmHg	124.76±11.23 mmHg	0.93
DBP	79.4±6.01 mmHg	78±8.42 mmHg	0.17
Hb%	11.78±0.87 gm%	11.93±0.87 gm%	0.56
TLC	7212±1547.4 $/mm^3$.	7300±1334.5 $/mm^3$	0.83
Neutrophils	67.4±4.86 %	66.71±5.41 %	0.65
Lymphocytes	31.0±4.79 %	31.3±3.75 %	0.79
Eosinophils	1.4±1.15 %	1.14±0.73 %	0.38
Monocytes	0.6±0.70 %	0.57±0.51%	0.87
ESR	18.56±6.79 Mms	18.42±6.44 Mms	0.94

Yoga Group **After six months**	**N=25**	**N=21**	**p Value**
Demographic Variables			
BMI	24.17± 5.41 Kg/m^2	21.82±4.63 Kg/m^2	0.13
WC	80.56±12.69 cm.	75.1±11.27 cm.	0.14
HC	98.0±12.25 cm.	92.45±11.62 cm.	0.13
WHR	0.82±0.06	0.79±0.07	0.17

Clinical Variables	**Pre Values**	**Post Values**	**p Value**
SBP	124.8±11.23 mmHg	123.1±12.56 mmHg	0.63
DBP	78±8.42 mmHg	76.85±7.57 mmHg	0.64
Hb%	11.80±0.80 gm%	12.58±0.63 gm%	0.001*
TLC	7440±1134.3 $/mm^3$.	8065±728.57 $/mm^3$	0.03*
Neutrophils	68.0±6.21 %	67.15±4.51 %	0.61
Lymphocytes	29.8±6.33 %	29.15±7.44 %	0.75
Eosinophils	1.52±0.87 %	1.4±0.68 %	0.61
Monocytes	0.64±0.64%	0.65±0.59%	0.91
ESR	21.96±8.04 Mms	18.05±5.08 Mms	0.06*

Table 3: - Using independent‘t’ test between differences of base line values from post values (Values after six months) of each variables in both (Non Yoga and Yoga) groups

Variables	**Difference in Scores**		**t value**	**p value**
	Yoga	**Non Yoga**		

	n = 20 mean, sd	n = 21 mean, sd		
BMI	2.41, 0.58	0.02, 0.16	4.08	0.0002*
WC	5.85, 2.65	0.33, 0.45	2.105	0.04*
HC	5.45, 2.24	1.43, 1.03	1.66	0.11
WHR	0.06, 0.03	-0.01, 0.01	1.95	0.05*
SBP	0.90, 3.67	1.19, 3.03	0.06	0.95
DBP	0.15, 2.33	1.86, 2.09	0.55	0.59
Hb%	0.78, 0.16	0.21, 0.20	2.16	0.03*
TLC	735.0, 259.2	266.7, 178.1	1.50	0.14
Lymphocytes	2.55, 1.61	4.68, 2.38	0.70	0.49
Neutrophils	0.85, 1.22	-0.71, 0.52	1.19	0.23
Eosinophils	0.09, 0.19	0.19, 0.27	0.29	0.77
ESR	4.60, 2.05	0.90, 1.65	1.41	0.16

Abbreviations: - BMI, Body Mass Index; WC, Waist Circumference; HC, Hip Circumference; WHR, Waist Hip Ratio; SBP, Systolic Blood Pressure; DBP, Diastolic Blood Pressure; Hb %, Haemoglobin percentage; TLC, Total Leukocyte Count; DLC, Differential Leukocyte Count; ESR, Erythrocyte Sedimentation Rate.

Discussion

The precise mechanism by which yoga nidra acts centrally upon the brain to induce relaxation throughout the nervous system and to bolster the resistance levels of the physiological systems has become an important area of research. Yoga Nidra has remarkable similarities with sleep. During this meditation practice, the participant becomes disconnected from external stimuli, increases their parasympathetic drive (i.e., relaxation) and reaches states of dream-like visual experiences. Yoga Nidra is described as a meditation practice that

allows the practitioner to approach state of consciousness.[10] In one stage of the practice, Yoga Nidra involves progressive relaxation of the physical body through visualization and awareness of body parts. Toma et al.[11] described that the rotation of consciousness through the body that takes place during Yoga Nidra may in itself be an effective means of establishing motor skill learning that is further enhanced in the later and deeper stages of the practice. It is very helpful in the management of menstrual abnormalities.

Yoga nidra has also been prescribed for the relief of pain associated with dysmenorrhoea (pain during menstruation) and excessive levels of pre-menstrual tension and other disturbance of menstrual cycle. Yogic relaxation training can be prescribed frequently as an adjunct or alternative to conventional drug therapy for menstrual dysfunction and pain.[2]

In present study we found that BMI ($p<0.0002$), WC ($p<0.04$), WHR ($p<0.05$) and Hb% ($p<0.03$), were significantly changed after six months of yoga nidra practice in yoga group, when compared with non yoga group. Kumar, Kamakhya (2007) also found that after Yoga nidra practice haemoglobin and Total Leukocytes Counts (TLC) increased significantly[3]. Bhogal R.S. et.al. also got significant increase in Red blood cells after four week meditation practice with preceded by omkar.[4] apart from these hematological parameters in this study like HC, TLC, DLC, Systolic Blood Pressure and Diastolic Blood pressure were found to have decreased in yoga group as compared to non yoga group.

Datey, K.K. et. al. found that yoga nidra therapy adopted either alone or as an adjunct therapy, reduced systolic readings (SBP) by an average of 15- 20 mm Hg, and diastolic readings (DBP) by 10 mm Hg after 3 weeks yogic practice.[5,6,7]. A recent study conducted at the Stanford University School of Medicine (USA) demonstrated that the drop in blood pressure induced by daily yoga nidra practice has a far reaching effect, extending throughout the day, and is not merely a transient effect coincident with the practice session.[8]

In an important study it is found that pain during menstruation is a common complaint in over 50% of Indian women. Data on menstrual cycles and pain and discomfort both prior and after doing yoga practices were collected from 40 women who have been coming to learn to do yoga practices to Kaivalyadham, Bombay. The regular practice of yoga nidra may be helpful in relieving pain from menstrual disturbances.[9]

Conclusion: Yoga is a centuries-old tradition with origins in ancient India. Blending physical, mental, and spiritual practice, it seeks to bring about a state of harmony between mind and body through concentration, physical practice, and mental discipline. In this study we have taken 50 patients suffering form menstrual abnormalities. Out of these 25 patients participated in an interventional study for six months. All the patients taking medication and were referred by a senior gynecologist. Under the supervision and guidance of Yoga expert they were performed yoga nidra practice for six months. Hematological and anthropometric measurements were done at the beginning and the end of six months, in all the patients. Results have indicated that yoga nidra is a powerful relaxation technique and can heal chronic patients too.

This study suggests that yoga nidra practice have an effect of hematological variables in women of reproductive age group suffering from menstrual disturbances. It improves the haemoglobin percentage in these patients. Thus yoga nidra relaxation and visualization are excellent therapeutic techniques for women of reproductive age group. Yoga nidra is a successful therapy for both recent and long standing menstrual disturbances.

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