

A comparative study on the effect of Physical activity in young women having Dysmenorrhea before and after intervention

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Introduction

Adolescents determine the future of any country in the sense that today's adolescents will become tomorrow's earning adults. Adolescents constitute 22.8% of population in India as on 1st March 2000. (14). Hence, it is imperative to look into issues concerning adolescents. The present study deals with one such issue bothering adolescent girls namely dysmenorrhea (painful menstruation). The term dysmenorrhea is derived from Greek words dys meaning difficult/painful/abnormal; meno meaning month; and rhea meaning flow. Dysmenorrhea may be accompanied by nausea, vomiting, diarrhoea, headache, irritability or anorexia. It is a common complaint in around 50% of post pubescent females (15). It may be primary or secondary depending on the cause. It is believed that primary dysmenorrhea occurs when hormone-like substances called "prostaglandins" produced by uterine tissue trigger strong muscle contractions in the uterus during menstruation. The first year or two of a girl's periods are not usually very painful. However, once ovulation begins, the blood levels of the prostaglandins rise, leading to stronger contractions. Pain may radiate to the back of the legs or the lower back. Systemic symptoms of nausea, vomiting, diarrhea, fatigue, mild fever and headache or lightheadedness are fairly common.³ Dysmenorrhea is the most common gynecologic disorder among female adolescents, with a prevalence of 60% to 93%.^{4,5}

In the United States, dysmenorrhea is the leading cause of recurrent short-term school absenteeism.⁶ Several studies have shown that adolescents with dysmenorrhea report that it affects their academic performance, social and sports activities.⁷ Several researches have concluded that regular physical activity helps in decreasing the intensity, duration and the use of medicines for decreasing menstrual pain.^{8,13} So, the present study aims to evaluate the effect of physical activity on the clinical manifestation of dysmenorrhea amongst young women who have been given an intervention [yog asanas].

Methodology

The junior and senior college students of Smt. HMN College of Home Science and Dr. BMN College of Home Science (which are collectively and commonly known as SNTD, Matunga) were selected for the study. The consent for working on this topic was given by the SMES ethical committee. The method of sampling used was purposive sampling. The students were given questionnaires regarding their family background, reproductive health, medical and medication history and current physical activity pattern. From all the students surveyed, 80 students having dysmenorrhea (50 for experimental and 30 for control group) were selected for the study.

They were divided into 2 groups – 44 members (as there was a drop out rate) for experimental and 30 for control group. The experimental group did

daily yog asanas whereas the control did not have any physical activity. Anthropometric measurements (height, weight, BMI and waist circumference) and 24 hour dietary recall of the selected subjects was taken. This was followed by a physical activity schedule for a period of 2 months. The subjects were taught physical activities including yoga asanas (Bhujangasana and Dhanurasana) and breathing exercises, knee bends by a qualified yoga teacher. Thereafter subjects were told to do these exercises daily. The intervention period was for 2 months. Intensity and duration of pain, use of medicine, dietary recall and anthropometric measurements after physical activity schedule were recorded for subjects from experimental group.

Results and Discussion

The mean age of subject's was 17.87. Majority of the subjects (32.5%) had 4 members in their family followed by around 21% had 6 family

members. Majority of the subjects (79 %) were Hindus, followed by 19% Muslims, 2 % Christians and 1 % Parsi. (51%) of the subjects belonged to middle income group. Thirty nine percent of the subjects had low socio economic status followed by 10 % having high socio economic status.

Age at menarche of the subjects- Majority of the subjects that is 70 % (n= 56) of the subjects had their menarche in between 13 to 15 years of age followed by 25% had in between 11 to 12 years, equal percentage of subjects that is 2.5 % attained menarche at 10 and 16 years as indicated in fig 1 below.

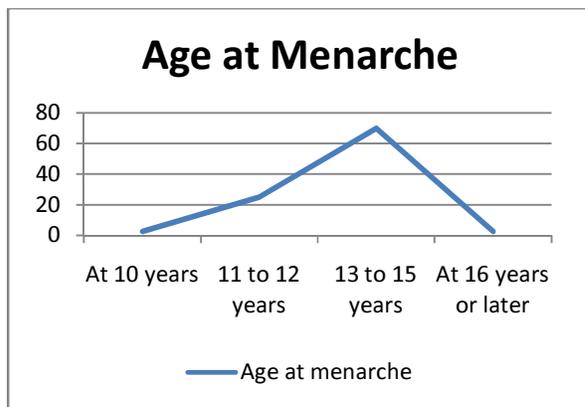


Figure .1 Age at menarche

Fifty eight percent of the subjects reported that they do not resort to any behavioural change for decreasing pain while 12.5 % students reported that they do breathing techniques and engage in activities such as watching television or going for a walk . Majority of the subjects (91%) reported absence of any chronic disease while 2.5 % reported thyroid disorder and anaemia followed by 1.3 % subjects had insomnia and migraine and 1.3 % reported presence of migraine and anaemia.

Dysmenorrhea was common among students who were part of the survey with a prevalence of 76.62 % (n= 118). It was found that subjects who got menses early (10yrs) or late (16+ years) had very irregular duration. It was concluded from our study that if menarcheal age is between 13-15 years, blood flow seemed to be normal. It was also observed that later the menarche, less will be the number of days of pain. There was slight reduction in intensity of

pain and use of medicine after intervention; however the difference was not statistically significant due to short duration of the study. Similarly, there was no statistically significant difference found in the waist circumference, weight and BMI of the subjects after administering physical exercise in their daily schedule.

A majority of the subjects (68.8%) had a 28 day cycle **Seventy percent of the subjects had normal bleeding while 27 % of the subjects had “heavy” bleeding.** They [subjects (46 %) had bleeding for 5 to 8 days followed by 37.5 % of the subjects had bleeding for 4 days. Nearly half of the subjects (51.3 %) had pain every month. Intensity of pain ranged from 3 to 10 on a 10 point scale. 10 % of the subjects rated ‘10’ as their intensity indicating severe pain while a large number of subjects(27%) reported their intensity as ‘5’ followed by 21% subjects reporting their intensity as ‘8’ Majority of subjects (90 %) experienced pain only for 1 day .

Twenty two percent of the subjects took pain killers, 4 % relied on home remedies while

70 % do not take any medicine. Majority of the subjects (67.5 %) do not engage in any type of exercise namely suryanamakar, yoga or go to gym. 20 % practiced yoga while 5% did suryanamaskar.

Ten percent of the subjects did exercise daily . 61.3% did not engage in any kind of physical activity followed by 30 % were engaged in dance and 10% in sports,

The mean height of the subjects was 155.1 cms (SD =16.4cms). In the present study, 6.25 % of the subjects were stunted (< 145 cms) which is considered a obstetric risk factor.²⁸

The mean BMI was 20.42 kg/m² (SD = 4.275 kg/m²). In the present study, 42.5 % (n= 34) subjects were underweight, 5% subjects (n= 4) were in overweight category while 6.25 % subjects (n= 5) fell into obese category.

The mean waist circumference was 76.09 cms. (SD = 9.819 cms). The normal waist

circumference should not be more than 80 cms irrespective of the frame size.

The mean calorie intake was found to be 1398.9 kcals/ day (SD = 237.46kcal). The mean Protein intake was 38 gms/day. (SD = 7.39 gms) both falling well below RDA.

Majority of the subjects that is 70 % (n= 56) of the subjects had their menarche in between 13 to 15 years of age. Maximum of the subjects (68.8%) had a 28 day cycle. Subjects reporting normal and heavy bleeding accounted for 70 % and 27 % respectively. Majority of the subjects (46 %) had bleeding for 5 to 8 days. Nearly half of the subjects (51 %) had pain every month. A large number of subjects (27%) reported their intensity as '5' while 10 % of the subjects rated '10' as their intensity indicating severe pain. A maximum no. of subjects (90 %) experienced pain only 1 day. A majority of subjects (23 %) reporting 5 hours of pain followed by 13 % subjects reporting 15 hours of pain. Common complaint reported by the subjects was body ache (63 %). Most (58 %) of the subjects conveyed that they don't participate in any behavioural change for decreasing pain. Majority of the subjects (60%) had no vaginal discharge on non menstruating days. Pain killers were taken by 21%. Majority of the subjects (91%) reported absence of any chronic disease. Only 12 subjects out of 22 subjects taking medicine took it by consulting a doctor. A small percentage of subjects (14%) reported taking 1 dose (pill) of medicine followed by few subjects reporting 2, 3, 4 and 5 doses of medicine throughout the menstruating days. A large number of subjects do not take any long term medication like iron supplement, multivitamin supplement etc.

Most of the subjects (67.5 %) do not engage in any type of exercise like suryanamaskar, yoga. Majority of the those (60 %) do not engage in any type of sport like badminton, handball, kho- kho, kabaddi etc Subjects reported that they (61.3%) do not engage in any kind of physical activity like swimming, skating, long jump, dance, cycling etc. A large number of subjects (79 %) have engaged in walking as a part of their every day routine.

The mean height and weight of the subjects were 155.1 cms. (SD= 16.4) and 49.32 kgs. (SD = 11.868) respectively. The mean BMI and waist circumference of the subjects was found to be 20.42 kg/m² (SD = 4.275) and 76.09 cms. (SD = 9.819) respectively.

The mean energy and protein intake of the subjects was found to be 1398.93 kcals. (SD = 237.461) and 38.02 gms. (SD = 7.393) which was way below RDA.

When an association between duration between 2 menstrual periods and age at menarche was correlated as depicted in **Table 2**, it was seen that, majority (78.9 %) of the subjects (n = 15) whose age at menarche was 11-12 years had a 28 days menstrual cycle. A small number of subjects (33.3 %, n = 1) who menstruated at 10 years had a menstrual cycle of less than 28 days. All the subjects having duration between their 2 menstrual cycles more than 45 days belonged to 13-15 years of age.

Some of the subjects (66.7 %, n= 2) and (50 %, n= 3) whose menarcheal age was 10 years and 16 years respectively had irregular menstrual cycle.

DURATION BETWEEN 2 MENSTRUAL PERIODS AND AGE AT MENARCHE

Table 1: Association between Age at Menarche and Duration between two menstrual periods

Duration between 2 menstrual periods	Age at Menarche in Years				Total
	10	11-12	13-15	> 16	
28 days	0	15	38	1	54
< 28 days	1	3	11	0	15
> 45 days	0	0	2	0	2
Very Irregular	2	0	3	1	6
30 days	0	1	2	0	3
Total	3	19	56	2	80

Chi-square = 25.066, p = 0.015

Since p is < 0.05, there is an association between age at menses and duration between 2 menses. **Thus, those who got menses early (10yrs) or late (16+ years) have very irregular duration between menses.**

FLOW OF BLEEDING DURING PERIODS AND AGE AT MENARCHE

When correlation between flow of bleeding during periods and age at menarche was evaluated as given in **Table 3**, it was seen that 42.1 % of the subjects (n = 8) whose menarcheal age was 11-12 years had heavy bleeding. A majority (75 %) of subjects (n= 42) whose menarcheal age was 13-15 years had normal flow of bleeding. Subjects (n = 1) whose menarcheal age was 16 years or later had very less bleeding.

Table 2: Association between Age at Menarche and flow of bleeding

Flow of bleeding	Age at menarche (Years)				Total
	10	11-12	13-15	>16	
Heavy	1	8	13	0	22
Normal	2	11	42	1	56
Very Less	0	0	1	1	2
Total	3	19	56	2	80

Chi-square = 21.866, p < 0.001

Since p value was = 0.001, there is highly significant difference between flow of bleeding and age at menarche. Thus, it can be concluded that normal will be the flow of bleeding if menarcheal age is between 13 – 15 years of age.

DURATION OF BLEEDING AND AGE AT MENARCHE:

Correlation between duration of bleeding and age at menarche was assessed in **Table 4** which is given below.

Table 4:

Duration of bleeding	Age at menarche (Years)				Total
	10	11-12	13-15	>16	
4 days	1	4	24	1	30
< 4	1	2	7	0	10
8-May	1	13	25	0	39
> 8 days	0	0	0	1	1
Total	3	19	56	2	80

Chi-square = 45.758, p < 0.001

It was seen that 42.9 % of the subjects (n = 24) having menarcheal age between 13- 15 years and 50 % of the subjects having menarcheal age as 16 years or later had bleeding for 4 days. 33.33 % of the subjects (n = 1) having menarcheal age as 10 years had bleeding for less than 4 days. Around 68.4 % of the subjects (n = 13) having menarcheal age between 11- 12 years had bleeding for 5 to 8 days. 50 % of the subjects having menarcheal age as 16 years or later had bleeding for more than 8 days.

Since p = 0.000, there exists a significant association between number of days of bleeding and the menarcheal age. Hence it can be concluded that later the menarche, less will be the number of days of pain.

Correlation between days of pain and age at menarche was seen. However, there was no statistically significant difference between the two variables.

COMPARISON BETWEEN INTENSITY OF PAIN PRE VERSUS POST INTERVENTION:

The figure given below indicates that there is reduction in percentage intensity of pain of values 6,7,8,9 and 10. While there is increase in 3, 4, 5 and 7. This indicates that there is overall reduction in intensity of pain.

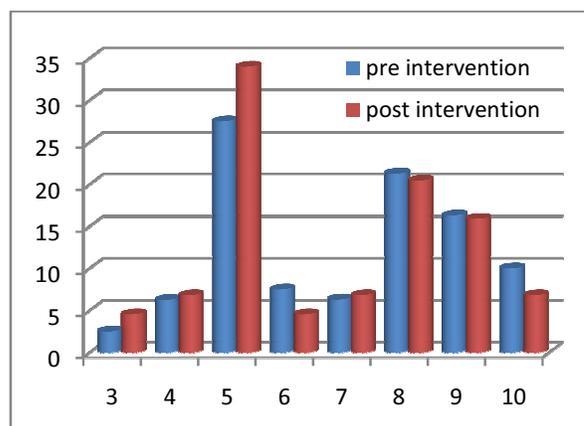


Figure 2

COMPARISON BETWEEN DURATION OF PAIN IN HOURS:

Though previous studies¹² report that there is decrease in duration of pain after yoga intervention, the present study did not find any change in duration of pain. The reason for this effect may be attributed to the short time duration of intervention.

COMPARISON BETWEEN DOSES OF MEDICINE PRE VERSUS POST INTERVENTION.

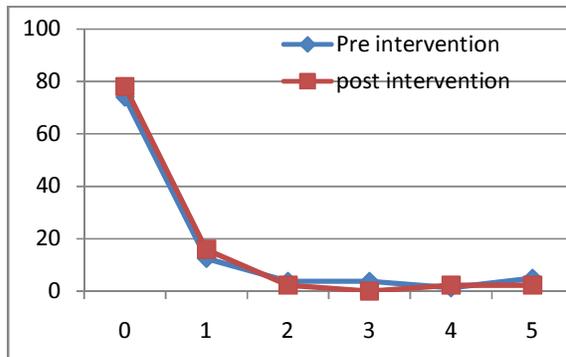


Figure 3

This figure indicates that 74 % took no medicine pre intervention while 78 % took no medicine in post intervention.

Overall there has been a reduction in the dose of medicine though it is not very significant. Some subjects who earlier took higher doses of medicines have reduced their doses.

Table 5 Anthropometric measurements before and after intervention

Parameter	Group	Mean	N	SD
Weight	Pre	48.24	44	11.79
	Post	48.24	44	11.77
BMI	Pre	20.42	44	4.37
	Post	20.18	44	4.36
Waist Circumference	Pre	76.40	44	9.39
	Post	76.40	44	9.39

In the table given above, mean weight of the subjects prior to intervention was found to be 48.24(SD = 11.785) while after intervention it was 48.238(SD = 11.774).Mean BMI before

intervention was 20.42(SD = 4.37) and after intervention it was 20.18(SD = 4.35).Mean waist circumference prior to intervention was 76.4 (SD = 9.393) while subsequent to intervention it was 76.39(SD = 9.392).

There was a minute difference found in the mean weights, mean BMI's and mean waist circumference which was not statistically significant. A longer intervention is definitely needed to see the effects on anthropometric indices. There was no significant difference observed.

CONCLUSION

Dysmenorrhea is common among students of SNDT Matunga with a prevalence of 76.62 % (n= 118). Such high prevalence is also reported by various studies.³ 51.3 % subjects reported pain at every month. 63.8 % reported body ache followed by 20 % reporting stomach pain.

Majority (67.5 %) of the subjects (n= 54) did not engage in any physical activity, 60 % (n=48) do not play any sport, 61.3 % do not indulge in any physical activity. It is concluded from the study that there was a slight reduction in the intensity of pain and use of medicine but it is not statistically significant. There was no difference in the duration of pain in hours. There was no statistically significant difference in weight and hence BMI of the subjects; and also waist circumference. The main significant findings of the study were that there is an association between age at menses and duration between 2 menses. **Thus, those who got menses early (10yrs) or late (16+ years) have very irregular duration between menses.** Highly significant difference was seen between flow of bleeding and age at menarche. Thus, it can be concluded that normal will be the flow of bleeding if menarcheal age is between 13 – 15 years of age.

In this study it was found that there is a decrease in duration of pain after yoga intervention. Overall there has been a reduction in the dose of medicine though it is not very significant. Some subjects who took higher doses of medicines earlier had reduced their doses after intervention.

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Site this article as: Anuradha Shekhar¹, Swarada Pitkar², A comparative study on the effect of Physical activity in young women having Dysmenorrhea before and after intervention, Int J Medicine and Allied Health Sciences, 2014; 3: 258-263