



Efficacy Of Yoga On Primary Dysmenorrhea among Adolescent Girls

S. Deepika^{1*}, Ph.D, Dr.S.Murugesan²,

¹scholar(Full Time) ,Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research, No.12, Vembuliamman Koil Street,West K K.Nagar, Chennai-78, Tamil Nadu,INDIA&

²Principal, Faculty of Yoga Sciences and Therapy, Meenakshi Academy of Higher Education and Research, No.12, Vembuliamman Koil Street,West K K.Nagar, Chennai-78, Tamil Nadu ,INDIA.

Citation: S. Deepika, Ph.D, Dr.S.Murugesan, (2024), Efficacy Of Yoga On Primary Dysmenorrhea among Adolescent Girls, *Educational Administration: Theory and Practice*, 30(5), 2746-2750

Doi: 10.53555/kuey.v30i5.3333

ARTICLE INFO

ABSTRACT

Objectives:The research aimed to determine if practicing yoga could help alleviate the Body Mass Index (BMI) and pain experienced by adolescent girls with primary dysmenorrhea

Materials and Methods:The study involved 60 adolescent girls (N=60) aged 14 to 18, selected randomly from Chennai, with primary dysmenorrhea. These participants were divided into two groups: Group I and Group II, each comprising 30 individuals. The research aimed to assess the impact of yoga on Body Mass Index (BMI) and pain among adolescent girls with primary dysmenorrhea. Both groups underwent initial assessments of BMI and pain before the study. Group I underwent six days a week of yoga for twelve weeks, while Group II continued their regular activities. After the intervention, both groups were reevaluated using the same variables. A paired t-test was conducted to identify differences between the experimental and control groups, using a significance level of 0.05 (95% confidence interval).

Results:In comparison to the Control Group, adolescent girls with primary dysmenorrhea who engaged in yoga exhibited notably reduced levels of Body Mass Index (BMI) and pain. The hypothesis was validated with a confidence level of 0.05.

Conclusions:Therefore, it can be said that adolescent girls who practice yoga find alleviate from their Body Mass Index (BMI) and Pain.

Keywords: Body Mass Index (BMI), Pain, dysmenorrhea, and yoga

INTRODUCTION

1. Dysmenorrhea Overview:

Dysmenorrhea, characterized by painful menstruation unrelated to pelvic issues, involves uterine contractions due to inflammatory agents like prostaglandins. It is often misdiagnosed, impacting pain, emotions, life quality, and sleep in adolescent girls. This condition affects over half of menstruating adolescents, causing health challenges and lowered self-esteem.

2. Dysmenorrhea Prevalence:

Numerous teens experience dysmenorrhea, with rates ranging from 16% to 90%[1]. Rates are higher among adolescent girls, projected at 85% in the USA[1], 84.2% in India[7], and 83.6% in Ghana[10].

3. Yoga for Dysmenorrhea :

Yoga offers a natural remedy without side effects, alleviating menstrual discomfort and promoting mental well-being. It enhances pain management and quality of life by reducing pain and sympathetic responses. It positively impacts adolescent girls with primary dysmenorrhea, relevant globally. Scientifically, these benefits can be understood through the interplay of physiological and psychological factors:

a) Nervous System Balance: The practice of yoga often involves relaxation techniques that activate the parasympathetic nervous system, responsible for the body's "rest and digest" response. This counteracts the

sympathetic nervous system's "fight or flight" response, reducing stress and helping to manage pain perception. By creating a calmer overall state, yoga can make the experience of dysmenorrhea less intense.

b) Improved Blood Flow: Many yoga poses focus on stretching and opening the pelvic area, enhancing blood circulation to the reproductive organs. This increased blood flow helps to alleviate cramps and discomfort by providing more oxygen and nutrients to the tissues. Improved circulation also aids in removing waste products that could contribute to pain.

c) Hormonal Regulation: Stress can exacerbate dysmenorrhea by causing hormonal imbalances that contribute to increased pain sensitivity. Yoga, with its emphasis on relaxation and mindfulness, has been shown to reduce stress hormones and promote hormonal balance. This modulation of hormones can potentially lead to a reduction in the severity of menstrual pain.

d) Endorphin Release: Engaging in yoga can trigger the release of endorphins, which are natural pain-relieving compounds produced by the body. These endorphins not only help to manage pain but also have mood-enhancing effects, which can positively influence an individual's experience of dysmenorrhea.

e) Muscle Relaxation: Yoga involves various poses and stretches that target different muscle groups. By gently stretching and relaxing muscles, yoga can alleviate tension, particularly in the lower back, hips, and pelvic region. This muscle relaxation can lead to a decrease in cramping and pain.

f) Breathing Benefits: Many yoga practices incorporate controlled breathing techniques, which have been shown to lower stress levels and promote relaxation. Deep and mindful breathing increases oxygen supply to tissues, aiding in pain relief and overall comfort.

4. Empowering through Education:

Understanding dysmenorrhea's global effects highlights the need for educating adult females about effective management. A non-intrusive, effective approach like yoga necessitates a mindset shift, potentially improving adults' well-being during challenging menstruation.

PROBLEM STATEMENT

The aim of this research was to investigate the potential impact of yoga on the Body Mass Index (BMI) and pain levels in Adolescent girls dealing with primary dysmenorrhea.

HYPOTHESIS

The study foresaw a substantial improvement in both the physiological and psychosocial aspects of adolescent girls dealing with primary dysmenorrhea as a result of engaging in yoga practice.

RESEARCH OBJECTIVES

1. The objective is to determine whether yoga has a noteworthy impact on specific physiological factors, like Body Mass Index (BMI), among adolescent girls experiencing primary dysmenorrhea.
2. The aim is to investigate potential distinctions in particular psychological attributes, such as pain perception, among adolescent girls with primary dysmenorrhea who engage in yoga practice.

INCLUSION CRITERIA

The diagnosis of primary dysmenorrhea was established based on the following criteria:

- Adolescent girls aged 14 to 18 experiencing primary dysmenorrhea.
- Presence of lower back or pelvic discomfort lasting 8 to 72 hours, aligning with the onset of menstruation.
- Occurrence of medial or anterior femoral pain.
- Additional symptoms like headache, diarrhea, nausea, and vomiting might accompany menstrual pain.

EXCLUSION CRITERIA

The study excluded adolescent girls who met the following criteria:

- Individuals who opted not to participate.
- Individuals who were under medication.
- Individuals with a background of pelvic disorders like fibroids, adenomyosis, polycystic ovary syndrome, and endometriosis.

REVIEW OF RELATED LITERATURE

Julaecha, et al. (2020)^[6] found that dysmenorrhea, caused by imbalanced progesterone levels, affects 45-95% of women, including non-athletes. Dysmenorrhea's impact on education prompted this study on yoga's efficacy. Using a single-group pre-post-test design, 33 female students were sampled via deliberate selection. The Visual Analog Scale measured menstrual discomfort. Data underwent normality checks, followed by repeated ANCOVA analysis. Mean pain scores (5.8 vs. 4.0 vs. 2.7) showed significance ($P < 0.05$) before and after interventions. Yoga was found to effectively reduce dysmenorrhea discomfort.

Ola Abdelhafez Ali Salem, et al. (2023)^[14] conducted a study with the aim of evaluating the impact of instructional guidelines on implementing physical measures for primary dysmenorrhea among nursing

students. Their research employed a quasi-experimental design involving a pre/post-test one-group setup. The study was conducted at Benha University Hospital, specifically at a technical nursing institution. The sample size consisted of 218 nursing students selected through purposive sampling. Data collection utilized four tools: an interview-based questionnaire for gathering information about the sample and menstrual characteristics, a Verbal Multidimensional Scoring System, a Visual Analogue Scale, and a Likert scale. The findings revealed a significant and substantial improvement in the symptoms of primary dysmenorrhea from pre-intervention to post-intervention phases. Likewise, a marked enhancement in satisfaction levels and a reduction in pain intensity related to dysmenorrhea were observed among the study participants post-intervention (with a significance level of $P\text{-value} \leq 0.05$). Notably, the implementation of instructional guidelines for physical measures led to a notable alleviation of dysmenorrhea symptoms and pain, confirming the study's hypothesis. Moreover, a statistically significant association was established between the satisfaction levels and pain intensity of dysmenorrhea among the study participants during the post-intervention phase.

METHODOLOGY & SUBSTANCE

- A total of 60 adolescent girls with primary dysmenorrhea ($N=60$) were randomly selected from a pool of 180 volunteers in Chennai, all aged between 14 and 18. These girls were then divided into two groups: Group I and Group II, each consisting of 30 participants.
- Prior to initiating the training program, both groups underwent an initial assessment covering Body Mass Index (BMI) and Pain levels using the Visual Analog Scale (VAS).
- Over a span of twelve weeks, subjects in Group I (Experimental Group) engaged in Yogic practices, including activities like Loosening Exercises, Surya Namaskar, Asanas, Pranayama, and Relaxation, for six days per week.
- During the study, volunteers in Group II (Control Group) maintained their usual daily routines, without receiving any specialized training but engaging in active rest.
- At the conclusion of the twelve-week period, both groups were subjected to a follow-up assessment on the same variables: Body Mass Index (BMI) and Pain (Visual Analog Scale-VAS). The collected data were then analyzed, with a significance level of 0.05 used for the statistical tests.
- The significant distinctions between the experimental and control groups were identified through the utilization of a paired t-test. The chosen confidence level for these significance tests was 0.05.

RESULTS

- The information regarding the variable collected from both groups prior to and following the training duration was subjected to statistical examination utilizing the paired t-test, aiming to ascertain any notable distinctions. The hypothesis was evaluated with a confidence level of 0.05.
- The representation of this data is illustrated in the tables presented below.

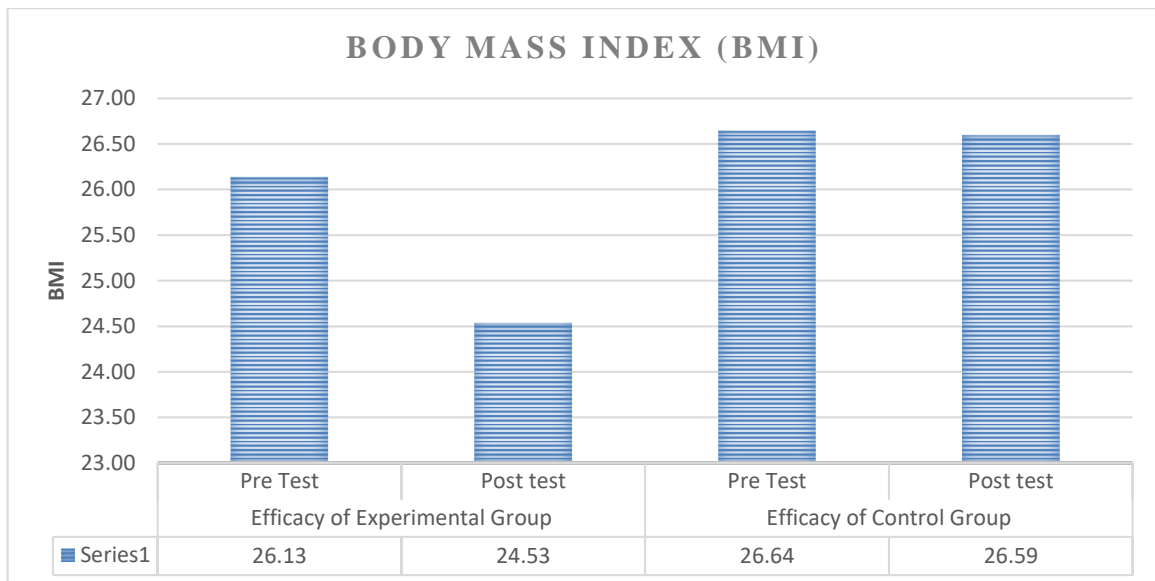
Test	Efficacy of Experimental Group					Efficacy of Control Group				
	Mean (S.D)	Avg. diff. (\bar{x}_d)	SD of diff. (Sd)	Paired t value test and p value	t	Mean (S.D)	Avg. diff. (\bar{x}_d)	SD of diff. (Sd)	Paired t value test and p value	t
Pre Test	26.13 (0.71)	1.60	0.26	t(59) = 48.5, p < .001.	=	26.64 (1.01)	0.05	0.72	t(59) = 0.5, p = 0.598.	
Post Test	24.53 (0.66)			S		26.59 (1.04)			N.S	

* Significant at 0.05 level of confidence.

COMPUTATION OF MEAN AND STANDARD DEVIATION FOR PAIRED T-TEST OF EXPERIMENTAL AND CONTROL GROUP FOR BODY MASS INDEX (BMI)

The effectiveness of the experimental group was demonstrated through the results of the paired t-test on Body Mass Index (BMI). The analysis revealed a significant and substantial difference between the initial measurements ($M = 26.13$, $SD = 0.71$) and the subsequent measurements ($M = 24.53$, $SD = 0.66$), $t(59) = 48.5$, $p < 0.001$.

The outcomes of the paired t-test conducted on Body Mass Index (BMI) underscored the effectiveness of the experimental group. The analysis indicated a non-significant and negligible distinction between the initial measurements ($M = 26.64$, $SD = 1.01$) and the subsequent measurements ($M = 26.59$, $SD = 1.04$), $t(59) = 0.5$, $p = 0.598$.



BAR DIAGRAM SHOWING PRE AND POST- TEST MEANS FOR BODY MASS INDEX (BMI) ON EXPERIMENTAL GROUP-I AND CONTROL GROUP-II

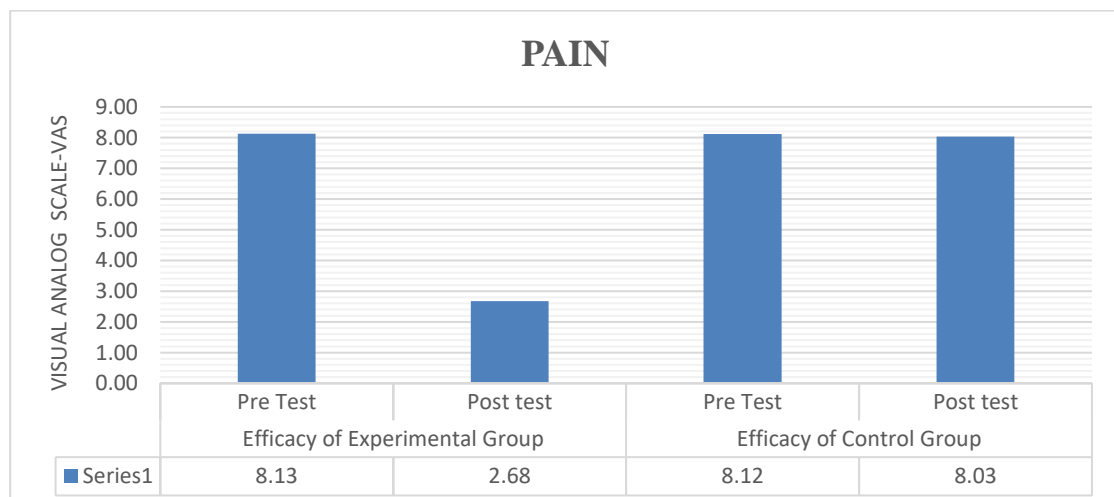
Test	Efficacy of Experimental Group				Efficacy of Control Group			
	Mean (S.D)	Avg. diff. (x̄d)	SD diff. (Sd)	Paired t value test and p value	Mean (S.D)	Avg. diff. (x̄d)	SD diff. (Sd)	Paired t value test and p value
Pre Test	8.13 (0.72)	5.45	0.85	t(59) = 49.5, p < .001	8.12 (0.67)	0.08	0.83	t(59) = 0.8, p = 0.440
Post Test	2.68 (0.47)			S	8.03 (0.58)			N.S

* Significant at 0.05 level of confidence.

COMPUTATION OF MEAN AND STANDARD DEVIATION FOR PAIRED T-TEST OF EXPERIMENTAL AND CONTROL GROUP FOR PAIN

The effectiveness of the experimental group was demonstrated through the results of the paired t-test on Pain. The analysis revealed a significant and substantial difference between the initial measurements (M = 8.13, SD = 0.72) and the subsequent measurements (M = 2.68, SD = 0.47), t (59) = 49.5, p < 0.001.

The outcomes of the paired t-test conducted on Body Mass Index (BMI) underscored the effectiveness of the experimental group. The analysis indicated a Non-significant and negligible distinction between the initial measurements (M = 8.12, SD = 0.67) and the subsequent measurements (M = 8.03, SD = 0.58), t (59) = 0.8, p = 0.440.



BAR DIAGRAM SHOWING PRE AND POST- TEST MEANS FOR PAIN ON EXPERIMENTAL GROUP-I AND CONTROL GROUP-II

CONCLUSION

Yoga was implemented within the experimental group (Group I), differing from the control group (Group II), and demonstrated consistent levels of Body Mass Index (BMI) alongside a reduction in pain among adolescent girls dealing with primary dysmenorrhea.

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