Effectiveness of Acupressure at Sanyinjiao Point (SP6) on Menstrual Discomfort among Adolescent Girls in Selected Senior Secondary Schools at Meerut (UP)

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Abstract: *Dysmenorrhea is one of the commonest problems experienced by adolescent girls which results in disruption of routine activities, absence from schools, unnecessary medical expenses, and adverse effects of drugs, physical & mental disorders.* <u>Aim:</u> *The main aim of the study was to assess the effectiveness of SP6 acupressure on menstrual discomfort among adolescent girls at RG Inter-College, Meerut.* <u>Methodology:</u> *The true experimental study was conducted with pretest-posttest control group design. Sample size was 100 (50 in experimental and 50 in control group). Probability simple random sampling technique was used. Pain and anxiety levels were assessed by 11-point numerical pain rating scale and Hamilton anxiety scale by structured interview method. Post test was taken after 1hr and 2hrs of intervention.* <u>Results:</u> *There was 32% and 22.5% reduction in pain and anxiety after 1hr of intervention and 8% and 4.5% alleviation in pain and anxiety after 2hrs of intervention among experimental group . The findings were significant at 0.01 level of significance (p<0.01). There was significant association between post test pain score of experimental group and age χ^2 = 9.69, p=0.008 (at 0.05 level of significance).* <u>Conclusion:</u> *SP6 acupressure was effective in reducing menstrual discomfort up to 2 hours among experimental group of adolescent girls.*

Keywords: Effectiveness, Menstrual Discomfort, Acupressure, SP6 Acupoint, Adolescent Girls

1. Introduction

Menstruation is a physiological phenomenon occurring among females from the age of menarche until menopause. Painful menstruation is one of the most common problems of menstruation found among adolescent girls. The painful menstruation is termed as dysmenorrhea which can be primary and secondary. Primary dysmenorrhea without any pathological evidences is highly prevalent among adolescent girls. This leads to frequently missing college and classes, limitation of daily, social and sport activities. The intensity of pain is more during 1st and 2nd day of menstruation so most of girls prefer analgesics to relieve dysmenorrhea but analgesics are having serious side effects on health

Most of girls like to avoid pharmacological and invasive methods of pain management and this may contribute towards the popularity of alternative methods of pain management. One of such alternative approach is acupressure. In all the alternative therapies acupressure is gaining more popularity now a day.

According to WHO article (2006) on systematic review of 106 researches on 125249 women reported that prevalence of dysmenorrheal is 17%-81% globally. Primary Dysmenorrhoea is the most common gynecological disorder among female adolescents, with a prevalence of 60% to

93%. 42% of affected adolescents describe their menstrual pain as severe, 33% as moderate and 25% as mild. Dysmenorrhoea accounts for 600 million lost work hours and US $ 2 billion in lost productivity annually. During this phase they experience marked feeling of anxiety and eagerness to know about this natural phenomenon.

Lee et. al (2011). Stated that acupressure is an alternative medicine technique which is based on the concept of life energy which flows through "meridians" in the body. For treatment with acupressure physical pressure is applied to acupoint with the aim of clearing blockage in these meridians. Pressure may be applied by hand, by elbow or with various devices. Acupressure is effective in nausea, vomiting, lower back pain, tension, anxiety, and headache. Administration of self medication, lack of knowledge related to side effects of pain killers and lack of awareness regarding the alternative therapies**,** therefore investigator felt the need to innovate the measure which is safe, cost effective, without any side effect and efficient to reduce the pain and anxiety during menstruation

2. Literature Survey

Chaudhuri A, et.al (2012), did a study on school girls how they deal with dysmenorrhoea, at Chandigarh, India. They selected 240 school girls in the standard VIII to X who had attained menarche. They done the study to determine its impact on their routine life and to ascertain the practices adopted by them for management of primary dysmenorrhoea. A modified menstrual distress questionnaire was used. Visual analogue scale for pain was used to measure pain. The results showed that prevalence of dysmenorrhoea was 59.82%. Sickness absenteeism due to dysmenorrhoea was reported in 25.8% girls. 52.3% had moderate pain and 25% had severe pain. Menstrual distress questionnaire scores their mood swings, irritability, difficulty in concentrating, poor school performances the common problems; 8.6% of the study population they went for physicians consultation, 15.6% took painkillers, 12.5%

used hot water bottles, 3.1% practised exercise, 26.6% practised dietary modifications for reducing pain..

Chan SS, et.al, (2009), conducted a descriptive study to assess the prevalence of menstrual problems among 160 adolescent girls in Hong Kong. The result revealed that the prevalence of dysmenorrhoea and menstrual symptoms were 69 percent and 37 percent, respectively. One in eight girls reported having been absent from school, while only six percent had sought medical care because of menses. Multivariate analysis indicated that seeking medical care for menorrhagia was dependent on the opinion of a family member and on dysmenorrhoea severity. The investigator concluded that the prevalence of menstrual problems in adolescence was higher.

Zahra Moradi (2014), conducted a study to assess the effectiveness of SP6 acupressure on menstrual pain and anxiety among women with menstrual discomfort in Iran, 150 women were allocated to acupressure at GB-21 acupoint, acupressure at SP-6 acupoint, and control group. The pressure was applied to the acupoint for 20 minutes. Mother's anxiety level was assessed using questionnaire before and one hour after the intervention. The results revealed no significant difference among the three groups regarding the anxiety level before the intervention (P > 0.05). One hour after the intervention, this measure was significantly lower in the intervention groups in comparison to the control group (P < 0.001); However, no significant difference was found between the two intervention groups in this regard (P > 0.05). Acupressure at both acupoint reduced pain and anxiety level.

Montserrat Gea-Sánche et.al, (2014), carried out a study to evaluate the effectiveness of Sanyinjiao (SP6) acupressure in reducing the pain level and menstrual distress resulting from dysmenorrhea among women with menstrual pain and distress in Iran. 40 participants with dysmenorrhea were assigned to either the acupressure group (n = 19) or the control group (n = 21). The acupressure group received 20 min of SP6 acupressure. The control group was only told to rest. Outcomes were measured through (1) the Pain Visual Analogue Scale (PVAS), (2) the Short-Form McGill Pain Questionnaire (SF-MPQ), and (3) the Short-Form Menstrual Distress Questionnaire (SF-MDQ). There was a statistically significant decrease in pain score for PVAS (p = 0.003) and SF-MPQ (p = 0.02) immediately after the 20 min of SP6 acupressure.

Chen HM et.al, (2010) conducted a study on effects of acupressure on menstrual distress in adolescent girls: comparison between Hegu-Sanyinjiao matched points and Hegu, Zusanli single point in Koreaa. 134 Adolescents randomly assigned to experimental groups Zusanli (n = 30), Hegu (n = 33) and Hegu-Sanyinjiao Matched Points (n = 36) received acupressure intervention protocol for 20 minutes. Four instruments were used to collect data: (1) the Visual Analog Scale for Pain; (2) the Menstrual Distress Questionnaire Short Form; (3) the Short-Form McGill Pain Questionnaire and (4) the Visual Analog Scale for Anxiety. Hegu and Sanyinjiao reduced the pain, distress and anxiety typical of dysmenorrhoea. Acupressure at single point Hegu

was found, effectively, to reduce menstrual pain during the follow-up period. Zusanli acupressure had no significant effects of reducing menstrual pain, distress and anxiety perception.

3. Statement of the Problem

"A study to assess the effectiveness of Acupressure at Sanyinjiao Point (SP6) on Menstrual Discomfort Among Adolescent Girls in Selected Senior Secondary School at Meerut."

Objectives of the study
- To assess the level of menstrual discomfort among experimental and control group of adolescent girls.
- To assess the effectiveness of acupressure at SP6 point on menstrual discomfort in experimental group of adolescent girls.
- To compare the pre test and post test scores regarding menstrual discomfort of experimental group with pre test and post test scores of control group.
- To find out association between post test result of experimental group with selected demographic variables on menstrual discomfort among adolescent girls.

Hypothesis
H1: There will be significant reduction in menstrual discomfort (menstrual pain and anxiety) after applying acupressure at SP6 point among experimental group
H2: There will be significant reduction in menstrual discomfort (pain and anxiety) among experimental group in comparison to the control group.
H3: There will be significant association between reduction of menstrual discomfort (pain and anxiety) with selected demographic variables.

Assumptions:
- The adolescent girls will be having pain and anxiety during menstruation.
- The adolescent girls have never undergone acupressure therapy for relieving menstruation pain.
- Acupressure at SP6 acupoint will reduce pain and anxiety during menstruation among adolescent girls and their level of daily activities will be maintained.

Conceptual framework

The conceptual framework for this study was modified and adopted "Prescriptive therory" (helping art of clinical nursing) proposed by Ernestine Weidenbach. Weidenbach's prescriptive theory described as a system of conceptualization invented to some purpose.

4. Operational Definitions

1) Effectiveness: It indicates the extent to which the acupressure at SP6 acupoint achieved the desire result in reducing the menstrual discomfort during first day of menses among adolescent girls.

2) Acupressure**:** It refers to gentle pressure applied at SP6 point on the medial aspect of ankle on the lower calf (3 cun above ankle) for 20 minutes, 10 minutes in right leg and 10 minutes in left leg on first day of menses.

3) The Sanyinjiao Point (Sp6): It refers to the acupoint which is found at 3 cun up the medial aspect of the calf, proximal to the medial malleolus. The point is located just posterior to the border of the tibia**.**

4) Menstrual Discomfort**:** It refers to any degree of perceived menstrual pain and anxiety during first day of menses.

5) Adolescents Girls: It refers to girls belong to 11-18 years of age group, who have attained menarche studying in higher secondary school of Meerut.

5. Methodology

- **Research Approach:** Evaluative approach was used to carry out the study
- **Research Design:** True experimental research design (pretest posttest control group design)
- **Setting:** The study was conducted in Raghunath Girls Inter College, Meerut
- **Variables:**
  Independent variable: Sanyinjiao acupressure SP6) for 20 minutes, 10 minutes for each leg.
  Dependent variable: Menstrual discomfort (pain and anxiety) among adolescent girls.
  Extraneous variables: The extraneous variables under study are: age, age of menarche, duration of menstruation cycle, duration of menstruation, flow of menstruation, the first time of menstrual discomfort, onset of menstrual discomfort occurs, ending of menstrual discomfort occurs, frequency of menstrual discomfort, limitation of daily activities, self-care methods used during menstrual discomfort
- **Population:** Adolescent girls of Senior Secondary School having menstrual discomfort on first day of menses
- **Sample:** Adolescent girls of selected senior secondary schools at Meerut with menstrual discomfort on first day of menses, who full filled inclusion and exclusion criteria, were selected as sample.
- **Sample size:** The total sample size of the study was 100 adolescent girls. 50 girls were selected in experimental group and 50 girls in control group
- **Sampling techniques:** Probability- Simple random sampling technique with lottery method was used to select the sample.
- **Method of data collection:** SP6 acupressure was given for 10 minutes on right leg and 10 minutes on left leg in experimental group on first day of menses with menstrual discomfort**.** Structured Questionnaire was used to collect demographic data and 11-Point Numerical Pain Rating Scale & Hamilton Anxiety scale were used to assess the levels of pain and anxiety. The data was collected by structured interview schedule.

6. Results and discussion

Table 1: Frequency and percentage distribution of sample's characteristics of experimental group and control group (N=100).

SL No	Variables	Experimental group (n=50)		Control group (n=50)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	**Age (in years)**				
	a)11-13	10	20%	09	18%
	b)14-16	31	62%	35	70%
	c)17-18	29	18%	06	12%
2	**Age of menarche (in years)**				
	a)9-11	05	10%	01	02%
	b)12-14	24	48%	32	64%
	c)15-17	21	24%	17	34%
3	**Cycle of Menstruation (in days)**				
	a) < 21	00	0%	0	0%
	b)21-25	01	02%	38	76%
	c) 26–30	46	92%	12	24%
	d) 31–35	03	06%	06	0%
4	**Duration of Menstruation** (in days)				
	a) 1-2	03	06%	0	00%
	b) 3-4	43	86%	38	76%
	c) 5-6	04	08%	12	24%
	d) More than 6 days	00	00%	00	00%
5	**Flow of menstruation**				
	a)Mild	0	00%	0	00%
	b)Moderate	36	72%	37	74%
	c)Severe	14	28%	13	26%
6	**The first time of menstrual discomfort**				
	a)During menarche	41	82%	46	92%
	b) During 6 months to 1 year after menarche	06	12%	04	08%
	c)1-2 years after menarche	03	06%	0	0%
	d)2 years after menarche	0	00%	0	0%
7	**Onset of menstrual discomfort occurs on**				
	a) Previous day of menses	11	22%	15	30%
	b) 1st day of menses	39	78%	35	75%
	c) 2nd day of menses	0	0%	0	0%
	d) 3rd day of menses	0	0%	0	0%
8	**Ending of menstrual discomfort occurs on**				
	a) 1st day of menses	09	18%	11	22%

	b) 2nd day of menses	37	74%	38	76%
	c) 3rd day of menses	03	06%	01	02%
	d) Remains for all days of menses	01	02%	00	00%
9	**Frequency of menstrual discomfort (in months)**				
	a) For every cycle	46	92%	48	96%
	b) 2-months interval	0	00%	01	02
	c) 3-months interval	02	04%	0	00%
	d) More than 4 months interval	02	04%	01	02%
10.	**Limitation of daily activities**				
	a) No affect	0	00%	0	00%
	b) Less affect	09	18%	11	22%
	c) More affect	41	82%	39	78%
11.	**Self-care methods used during menstrual discomfort**				
	Yes	05	10%	04	08%
	No	45	90%	46	92%

Majority of girls i.e., 62% & 70% were between age group 14 -16 years in experimental & control groups. 48% and 64% girls had attained menarche between ages 12-14 years in both the groups. Menstrual cycle in experimental group 92% girls had 26-30 days of menstruation cycle, 2% had cycle of 21-25 days. In control group 100% had menstrual cycle of 26-30 days. Duration of menstruation in experimental group between 3-4 days was 86% and 5-6 days were 8%. In control group between 3-4 days were 76% and 5-6 days were 24%. 72% girls were with moderate flow of menstruation and 28% were with heavy flow. In control group, 74% were with moderate flow and 26% girls were with heavy flow. Majority of girls 82% and 92% experienced menstrual discomfort first time during menarche in experimental and control group. In experimental group majority of girls 78% & 70% in control group were feeling menstrual discomfort on 1st day of menses. In majority of girls (74%) ending of menstrual discomfort was on 1st day of in experimental group and 76 % was in control group. 92% girls of experimental group and 96 of control group were experiencing menstrual discomfort at every cycle. 82% girls complained of more effect on limitation of activities in experimental group and in control group girls with more affected were 78%. 90% in experimental and 92% in control group were not using self care method

Table 2: Comparison of pain assessment score between pretest, post test-I and post test-II pain scores in experimental and control

Scores	Experimental group (n=50)		Control group (n=50)		Reduction or increment (%)	Unpaired t-test
	Mean	SD	Mean	SD		
Pretest	7.44	1.2148	7.4	1.243	0.4%	p=0.809923 t=0.28611
Post test –I	4.44	1.0528	7.58	1.1444	-32%	P=0.0000 t=14.6864
Post test-II	3.9	0.7626	7.7	1.0546	-38%	p=00000 t=20.6464

't' (98) At 0.01 level (2.62)

The mean pre test pain score of experimental and control group was 7.44±1.2148 and 7.38±1.243. There was 0.4% mean difference in both group; this is not statistically significant as 't' value 0.286112 is lower than table value at 0.01 level of significance. The mean post test-I score of experimental group 4.44±1.0528 was lower than mean post test pain score of control group i.e. 7.58±1.1444. There was 32% reduction of pain in experimental group. The findings are statistically significant as calculated' value 14.68 was greater than table value and p=0.000 at 0.01 level of significance. The mean post test-II pain score of experimental group 3.9±0.7626 was lower than mean post test-II pain score 7.7±1.0546. There was 38% reduction of pain seen after 2 hour of intervention in experimental group as compared with control group. The findings are significant as computed't' value 20.6464 value is greater than table value and p=0.000 at 0.01 level of significance. There was 32% reduction in pain after 1 hour of intervention and further 6 % reduction in pain level was seen after 2 hours of intervention.
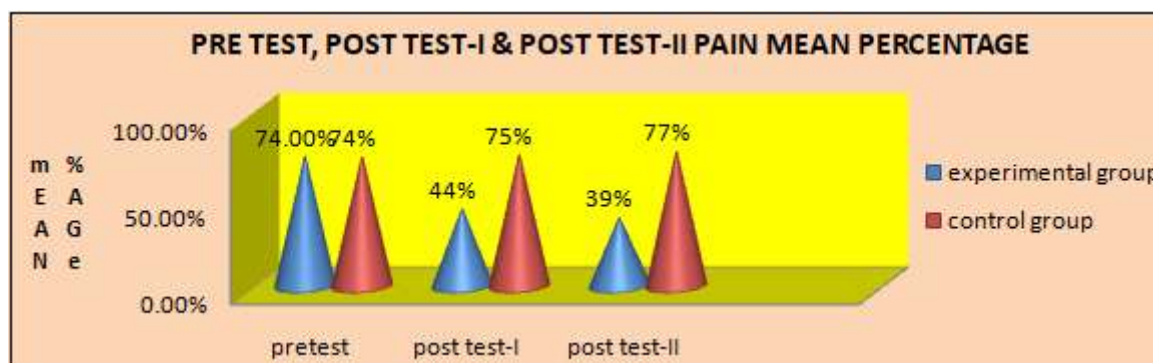

Figure 1: Cone graph showing comparison of pre test, post test-I & post test-II pain score of experimental and control group

Table 3: Comparison of anxiety assessment score between pretest, post test-I and post test-II pain scores in experimental and control

Scores	Experimental group (n=50)		Control group (n=50)		Reduction or increment (%)	Unpaired t-test
	Mean	SD	Mean	SD		
Pretest	29.68	6.028068	30.02	5.54937	0.60%	p=0.771044 t=0.293432
Post test –I	17.78	4.945788	30.4	5.635167	-22.53%	p=1.333286 t=11.9019
Post test-II	16.02	4.283285026	30.96	5.014103	-26.67%	p=0.00000 t= 15.8284

't' (98) At 0.01 level (2.62)

Mean pre test anxiety score of experimental group was 29.68±6.028068 and 30.02±5.54937 in control group. There was 0.60% mean difference which is not significant as computed p>0.01 and 't' value 0.293432 is lower than tabulated value and at 0.01% level of significance. The mean post test-I anxiety score 17.78±4.945788 of experimental group was lower than mean post test-I anxiety score of control group i.e. 30.4±5.635167. There was 22.53% reduction in anxiety seen after 1 hour of intervention in experimental group as compared with control group. These findings are statistically significant as computed 't' value 11.9019 is greater than table value at 0.01 level of significance and p<0.01. The mean post test-II anxiety score of experimental group was16.02±4.28328 which was lower than the mean post test-II anxiety score i.e. 30.96±5.014103 of control group. There was 27% reduction in level of anxiety among experimental group as compared with control group. These findings are statistically significant as computed't' value15.8284 is greater than table value and p=0.000 at 0.01 level of significance.

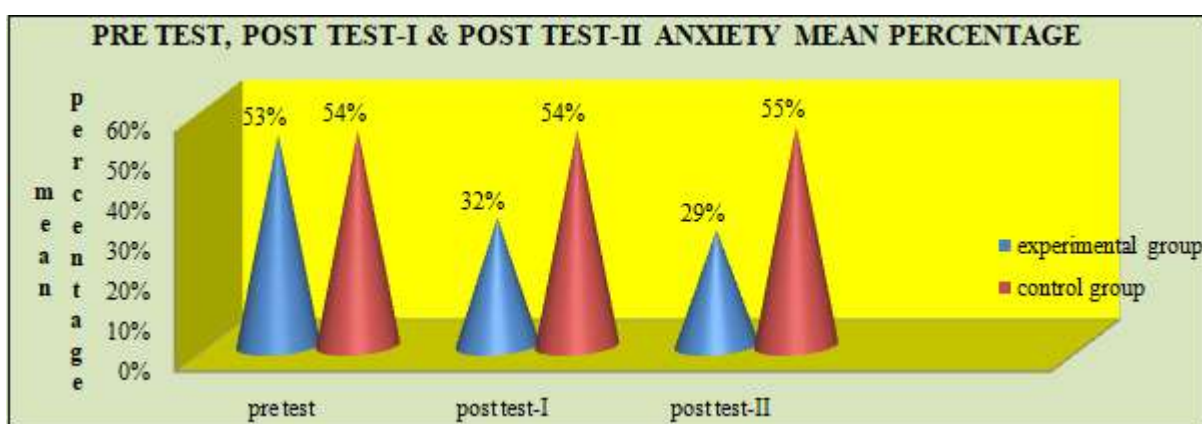**Figure 2:** Cone graph showing comparison of pre test, post test-I & post test-II anxiety mean score of experimental and control group

Table 4: Association between Post-test-I pain score and demographic variable age & post test-I anxiety score and demographic variable self care methods used during menstrual discomfort of experimental group

S. No.	Demographic variable	Pain score		df	Chi-square	
		Below mean	Above mean		Calculated Value	Table value
1	Age (in years)			2	χ^2 = 9.68 p=0.008 significant	5.99
	a) 11-13	06	04			
	b) 14-16	10	21			
	c) 17-18	08	01			
2	Self-care methods used during menstrual discomfort	Anxiety score		1	χ^2 = 4.37 p=0.037 significant	3.84
	a) yes	5	0			
	b) no	23	22			

The above table shows that there was significant association between age and post test pain score of experimental group as p=0.008 and χ^2 = 9.68 at 0.05 level of significance. And also there was significant association between self care method used during menstrual discomfort with post test anxiety score as computed p=0.037 and χ^2= 4.37at 0.05 level of significance. There was no significant association with other demographic variables with post test pain score and anxiety score of experimental group.

7. Conclusion

The study concluded that the effect of SP6 acupressure was sustained up to 2 hours after intervention. While in control group there was increment in pain and anxiety. Hence SP6 acupressure was effective in reducing menstrual discomfort in terms of pain and anxiety. Significant association was found between demographic variable age with post test-I pain score and self care method used during menstrual discomfort with post test –I anxiety score of experimental group. There was no association between demographic variables age of menarche, cycle of menstruation, duration of menstruation, first time menstrual discomfort, frequency of menstrual discomfort, flow of menstruation, onset of menstrual discomfort, end of menstrual discomfort, and limitation of daily activities except age with post test pain score &lf care method used during menstrual discomfort with post test –I anxiety score of experimental group.

8. Nursing Implications

The findings of the study have implications for the nursing education, nursing administration, nursing practice and nursing research

Nursing Education: Future of nursing profession requires qualified nurses to meet the challenges and deliver the health care. The study indicates to educate the students and adolescent girls regarding significance of acupressure and to encourage the nursing personnel to practice acupressure in. The nursing curriculum should include more natural non pharmacological therapies. Nurse educator can teach their students regarding significance of acupressure. Clinical instructor can teach about the application of acupressure and its mechanism. Continuing education programs can be organized to enhance the knowledge and practice regarding acupressure especially in midwifery as it is a new therapy to our nursing field

Nursing Administration: Administration should support the researchers to conduct the research on reproductive health problems faced by adolescent girls. Small training courses can be conducted about naturopathy interventions for student nurses and nursing professionals. It will also enhance the quality of care and collaboration with other professions.

Nursing Practice: In hospitals clients can be advised for acupressure treatment. In maternity centers, nursing homes and private clinics more cases come with the complaints of menstruation symptoms, there demonstration sessions can be

organized to teach the clients because it is a self administration method also. It is a cost effective therapy and having no adverse effect so can be advised to those clients who are not able to spent money and want to avoid pain killers and suffere with side effects of medicines. School health nurses also can demonstrate the procedure to the school aged girls as menstrual discomfort is very common in adolescent age group.

Nursing Research: Similar study can be implicated in another setting with new subject so as to generate more valid and reliable data. The study data can be used for various training programs regarding SP6 acupressure. As this kind of researches are very less in nursing profession in India so more researches should be conducted to assess the significance of acupressure on various reproductive problems among adolescent age group girls and other aged women also.

9. Recommendations

Based on the findings of the study, the following recommendations are offered for future research.
- A similar study can be undertaken (a) with large sample size for wider generalization (b) among nursing personnel.
- A study can be done by using modified time series design.
- A study can be done to assess the effectiveness of acupressure on other menstrual discomfort symptoms.

- A comparative study can be conducted among urban and rural adolescent girls also can be conducted in unmarried and married women.
- Training programs can be conducted in schools and community areas to teach self administration of acupressure.
- A Study can be conducted to assess the effectiveness of other cost effective and safe measures on menstrual discomfort.

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