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**A RESEARCH ON VARIOUS OUTCOME OF
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A Research on Various Outcome of Alternative Yoga Therapy for Primary Dysmenorrhoea and Stress

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Abstract – Few studies have been done on yoga as therapy for stress and primary dysmenorrhoea. This study is aimed at evaluating the efficacy of yoga as alternative therapy for primary dysmenorrhoea and stress. With yogic exercises the stress and pain of dysmenorrhoea was controlled indicating the benefits of yoga in primary dysmenorrhoea. Yoga lessens psychosocial stress levels, so it should be implemented among college students to augment their menstrual well-being.

Primary dysmenorrhea is one of the most common complains and gynecological problem worldwide among young females. Findings claimed that exercise may positively affect this problem. Therefore, the main purpose of this study was to examine the effect of 8 weeks physical activity on primary dysmenorrheal. Overalls, the results of this study indicated that participating in physical activity program is likely an approach to reduce the detrimental effect of primary dysmenorrhea symptoms. In present day life women are effectively facing challenges encountered by stressful life resulting in Mithya Ahar, vihar, over exertion & malnutrition this may direct to vikruti in "Rutuchakra" leading to various vyadhi allied to menstruation. Ayurveda recommends rutucharya and dinacharya, diet modulation and yoga in the form of asanas, pranayam and meditation on a regular basis so as to alleviate dysmenorrhoea effectively. Similarly, Uttarbasti, Garbhashaya balyaaushadhi, anuvasan or matrabasti can also be administered if necessary.

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INTRODUCTION:-

Menstrual disorders are a common presentation by late adolescence, 75% of girls experience some problems associated with menstruation 1. Dysmenorrhoea is a common problem in women of reproductive age. Primary dysmenorrhoea is defined as painful menses in women with normal pelvic anatomy, usually begins during adolescence². Affected women experience sharp, intermittent spasm of pain usually concentrated in the supra pubic area. Pain may radiate to the back of the legs or the lower back. Systemic symptoms of nausea, vomiting, diarrhoea, fatigue, mild fever and headache or light headedness are fairly common. 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.

Primary Dysmenorrhoea is the most common gynaecologic disorder among female adolescents, with a prevalence of 60% to 93%. 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. 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. The aetiology of primary dysmenorrhoea is not precisely understood, but most symptoms can be explained by the action of uterine prostaglandins, particularly PGF₂- Alfa. The risk factors for dysmenorrhoea are; age < 20 years, nulliparity, heavy menstrual flow, smoking, upper socioeconomic status; attempts to lose weight, physical inactivity, disruption of social networks, depression and anxiety. Physical activity is also an

important behavioral cofactor; people who describe themselves as active have lower levels of inflammatory biomarkers than their sedentary counterparts.

Additionally, psychological stressors can directly provoke transient increases in proinflammatory cytokines. Yoga's reputation for stress reduction and mental health benefits has bolstered its popularity in recent years, and data from randomized trials suggest that yoga reduces symptoms of anxiety and depression.

Mechanistic explanations for yoga's potential mental and physical health benefits have highlighted reductions in sympathetic nervous system tone and increases in vagal activity, both of which could have favourable endocrine and immune consequences, including lower inflammation. It has been suggested that the number of regular ovulatory menstrual cycles is associated with an increased risk of breast cancer for women. At the same time, there is growing evidence of an association between psychosocial stress and menses-associated health problems in women, suggesting that stress may affect menstrual function.

However, Studies to date have examined the relation between stress and the risk of dysmenorrhoea. Yoga appears to provide improvement in stress. Very few studies suggested that yoga reduced the severity and duration of primary dysmenorrhoea.

In the past two decades, the relation between physical activity and menstrual disorders including primary dysmenorrhoea has significantly been studied. Research findings have indicated that exercise can affect menstruation in many ways including inducing amenorrhoea in athletes and it may decrease symptoms of premenstrual syndrome and dysmenorrhoea. Primary dysmenorrhoea or painful menstruation, in absence of any specific pelvic diseases, is one of the most common

complaints of women and is also the most common gynecological problem worldwide. Primary dysmenorrhoea begins when young girls first experience the ovulatory cycles and its prevalence increases during adolescence (15-17 years) and reaches to its highest in 20-24 years and decreases progressively thereafter. In primary dysmenorrhoea pain begins few hours before or after the onset of menstruation and lasts for 24-48 hours.

The pain is more in the first day and rarely continues to next day. Dysmenorrhoea pains are felt in lower abdomen and may radiate into inner parts of thighs. In a high percentage of cases, girls may experience systematic symptoms such as backache, nausea, vomiting, diarrhea, fatigue and headache. With severe pain, the suffers may be absent from school or work for one or two days and it could have negative impact

on academic, social and sports activities of young girls.

Although primary dysmenorrhoea is not a real threat of life, but can impact on the quality of female life and in case of severity it may lead to disability and inefficiency. On the other hand, dysmenorrhoea can cause psychological problems in some of the females resulting in their loneliness and inactive participation in different social activities, The detrimental impact of dysmenorrhoea on the lives of women has been considered by most of the researchers in this area. In many countries, primary dysmenorrhoea is the leading cause of recurrent short-term school and work absenteeism in young girls and women. Data from few longitudinal studies showed that the absenteeism from school due to primary dysmenorrhoea is 34 to 50 percent. Indeed, as reported by many studies, there is a considerable cost to both the individual and society as a result of dysmenorrhoea.

It is believed that symptoms of primary dysmenorrhoeal stem from raised concentrations of prostaglandins F_{2a} (PGF_{2a}) resulting in uterine contractions and ischemia. One likely mechanism for increasing prostaglandins is that, during premenstrual phase, progesterone decreases which results in the synthesis of prostaglandins in endometrial cells by membrane phospholipids. This process is supported by the ability of prostaglandin synthesis inhibitors in pain relief. As these inhibitors only provide pain relief in 70% to 75% of women, other factors may also be involved. The results of studies carried out in North America, China, Australia, Turkey and Iran have shown that the prevalence of primary dysmenorrhoea and percentage of women involved are different from society to society. Based on findings of these and other studies, dysmenorrhoea is one of the most important health issues of young girls which must be considered because many researchers claimed that primary dysmenorrhoea affects between 50 to 90% of general population.

Due to its importance, different treatments including medical and non-medical treatment such as taking non-steroidal anti-inflammatory drugs (NSAIDs), herbal, dietary therapies, yoga, meditation and acupuncture have been used to reduce the effects of dysmenorrhoea.

Although these treatments are generally thought to reduce the discomfort associated with dysmenorrhoea, it is believed that participation in regular physical activity is another positive way of dysmenorrhoea treatment by which it may diminish the symptoms of dysmenorrhoea in exercising young girls and women. Shavandi et al. (2009) studied the effect of 8 weeks isometric exercise on primary dysmenorrhoea and reported that intensity and duration of pain-induced by primary dysmenorrhoea are reduced

and less medicine is taken, but it has no effect on the amount of bleeding. Shahrjerdi and Sheikh Hoseini (2010) reported that the severity and length of pain due to primary dysmenorrhea in young girls following 8 weeks stretching exercises are diminished and they take significantly less medicine. However, a number of studies have shown a correlation between life stress and gynecological symptoms. Similarly, women who train intensively have been found to experience fewer symptoms than women who take part in physical activities occasionally or not taking part at all.

Dysmenorrhea, or painful menstruation is one of the most important causes of school absenteeism amongst adolescent girls, and is also strongly linked to limitations

1. Dysmenorrhoea is the most common gynaecologic disorder among female adolescents, with a prevalence of 60% to 93%.
2. The aetiology of primary dysmenorrhoea is not precisely understood, but most symptoms can be explained by the action of uterine prostaglandins, particularly PGF₂-alfa.
3. Elevated prostaglandin levels were found in the endometrial fluid of women with dysmenorrhea and correlated well
4. with the degree of pain. The increase in prostaglandins in the endometrium following the fall in progesterone in the late luteal phase results in increased myometrial tone and excessive uterine .
5. contraction. The identified risk factors for dysmenorrhoea include teenage, nulliparity, heavy menstrual flow, smoking, upper socioeconomic status; attempts to lose weight, physical inactivity, disruption of social networks, depression and anxiety.

Yoga's potential mental and physical health benefits are reductions in sympathetic nervous system tone, increases in vagal activity and on social, academic, sports and daily activities is highly prevalent among female medical students also lowering inflammation; all of which could have 7 favourable endocrine and immune consequences. 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. Williams and colleagues reported that lyengar yoga, tailored to chronic low back pain patients, produced significant reductions in pain, physical disability, and 8 depression. Very few studies suggested that yoga reduced the severity and duration of pain in primary dysmenorrhea.

DYSMENORRHOEA (KASHTARTAVA): AN AYURVEDIC PERSPECTIVE

Today stress is becoming an inescapable part of modern life. In the incessant quest for material comforts, a woman has been losing her health. The basic reason why women are reeling under myriad problems is because she has not been following the codes of healthy living. She has disregarded the codes for the bodily health as well as healthy mind also.

Menstruation is a natural event as a part of the normal process of reproductive life in females. Due to today's sedentary lifestyle and lack of exercise, dysmenorrhoea is becoming today's burning problem throughout the world which causes discomfort for women's daily ensuing day to day activities and may result in missing work or school, inability to participate in sports or other activities. A systematic review of studies in developing countries performed by Harlow and Campbell (2002) has revealed that about 25-50% of adult women and about 75% of adolescents experience pain during menstruation, with 05-20% reporting severe dysmenorrhoea or pain.

In the treatment of dysmenorrhea, no addictive, analgesic, antispasmodics are prescribed which are not good for health for longer use. During menstruation, many women experience gastrointestinal upsets which are increased by analgesics and anti-inflammatory drugs, which also produce headache, dizziness, drowsiness and blurred vision.

In Ayurvedic classics Kashtartava (dysmenorrhoea) is not described as a separate disease because women were not suffering much from this problem in that era because of pin pointed Ritucharya & Rajasvalacharya. According to Ayurvedic text there are many other diseases in which Kashtartava is considered and is described as a symptom. Hence, this study is particular about the description regarding Kashtartava on the basis of scattered classical references.

1. Artava

A substance of the body which flows out at the specific period of time is called as *Artava*. A substance which flows out from Apaty amarga without pain, burning and sliminess is known as *Artava*. Apana Vayu and Vyana Vayuis mainly responsible for *Artava Utpatti*.

2. Kashtartava

Kashtartava (dysmenorrhea) is not separately described as a disease. But there are many diseases in which Kashtartava is considered and described as a symptom.

Nirukti – The term *Kashtartava* is made of two words- *Kashta* and *Artava*

Kashta: Painful, Difficult, troublesome, ill, forced, wrong, unnatural, a bad state of Thing.

Artava: Belonging to reasons, period of time, menstruation.

Kashtena - with great difficulty.

Thus the word *Kashtartava* can be expressed as- “Kashtenamuchyatiiti kashtartava” i.e. the condition where *Artava* is shaded with great difficulty and pain is termed as “*Kashtartava*”.

The term dysmenorrhea refers to painful menstruation. Dysmenorrhea is a cramp labor-like pain in the lower abdomen that radiates to upper abdomen, waist and thighs and is sometimes accompanied by systemic symptoms like nausea, vomiting, diarrhea, headache and dizziness.

Primary dysmenorrhoea is the pain associated to ovulation cycles, without demonstrable lesions that affect the reproductive organs. Primary dysmenorrhea is related to myometrial contractions induced by prostaglandins (Pgs) originating in secretory endometrium, which result in uterine ischemia and pain. In addition to the physiologic perspective, various psychologic theories have also been proposed, emphasizing the role of personality factors and attitudes about menstruation. Secondary dysmenorrhoea is the pain associated with ovulatory cycles caused by a demonstrable pathology.

METHODOLOGY

This study was carried out at Dr. Pinnamaneni Siddhartha Institute of Medical Sciences from July to October 2010. All the girl students of our medical college [1 – 5th year] were screened for primary dysmenorrhoea and stress using a structured questionnaire and 4-item version of The Perceived stress scale.

Unmarried girl students, within the age group 18-23 years, with primary dysmenorrhoea and stress were included in our study. Students with diagnosed psychiatric disorders would have been excluded from the study but no participant met this criteria. Students already practicing yoga and with other causes of secondary dysmenorrhea were excluded from the study. Out of the 320 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 student 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, the Numerical rating scale (NRS) for assessment of intensity of pain and The Perceived stress scale (PSS) for stress assessment 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 60 minute yoga class every day for a period of 3 months taught by the Yoga instructor. 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, Numerical rating scale (NRS) and The Perceived stress scale (PSS) 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).

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)³⁰ 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’.

The Perceived Stress scale (PSS) is a validated self-report questionnaire widely used for assessing an individual’s self-perception of stress. The PSS has 14-, 10- and 4-item versions and has been shown to yield adequate reliability and validity (Cohen et al., 1983; Cohen and Williamson, 1988). In this study, 4-item version was used to screen potential subjects while the 10-item version was used to assess change in perceived stress before and after 3 months. Participants gave their responses on a 5-point Likert scale, ranging from never (0) to very often.

Statistical analysis was done with SPSS 11.5 and the results were expressed in proportions. Friedman test were applied to find out the significance of association and p value <0.05 was considered as statistically significant.

RESULTS AND DISCUSSION

In the present study 113 medical students, unmarried girls, with primary dysmenorrhoea and stress, 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 questionnaires at the beginning of the study and at the end of three months. Semi structured questionnaire, The Numerical rating scale for pain and The Perceived Stress Scale were administered on all the participants. The subjects of the study group were asked to do yoga poses and the control group did not receive any intervention. We found that most of the participants (75%) suffering from both dysmenorrhoea and stress belong to high socioeconomic status.

In the present study we observed that in 98% of the study group and 57% of the control group the involvement in daily activities was affected and college absenteeism was more. After 3 months of yoga intervention absenteeism was reported only in 10% of the study group. Improvement in the daily activity involvement was also observed and only 10% of study group reported with disturbance.

In the present study, we examined the efficacy of yoga in relieving the menstrual pain and stress in unmarried female college students. In the present study we observed that in 98% of the study group and 57% of the control group the involvement in daily activities was affected and college absenteeism was more. Similar results have been reported by Sharma et al.⁵ However, after 3 months of yoga intervention, absenteeism came down to 10% in the study group. There was also improvement in the daily activity.

Students who had menstrual pain had higher stress scores than those who did not have menstrual pain, stress score was found to be associated with menstrual pain in the current study. Wang L et al suggested that perceived stress was associated with painful menses¹⁵. Regardless of these facts, it has been shown that daily stressors or perceived stress appears to be associated with premenstrual symptoms and that stress reducing measures such as eliciting a relaxation response and aerobic exercise are effective in alleviating premenstrual symptoms²¹. The current results seem to be consistent with these earlier findings. In our study compared to control group, students who had yoga intervention for three months demonstrated pronounced and significant improvements in perceived stress ($P < 0.0001$). 82% (49 subjects) of the study group reported complete stress relief.

We observed after yoga intervention in study group there is significant ($p < 0.0001$) reduction in the perceived pain using Friedman test. 88% of the study group (53 subjects) reported with complete pain relief and 12% (7 subjects) reported with mild pain. In contrast, no reduction of pain was found in the control group. NRS scores were compared between the study and control group at the end of the study and p value (< 0.0001) was found statistically significant.

CONCLUSION

In conclusion, the results of the present study suggested that performing regular physical activity reduced the primary dysmenorrhea symptoms. Therefore, because of high potential benefits of physical activity and exercise in reducing the detrimental effects of primary dysmenorrhea symptoms, young girls are recommended to take part in such physical activity programs in order to help them to decrease the negative impact of these symptoms on their academic, social and even personal life.

Ayurveda views Primary Dysmenorrhea as a doshic imbalance that can potentially be impacted through balanced living that is characterized by dosha appropriate diet, herbal supplements, exercise, routine, yoga, meditation, as well as nourishing inputs through all five senses.

It is concluded that yoga can be safely used as an alternative therapy for pain relief in dysmenorrhea and this action is not mediated through progesterone. Because we are dealing with a functional problem that is not a disease state, we can truly focus on a holistic approach. Further researched are required to explore the detailed mechanism of its efficacy.

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