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# Effect of acupressure on dysmenorrhea among adolescents

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## Abstract

### Background

Dysmenorrhea is a significant public health problem, which has a negative effect on female's health, social relationships, school or work activities, and psychological status.

### Purpose

The purpose of the study was to evaluate the effect of acupressure on Sanyinjiao Acupoint (SP6) on primary dysmenorrhea among adolescents.

### Participants and methods

Research design was an experimental case-control study. A total of 100 girls were randomly assigned to two equal groups (A and B): group A included 50 girls who received SP6 acupressure, whereas group B included 50 girls who received only light skin touching. Menstrual pain was measured by using a structured questionnaire, a subjective menstrual pain scales (Visual Analog Scale and McGill Pain Questionnaire – part I), before (at 8 a.m.) and after the intervention (at 8 p.m.) during the first 3 days of menstruation for 2 consecutive months.

### Results

There was a significant decrease in menstrual pain among the two groups.

### Conclusion

SP6 acupressure was effective in decreasing menstrual pain and can easily be used as a nursing management method for adolescents.

### Recommendation

Acupressure should be offered to cope with menstrual pain, as it is useful and has no adverse effects.

**Keywords:** Acupressure, McGill, menstrual pain, primary dysmenorrhea, Sanyinjiao Acupoint, Visual Analog Scale

## INTRODUCTION

The length of adolescence in a woman could be a period of physical and psychological transformation for maternity. One of the main physiological changes that crop up in adolescent girls is that the onset of the start. After that many girls face problems of irregular menstruation, excessive bleeding, and dysmenorrhea [1].

Dysmenorrhea is a common problem, defined as pain associated with menstruation. It is subclassified as either primary, in the absence of underlying organic disease, or secondary to a specific abnormality [2,3].

Pain or cramping sensations in the lower abdomen may be accompanied by headaches, dizziness, diarrhea, a bloated feeling, nausea and vomiting, backache, and leg pains. These symptoms are reported to be the most common reasons for adolescents visiting a gynecologist [4].

The high prevalence of dysmenorrhea among adolescents (50–70%) especially in the first years of their reproductive

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life influences their daily activities and can lead to high rates of school absenteeism [5].

Treatment of primary dysmenorrhea is directed at providing relief from the cramping pelvic pain, and it is associated with symptoms that typically accompany or immediately precede the onset of menstrual flow.

To date, pharmacotherapy has been the foremost reliable and effective treatment for relieving pain. NSAIDs and combination oral contraceptives are the most commonly used therapeutic modalities for the management of primary dysmenorrhea, but the use of these treatments can be costly and associated with adverse events [6,7].

There is a great need for effective nonpharmacological treatment options for primary dysmenorrhea, including bed rest, exercise, application of heat packs, and alternative treatments such as acupuncture and acupressure [8].

Acupressure is a one-in-all standard Chinese drug approach used for pain relief, diseases, and injuries. Acupressure could be a medical aid that is conducted by applying physical pressure on numerous points on body surface by suggests that of energy circulation and balance in cases of pain symptoms.

Acupressure technique is a noninvasive, safe, and practical application in reducing back, head, osteoarthritis, musculoskeletal and neck pains, preoperative and postoperative pains, nausea – vomiting, and sleeping problems [9].

This study aimed to evaluate the effect of acupressure on Sanyinjiao Acupoint (SP6) on primary dysmenorrhea.

## PARTICIPANTS AND METHODS

A written approval from ethical committee and the responsible authorities was obtained before starting the study in addition to a written consent was obtained from each subject for agreement to participate in this study after explanation of the purpose of the study. A total of 100 girls were selected randomly by a simple random sample. Randomization of the cases was done by a simple method according to a list of students' names, as girls that had odd numbers in a list of students' names were rolled in group A (intervention group), whereas girls who had even numbers in the same list were rolled in group B (control group). Intervention group had 50 girls who received SP6 acupressure intervention.

Control group had 50 girls who received only touch on the same point.

### Inclusion criteria

The following were the inclusion criteria:

- (1) One hundred single, adult females aged from 15 to 20 years and had regular menstruation (interval from 21 to 35 days) interval [10]

- (2) Girls who had primary dysmenorrhea, from mild to moderate dysmenorrhea [as determined by Visual Analog Scale (VAS)]
- (3) Had no medical problems
- (4) Did not use any methods of pain relief during the period of the study.

### Participants

- (1) A constructed interview questionnaire integrated sociodemographic characteristics of girl, physical characteristics of girls, medical and family history regarding chronic diseases, previous surgery and dysmenorrheal and menstrual history, severity of pain, other symptoms that may accompany, personal hygienic practices used during menstruation, and practices used for relieving dysmenorrhea (changing position, warm drinks, and using hot packs)
- (2) Pain Rating scales including VAS and McGill Pain Questionnaire (MPQ) – part I was used for assessment of pain intensity and sites of pain before and after the intervention.

Girls were asked to mark a spot on the VAS line corresponding to the intensity of their pain at a particular time on a possible scale of 0–10, where 0 means no pain, from 1 to 3 means mild pain, from 4 to 6 means moderate pain, and from 7 to 10 means severe pain. Moreover, each girl was asked to mark on the drawings on MPQ, the areas where she feels pain and write 'E' if external (if the girl felt superficial pain) or 'I' if internal (if woman felt deep pain) and write 'EI' if each external and internal for deciding the positioning or sites of the pain.

### Methods

#### Acupressure

SP6 was located on the medial side of the lower leg, three proportional inches (four fingers) superior to the prominence of the medial malleolus, in a depression, which is close to the medial crest of the tibia (Fig. 1).



**Figure 1:** Location of Sanyinjiao point (SP6) (as quoted from Charandabi *et al.* [11]).

Acupressure on this point was used to reduce menstrual pain, which is started by finding the most tender point on the leg. Then by utilizing either thumb, index, or middle finger to press firmly on SP6 Acupoint for 10 min for each leg (at 8 a.m. and also at 8 p.m.) in the first 3 days of menstruation for 2 consecutive months.

The intervention group had acupressure bilaterally on SP6 for 20 min at 8 a.m. and 20 min at 8 p.m. in the first, second, and third days of menstruation for 2 consecutive months. The acupressure was performed throughout 10 min for each side (right and left) with a total treatment period of ~40 min of acupressure per day for 2 consecutive months, whereas the control group received only SP6 touch with the same steps and period.

## RESULTS

There were nonstatistical significant differences regarding sociodemographic data between the studied groups (Table 1).

Regarding medical and surgical history of the studied groups, 46% of the intervention group had a positive family history of chronic diseases; hypertension, diabetes mellitus, cardiac diseases and chronic diseases, reported as 56.5, 21.7, 17.4, and 4.3%, respectively. Regarding the past history of surgical operation, 96% of the intervention group had previous surgeries.

There was a statistically significant difference between the two groups regarding the intensity of menstrual pain and other symptoms associated with menstrual pain, including

gastrointestinal symptoms, nausea, vomiting and diarrhea, stress and headache, flushing and hot sensation, and breast pain ( $P = 0.003$ ). However, there were nonstatistically significant differences between the two groups regarding the age of menarche, duration of menstruation, menstrual blood flow, and regularity of menstruation.

In the first month, on the first day, ~88% of girls in both groups had both external and internal pain at 8 a.m. and 8 p.m. In the second day, 28% of girls in the intervention group reported internal pain, 34% had external pain, and 38% of girls had both internal and external pain, whereas only 2% of the control group reported internal pain, 18% of girls had external pain, and 80% had both internal and external pain at 8 a.m. However, at 8 p.m., 24% of the girls reported internal pain, 64% had external pain, and 12% had both internal and external pain, but in the control group, 20% of girls reported external pain and 80% of girls had both internal and external pain. On the third day, 4% of girls in the intervention group reported internal pain, 88% of girls had external pain, and only 8% of girls had both internal and external pain, but in the control group, 2% of girls reported internal pain, 20% of girls had external pain, and 78% of girls had internal and external pain at 8 a.m. However, at 8 a.m., 96% of girls in the intervention group reported external pain and only 4% had both internal and external pain, but in the control group, 4% of girls reported internal pain, 18% of girls had external pain, and 78% had both internal and external pain.

There was a statistically significant difference in the sites of pain between two groups in the second day, but there were no statistically significant differences between two groups in the first and third days of menstruation in the first month.

In the second month, on the first day, 6% of girls in the intervention group reported internal pain, 8% of girls had external pain, and 86% had both internal and external pain at 8 a.m., whereas in the control group 18% of girls had external pain and 82% of girls had both internal and external pain. However, at 8 p.m., 8% of girls had internal pain in the intervention group, 4% of girls had external pain, and 88% had both internal and external pain, but in the control group, 12% of girls reported external pain and 88% reported both internal and external pain. On the second day, 26% of girls reported internal pain, 44% of girls had external pain, and 30% had both internal and external pain in the intervention group, but in the control group, 16% of girls had external pain and 84% had both internal and external pain at 8 a.m. However, at 8 p.m., 24% of girls in the intervention group reported internal pain, 74% of girls had external pain, and only 2% had both internal and external pain, whereas in the control group 20% had external pain and 80% had internal and external pain at 8 p.m.

In the third month in the third day, 10% of girls in the intervention group reported internal pain, 86% had external pain, and only 4% had both internal and external pain, whereas in the control group, 24% of girls had external pain and 76% had both internal and external pain at 8 a.m. However, at 8 p.m.,

**Table 1: Sociodemographic characteristics of the studied groups**

Variables	Studied groups (n=50) [n (%)]		$\chi^2$	P
	Intervention group	Control group (n=50)		
Age (years)				
<16	8 (16.0)	16 (32.0)	3.66	0.16 (NS)
16-18	29 (58.0)	22 (44.0)		
18-20	13 (26.0)	12 (24.0)		
Socioeconomic status				
Not enough	36 (72.0)	43 (86.0)	3.04	0.21 (NS)
Enough	14 (28.0)	7 (14.0)		
Education				
Secondary school	30 (60.0)	32 (64.0)	0.17	0.68 (NS)
Nursing school	20 (40.0)	18 (36.0)		
Religion				
Muslim	48 (96.0)	49 (98.0)	0.34*	1.0 (NS)
Christian	2 (4.0)	1 (2.0)		
BMI (kg/m <sup>2</sup> )				
<25	27 (54.0)	31 (62.0)	1.25	0.53 (NS)
25-35	22 (44.0)	17 (34.0)		
>35	1 (2.0)	2 (4.0)		

98% of girls in the intervention group had internal pain, and only 2% had external pain, whereas in the control group, 12% of girls had internal pain and 88% had external pain.

There was a highly statistically significant difference in the second and third days in the second month of girl's menstruation; however, there was no statistically significant difference in the first day between the both groups.

Regarding sites of the pain of the studied groups according to the MPQ in the first month, there was a significant difference between the intervention and control group regarding sites of pain in the first menstrual day at 8 a.m., second day at 8 a.m. and 8 p.m., and third day at 8 p.m. However, there was a highly statistically significant difference between both groups in the third day at 8 a.m., but there was no statistically significant difference between the studied groups in the first menstrual day at 8 p.m.

There was a highly significant difference between the intervention and control groups regarding sites of pain in the first and second menstrual day at 8 a.m and 8 p.m. and third menstrual day at 8 a.m. However, there was a statistically significant difference between both groups in the third day at 8 p.m. and second menstrual day at 8 a.m., but there was no statistically significant difference between the studied groups in the second menstrual day at 8 p.m.

In contrast, there was a highly statistically significant difference between the two groups regarding pain intensity of the studied groups according to VAS in the 3 days of the first and second months ( $P \leq 0.001$ ) (Fig. 2a and b).

## DISCUSSION

In recent years, many studies have evaluated the efficacy of acupressure at the SP6 Acupoint for relieving pain associated with primary dysmenorrhea. This study was carried out to investigate the effect of SP6 acupressure on primary dysmenorrhea among adolescents.

In this study, there were no statistically significant differences regarding sociodemographic data (age, socioeconomic

status, education, religion, and BMI) between the studied groups.

In this study, acupressure was applied within the first 3 days of menstruation, and results showed a highly statistically significant reduction in the severity of dysmenorrhea in the intervention group compared with the control group.

This study findings were in agreement with Chen *et al.* [12], Kashefi *et al.* [13], and Sharma *et al.* [14] who studied the effectiveness of acupressure at SP6 point on dysmenorrhea and showed a statistically significant reduction in severity of dysmenorrhea and proposed SP6 acupressure as an effective, feasible, and cost-effective intervention for reducing pain of primary dysmenorrhea.

Moreover, the study of Jun *et al.* [15], in Korea, showed a significant difference in dysmenorrhea severity between the two groups of intervention (acupressure at the SP6 point) and control (placing the thumb on SP6 point slowly with no pressure for 20 min) immediately after the treatment and 2h after it.

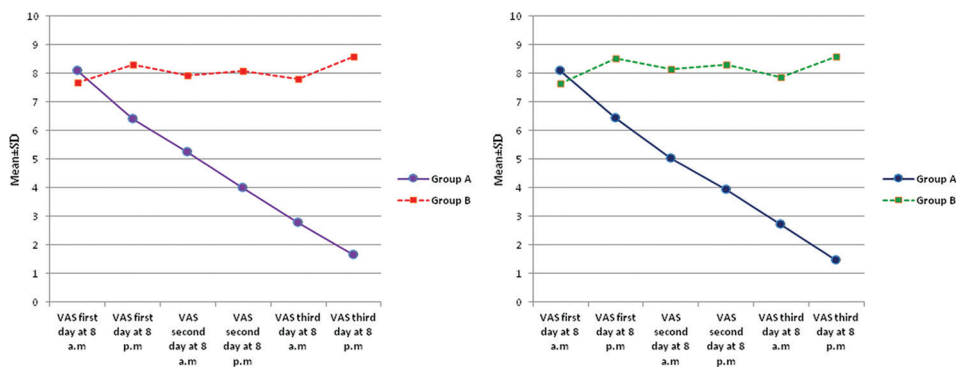
Furthermore, continuous use of SP6 point acupressure is effective in relieving pain and menstrual distress level resulting from dysmenorrhea. SP6 and SP8 points' acupressure helps to reduce the severity of dysmenorrhea up to 2 h after application [16].

In addition, Sohrabi *et al.* [17] showed that pain severity in the first and second months after treatment in the acupressure group was significantly lower than the ibuprofen group.

In this study, results showed a statistically highly significant decrease in pain scores assessed by VAS, MPQ – part 1, and an interview questionnaire.

These findings were supported by a randomized control trial conducted by Chen and Chen [18] in Taiwan, who found that acupressure at the SP6 reduced the pain and the stress resulted from dysmenorrhea during the first session of pressure.

Moreover, Wong *et al.* [19] applied acupressure at SP6 twice daily for first 3 days of the menstrual cycle, and findings showed a statistically significant decrease in pain



**Figure 2:** (a, b) Visual Analog Scale (VAS) before and after intervention in the first and second months of the studied groups in the first, second, and third days of menstruation (at 8 a.m. and 8 p.m.), correspondingly.



score using VAS, MPQ, and Modified Menstrual Distress Questionnaire.

These results were consistent with Mirbagher-Ajorpaz *et al.* [20] who conducted a study comparing light touch and acupressure at SP6 for 20 min in the control group and experimental group correspondingly. There were significant differences in VAS scores between the experimental and control groups immediately and 1, 2, and 3 h after the intervention. Findings of their study clearly indicate that 20 min acupressure is an effective complementary method for reducing dysmenorrhea without any adverse effects.

## CONCLUSION

For a period of 2 months of treatment care via acupressure, pain severity, and menstrual distress decreased gradually during each month, which was accomplished by achieving a significant reduction in pain through the second month. These indicated that acupressure has a long-term and accumulative effect in relieving primary dysmenorrhea.

This study revealed that SP6 acupressure is a simple, convenient, cost-free, noninvasive, and an efficient method to decrease the severity and the intensity of menstrual pain and can be adopted as a self-care measure for adolescent girls who have primary dysmenorrhea.

## Recommendations

On the basis of the results of this study, the following recommendations were suggested:

- (1) Establishing an educational program about self-care behaviors' among girls with primary dysmenorrhea
- (2) Incorporating dysmenorrhea and its treatment into the health education curriculum for adolescent girls in schools
- (3) Encouraging the use of acupressure procedure before and during the first 3 days of menstruation to reduce the menstrual pain
- (4) Further researches should be conducted in other nursing and secondary schools at different places to explore other factors affecting menstrual pain
- (5) Conduct similar studies in a larger sample of adolescents and young girls with primary dysmenorrhea and also compare the effect of other acupressure points with the effect of SP6 acupressure on menstrual pain.

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## Conflicts of interest

There are no conflicts of interest.

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