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MEDITATION AND YOGA AS ALTERNATIVE THERAPY FOR PRIMARY DYSMENORRHEA

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ABSTRACT

Objectives: The objective of the study is to analyze the effect of yoga and meditation as alternative therapy for primary dysmenorrhea in young students and its outcome on school absenteeism.

Materials and Methods: 113 medical students, unmarried girls from Dr. Pinnamaneni Siddhartha Medical college with primary dysmenorrhoea were randomly assigned to study (n = 60) and control group (n = 53). Semi structured questionnaire and the Numerical rating scale for pain were administered on all the participants at baseline and after three months. The study group was subjected to yoga and pranayama and meditation. Data was analysed using Microsoft Excel and the results were expressed as proportions. Chi square test was applied to find out the significance of association and p value <0.05 was considered as statistically significant.

Results: We observed a significant ($p<0.0001$) reduction in the perceived pain after yoga intervention in study group. 83.33% of the study group reported complete pain relief and 11.66% reported mild pain. No reduction of pain was found in the control group. After yoga intervention, absenteeism dropped to 10.3% and improvement in daily activity was observed in study group.

Conclusions: From the present study it can be concluded that meditation and yoga can be used as a definite alternative therapy for primary dysmenorrhoea in young students.

Keywords: absenteeism, dysmenorrhea, yoga

INTRODUCTION

Primary dysmenorrhoea is defined as painful menses in women with normal pelvic anatomy, usually begins during adolescence[1]. Pain usually develops within hours of the start of the menstruation and peaks as the flow becomes heaviest during the first day or two of the cycle.[2] Epidemiological studies of young adolescent girls reported prevalence of dysmenorrhea of 59.7% [3]. Release of prostaglandins and other inflammatory mediators in the uterus cause the uterus to contract.[4] These substances are thought to be a major factor in primary dysmenorrhea.

Several studies have shown that adolescents with primary dysmenorrhoea report that it effects their academic performance, social and sports activities and is a cause for school absenteeism.[1,4] The most common effect of menstrual problems on daily routine, reported by unmarried undergraduate medical students was in the form of prolonged resting hours followed by inability to study.[5] In fact, it is estimated that over 600 million hours are lost from work each year due to dysmenorrhea[6]. Such absences diminish opportunities for successful educational, psychosocial, and

cognitive development during the critical period of adolescent growth.

Yoga is recognized as a form of mind-body medicine that integrates an individual's physical, mental and spiritual components to improve aspects of health, particularly stress related illnesses.

A 3,000 year old tradition, yoga, is now regarded in the Western world as a holistic approach to health and is classified by the National Institutes of Health as a form of Complementary and Alternative Medicine (CAM).[7] The word "yoga" comes from a Sanskrit root "yuj" which means union, or yoke, to join, and to direct and concentrate one's attention.[8] Regular practice of yoga promotes strength, endurance and flexibility. [9]

Regular practice leads to improvement in life perspective, self-awareness and an improved sense of energy to live life fully. [10] With the practice of yoga balance between the mind and body can be achieved. [11]

Yoga philosophy and practice were first described by Patanjali in the classic text, *Yoga Sutras*, which is widely acknowledged as the authoritative text on yoga.[8] Asana is just one of the many tools used for healing the individual; only three of the 196 sutras mention asana and the remainder discusses about conscious breathing, meditation and lifestyle changes. [8]

In *Yoga Sutras*, Patanjali outlines an eightfold path to awareness and enlightenment called *ashtanga*, which literally means "eight limbs".[8] The eight limbs are comprised of ethical principles for living a meaningful and purposeful life; serving as a prescription for moral and ethical conduct and self-discipline, they direct attention towards one's health while acknowledging the spiritual aspects of one's nature.

The physical benefits of yoga are linked to the release of β-endorphins and the shift caused in neurotransmitter levels linked to emotions such as dopamine and serotonin.[12] Williams and colleagues reported that Iyengar yoga, tailored to chronic low back pain patients, produced significant reductions in pain, physical disability, and depression.[13] With this background we have taken up this study to analyse the effect of yoga and meditation on primary dysmenorrhea in young students.

MATERIALS AND METHODS

This study was carried out at Dr. Pinnamaneni Siddhartha Institute of Medical Sciences from January to March 2012 after obtaining the ethical approval from the institutional ethical committee. All the girl students of 4th and 5th semester from our medical college were screened for the complaints of primary dysmenorrhea with a menstrual history proforma. Unmarried girl students, within the age group 18-23 years, with primary dysmenorrhoea and were included in our study. Students already practicing yoga and with other causes of secondary dysmenorrhea were excluded from the study. Semi structured proforma and the Numerical rating scale (NRS) for assessment of intensity of pain were administered on all the subjects taken for study.

Out of the 135 girl medical students 113 students fulfilled the fixed criteria. These subjects were assured of confidentiality of information after explaining the purpose of the study and obtaining consent. Of the 113 students who fulfilled the fixed criteria, sixty subjects were selected by simple random sampling and were allotted to the study group (n=60) for yoga intervention and the remaining (n=53) were included in the control group. Semi structured proforma and the Numerical rating scale (NRS) for assessment of intensity of pain were administered to the students of both study and control group at the baseline. The 60 participants in the study group were asked to attend 40 minute yoga class every day for a period of 3 months taught by the Yoga instructor. Pranayama and Meditation were also practiced

for 10 min each day. All classes were free of charge to the participants. The control group (n=53) did not receive any intervention and were asked to complete the questionnaires. Each group was evaluated after three months. Semi structured questionnaire and the Numerical rating scale (NRS) were administered on both the groups at the end of three months.

Yoga intervention: The following Yoga poses were done by the study group: Navasana, Matsyasana, Dhanurasana, Vajrasana, Paschimotasana, Ustrasana, Ardhamatstyendrasana, Salabhasana, Bhujangasana, Sarvangasana, Uttanapadasana, Padmasana, and Surya namaskara (24 times).

Nadishodi Pranayama: one of the optimal breathing patterns is diaphragmatic—deep, smooth, even, quiet, free of pauses, involving exhalation and inhalation from alternative nostrils. This was followed by meditation for 10 minutes.

Semi structured proforma consists the details of the socioeconomic status; detailed history of menstrual flow; menstrual cycle; premenstrual symptoms; menstrual pain; college absenteeism and involvement in daily activities during menstruation.

Numerical rating scale (NRS) typically consists of a range of numbers from (0-10) from which the patient selects the number most representative of their pain. 0 would mean 'No pain' and 10 would mean 'Worst possible pain'.

Statistical analysis: Data was entered and analysed using Microsoft Excel and the results were expressed as proportions. Chi square test was applied to find out the significance of association and p value <0.05 was considered as statistically significant.

RESULTS

In the present study 113 medical students, unmarried girls, with primary dysmenorrhoea, were recruited and randomly assigned to study group (n = 60) and a control group (n = 53). The baseline characteristics were very similar for the study and the control groups. All the participants in this study completed the questionnaire at the beginning of the study and at the end of three months. Semi structured questionnaire and the Numerical rating scale for pain were administered on all the participants. The subjects of the study group were asked to do yoga poses, pranayama and meditation and the control group did not receive any intervention.

We found that most of the participants (75%) suffering from both dysmenorrhoea belonged to high socioeconomic status. In the present study college absenteeism was observed that in 98.3% of the study group and 56.9% of the control group and the involvement in daily activities was also affected. After 3 months of yoga intervention, absenteeism was reported only in10.3% of the study group as shown in Table 1. Improvement in the daily activity involvement was also observed.

Table 2 shows the comparison of NRS scores before and after yoga intervention in the study group. Out of the 60 study group 2 reported with mild pain, 47 reported with moderate pain and11 reported with severe pain. At the end of three months of yoga intervention 53 subjects (88.33%) reported with complete pain relief and 7 subjects reported with mild pain. We observed that there was significant ($p<0.0001$) reduction in the pain perceived after yoga intervention.

Table 3 shows the NRS scores at the baseline and after three months in the control group. 44 subjects of the control group (n=53) reported mild to moderate pain and 9 subjects reported severe pain. At the end of three months no change was observed in 52 subjects.

DISCUSSION

Yoga works on the whole person, bringing mind and body into harmony. The effect of relaxation techniques could be explained partially by nonspecific decreased activation of the brain secondary to decreased input of stimuli from the

internal and external environment. Decreased anxiety and depression through relaxation techniques influences the emotional component of pain.[14,15,16] Local relaxation of a painful area cannot be overemphasized. This relaxation is accomplished by activation of antagonistic muscle groups. Gentle stretching has similar effects. Strengthening of weakened muscles and correction of faulty postures can be pain relieving[17].

The practice of asana (yogic postures) develops muscle strength and flexibility, which facilitates diaphragmatic breathing.[8] Similarly, relaxation and meditation help with diaphragmatic breathing by releasing physical and emotional tension. The asanas invigorate and regulate the working of muscles; viscera; glands; and vascular, nervous, and lymphatic systems.

Zahra Rakhshaee studied the effect of yoga on dysmenorrhea .In their study, the results showed that compared with the Control group, there was a significant difference in the pain intensity and pain duration in the experimental group ($P < 0.05$).[18] The authors concluded, "Yoga reduced the severity and duration of primary dysmenorrhea. The findings suggest that yoga poses are safe and simple treatment for primary dysmenorrhea.[18] We observed that there was significant ($p<0.0001$) reduction in the pain perceived after yoga intervention in our study.

Pranayama is an essential part of yoga postures. It is the science of breath. Prana means ''breath, life, vitality, wind, and energy'' and Ayama means ''length, expansion, stretching, or restraint.'' There are several techniques of pranayama. One of the optimal breathing patterns is diaphragmatic—deep, smooth, even, quiet, free of pauses, involving exhalation and inhalation. In yogic tradition, voluntary control of breathing has long been used to foster selfawareness and reduce autonomic reactivity[17.] Some special breathing and meditation techniques may have a positive influence on the central nervous system to increase pain control and pain tolerance.[17] Pain modifies the pattern of respiration. This modification may be secondary to an emotional component and muscle guarding. Deep breathing, which includes prolonged expiration, tends to relax skeletal muscles and reduce pain.

For people coping with chronic pain, a brief training in mindfulness meditation could help improve pain management.[15] In a recent study that tested meditation's effect on perception of pain, meditation-trained participants had less of a response to pain while meditating and even experienced less pain sensitivity when they weren't meditating.[16]

In our study after 3 months of yoga, pranayama and meditation, subjects reported a relief in pain

One review aims to discuss the effect of stress on the immune system and examine how relaxation techniques such as Yoga and meditation could regulate the cytokine levels and hence, the immune responses during stress.[16,17]

In adolescents, absenteeism due to dysmenorrhea ranged from 14% [19] to 51% [20], of girls and decreased participation in school-related functions ranged from 29% to 50% [4]. In those with severe dysmenorrhea, 50% missed school[19]. In the present study college absenteeism was observed in 98.3% of the study group and 56.9% of the control group and the involvement in daily activities was also affected. After 3 months of yoga intervention, absenteeism was reported only in10.3% of the study group. Conclusions: From the present study it can be concluded that yoga can be used as a definite alternative therapy for primary dysmenorrhoea in young students. It reduces school absenteeism. So, it should be implemented among college students to augment their menstrual well-being.

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Table-1: Absenteeism: Baseline and After 3 Months in Study and Control Group

	Baseline	After 3 months
Study group	98.3	10.3
Control group	56.9	56.9

P <0.0001

Table-2: Comparison of NRS Scores at the Baseline and After Yoga Intervention in the Study Group

NRS	Baseline	After 3 months
0	0	53
1-3	2	7
4-6	47	0
7-10	11	0

p value <0.0001

Table-3: NRS Scores at the Baseline and After Three Months in the Control Group

NRS	Baseline	After 3 months
0	0	1
1-3	1	1
4-6	43	44
7-10	9	7