

A Pilot Study on the Effect of Acupressure Therapy in Managing Primary Dysmenorrhea

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Abstract: ***Background:** In young women, there is an 88% prevalence of Primary Dysmenorrhea with painful uterine menstruation without any pelvic pathologies, which affects the physical activities of daily living, and leads to absence in school or workplaces due to pain. About 20 - 25% of women have no pain relief even after using the NSAIDs, leading to other side effects. In our study, we used acupressure using hands, fingers and thumb. Acupressure is another non - invasive technique used in traditional Chinese medicines, stimulates endorphin hormones and blocks the pain receptors in the brain to enhance the relaxation in the body with a natural reduction of pain. **Aim of the study:** Aim is to compare the effect of Acupressure Therapy and Core Strengthening exercises in the management of Primary Dysmenorrhea. **Objectives:** To evaluate the effect of acupressure for pain relief, to reduce the severity and improve the quality of life in Primary Dysmenorrhea which would be safe and cost - effective treatment without any side effects. **Methodology:** A Pilot study with a randomized single blinded controlled trial was done on the females suffering from Primary Dysmenorrhea with the age group of 18 - 25 years old in which 20 samples were selected and after providing the consent form were recruited into two groups in which 10 participants were selected for acupressure therapy (Group A) intervention applied 5 to 7 days prior to menstruation while 10 participants were selected for Core Strengthening exercises (Group B) for 3 days/week. Both interventions were followed for three successful menstrual cycles. No intervention was applied during the menstruation cycle and each participant has to fill VAS, WaLIDD and SF - 12 scales during 1st, 2nd and 3rd menstrual cycles. Data was statistically analysed by paired t - test. Besides, P<0.05 was considered statistically significant. **Results:** With a significant difference (p<0.05). The experimental group and control group are both significant within the group analysis for the improvement of VAS, WALIDD, and SF12 (QOL) in primary dysmenorrhea conditions except PCS - 12 because of the small sample size. **Conclusion:** In our study, we concluded that acupressure therapy is a significantly effective method in reducing pain and improving the Quality of Life in primary dysmenorrhea without causing any side effects.*

Keywords: Primary Dysmenorrhea, Acupressure Therapy, Core Strengthening Exercise, Pain, Quality of Life

1. Introduction

The word "Dysmenorrhea" is derived from a Greek word that describes painful uterine contractions that make it difficult for blood to flow. ⁽¹⁾ About 71% of young women under 25 experience dysmenorrhea, or painful periods. ⁽²⁾ Primary Dysmenorrhea and Secondary Dysmenorrhea are the two sub - types of dysmenorrhea. ⁽¹⁾ Primary dysmenorrheas defined as dysmenorrhea that typically develops within a year of menarche without any other identical pelvic diseases and patient experiences regular monthly periods with cramps and supra - pubic pain either before or after the menstrual cycle starts but no pelvic pathology. ⁽³⁾ Sharp cramping lower abdominal pain, pain that lasts for one to three days from the start of the menstrual cycle, or 12 - 72 hours, as well as light headache, vomiting, nausea, mood swings, fatigue, and in severe cases, syncope are also common symptoms. While endometriosis, adenomyosis, uterine fibroids, uterine malformations, chronic pelvic inflammation, and interstitial cystitis are among the organic pelvic pathological alterations that typically induce secondary dysmenorrhea. ⁽¹⁾

Primary Dysmenorrhea with painful menstruation affects 88% of young women, and 20–25% of these women find no alleviation from their period discomfort even after using NSAIDs alone. ⁽⁴⁾

According to the World Health Organisation (WHO), women are more likely than men to lead sedentary lifestyles because they don't engage in physical activity during their free time, at home, or at work (84% of women against 78%

of men).60.5% of the female population is active, exercising through aerobics, walking, and cardio, compared to a sedentary lifestyle of 39.14%. ⁽⁵⁾

Another non - invasive method used in traditional Chinese medicine (TCM) is acupressure the term "acupressure" refers to the activation of acupoints by pressure applied with the hands, fingers, and thumb. ⁽⁶⁾ It acts on the pain - sensing area and stimulates endorphin hormones, which regulate the activity of the endocrine glands in which those molecules are stored. This enhances relaxation in the body by reducing or blocking the pain sensations to brain naturally. ⁽⁷⁾ Theoretically, acupressure widens the capillaries, controls the blood flow, and enhances it. As a result of the body's increased energy and decreased prostaglandin levels, the immune system is strengthened. As a result, the body continues to function normally. ⁽⁸⁾

Acupressure points used in our study according to Traditional Chinese medicines concept are Liv - 3 (Liver - 3) which reduces anxiety, Li - 4 (Large Intestine - 4) which is an analgesic point, Sp - 6 (Spleen - 6) distal analgesic point, UB - 40 (Urinary Bladder) is a distal point for backache (backache is common in dysmenorrhea), ST - 36 (Stomach - 36) is distal point for abdomen and HIT point (tonify, homeostatic), P - 6 (pericardium - 6) is a tranquilizing point (treats morning sickness, nausea, vomit, anxiety).

Non - steroidal anti - inflammatory drugs (NSAIDs), analgesic tablets, and other medications are frequently used to treat menstruation discomfort, but they can also have negative side effects, including nausea, breast tenderness,

intermenstrual bleeding, dizziness, sleepiness, hearing and visual abnormalities.⁽³⁾

Exercise is defined as "physical activity characterised by the use of planned and structured repetitive movements to increase or maintain physical fitness" by ACSM (2014).⁽²⁾

"Exercise alters hormonal secretion leads to increased neurotransmitters like endorphins, oestrogen, dopamine hence suppresses prostaglandins to decrease endometrial proliferation and shunts blood flow away from the uterus".⁽²⁾

Core strengthening may relieve primary dysmenorrhea by increasing circulation and metabolism in the pelvic area. Additionally, because of exercise, endorphin activation helps to lower prostaglandin levels, which causes uncomfortable cramps. lower incidence of primary dysmenorrhea.⁽²⁾

Aim of the study is to access the effect of acupressure for the management of primary dysmenorrhea by comparing acupressure therapy and core strengthening exercise regards pain rating scale (VAS), severity of dysmenorrhea (WaLIDD) and quality of life questionnaires (SF12).

2. Materials and Methods

Participants

Females suffering from primary dysmenorrhea with the age group of 18 - 25 years old were recruited for a randomized single blinded control trial study from a college in Surat.

Procedure to be performed: With the brief introduction of primary dysmenorrhea, students were assessed by asking general questions, inclusion criteria, exclusion criteria and WALIDD scale criteria to diagnose the patients suffering from primary dysmenorrhea

Inclusion criteria:^{(2) (4)}

- 1) Unmarried and diagnosed with primary dysmenorrhea by thorough history.
- 2) 18 to 25 years age.
- 3) Patients with primary dysmenorrhea (usually begins within 12 months of menarche without any pelvic pathology in adolescence).
- 4) Regular menstruation cycle 21 - 35 days and bleeding lasts 2 - 7 days.
- 5) Moderate to severe dysmenorrhea. (VAS score from 4 - 10).
- 6) Written consent form.

Exclusion criteria:⁽²⁾

- 1) Married women and Pregnant women.
- 2) Absent for 3 or more than 2 sessions of exercise.
- 3) Unable to tolerate physical exercise and severe pain leading them to take medications.
- 4) History of coronary vascular, liver, kidney, diabetes, asthma and any mental disease like depression, hypertension, hyperthyroidism, etc.
- 5) Any additional physical activity.
- 6) Secondary dysmenorrhea (with pelvic pathologies).
- 7) Smokers/using analgesic medication/vitamin/mineral supplements/oral contraceptives.

Study Design

We provided the cheats to the 20 diagnosed patients and equally distributed them into 2 equal halves in which 10 patients were recruited for acupressure therapy (Group A) and 10 patients were recruited for core strengthening exercise (Group B) as shown in figure 1 below. All the participation were given self - administered questionnaire and we took the VAS scale, WALIDD scale and SF - 12 during their 1st menstrual cycle as a pre assessment scale to analyse the condition before application of intervention and we will proceed to the exercise after completion of their first menstruation cycle.

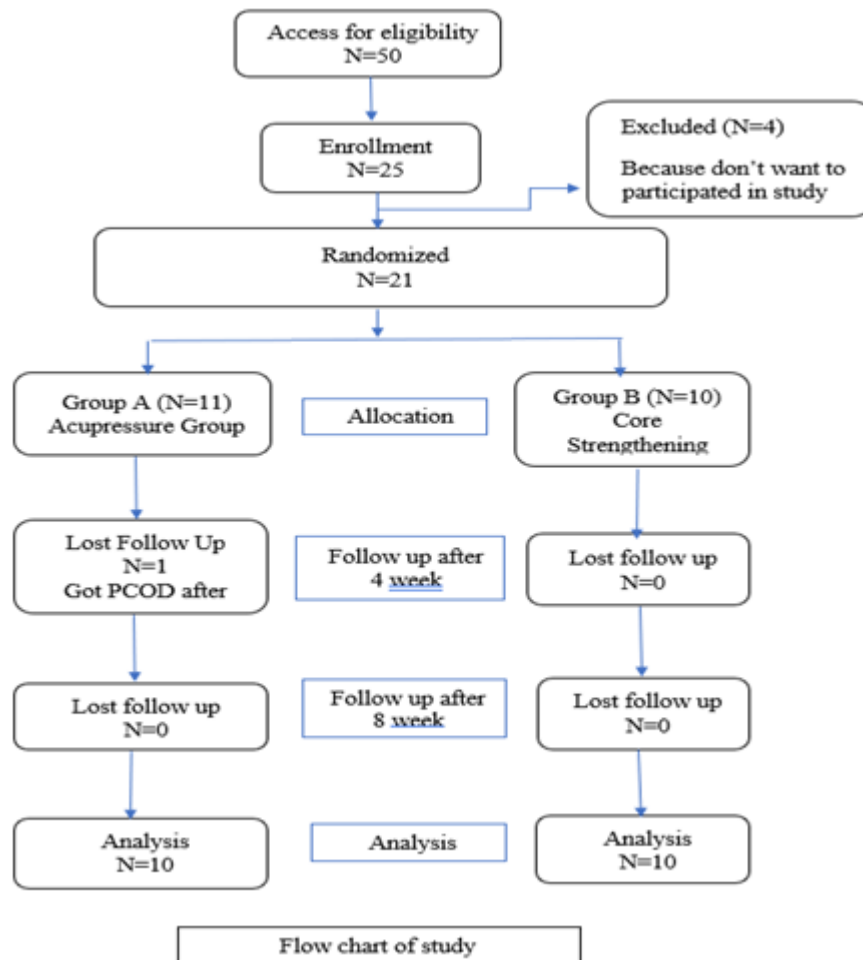


Figure 1

Then two post assessment tests taken in which posttest - 1 was taken after 4 weeks of interval and posttest - 2 was taken after 8 weeks of interval in which the VAS, WaLIDD and SF - 12 scales were filled by patients during their 2nd and 3rd menstrual cycle after application of intervention and no intervention was applied during the menstrual cycle. ⁽⁴⁾

Participants received the informative and motivational calls for the follow - up visits of intervention and reminding them to fill the questionnaire during their menstrual cycle.

Group A: Acupressure intervention

Total 30 - minutes of Acupressure application was conducted (120 - second pressure and 30 - second rest in which 60 secs in clockwise direction and 60 secs in anti - clockwise directions) with 5 mins of application for each point bilaterally, applied 5 - 7 days prior to the menstrual cycle. Change in colour of nail from which pressure is applied and mild pain with some discomfort to the patient is considered as a marker for application of accurate pressure. ^{(13) (4)}

We took total 6 points according to TCM concept, applied bilaterally on both the U. E and L. E are: Stomach - 36 (ST - 36) is distal point for abdomen and also HIT point (tonify, homeostatic), Urinary Bladder - 40 (UB - 40) is distal point for backache (backache is common in dysmenorrhea), Spleen - 6 (Sp - 6) is distal analgesic point, Liver - 3 (Liv - 3) reduces anxiety, Large Intestine - 4 (Li - 4) is an analgesic point, Pericardium - 6 (P - 6) is tranquilizing point (treats morning sickness, nausea, vomit, anxiety).

Location of the points: ^{(24) (25)}

(Large Intestine) LI - 4: between the forefinger and thumb on the dorsal aspect of hand at the top of 1st dorsal interosseous muscle when thumb is adducted. Analgesic location is in a depression lateral to midpoint of the 2nd metacarpal bone. Analgesic point used for headache and pain relief.

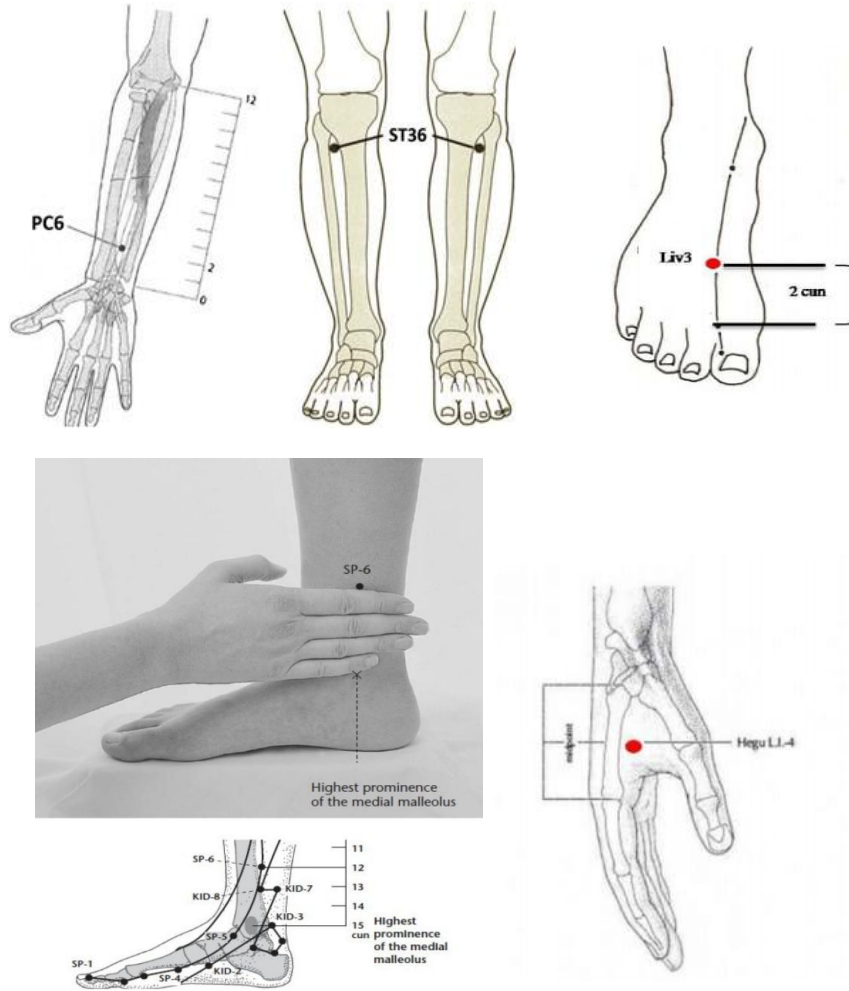
(Liver) Liv - 3: 2 cun proximal to the margin of web of 1st and 2nd toes. Used for headache, fainting and dizziness in primary dysmenorrhea.

(Stomach) ST - 36: 1 finger breadth lateral to lower end of tibial tuberosity. It is a distal point for abdominal disorders, nausea, vomit, fatigue, diarrhoea and constipation.

(Spleen) Sp - 6: 3 cun above tip of medial malleolus, posterior border of tibia. Distal analgesic point used for diarrhoea, vomit, abdominal distension.

(Urinary Bladder) UB - 40: At midpoint of popliteal transverse crease. Distal point used for low back and muscle cramps.

(Pericardium) P - 6: 2 cun proximal to midpoint of wrist crease between tendons of palmaris longus and flexor carpi radialis muscles. It is tranquilising point used for nausea, vomiting, and menstrual disorders.



(Group B) Core Strengthening Exercises

Core Strengthening exercises protocol includes 5 - 7 min warm up, 20 minutes main exercises and 5 - 7 minutes cool down exercise in which all subjects will be requested to perform all the following exercises for 3 - 4 days per week for about 8 weeks (excluding the time of menstrual cycle). In warm up includes dead bug exercise and cool down includes stretching (child pose, hamstring and calf stretch, butterfly pose). Main exercises include crunch, back bridging, cat and camel, bilateral single leg raises, prone cobra (20 reps/3 sets for week 1 - 2 and 25 reps/3 sets for week - 3) and plank (10 reps/3 sets for week 1 - 2 and 15 reps/3sets for week - 3) ⁽¹²⁾

3. Data Analysis and Results

Data was entered in SPSS version 20.0 and analysed for intra group Comparison by paired t - test with statistical significance level of $p < 0.05$.

Data was collected and analysed from 20 participants: 10 in experimental group for Acupressure Therapy and 10 in control group for Core Strengthening exercises. The Age Group criteria in our study is 18 - 25 years old in which we got the participants of age group of 19 to 21 years old in both the experimental and control group with the Mean \pm SD = 20.1 ± 0.567 . The menarche age of experimental group is ranging from 10 to 16 years old with the Mean \pm SD = 13.7 ± 1.888 and menarche age of control group ranges from 13 to 17 years old with the Mean \pm SD = 14.5 ± 1.269 . The

onset of dysmenorrheal in experimental group is 14 to 18 years old with the Mean \pm SD = 15.9 ± 1.3703 and onset of dysmenorrhea in control group is 16 to 19 years old with the Mean \pm SD = 17 ± 1.054 .

Table 1: The Associated Symptoms of both the groups

Experimental Group		
Associated Symptoms	N	Percent
Nausea	2	7.40%
Vomit	1	3.70%
Headache	6	22.20%
Fatigue	6	22.20%
Constipation	1	3.70%
Mood Swings	9	33.30%
Nervousness	2	7.40%
Total	27	100%

Control Group		
Associated Symptoms	N	Percent
Nausea	3	12.50%
Vomit	2	8.30%
Headache	5	20.80%
Fatigue	6	25.00%
Constipation	1	4.20%
Mood Swings	7	29.20%
Nervousness	0	0.00%
Total	24	100%

Shows the percentage of associated symptoms with Primary Dysmenorrhea in both the groups of intervention

Table 2: Comparison between the group analysis with given parameters at pre - test, posttest - 1 and posttest - 2 after 4 weeks of application of intervention

Scales	After 4 weeks of interventions			Two - sided p
	Percentage	MEAN \pm SD	Co - relation	
EX VASPOST1	54%	5.4 \pm 1.07497	- 0.191	0.853
CG VASPOST1	55%	5.5 \pm 1.08012		
EX WALIDD POST1	64%	6.4 \pm 0.96609	- 0.195	0.191
CG WALIDD POST1	57%	5.7 \pm 1.05935		
EX SF12 PCS POST1	421.78%	42.1784 \pm 5.4817	0.025	0.184
CG SF12 PCS POST1	450.91%	45.091 \pm 3.42267		
EX SF12 MCS POST1	491.70%	49.17 \pm 8.24549	- 0.006	0.55
CG SF12 MCS POST1	512.69%	51.269 \pm 6.74709		

Table 3: After 4weeks of intervention, we concluded that the scoring of VAS (experimental group post - 1 SD = 1.07 and control group post - test - 1 SD = 1.08) and WALIDD (experimental group post - 1SD = 0.96 and control group post - 1 SD =1.05) has been improved more significantly in

experimental group and PCS - 12 (experimental group post - 1 SD= 5.48 and control group post - test - 1 SD= 3.42), and MCS - 12 (experimental group post - 1 SD = 8.24 and control group post - 1 SD= 6.74) has been improved more significantly in control group.

Table3: Comparison between the group analysis with given parameters at pre - test, posttest - 1 and posttest - 2 after 8 weeks of application of intervention

Scales	After 8 weeks of interventions			Two- sided p
	Percentage	Mean \pm SD	Co - relation	
EX VAS POST2	42%	4.2 \pm 0.63246	- 0.186	0.619
CG VAS POST2	40%	4 \pm 0.94281		
EX WALIDD POST2	52%	5.2 \pm 1.0328	- 0.042	0.14
CG WALIDD POST2	46%	4.6 \pm 0.5164		
EX SF12 PCS POST2	480.86%	48.086 \pm 5	- 0.008	0.097
CG SF12 PCS POST2	510.98%	51.098 \pm 2.06536		
EX SF12 MCS POST2	557.54%	55.754 \pm 4.23916	0.554	0.673
CG SF12 MCS POST2	551.98%	55.198 \pm 4.30064		

Table 4: After 8 weeks of intervention, we concluded that the VAS score (experimental group post - 2 SD = 0.63 and control group post - 2= 0.94) and MCS of SF - 12 (Experimental group post - 2 SD= 4.23 and control group post - 2 SD=4.30) has been improved and more significant in experimental group while PCS of SF - 12 (Experimental group post - 2 SD= 5 and control group post - 2 SD=2.06) and WALIDD (experimental group post - 2 SD= 1.03 and control group post2 SD= 0.51) has been improved and more significant in control group.

Results: Hence concluded that, the experimental group is more significant in improvement of pain (VAS) and severity of dysmenorrhea (WALIDD) after 4 weeks of intervention between the group analysis. While, control group is more significant in improvement of Quality of Life (SF - 12) after 4 weeks of intervention.

The experimental group is more significant in improvement of pain (VAS) and Quality of life (SF - 12) except PCS (physical condition status) after 8 weeks of intervention in between the group analysis because of small sample size. While core strengthening is more significant in improvement of WALIDD (severity of dysmenorrhea) and PCS of SF - 12.

4. Discussion

Primary dysmenorrhea is a common gynaecological problem seen in women of reproductive age in which majority of

female population suffers pain in abdominal, inguinal and lower back pain with some associated symptoms like nausea, vomit, headache, fatigue, constipation, mood swings and nervousness. Thus affects QOL and social activity of women. ⁽⁸⁾

Wong et al reported that SP6 acupressure has an immediate pain - relieving effect for dysmenorrhea while in contrast, the control group was only told to rest. Moreover, acupressure applied to the SP6 acupoint for 3 consecutive months received 20 mins of Acupressure (twice a day) from the first to third days of their menstrual cycle, and was effective in relieving both the pain and menstrual distress level resulting from primary dysmenorrhea. ⁽¹⁹⁾

ShahlaGharloghi et al. conducted a study in (2012) and concluded that Acupressure at the SP6 and SP8 points can reduce pain severity of dysmenorrhea for up to 2 hours after application, and these points may be used to alleviate the severity of systemic symptoms accompanying dysmenorrhea. These indicated that acupressure has a short - term and accumulative effect in relieving primary dysmenorrhea. ⁽²⁰⁾

In, our study results showed that pain intensity of dysmenorrhea is significantly improved in acupressure group by second and third menstrual cycles compared to control group. While in the study of Kafaei - Atrian et al. (2013) participants were randomized into third liver point (liv3) and control (placebo) groups. In the second and third

cycles, pressure was applied by the research unit intermittently for 16 minutes (2 minutes pressure, 2 minutes resting) with the starting of blood flow. Primary outcome of this study was the pain intensity which was compared between first and third cycles. Someone who divided groups, samples and data analyzer was blinded found no significant difference between acupressure of LIV3 and placebo group in reduction of pain intensity in 3rd cycle of menstruation.⁽²¹⁾ However, in our study there is bit difference in our protocol. We applied acupressure therapy 3 - 7 days prior to the menstrual cycles with total 30 mins of duration per day (5 mins for each point bilaterally).

Othman SM et al. conducted a study (2019), 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 and concluded that Acupressure was applied within the first 3 days of menstruation showed a highly statistically significant reduction in the severity of dysmenorrhea in the intervention group compared with the control group.⁽²²⁾

In Bazarganipour et al. (2017) study, participants were randomly divided into three groups of LIV3, LI4, and the placebo group. The severity of dysmenorrhea was similar in all three study groups at the first cycle (control) ($p=0.17$); but by the second and third cycles there was a significant difference between three groups in pain intensity ($p<0.05$). No significant difference was detected between the three groups in terms of pain duration at the first cycle ($p=0.16$) and after the intervention, a significant difference between three groups in the second and third cycle in pain duration ($p<0.05$) while there is no significant differences between the three groups in terms of QOL scores of all domains at the first cycle ($p>0.05$) were observed and in the second cycle, a significant difference between the three groups in all domains of QOL, except for general health perceptions ($p=0.4$), mental health ($p=0.7$), mental subscale factor ($p=0.12$). A significant difference between three groups in all domains of QOL, except for mental health ($p=0.9$), and mental subscale component ($p=0.14$) were observed in the third cycle participants. Hence acupressure showed significant difference in SF - 12 QOL except mental subscale component in 2nd and 3rd cycle of menstruation in the study.⁽⁴⁾

While in our study there is a significant difference SF - 12 QOL except physical subscale components in 2nd and 3rd cycle of menstruation because of limited sample size.

In addition, Sohrabiet al. study, concluded that severity in the first and second months after treatment in the acupressure group was significantly lower than the ibuprofen group.⁽²³⁾

In our study, there is pain reduction in primary dysmenorrhea after application of acupressure points as we used 6 points for total 30 mins of duration applied 3 - 7 days

prior to menstrual cycle (5mins for each point bilaterally). Therefore, it is concluded that because of our given protocol we got the significant results.

5. Conclusion

In our study, we concluded that Acupressure Therapy significantly alleviates the menstrual pain and improves the quality of life except physical status may be because of limited sample size. Hence reduces the absence in schools and work places. Acupressure therapy is an easy, cost - effective and non - pharmacological treatment without any side effects which can be learned by patient to avoid medical treatment causing no side effects for the relief of pain in primary dysmenorrhea.

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