



## ROLE OF WALNUT CONSUMPTION, AEROBIC EXERCISES AND MEDITATION IN RELIEVING SYMPTOMS OF DYSMENORRHOEA IN YOUNG HEALTHY MEDICAL STUDENTS

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### ABSTRACT

**Objectives:** - (1) To check efficacy of aerobic exercise, meditation and walnut consumption in dysmenorrhoea. (2) To find method to reduce sickness absenteeism.

**Study design:-** Randomised control trial

**Methodology:-** Ninety dysmenorrhoeal students (based on VAS score and Menstrual distress questionnaire ) in the age group of 17-25 from medical and nursing students of two medical colleges were selected and randomly divided into three groups A, B and C. Group A performed aerobic exercises, Group B performed meditation and group C were given 20gm of walnut each day. VAS score was taken during each cycle for three consecutive cycles.

**Results:** - After three cycles the entire three groups showed reduction in symptoms based on VAS score but reduction in symptoms was much more in case of students. Three groups were compared using ANOVA test. Group C showed most significant decrease in VAS score ( $p=0.039$ ) followed by exercise group ( $p=0.156$ ) and meditation group showed least reduction ( $p=0.465$ ).

**Conclusion:** - By decreasing the severity of dysmenorrhoeal symptoms walnut consumption along with aerobic exercises can reduce sickness absenteeism and increase performance of female medical professionals.

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### INTRODUCTION

It is a well established fact that more than 50% of the women in their reproductive ages suffer from Dysmenorrhoea. Out of these 10% have severe dysmenorrhoea and 1 to 3 days of their life is impaired in each menstrual cycle (1). Primary dysmenorrhoea starts some hours before menstruation and continues up to 12-72 hours and sometimes pain is so severe that it can be compared to labour pains along with cramps in the lower abdomen radiating toward the inner side of the thighs. Many such cases experience systemic symptoms, such as nausea, vomiting, diarrhoea, fatigue, irritability, and dizziness (2, 3). Even though the causes of primary dysmenorrhoea are still not clearly determined, but it has been demonstrated that prostaglandin might be playing a major role in its occurrence, and most of its symptoms could be explained by prostaglandin activity (2, 4).

Dysmenorrhoea is a common cause of sickness absenteeism from both classes and work by the female student community. (5) The idea that exercise might help relieve menstrual pain is not new.

Billig proposed that women with dysmenorrhoea had contracted ligamentous bands in the abdomen and later he developed a series of stretching exercises for which he claimed a high rate of symptom relief. (6) The belief that exercise was effective seems to have prevailed and led to anecdotal beliefs among health agencies, clinicians, and women that exercise is beneficial. A meta-analysis that examined risk factors for different types of chronic pelvic pain found exercise was associated with a small reduced risk of dysmenorrhoea (odds ratio: 0.89, 95% CI = 0.80 to 0.99). Those randomised to exercise reported significantly lower dysmenorrhic symptoms than non-exercising controls in this trial (7).

Jart *et al.* indicated no significant difference between the women who practiced aerobic exercises and others in terms of dysmenorrhoea (8). Also, Metheny and Smith conducted a study on 179 nursing students and revealed that the participants with regular exercise had significantly more severe dysmenorrhoea compared to those who did not exercise (9)

One randomized experimental study was conducted on 36 participants revealed that aerobic exercises have beneficial effects on primary dysmenorrhoea (10). In a review study, Daley concluded that doing exercise had no clear effects on primary dysmenorrhoea. However, considering the positive

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effects of exercise on health, the effects of exercise on dysmenorrhoea can be discussed (11). It has recently been demonstrated that mindfulness meditation is more effective in reducing pain than placebo (12) and it is also demonstrated that their mechanism of action does not engage endogenously driven opioidergic systems to reduce pain (13) However, lack of reproducibility has reduced the clinical acceptance of meditation to treat pain.

Not much scientific literature is available about role of specific food (e.g:-walnuts) constituents in relieving dysmenorrhoea. Walnuts are rich in the healthy omega-3 fatty acids which are known to have anti-inflammatory and pain-relieving properties. Additionally, walnuts are loaded with magnesium and with vitamin B6. One cup of chopped walnuts provides 31% of the recommended daily intake of B6. All these support that they could be one of food item which can help in relieving symptoms of dysmenorrhoea.

Most of the studies on dysmenorrhoea have emphasized mainly on the drug management and a few have stressed on the role of exercise on dysmenorrhoea. We planned to compare the efficacy of aerobic exercise, meditation and consumption of walnut on relieving symptoms of dysmenorrhoea.

**Aims**

1. Check efficacy of aerobic exercise, meditation and walnut consumption in dysmenorrhoea.
2. Reduce sickness absenteeism due to Dysmenorrhoea in young medical students

**Objectives**

1. Find methods which can provide relief in symptoms of Dysmenorrhoea.
2. To find which method (aerobic exercise, meditation and walnut) is most effective in relieving dysmenorrhoea.

**MATERIAL AND METHODS**

**Study Design:-** Randomized control trail was conducted.

This study was conducted in Department of Physiology, AIIMS Patna and LLRM Medical College, Meerut (UP) over a period of three months.

Total of 90 female (1st and 2nd year) MBBS & Nursing students were chosen for this study and each student was given a questionnaire to complete (MDSQ).

Back ground information about the subjects were taken including of age, weight, height, education, religion, socioeconomic status, number of total family members, dietary habits, physical exercise and family history of dysmenorrhoea. Each participant was given 30 minutes to complete the questionnaire and they were told that their responses would remain confidential. The participant also rated their dysmenorrhoea on a visual analog score (VAS) ranging from 0-10.

Based on responses of questionnaire and VAS score subjects fulfilling following criteria were included for study.

**Inclusion Criteria**

- Young healthy females in the age group of 17-28yrs.
- Having two or more symptoms of dysmenorrhoea (i.e. experiencing sharp, intermittent spasm of pain usually

concentrated in the suprapubic area. Pain radiating to the back of the legs or the lower back. Systemic symptoms of nausea, vomiting, diarrhoea, fatigue, mild fever and headache)

- VAS score of 5 or more.

**Exclusion Criteria**

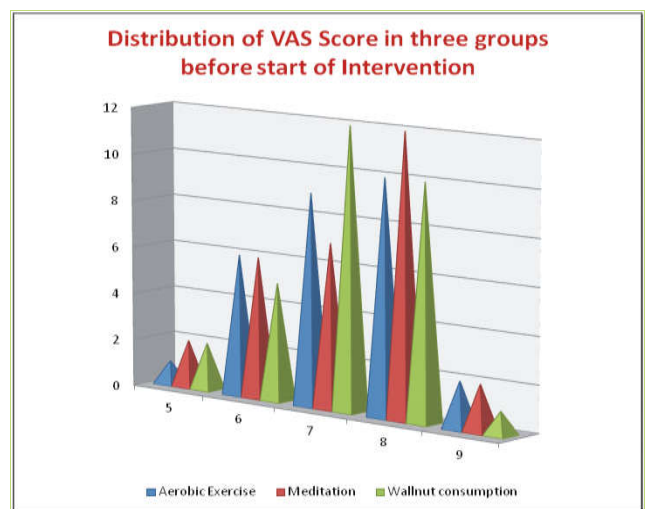
- VAS score of 5 or less
- Females having Premenstrual distress syndrome.
- Any disability which can hinder with performance of exercise

The selected subjects were randomly divided into three groups A, B and C (using closed box colour bead method).

Group A performed aerobic exercises for 30 minutes under supervision for five days in a week. Group B performed meditation for 30 minutes under supervision for five days in a week. Group C consumed 20 gms of walnut (in front of investigator daily for 5 days in a week). Intervention continued for 90 days and all subjects recorded their VAS Score on 2nd day of each menstrual cycle. At the end of three menstrual cycles (90 days) the data obtained was analyzed and pre and post VAS score were compared using paired t-test using spss version 20

**Table 1** Comparison of VAS Score before intervention and at two and three months after intervention in three Groups

	Std. Mean	Std. Deviation	Std. Error	95% Confidence Interval of the Difference		t
				Lower	Upper	
Aerobic Group Pre vs 2 month	.766	.897	.16	.431	1.101	4.678
Aerobic Group Pre vs 3 month	.966	1.351	.24	.462	1.471	3.918
Meditation Group Pre vs 2 month	1.00	.982	.17	.633	1.366	5.574
Meditation Group Pre vs 3 month	1.80	1.297	.23	1.315	2.284	7.600
Walnut Group Pre vs 2 month	1.13	.973	.17	.769	1.496	6.378
Walnut Group Pre vs 3 month	2.76	.971	.17	2.403	3.129	15.599



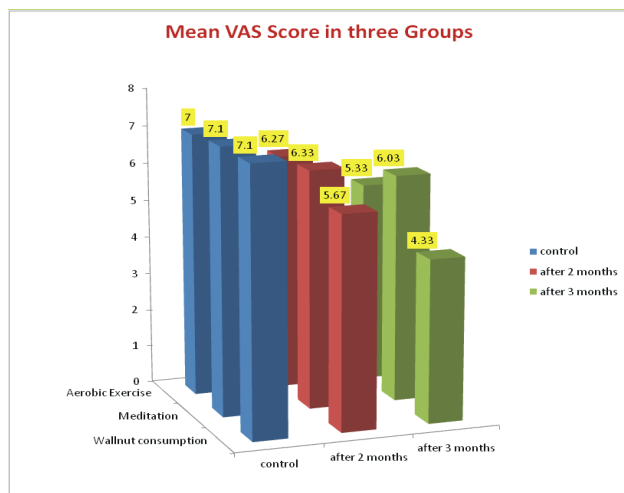
**Figure 1**

Figure 1 shows the distribution of VAS Score in different groups. It can be seen that maximum number of subjects were having VAS score of 7 or 8 before start of study while only a few were having VAS score of 5 and 9. Mean VAS Score of all the three groups before start of intervention was 7.05.

## Observation and Result

In this study 90 female (1st and 2nd year) MBBS & Nursing students were chosen with mean age 20 yrs, height 152 cms and weight 52 kg. The average age of the participants was  $20.8 \pm 1.8$  years (range 17–25 years). More than 45.4% of the students (n = 90) were in the age group of 20 and below.

In the present study we observed that in 98% of the study group the involvement in daily activities was affected and college absenteeism was more.



**Figure 2**

**Figure 2** shows the change in VAS score in the three groups after 2 months and 3 months of intervention. All three have shown reduction in VAS score. Maximum reduction was seen in walnut consumption group (from 7.1 to 4.33) while least change is seen in meditation group (7.1 to 6.03) and change in aerobic group was in between (7 to 5.33)

## DISCUSSION

In the present study it is clearly seen that Mean VAS Score of all the three groups before start of intervention was 7.05. After three months of intervention program all three groups showed reduction in dysmenorrhoea symptoms. Least reduction in symptoms was observed in meditation group ( $p=0.465$ ) while maximum reduction was in walnut consumption group ( $p=0.039$ ), Aerobic exercise group was in between ( $p=0.156$ ). Reduction in symptoms of dysmenorrhoea is in line with many other studies which also concluded that aerobic exercises have resulted in decrease in VAS Score. Jahromi *et al.* studied the effects of weight training exercises on the features of menstrual cycle in 250 students of Shiraz University in a single group before and after doing the exercises. They showed that the intensity of dysmenorrhoea significantly decreased after doing the exercises compared to the beginning of the study (14). Meta-analysis of observational studies conducted by Latthe *et al.* also showed that exercises could slightly reduce the risk of dysmenorrhoea (15). Intensity of dysmenorrhoea has been shown to be higher in the women with more stress, and doing exercises has been found to be effective in the reduction of stress (16) Stress is thought to increase the sympathetic activity which may cause increase in the intensity of uterine contraction leading to more pain during menstruation. As exercise could reduce and moderate stress, the sympathetic activity may be decreased. And so intensity of menstrual pain and other related symptoms may be reduced as well.

In this study we found improvement in symptoms in the group eating walnut was more as compared to aerobic exercises

group which could be due to the fact that walnuts contains a lot of contain a lot of Omega-3 fatty acids which are known to have anti-inflammatory and pain-relieving properties by preventing the secretion of prostaglandins. It is also possible that might be doing exercises also at home adding the benefits of exercise also.

In meditation group there was reduction in VAS score but it was insignificant and may be due to chance. Sickness absenteeism rate was also reduced in both aerobic exercise group and walnut consumption group. Improvement in the daily activity, involvement was also observed in aerobic exercise and walnut consumption group. Reduction in symptoms also showed some correlation with duration of intervention. Significant reduction of VAS Score was observed only after 3 months not after 2 months in both aerobic exercise and walnut consuming group

## CONCLUSION

It can be concluded that walnut consumption is superior to aerobic exercise and meditation in controlling symptoms of Dysmenorrhoea. Consumption of walnut along with aerobic exercises can reduce sickness absenteeism and increase performance in dysmenorrhoeic females.

## Limitation of the study

We are well aware of the limitations of the present study. Firstly, it was performed in medical and nursing students of two medical colleges; therefore the sample may not be representative of all female medical students. In other words, its comparability with community-based studies is weak, because the mean age of the female students in the study group was rather low compared to that of the general population. In addition, when taking into consideration that dysmenorrhoea decreases with increasing age, it's being done with a determined age group hinders its applicability to all women.

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