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Prevalence of Dysmenorrhea and Effectiveness of Selected Yogasanas on Dysmenorrhea Among Adolescent Girls

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Abstract

Background: Adolescence for girls is a time of physical, emotional and social change [1]. Dysmenorrhea is the painful menstruation of sufficient magnitude to incapacitate day-to-day activities [2]. Recurrent school absenteeism has negative impacts on adolescent girls. Yogasanas are an evidence-based solution in treating dysmenorrhea [3].

Objective: To assess the prevalence of dysmenorrhea among adolescent girls. To evaluate the effectiveness of selected Yogasanas on dysmenorrhea in the experimental group and the control group. To find out the association between the pretest scores of dysmenorrhea among adolescent girls with selected study variables.

Method: The research proposes a Quantitative approach, which is conducted in two phases to meet the objectives. In Phase I, a Descriptive cross-sectional survey design was adopted and study variable proforma and WaLIDD score

were used to assess the prevalence of dysmenorrhea. In Phase II, a quasi-experimental design was adopted to assess the effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls. Wong Baker's Facial Pain Scale was used to assess the pain level.

Result: The prevalence rate was 95.4%. The mean post-test scores of Group I is less than that of the mean post-test score of Group II ($p < 0.01$). There is an association between pretest scores of dysmenorrhea with duration of menstruation and previous knowledge on yoga measures.

Conclusion: The prevalence of dysmenorrhea among adolescent girls was higher (95.4%). There is a significant difference in the post-test scores on practising selected Yogasanas ($p < 0.01$). There is an association between pretest scores of duration of menstruation, and previous knowledge on yoga of adolescent girls ($p < 0.05$).

Keywords: Adolescence, Prevalence, Dysmenorrhea, Selected Yogasanas

Introduction

Adolescence is a period in which girls attain menarche, which represents a landmark event in pubertal development in adolescent girls. Menstruation is an essential part of every woman's life, influencing her physical, mental, and emotional health and quality of life. It is a physiological process that declares the potential capability of women for reproduction. Mild dysmenorrhea is common and expected; however, moderate to severe dysmenorrhea is disabling. The problem of persistent dysmenorrhea is more pronounced in adolescents, where the negative impact associated with pain can reflect on their academic and physical performance [4].

Materials and Methods

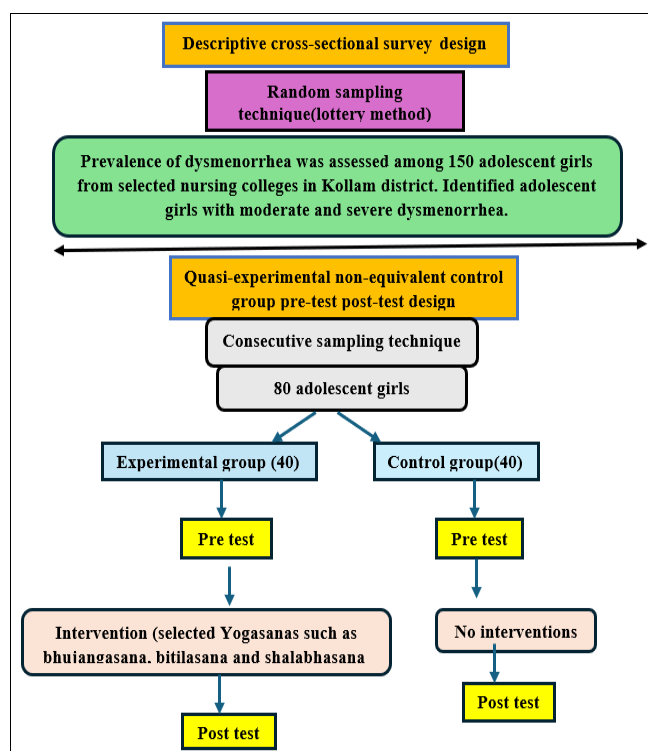


Fig 1: Schematic representation of research methodology

The study was done to assess the prevalence of dysmenorrhea and the effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls in selected Nursing Colleges at Kollam district. The study was conducted in two phases, which took place in January and February 2025. The first phase (phase I) was a Descriptive cross-sectional survey design study where the prevalence was assessed in which 150 adolescent girls (75 in experimental and 75 in control) were asked to fill in the study variable proforma (consisted of age, age at menarche, length of cycle, regularity of cycle, duration of menstruation, number of pads used in a day, management of dysmenorrhea, family history of dysmenorrhea, previous knowledge on yoga measures, any other gynaecological problem) and to fill in the Modified WaLIDD score test [5]. The second phase (phase II) was the interventional phase to assess the effectiveness of selected Yogasanas (Bhujangasanas, Bitilasana and Shalabhasana) on dysmenorrhea among 80 adolescent girls (40 in experimental and 40 in control) who had moderate to severe pain in phase I. The pretest was given to the 80 adolescent girls and selected Yogasanas were practised from their 5th day of menstruation till the previous day of their next menstruation. The post-test was conducted on the first day of the next menstruation with the help of Wong Baker's facial pain scale [6].

Results and Discussion

Section I: Distribution of Study Variables

N=150

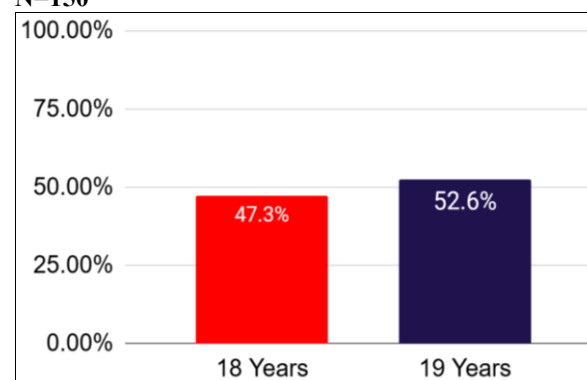


Fig 2: Frequency and percentage distribution of the sample according to Age

Based on age, among 150 adolescent girls, 47.33% (71) are 18 years and 52.67% are 19 years.

Table 1: Frequency and percentage distribution of the sample according to the Age at menarche (N=150)

Age at menarche	Frequency (f)	Percentage (%)
10-12 years	66	44%
13-15 years	84	56%

Based on age at menarche, among 150 adolescent girls, 44% (66) attained menarche at the age of 10-12 years while 56% (84) attained menarche at the age of 13-15 years.

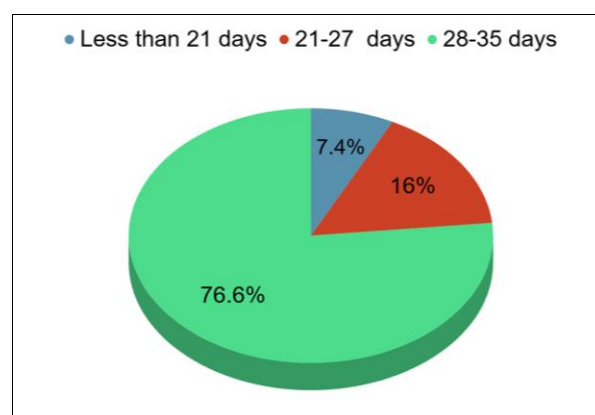


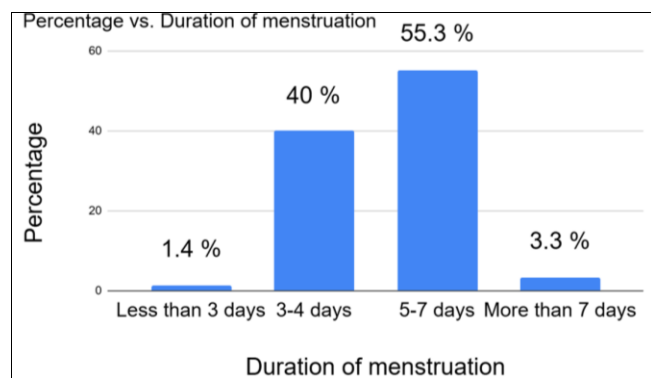
Fig 3: Frequency and percentage distribution of the sample according to the length of the cycle (N=150)

Based on the length of cycle, among 150 adolescent girls, 7.4% (11) had less than 21 days, 16% (24) had 21-27 days, 62% (93) had 28-35 days, and 14.6% (22) had a cycle more than 35 days.

Table 2: Frequency and percentage distribution of the sample according to the regularity of cycle (N=150)

Regularity of cycle	Frequency (f)	Percentage (%)
Regular	123	82%
Irregular	27	18%

Based on the regularity of cycle, among 150 adolescent girls, 82% (123) had regular menstrual cycle while 18% (27) had irregular menstrual cycles.

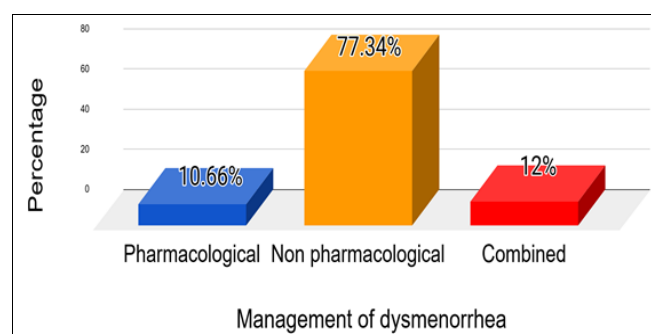
**Fig 4:** Frequency and percentage distribution of the sample according to the duration of menstruation (N=150)

Based on the duration of menstruation, among 150 adolescent girls, 1.4% (2) had less than 3 days of duration, 40% (60) had 3-4 days of duration, 55.3% (83) had 5-7 days of duration and 3.3% (5) had more than 7 days of duration of menstruation.

Table 3: Frequency and percentage distribution of sample according to the number of pads used per day (N=150)

Number of pads used per day	Frequency (f)	Percentage (%)
2-3 pads	109	72.7%
4-5 pads	34	24.7%
More than 5 pads	4	2.6%

Based on the number of pads used per day, among 150 adolescent girls, 72.7% (109) changed 2-3 pads per day, 24.7% (37) changed 4-5 pads per day, 2.6% (4) changed more than 5 pads per day.

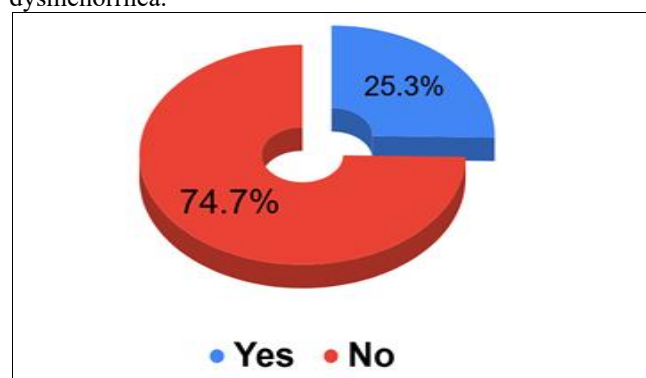
**Fig 5:** Frequency and percentage distribution of the sample according to the management of dysmenorrhea. (N=150)

Based on the management of dysmenorrhea, among 150 adolescent girls, 10.66% (16) take pharmacological management, 77.34% (116) take non-pharmacological management, and 12% (18) take combined methods.

Table 4: Frequency and percentage distribution of the sample according to family history of dysmenorrhea (N = 150)

Family history of dysmenorrhea	Frequency (f)	Percentage (%)
Yes	68	45.3%
No	82	54.7%

Based on family history of dysmenorrhea, among 150 adolescent girls, 45.3% (68) had a family history of dysmenorrhea while 54.7% (82) had no family history of dysmenorrhea.

**Fig 6:** Frequency and percentage distribution of the sample according to the knowledge on yoga measures (N=150)

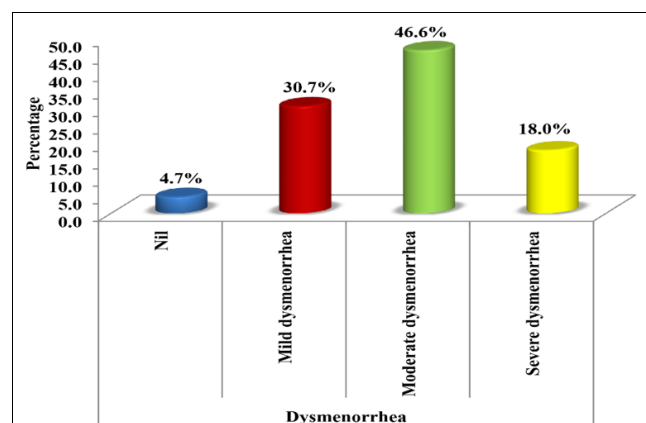
Based on previous knowledge on yoga measures, among 150 adolescent girls, 25.3% (38) had previous knowledge on yoga measures, while 74.7% (112) had no knowledge on yoga.

Table 5: Frequency and percentage distribution of the sample according to any other gynaecological problems (N = 150)

Any other gynaecological problems	Frequency (f)	Percentage (%)
Yes	1	0.67%
No	149	99.33%

Based on other gynaecological problem, among 150 adolescent girls, 0.67% (1) had other gynaecological problem while 99.33% (149) had no other gynaecological problem.

Section II

**Fig 7:** Frequency and percentage distribution of prevalence of dysmenorrhea among adolescent girls (N = 150)

The above figure shows that among 150 adolescent girls 4.6% (7) had no dysmenorrhea, 30.7% (46) had mild dysmenorrhea, 46.7% (70) had moderate dysmenorrhea and 18% (27) had severe dysmenorrhea. The prevalence rate is 95.4%.

Section III

Pretest and post test scores of dysmenorrhea among adolescent girls in experimental group (Group I) and control group (Group II)

Table 6: Assess the Pretest and Post-test scores of dysmenorrhea among adolescent girls in the experimental group (Group I) and control group (Group II) (N=80)

Test	Groups	Moderate Pain	Severe Pain	Very severe pain
Pre-Test	Experimental group	0%	72.5%	27.5%
	Control group	0%	45%	55%
Post-test	Experimental group	62.5%	27.5%	10%
	Control group	0%	40%	60%

Table 6 shows that in the pretest among 40 adolescents in the experimental group, no samples had moderate pain, 72.5% (29) had severe pain, and 27.5% (11) had very severe pain. Thereafter, among in the control group of 40 adolescents, no samples had moderate pain, 45% (18) had severe pain and 55% (22) had very severe pain. Whereas in post-test among 40 adolescent girls in the experimental group, 62.5% (25) had moderate pain, 27.5% (11) had severe pain and 10% (4) had very severe pain. Thereafter in the control group, no one had moderate pain, 40% (16) had severe pain and 60% (24) had very severe pain.

Section IV: Effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls in the experimental group (Group I) and the control group (Group II).

Table 7: Effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls in the experimental group and the control group (N=80)

Test	Groups	Mean	SD	N	t	p
Pre-Test	Experimental group	6.7	1.2	40	1.71	0.090
	Control group	7.2	1.1	40		
Post-test	Experimental group	5.0	1.4	40	* 8.38	p<0.01 (0.0008)
	Control group	7.3	1.1	40		

Independent t-test

* significant at p<0.01 level

Table 7 shows that the mean pretest scores of the experimental group (Group I) and control group (Group II) are the same. But the mean post test scores of the experimental group is (5.0) is lesser than that of the mean post test score of the control group (7.3). The calculated t value (8.38) is higher than that of the tabulated value (2.58) at 0.01 level of significance. Hence, the p value is significant (0.0008) which is less than 0.01 level.

Table 8: Effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls N=40

Category	Test	Mean	SD	N	t	p
Experimental group	Pre-test	6.7	1.2	40	*16.52	p<0.01
	Post-test	5.0	1.4	40		

Paired t-test

*Significant at 0.01 level

Table 8 shows that in the experimental group; the mean post-test score (5.0) was lesser than the mean pre-test score (6.7) and the calculated t value (16.52) is higher than that of the tabulated value (2.58) at 0.01 level of significance. Hence, the p value is significant which is less than 0.01 level. Hence it can be concluded that the selected Yogasanas were effective in adolescent girls with dysmenorrhea.

Section V: Association between the pretest scores of dysmenorrhea among adolescent girls with selected study variables

Table 9: Association of pre-test scores of dysmenorrhea with selected study variables N=80

Study variables	Severe pain		Very severe/ Worst Pain		χ^2	p value
	Frequency	Percentage	Frequency	Percentage		
Age						
18 years	26	63.4	15	36.6	0.76	0.385
19 years	21	53.8	18	46.2		
Age at menarche						
10-12 years	20	55.6	16	44.4	0.28	0.600
13-15 years	27	61.4	17	38.6		
Length of cycle						
Less than 21 days	6	85.7	1	14.3	6.81	0.146
21-27 days	6	50.0	6	50.0		
28-35 days	26	66.7	13	33.3		
More than 35 days	9	35.7	13	64.3		
Regularity of cycle						
Regular	37	58.7	26	41.3	0	0.994
Irregular	10	58.8	7	41.2		
Duration of menstruation						
Less than 3 days	1	50.0	1	50.0	8.04*	0.045
3-4 days	12	40.0	18	60.0		
5-7 days	32	69.6	14	30.4		
More than 7 days	2	100	0	0.0		
Number of pads used per day						
2-3 pads in a day	34	56.7	26	35.0	0.43	0.512
4-5 pads in a day	13	65	7	38.5		
Management of dysmenorrhea						

Pharmacological	8	61.5	5	38.5	0.05	0.974
Non-Pharmacological	35	58.3	25	41.7		
Combined	4	57.1	3	42.9		
Family history of dysmenorrhea						
Yes	20	48.8	21	51.2	3.45	0.063
No	27	69.2	12	30.8		
Previous Knowledge on yoga						
Yes	5	31.3	11	30.8	6.24*	0.012
No	42	65.6	22	68.8		
Any other gynaecological problem						
Yes	0	0.0	0	0.0	-	-
No	47	58.8	33	41.3		

*: - Significant at 0.05 level

The above Table 9 depicts that the association between pretest scores of dysmenorrhea and selected study variables (Duration of menstruation and previous knowledge on yoga measures) among adolescent girls in both experimental and control groups are significant at the 0.05 level of significance. The calculated p-value is less than 0.05, so it is significant. Thus, it concludes that there is an association between pretest scores of dysmenorrhea among adolescent girls with duration of menstruation (0.045) and previous knowledge on yoga measures (0.012).

Discussion

1. To assess the prevalence of dysmenorrhea among adolescent girls.

The present study revealed that among 150 adolescent girls 4.7% (7) had no dysmenorrhea, 30.7% (46) had mild dysmenorrhea, 46.6% (70) had moderate dysmenorrhea and 18% (27) had severe dysmenorrhea. Thus, the prevalence rate is 95.4%. The prevalence rate of dysmenorrhea among adolescent girls is higher. Here the researcher can conclude the confidence interval between 94.42% & 96.38%.

The findings of the present study was supported by another study conducted in Wayanad District, Kerala (2020). All the female undergraduate students of the college were the study subjects. Data were collected using a pre-designed and pre-tested self-administered questionnaire. Results: 72.51% of subjects were suffering from dysmenorrhea. Prevalence of dysmenorrhea was high among subjects <20 years, who had attained menarche at < 13 years, those who had length of cycle >35 days, irregular cycles, menstruation for 3-6 days, heavy menstrual flow, family history of dysmenorrhea, and those with BMI <18.5. However, only family history was found to have a statistically significant association with dysmenorrhea ($P < 0.01$). 27.5% had grade 0, 37.8% had grade 1, 26.7% had grade 2 and 8% had grade 3 dysmenorrhea. Backache (67.6%), tiredness (60.4%), and abdominal bloating (52.2%) were the most common physical symptoms reported by subjects with dysmenorrhea, and uneasiness (75.3%) the most recurrent psychological symptom. The study concluded that the incidence of dysmenorrhea in the current study was higher than in other studies. Hereditary of dysmenorrhea was connected to have a significant connection with dysmenorrhea [7].

2. To assess the pretest and post scores of dysmenorrhea among adolescent girls in the experimental group (Group I) and control group (Group II).

The present study revealed that among 40 adolescents in the experimental group, 72.5% (29) belonged to a group of severe pain and 27.5% (11) belonged to a group of very severe/ worst pain. Thereafter, 40 adolescents in the control

group, 45% (18) belong to severe pain and 55% (22) belong to a group of very severe/ worst pain. Whereas, in post-test among 40 adolescent girls in the experimental group, 62.5% (25) have moderate pain, 27.5% (11) have severe pain and 10% (4) have very severe pain. Thereafter in the control group, no one had moderate pain, 40% (16) had severe pain and 60% (24) had very severe pain.

The findings of the study were supported by another study conducted in Chennai (2024) to determine the outcome of Hatha yoga on reducing primary dysmenorrhoea. 113 medical students with primary dysmenorrhoea were randomly aligned to the study ($n = 60$) and the control group ($n = 53$). Semi-structured questionnaire, the Numerical rating scale for pain and the perceived stress scale were administered initially and after three months. The experimental group was subjected to yoga intervention. 88% of them reported complete pain relief and 12% reported mild pain. 82% of the study group reported complete stress relief. After yoga intervention, absenteeism dropped to 10% and improvement in daily activity was observed in the study group. The study concluded that with yogic exercises, the stress and pain of dysmenorrhoea were controlled, indicating the benefits of yoga in primary dysmenorrhoea [8].

3. To evaluate the effectiveness of selected Yogasanas on dysmenorrhea among adolescent girls in the experimental group (Group I) and the control group (Group II).

The present study revealed that the mean pretest scores of the experimental group (Group I) and control group (Group II) are the same. But the mean post test scores of the experimental group is (5.0) less than that of the mean post test score of the control group (7.3). The calculated t value (8.38) is higher than that of the tabulated value (2.58) at 0.01 level of significance. Hence, the p value is significant (0.0008) which is less than 0.01 level. Therefore it can be concluded that in this study the mean post-test scores of dysmenorrhea among adolescent girls in Group I is significantly different than that of Group II. It is found that in the control group, the mean post-test score (7.3) is higher than that of the mean pre-test score (7.2) because the researcher had advised them to avoid using both pharmacological and nonpharmacological measures, which reduce dysmenorrhea.

In the experimental group, the mean post-test score (5.0) was lower than the mean pre-test score (6.7) and the calculated t value (16.52) is higher than that of the tabulated value (2.58) at 0.01 level of significance. Hence, the p value is significant, which is less than 0.01 level. Hence it can be concluded that the selected Yogasanas were effective in adolescent girls with dysmenorrhea.

The present findings are supported by another Interventional study was conducted in Maharashtra (2023) to study the effects of Yogasanas among 31 young adult females at Nanded Physiotherapy College and Research Centre. They have performed the Yogasanas Bhujangasana, Matsyasana, Dhanurasana, Marjarasana, Vajrasana, Setu Bhandha Sarvangasana, Malasana, Apanasana, Supta Baddha Konasana along with Anuloma villoma techniques. The subjects were assessed at the baseline and after 4 weeks, which included the subjects having the presence of dysmenorrhea on the basis of Pain Scale and Verbal Multidimensional Scoring System for pain and severity. The intervention consisted of a period of 4 weeks. Result For VAS and VMSS the p-value was <0.0001 . Hence, there was statistical significance of treatment in the pretest and post-test within the experimental group. Whereas it showed a significant improvement in pain and severity of the subjects with primary dysmenorrhea ^[9].

4. To find out the association between the pretest scores of dysmenorrhea among adolescent girls with selected study variables of experimental group (Group I) and control group (Group II).

The finding of the present study revealed that there was a significant association between pretest scores of dysmenorrhea with selected demographic variables (Duration of menstruation and previous knowledge regarding yoga measures) among adolescent girls in both experimental and control groups, is significant at the 0.05 level of significance. The calculated p-value is less than 0.05 so it is significant.

The result of the study is supported by an experimental study conducted in India to assess the effectiveness of yoga on primary dysmenorrhea among the adolescent girls. The study shows that there is a significant association between dysmenorrhea and age in years, mother's education, flow of menstruation, and knowledge on primary dysmenorrhea ^[10].

Conclusion

The study findings concluded that the prevalence of dysmenorrhea among adolescent girls were high (94.5%) and the selected Yogasanas was effective in reduction of dysmenorrhea pain level. In adolescents, moderate to severe dysmenorrhea that affects lifestyle. Therefore, they must know the complementary therapies to manage dysmenorrhea and also apply it in their daily life.

Recommendations

- Future this study can be conducted for a longer duration.
- Further health education programmes are needed to promote menstrual health knowledge and reduce the social stigma about menstruation to ensure adequate pain assessment and management.
- This study could pave the way for future investigation on a nationwide scale to investigate on dysmenorrhea among young adults.
- A similar research can be also replicated in urban and rural areas.

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