

JOY: The Journal of Yoga

An experimental study of selected *yoga* poses on young adult female population reporting primary dysmenorrhoea.

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BACKGROUND AND PURPOSE: Dysmenorrhea is one of the most common gynaecological complains in young adolescent girls who present to clinical physician and referral to physiotherapy. *Yogic* exercises are well designed for women and various *yoga* poses are mentioned in various research articles but enough research is yet to take place related to absenteeism at workplace, frequency of medication and other symptoms related to menstrual period. **SUBJECTS:** - 30 subjects between 15-25 yrs age group **METHOD:** - 40 subjects were included in the study; 10 subjects were compliant. Hence, only 30 subjects were included in study. A *yogic* exercise programme was given three times in a week for three months one time session was supervised. A record was maintained regarding absenteeism at workplace, Visual Analogue Scale, Moo's Menstrual Distress Questionnaire and frequency of medications. Data was collected and analysed statistically. **RESULT:** - There is a significant change in the frequency of medication ($t= 9.5$), absenteeism at workplace ($t= 8.5$), visual analogue scale ($z= -4.824$), Moo's menstrual distress questionnaire ($z= -4.784$). **DISCUSSION AND CONCLUSION:** - Selected *Yoga* postures can be used as an alternative treatment protocol. Selected *yoga* postures have shown significant change in the outcome measures by influencing autonomic nervous system. **CLINICAL RELEVANCE:** - After conducting the supervised programme, these *yoga* postures are positively influencing all outcome measures. Hence, selected *yoga* postures can be used as remedy for alleviating symptoms of primary dysmenorrhea.

KEY WORDS: - dysmenorrhea, MDQ, VAS, yoga

INTRODUCTION

Dysmenorrhea is derived from Greek word, “*dys*”, meaning difficulty / painful/ abnormal, “*meno*”, meaning flow.¹ It is of two types, primary and secondary. Primary dysmenorrhea is defined as menstrual pain with no visible pelvic pathology to account for them.^{1, 2} It typically occurs in first 6-12 months requires starting ovulation followed by pain.³ Secondary dysmenorrhea is associated with pelvic condition or pathology that causes pain in conjunction with menses.^{1,2,4}

Dysmenorrhoea (period pain) is one of the commonest gynecological disorders and is thought to affect 50% of women in their reproductive years.⁵ It has a negative effect on quality of life of the patients as well as their families. It is also responsible for huge economic losses as a result of cost of medications, medical care and reduced productivity.⁶

There are various options available for the management of primary dysmenorrhea like drugs such as NSAIDs and combination OCs are the most commonly used. Patients receiving these medications should be monitored for more serious adverse effects, including GI bleeding and renal dysfunction. Cyclooxygenase-2 (COX-2) inhibitors may be used in patients who cannot tolerate other NSAIDS or in whom these agents are contraindicated. The combination OCs suppresses the hypothalamic-pituitary-ovarian axis and thereby inhibits ovulation and prevents prostaglandin production in the late luteal phase Caution in patients diagnosed with hepatic impairment, migraine, seizure disorders, cerebrovascular disorders, breast cancer, or thromboembolic disease.² Other drugs such as niacin, vitamin E, calcium, omega-3 fatty acids antispasmodics are also used.⁷

Physiotherapy modalities like TENS⁸, spinal manipulation⁹ and acupuncture¹⁰ seems to be effective in the pain relief. There is need of studies regarding to look at the effect of myofascial trigger points on dysmenorrhea. Besides attaining physical fitness, *yoga* offers positive mental health. As *yoga* includes both of these aspects, its integration in prevention

of disease and promotion of positive of physical and mental health deserves its proud place in any health care programmed specially in women's health.¹¹Few articles mention that, cobra, cat and fish poses are effectively alleviating period pain.¹² Other yoga poses are yet to explore.^{11,13,14,15}There is need of quantification of outcomes such as absenteeism at workplace, frequency of medication and other symptoms related to menstrual period. This project is an effort to lighten the contribution of yoga regarding primary dysmenorrhea.

METHOD

Aim To observe the effectiveness of selected *yoga postures* on primary dysmenorrhea.

Objectives To observe the effectiveness of selected yoga postures on - Pain during menstruation, absenteeism at workplace, frequency of medication, and other symptoms observed during menstruation.

Material Assessment format, Exercise log book, Mat for each individual girl, a demonstration room, Pencil, Scale, Ruler, Pen, Selected yoga postures

Methodology

Study population: female subjects having primary Dysmenorrhea, **study design:** Experimental study, **sample size:** Initial assessment was made on 40 subjects but 10 subjects were compliant. Hence, only 30 subjects were statistically analysed. This compliance was due to their exams, vacations and college schedule. **Sampling method:** convenient sampling **Duration of data collection:** 1 year **Inclusion criteria:** Age group 15-25 yrs having primary dysmenorrhea, two yrs after completing menarche ,Unmarried females to avoid compliance **Exclusion criteria:** Any medical and surgical conditions in which selected yoga postures are contraindicated, subjects who were not able to attend the programme regularly. **Hypothesis: Null Hypothesis:** Selected yoga postures relieve symptoms of primary dysmenorrhea. **Alternate Hypothesis:** Selected yoga postures are not causing any effect on symptoms of primary dysmenorrhea **Study method:** Girls' hostels and

institutional visits were done with prior consent and appointment of the authorities and subjects participating in the study. Screening of subjects was done with the help of evaluation format. Selected *yoga* postures were prescribed to these subjects for three times a week. Out of which, one time session in a week was supervised. A record was maintained for three months with the help of log book given to every subject for the outcome measures such as - Visual Analogue Scale (VAS), Frequency of medication, Absenteeism at workplace and Moo's menstrual distress questionnaire (MDQ). All these readings were analysed statistically. The selection of *asnas* was done by keeping in mind that, the subjects were beginners and will not be able to perform difficult postures. The selected *yoga* postures were as follows-

BADDHAKONASANA (~ 1minute or as per tolerance)



VAJRASANA (~5 minutes or as per tolerance)



PASCHIMOTTANASANA (~30 seconds or as per tolerance)



UTTAHITA TRIKONASANA (~1 minute each side as per tolerance)



ARDHAMTSYENDRASANA (~2 minutes each side or as per tolerance)



SHAVASANA (asana is meant for rest, so its duration may vary subject to subject)



6) Duration of each posture was kept flexible as every individual's physical capacity will be different.

7) All the readings for above mentioned outcome measures were documented and data was analysed statistically.

Statistical Analysis

Descriptive statistics:-

Sr no.	Content	No of subjects (n=30)	Mean	Min	Max	Standard Deviation (SD)
1.	Age (yrs)	30	22.33	19	25	±5.38
2.	Menarche (yrs)	30	13.36	10	15	± 1.32
3.	Frequency of medications (total no. of tablets)	30	0.76	0.5	2	±0.45
4.	Absenteeism at workplace (in days)	30	0.83	0	2	± 0.56

- Paired 't' test was applied to ¹⁶
 - 1) Frequency of medications
 - 2) Absenteeism at workplace

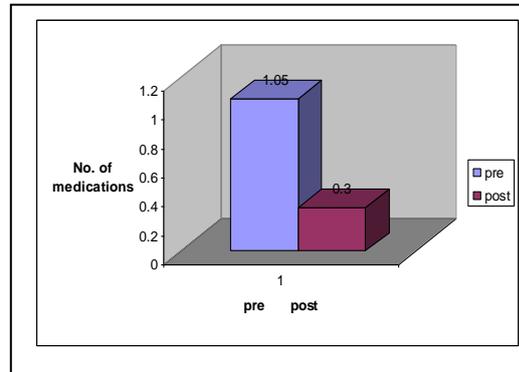
- Wilcoxon signed rank test was applied to—
 - 1) Visual analogue scale
 - 2) Moo's Menstrual Distress Questionnaire

Results

Frequency of medication

Table 1

Pre (Mean)	Post (Mean)
1.05	0.3

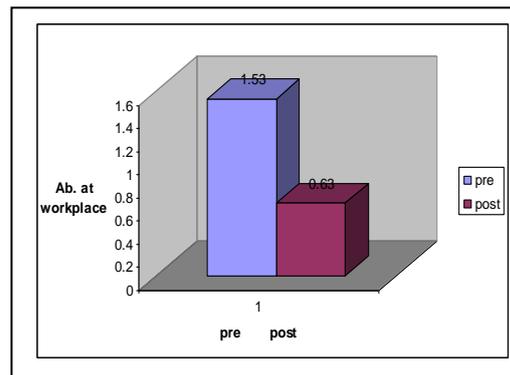


After applying paired *t* test, $t = 9.5$; $P < 0.05$; this shows significant change due to selected yoga poses exercise programme.

Absenteeism at workplace

TABLE 2

Pre (Mean)	Post (Mean)
1.53	0.63

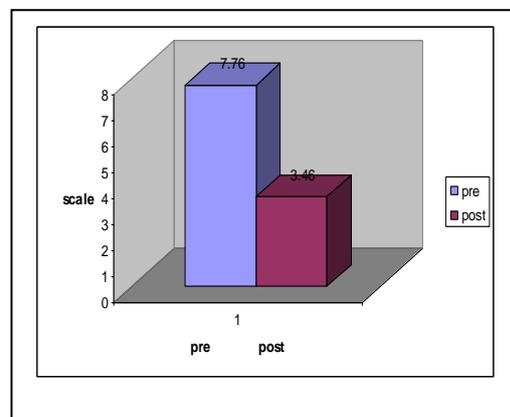


After applying paired *t* test, $t = 8.3$; $P < 0.05$; this shows significant change due to selected yoga poses exercise programme.

Visual analogue scale

TABLE 3

Pre (Mean)	Post (Mean)
7.76	3.46

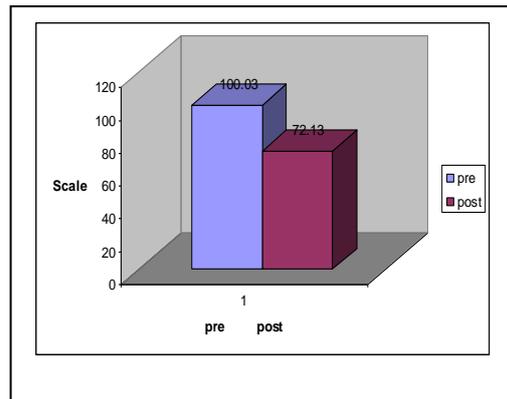


After applying Wilcoxon signed rank test, visual analogue scale showing significant change due to selected yoga poses exercise programme. $z = -4.824$; P value .000

Moo's menstrual distress questionnaire

TABLE 4

Pre (Mean)	Post (Mean)
100.3	72.13



After applying Wilcoxon signed rank test, Moo's menstrual distress questionnaire showing significant change *i.e.* $z = -4.784$; P value .000 due to *yoga* posture programme.

Discussion

The purpose of doing this study was to reduce frequency of medications as it has shown side effects on patients as mentioned in introduction. Selected *yoga postures* have not shown any side effects during the sessions. The inclusion criteria were decided regarding the history and age group. The selections of *asnas* were done by keeping in mind that, the subjects were beginners and will not be able to perform difficult postures. So *yoga postures* which are easy to learn and perform were selected. Sessions were avoided during menstrual phase of the cycle.¹¹

The 24 subjects out of 30 were taking medications and maximum medications taken by subjects was 3 in whole menstrual period as per their visual analogue scale scores highest *i.e.* 9 and 10. Other subjects were taking medications in between 2 and 1. After the *yogic* exercise programme, medication was reduced till 0 in whole menstrual period in 14 out of 24 subjects and 6 subjects showing 1. That means these people still have to continue the *yoga* programme to reduce it further.

Most of the subjects were absent on one day before and on the day of starting menstruation. Those who have highest score on the Moo's menstrual distress questionnaire and visual analogue scale have shown maximum absenteeism. However, some subjects

were not allowed to remain absent due to their working design; those subjects were given days of discomfort which are then included in the study. However, this *yogic* exercise programme has reduced absenteeism till 0 days in 18 subjects out of 27 subjects.

Meir Steiner and David L Streiner have explained that, the visual analogue scale is a reliable and valid source of assessing pain during menstrual disorder.¹⁶ Three months of *yogic* exercise programme shows, significant reduction in pain perceived in dysmenorrhea. Other outcome measures which may be influenced by pain are mentioned below. As increase in pain increases absenteeism at workplace and increased frequency of medications is found. David Coulter explains, standing postures includes *Utthita Trikonasana*. postures flood the nervous system with sensory input from all over the body. This is not so much of a twist as it is a swivel, one in which the pelvis rotates 90° causing the thigh is flexed with respect to the torso and the left thigh is hyper extended. In this sense, abducted hips are more in line with the frontal plane of trunk. Such Position causes facilitation of autonomic nervous system causing increase awareness of the nervous system, co-ordination and stretching of the muscle leads to increase in blood supply and pain relief. Twisting postures includes *Uttahita Trikonasana*. causes axial compression and release of blood vessels of abdomen and pelvic organs. Forward bending *Paschimottanasana* and *Badhakonasana* tend to inhibit the somatic nervous system and sympathetic limb of autonomic nervous system. Flexing forward enough in spine and hips to compress the abdomen have mildly in vigorating effects on abdominal organs stimulating enteric nervous system.¹⁸ As Dutta ray explains, sitting posture such as *Vajrasana* will give relaxation of pelvic floor muscles leading to pain relief. Relaxation of pelvic floor muscles will lead to the reduction of stimuli passing through the spasmodic muscles will lead to pain relief. Relaxation of pelvic floor muscles will lead to the reduction of stimuli passing through the spasmodic muscles will lead to pain relief.¹⁹ Karel Nespor published an article on *yoga* and pain relief in which he mentions that, decreased activation of brain due to decreased input of stimuli from the internal as well as external environment.²⁰ Lying posture like *Shavasana*, will

diminish the sympathetic effects on organs and tissues throughout the body. When you lie down to relax, the sympathetic nervous system calms down, reduces the muscle tone in smooth muscle that encircles artery and arterioles which allows those vessels to dilate to increase the blood supply.¹⁸

Telles et al, has studied the effect combining stimulating and calming *yogic* procedures in the same session. Their results supported that, a greater reduction in autonomic arousal followed by the relaxing procedure on their own.²¹

Rosemary A. Markum in has got results that, MDQ is internally consistent and does have high test retest reliability. However, difference between intermenstrual phases has just missed its significance at 0.05 levels. Results obtained in this study have shown significant change in the MDQ scores; at $P < 0.05$ level by Wilcoxon signed rank test. Psychological stresses may have influence regarding MDQ score²². As mentioned by Schellet et al in yoga gives psychological benefits to the patients to the patients may have given a significant change in MDQ. S. Dutta Ray also supports the psychosomatic adaptations of yoga postures.^{19, 21}

Limitations of the study: Sample size is small further study should be done with a larger sample size. No investigation was done to rule out endometriosis. **Suggestions:** Study should be done by taking the large sample size in which subjects from various strata of society like geographical, cultural, socioeconomic, educational background can be included. Exercise programme can be conducted at convenient site to involve larger population in the study; randomized control trial can be performed.

Conclusion

Selected yoga postures which were planned could be used as a home based treatment. It is cost effective. It has not shown any side effects in the treatment of primary dysmenorrhea. It causes reduction in frequency of taking medications, absenteeism at workplaces. There is

reduction in scores of visual analogue scale and Moo's menstrual distress questionnaire which suggests that yogic exercise programme is effectively reducing symptoms of primary dysmenorrhea. Hence, planned *yogic* posture exercise programme may be used as an alternative source of treatment in primary dysmenorrhea.

Acknowledgment

My grateful acknowledgment to Dr Nilima Bedekar who helped in every aspect of this research. I am very much thankful for her valuable support and time to time help. I express my immense gratitude and thanks to all subjects who participated in this study, without whose cooperation this study was not have been possible. I would like to thank Dr Dhara Kapoor and Dr Rohit Sonttake for their valuable help suggestions in statistical analysis of data.

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