Research Article

A Study on the Effect of Yoga Therapy on Dysmenorrhoea

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Abstract:
The present study, entitled 'A study on the effect of yoga therapy on Dysmenorrhea' was conducted at Mangalore University Campus, Mangalagangothri. 20 girls who were suffering from menstrual disorders were selected from University Campus, Mangalagangothri and nearby places. Duration of the study was 30 days. The subjects were randomly divided into an experimental group and a control group, each group having 10 subjects. Yogic practices were progressively introduced to the experimental group on six days in a week for one hour from 6.15am to 7.15am every day. The control group was not exposed to any yogic practices. Both the groups underwent Oestrogen test, BP, Weight and BMI measurement at baseline and at 30 days. A questionnaire was also administered to both the groups at baseline and at 30 days.
After yoga therapy for a period of 30days, the members of experimental group experienced overall improvement in their health. The yogic practices made them get relieved of their painful menstruation. The results of various tests were analysed using *t* test. After the yoga therapy, except BMI, remaining parameters showed significant improvement among experimental group when compared to control group. Oestrogen test showed a significant improvement with p=0.024398, Weight with p=0.036408. Similarly the Systolic Blood Pressure showed a significant improvement with p=0.001886, Diastolic Blood Pressure with p=0.044891. The mean scores of questionnaire decreased from 68.662 to 55.264 with p=0.042352. As p <0.05, the result is significant. The study depicts that yogic practices are helpful in managing menstrual disorders in general and Dysmenorrhea in particular.
Key words: Dysmenorrhoea, Oestrogen level, Yoga Therapy, Well-being.

Asian Journal of Complementary and Alterantive Medicine.
Volume 05, Issue 17
Published on: 05/12/2017.
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Cite this article as: K. Krishna Sharma, Thirumaleshwara Prasada H, Udayakumara K. K A Study on the Effect of Yoga Therapy on Dysmenorrhoea. Asian Journal of Complementary and Alterantive Medicine, Vol 5(18):1-9, 2017.

INTRODUCTION

Health of the future generation and the wealth of a nation depend upon the physical and mental well-being of women. It is because; nature has endowed her with the responsibility of perpetuating mankind. Nathamuni, in Yoga Rahasya clearly emphasises, women, when compared to men, have a special right to practise yoga. This is because, it is women who are responsible for continuity of the lineage. Women who were the most dormant segment of Indian population, have now become active participants in all walks of life. Till now, they were only unit of the family organization. Now, women are becoming not only a significant unit of the society but also influencing the course of social change in society. When a girl matures, the physiological functions taking place to develop the body to complete womanhood are at their peak to enable her to fulfil the responsibilities which nature has entrusted upon her.

The maturing process begins between the ages of ten and fifteen years and stops between forty five and fifty years. The endometrium becomes soft and swollen to receive an ovum. When the ovum is not fertilized and the blood is not needed for its nourishment, the swollen membrane and blood are expelled from the uterus through the vagina in the form of blood discharge. This discharge takes place once in a month and is called

menstruation. Hence, menstruation is a periodic change occurring in a female in which discharge of blood takes place from the cavity of the womb. It is purely physiological process preparing the female body for reproduction. Regularity of menstrual cycle in any woman depends upon a lot of internal and external factors affecting mind and body. Many a time, due to several factors the menstrual process may cause discomfort and severe pain. It is then considered to be a disorder in menstruation.

Women and men share many similar health problems, but women also have their own health issues, which deserve special consideration. Yoga helps women to fulfil her tasks as well as to maintain her complexion, lustre, and femininity. Yogic practices help her in all conditions and circumstances of her daily life. It is not only curative, but also preventive. It activates the internal organs and makes them function harmoniously. It strengthens the body's natural defences to fight against diseases. Yoga can make her emotionally stable and make her free from psychological disturbances. It helps to control and check emotions; it gives balance of mind. It makes her physically fit and healthy and makes her to approach the future life without any disturbances.

Dysmenorrhoea is - menstruation that is associated with cramping lower abdominal pain radiating into the lower back and thighs; the pain sometimes precedes menstrual flow. Dysmenorrhoea and their adverse symptoms represent an important health issue for many women of child-bearing age. Apart from a deleterious effect on the individual's private life, Dysmenorrhoea is being increasingly recognized as having significant implications at work. Therefore this study was done to test the efficacy of yogic practices in the management of menstrual disorders with special reference to dysmenorrhoea.

Review of Literature:

Yang et al. (2016) in their study entitled 'Effects of a yoga program on Menstrual Distress in Undergraduate students with primary dysmenorrhea: A single-blind, randomized controlled trial'. The study shows the effect of yoga program on menstrual cramps and menstrual distress in nursing students. Menstrual cramps and menstrual distress were decreased. According to this findings it indicates that yoga intervention may reduce menstrual cramps and menstrual distress in females under graduates with primary dysmenorrhea.

Sharma K.et al. (2014) in their study 'Effect of yoga therapy on menstrual disorders with reference to hormonal discrepancy' stated that Yoga therapy helps efficiently in managing the menstrual disorder and reducing the symptoms with minimal efforts. Yoga therapy is fruitful in controlling menstrual disorders. The study depicts that yogic practices are helpful in managing disorder.

Ekta et. al. (2014) in their study 'Role of yoga in primary dysmenorrhea' stated that Primary dysmenorrhea is the most common gynaecology disorder among female adolescents. Report shows that it affects their academic performance, social and sports activities and is a cause for school absenteeism. Yoga does not cause any side effect. It regulates the endocrine system and relieves anxiety. It helps in decreasing the level of prostaglandin and inflammatory mediators responsible for pain.

Usha Nag et. al. (2013) in their study effect of yoga on primary dysmenorrhea and stress in medical students stated that significant ($p<0.0001$) reduction in the perceived pain after yoga intervention in study group. 88% of the study group reported complete pain relief and 12% reported mild pain. After Yoga intervention, absenteeism dropped to 10% and improvement in daily activity was observed in study group.

Deo. SS et. al. (2011) concluded through their study namely "Yoga in the management of menstruation problems on college girls" that Lack of appropriate education in respect of menstruation and its care, inadequate nutrition, absence of exercise, social embarrassment and stress have been found to be the causes for the problems of menstruation in adolescent college girls. Therefore it was thought to investigate the contribution of yoga practices in solving the menstruation related problems in college girls. The seventy and frequency of these problems was reduced in 60% girls who suffered from premenstrual and menstrual problems, after 6 months Yoga intervention.

Objectives of The Study: To study the effect of yogic practices on Dysmenorrhoea of young girls of the age group of 20-22 years.

It was hypothesized that, as a result of yoga practice-

There is significant difference between pre and post levels of Estrogen.

There are significant changes in the pre and post level of Questionnaire, BP, Weight and BMI.

The following null hypotheses were set:

As a result of yoga practice,
There is no significant difference between pre and post levels of Estrogen.
There are no significant changes in the pre and post level of Questionnaire, BP, Weight and BMI.

MATERIALS AND METHODS:

The present study was conducted on 20 subjects to assess the effect of yogic practices among young girls who were suffering from Dysmenorrhoea. A detailed case history of each subject was taken. The subjects were divided randomly into two groups- experimental and control, each containing 10 subjects. The study was undertaken at Mangalagangothri. All the subjects of the study were of the age group of 20 to 22 years. All the subjects were unmarried. The study was conducted for the period of 30 days from 1thFebruary to5th March. The practices were taught to the subjects of experimental group six days in a week, from 6.15am to 7.15am.

Experimental group was introduced with Yoga therapy, which contained a set of twenty nine practices which included Asanas, Pranayamas, and Meditation and Relaxation techniques in a proper sequence. Asanas were taught for a period of 30 minutes, Pranayamas for 15 minutes, Meditation for 5 minutes and relaxation for 10 minutes. All the practices were taught gradually. Sufficient rest was given in between the practice whenever needed. The control group was not exposed to any yogic practices.

Method of analysis: A Paired "t" test was employed in the study to analyse the significance of the result statistically.

Parameters:

The parameters used are as follows-

Weight: Weight was measured before and after the practice of yoga, using the weight measuring scale and used as body parameter for the study.

Body Mass Index (BMI): BMI is a measure of body fat related height and is a simple measure of Height-Weight ratio. Body mass index was calculated using the formula, BMI=weight (kg)/height^2 (m), before and after the practice of yoga.

Blood Pressure: Blood pressure of all the subjects was measured twice using Sphygmomanometer, before and after the practice of yoga. Normal value of Systolic blood pressure is 120 mmHg and Diastolic blood pressure is 80 mmHg. Blood pressure varies according to age, sex, physiological conditions and activity level.

Questionnaire: The subjects were asked to answer a questionnaire both before and after the practice of yoga. A questionnaire with 28 questions was prepared for the purpose of study by considering the various signs and symptoms of Dysmenorrhea. It contained questions about their present menstrual pattern and general health condition.

The questionnaire was of closed form and each question contained answers in the form of choices in accordance with the questions. The subjects were asked to answer the questionnaire in an honest manner by choosing the most suitable answer. There were four answers for each question which were rated from 1 to 4 points. The most severe symptoms would result in a score of 112.

Estradiol test: Estradiol test is a Blood test that measures the amount of estradiol in Blood. Estradiol is the most common type of Estrogen measured for non-pregnant women. The amount of Estradiol in a women's blood varies throughout her menstrual cycle.

Reference Range:

Follicular phase: 19.5-144.2 pg/ml
Ovulatory phase: 63.9-356.7 pg/ml
Luteal phase: 55.8-212.2 pg/ml
Post-menopausal: 0-32.2 pg/ml

Introducing of Yoga:

The following practices were gradually introduced to the subjects of experimental group.

Svastikasana	Pavanamuktasana	Viparitakarani
Vajrasana	Bhujangasana	Uttanapadasana
SuptaVajrasana	Shalabhasana	Ujjayi pranayama
Urdwavajrasana	Dhanurasana	Anuloma-Viloma
Tadasana I	Makarasana	Pranava Meditation
Tadasana II	Ustrasana	Soham Meditation
Trikonasana	Janushirshasana	Shavasana I
Parsvakonasana	Upavistakonasana	Shavasana I
Pascimottanasana	Baddhakonasana	Yoganidra
Purvottanasana	Navasana	

RESULTS

After the practice of yoga for a period of 30days, the members of experimental group experienced overall improvement in their health. The yogic practices made them get relieved of their painful menstruation.

All the subjects of the study underwent Estrogen Test before and after the practice of yoga. The experimental group showed considerable improvement in the Estrogen test readings, weight and blood pressure which are shown in tables numbering from Table I-II. There were no much considerable changes in the control group in this regard (Table III-IV).

The following tables show the results of various parameters for both experimental and control group, before and after the practice yoga.

Table-I Height, weight, BMI and BP of Experimental group

Sl.No.	Names	Age (Years)	Height (cm)	Weight (Kg)		B.M.I.		B.P. Systole in mm Hg		B.P. Diastole in mm Hg	
				Before	After	Before	After	Before	After	Before	After
1.	Asha	21	154	49.7	49.8	21.0	20.99	124	128	82	80
2.	Anupama	21	171	69.4	70	23.7	23.9	108	110	72	76
3.	Nayana	22	155	50.7	51	21.1	21.22	114	116	80	82
4.	Kavya	21	152.5	40.9	40.5	17.6	17.4	78	80	48	60
5.	Milana	21	161	51.8	52.5	20.0	20.25	110	112	72	78
6.	Padma	21	152	37	37.5	16	16.23	102	104	74	76
7.	Namrutha	21	153	43.7	44.1	18.7	18.8	118	120	78	80
8.	Usha	21	153.5	39.7	39.8	16.7	16.89	112	110	76	74
9.	Sahana	21	157	49	49	19.9	19.87	118	120	78	76
10.	Pramitha	21	159	89.6	89.5	36.4	35.40	104	108	64	68

Table-II Estrogen test and Questionnaire of Experimental group

Sl.No.	Names	Estrogen in Pg/ml		Questionnaire in %	
		Before	After	Before	After
1.	Asha	76.80	88.13	59.8	56.25
2.	Anupama	202.18	305.28	63.3	46.42
3.	Nayana	80.78	48.50	61.6	56.25
4.	Kavya	72.04	218.81	132.3	58.03
5.	Milana	344.82	355.99	61.6	50.89
6.	Padma	50.44	51.38	62.5	52.67
7.	Namrutha	72.32	150.69	60.71	58.03
8.	Usha	46.92	47.37	56.25	51.78
9.	Sahana	62.93	67.47	65.17	62.5
10.	Pramitha	73.06	195.49	63.39	59.82

Table-III Height, weight, BMI and BP of Control group

Sl.No.	Names	Age (Years)	Height (cm)	Weight (Kg)		B.M.I.		B.P. Systole in mm Hg		B.P. Diastole in mm Hg	
				Before	After	Before	After	Before	After	Before	After
1.	Pooja	21	156	46	46	18.90	18.90	102	100	62	60
2.	Mandara	22	150	38.2	38	17.00	16.88	102	108	60	64
3.	Keerthana	22	155	45.8	45	19.10	18.73	120	118	78	72
4.	Impana	21	148	57.2	57	26.10	26.02	90	92	60	64
5.	Janaki	20	152.3	41.6	41	18.00	17.67	96	94	56	52
6.	Sannidhi	21	150.3	47.4	47.5	20.90	21.02	90	92	60	62
7.	Deepthi	21	160.5	45.7	46	17.90	17.85	100	98	58	54
8.	Meghana	21	154.2	42.5	42	17.90	17.66	138	130	80	78
9.	Sumalatha	21	157	43.1	45	17.50	18.25	98	96	68	64
10.	Anagha	21	160.4	52.6	52	20.40	20.21	122	120	78	76

Table - IV Estrogen test and Questionnaire of Control group

Sl.No.	Names	Estrogen in Pg/ml		Questionnaire in %	
		Before	After	Before	After
1.	Pooja	133.89	199.91	63.39	62.5
2.	Mandara	43.03	106.19	67.85	66.96
3.	Keerthana	75.64	25.11	59.82	58.03
4.	Impana	63.60	46.39	64.28	65.17
5.	Janaki	137.24	53.72	74.1	71.42
6.	Sannidhi	53.63	56.79	62.5	63.3
7.	Deepthi	45.04	40.32	62.5	61.6
8.	Meghana	249.34	122.79	71.42	74.1
9.	Sumalatha	52.93	57.48	69.64	68.75
10.	Anagha	257.66	62.06	57.14	55.2035

Statistical Analysis: A paired "t" test was applied for each parameter and found out the values for each group viz, Experimental and Control, before and after the study. The results of "t" test are tabulated in below (tables V-VI).

Table -V Result of statistical Analysis of Experimental group

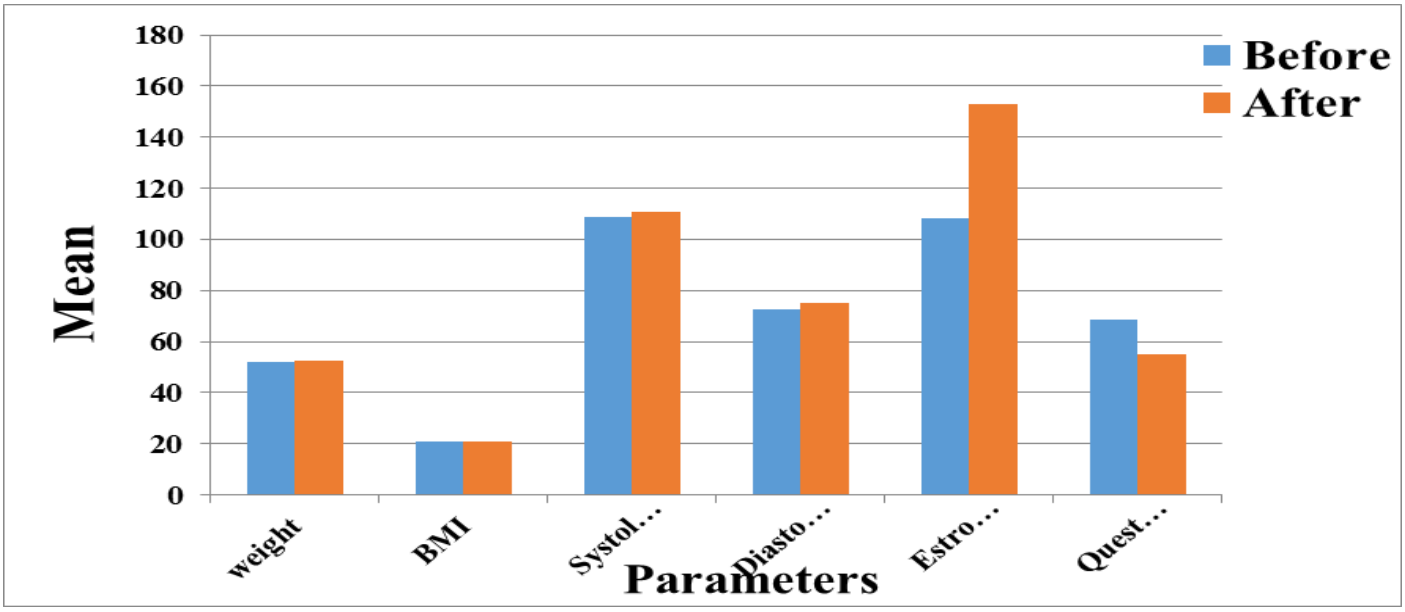
Sl. No.	Parameters	Mean		Standard deviation		T value	P value	Significance
		Before	After	Before	After			
1.	Weight	52.15	52.37	15.98855	15.97818	-2.03101	0.036408	S
2.	BMI	21.1	21.095	5.839416	5.541199	0.127043	0.45085	NS
3.	Systolic BP	108.8	110.8	12.72618	12.89961	-3.87298	0.001886	HS
4.	Diastolic BP	72.4	75	9.96884	6.548961	-1.90074	0.044891	S
5.	Estrogen	108.229	152.91	89.17939	106.9878	-2.27707	0.024398	S
6.	Questionnaire	68.662	55.264	21.33559	4.545086	1.937089	0.042352	S

Level of significance $p<0.05$
S-Significant
NS -Not Significant
HS-Highly Significant

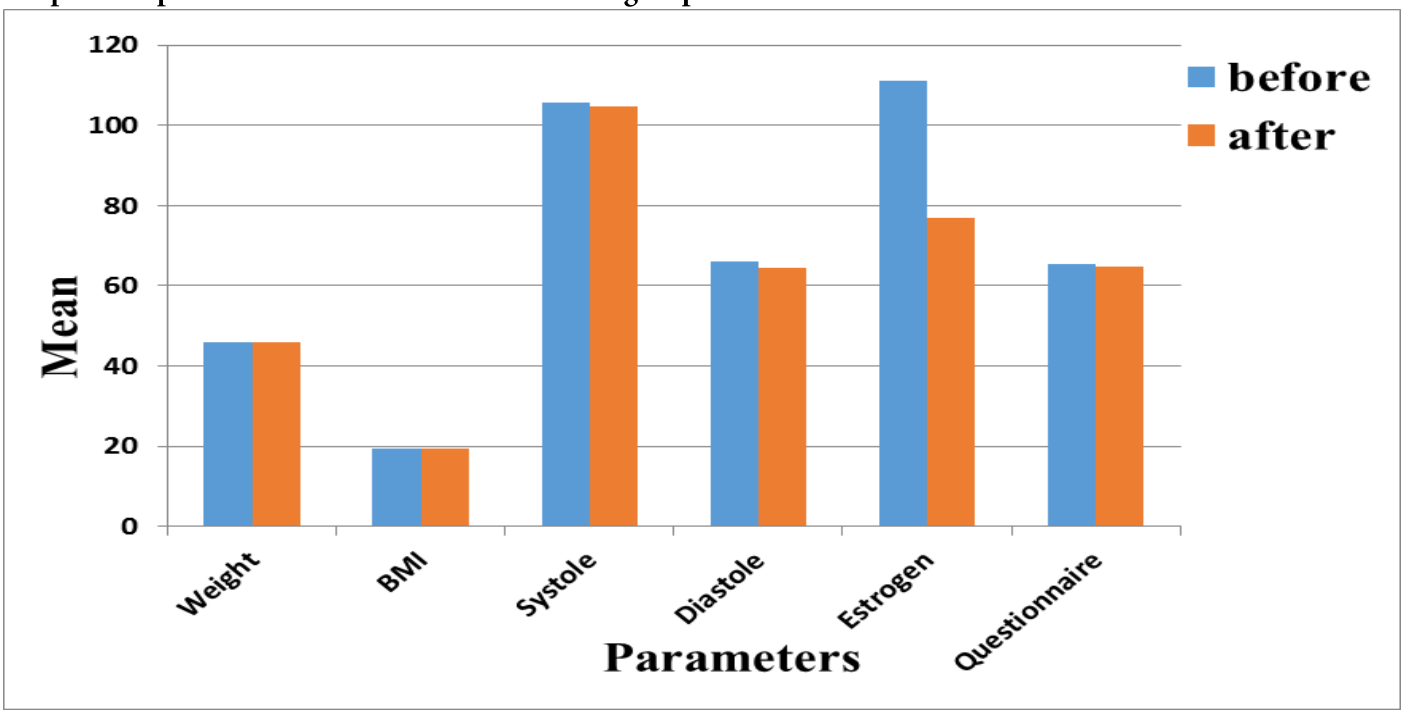
Table-VI Result of Statistical Analysis of control group

Sl. No.	Parameters	Mean		Standard deviation		T value	P value	Significance
		Before	After	Before	After			
1.	Weight	46.01	45.95	5.496959	5.438801	0.24577	0.405687	NS
2.	BMI	19.37	19.319	2.67293	2.663208	0.506165	0.312453	NS
3.	Systolic BP	105.8	104.8	15.70421	13.50555	0.858898	0.206344	NS
4.	Diastolic BP	66	64.6	9.285592	8.591986	1.252755	0.120933	NS
5.	Estrogen	111.2	77.076	82.32076	52.26555	1.312293	0.110951	NS
6.	Questionnaire	65.264	64.718	5.071529	5.509697	1.094185	0.151146	NS

Graphical representation of mean value of experimental group



Graphical representation of mean value of control group



DISCUSSION :

The yoga was conducted every day in the early morning from 6.15am to 7.15am. As a result, everyone have developed the habit of waking up early in the morning. Also, their sleeping pattern was regularized. This made them feel active and enthusiastic throughout the day. Most of them reported that they experienced freshness, relaxation and calmness after practice; it showed various other positive effects such as reduced tension, improved working ability and positive thinking after few days of practice.

In the present study, except BMI remaining all parameters were proved to be statistically significant in the experimental group. Every member felt improvement after the yoga therapy programme. It is clear in Table-V. But there was no significant

improvement among control group members. (Table - VI)

All 10 subjects who participated in yoga therapy programme for 30 days have experienced positive result. The study showed increased mean for Estrogen level. Before yoga practice it was 108.229 pg/ml and after yoga practice estrogen increased to 152.911 pg/ml. It shows a significant improvement with p=0.024398. Control group has not shown significant improvement in Estrogen test with p=0.110951. The mean scores of questionnaire decreased from 68.662 to 55.264 with p=0.042352. As p <0.05 the result is statistically significant. In control group also the mean score of Questionnaire decreased from 65.264 to 64.718. It was less when compared to experimental group. Its result is non significant p=0.151146. The study also showed increased mean for Systolic blood pressure. Before the yoga practice it was 108.8 and after the yoga practice it was 110.8. It showed a significant improvement with p=0.001886. Diastolic blood pressure also showed increased mean. Before the yoga practice it was 72.4 and after the yoga practice it was 75. It showed a significant improvement with p=0.044891. After yoga therapy the weight improved significantly with p=0.036408. The body mass index not significant with p=0.45085. It is evident from the above result that all the10 subjects responded to the treatment positively. But the variation of the rate of success could be dependent upon the regularity of practice, lifestyle and attitude. Thus, the study clearly shows that yoga therapy helps to overcome Dysmenorrhoea, the therapy is also helpful in improving the functioning of various systems in our body.

CONCLUSION:

The present study reveals, yoga therapy helps effeciently in the management of Dysmenorrhoea without using drugs. The results are encouraging as the therapy was given only for a short duration and there was no much control over the diet. The yoga therapy would yield better result if it is carried out for longer duration with more control over food and life style. Therefore it can be concluded that Dysmenorrhoea can be managed by yoga therapy. Yoga emphasizes on well-being of an individual. There fore, yoga therapy has shown beneficial effects on a variety of other conditions also along with dysmenorrhoea.

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