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The Efficacy of Shiatsu Therapy at “Sea of Energy” Point on Primary Dysmenorrhea in Nursing Students

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Abstract: Dysmenorrhea is one of the most common gynecological disorders, affects more than half of the reproductive aged women. Women experience periodic repeated discomforts associated with menstruation can affect their daily activities. A **Quasi experimental study** was conducted to evaluate the efficacy of using shiatsu therapy at "Sea of Energy" point on relieving primary dysmenorrhea. The study was conducted at College of Applied Medical Science, Shaqra University in the academic year 2015-2016. **Eighty-two** of nursing students at different academic levels was recruited for the study, allocated into two groups 'shiatsu group (46) and non-shiatsu group (36). **Three tools** for data collection were used; a structured interviewing questionnaire, visual-analogue scale and follow up chart. **The results** of the current study revealed that, the severity of pain and the associated symptoms was decreased in the shiatsu group compared to non-shiatsu group, with a highly statistically significant difference was found between groups after using the shiatsu massage therapy at "sea of energy" point. **In conclusion**, the present study concluded that using of shiatsu therapy at "Sea of Energy" point was effective for relieving primary dysmenorrhea pain and the associated symptoms for women. The study **recommended** that considering the shiatsu therapy as one of the effective therapeutic options for women suffering primary dysmenorrhea. Further studies are needed to investigate the effect of shiatsu points in a large population and on other health problems.

Keywords: Primary Dysmenorrhea, Shiatsu.

INTRODUCTION

Dysmenorrhea is a common gynecological disorder affects 50% of menstruating women, it is classified into two types; Primary dysmenorrhea is a painful menstruation with normal anatomy of the pelvis, begins usually in the female puberty. Its onset usually begins from six to twelve months after menarche, with regular ovulatory cycles. Meanwhile, secondary dysmenorrhea is defined as menstrual pain associated with underlying pathology. These two forms of dysmenorrhea are different at the time of menstrual cycle manifestations in pain quality and other symptoms. Primary dysmenorrhea (Spasmodic) is an acute pain which occurs in the first two to three days of menstruation and is often associated with gastrointestinal symptoms. Pain is confined to the parts of the body which are innervated by the uterine or ovarian nerves.[1]

Various bio-social and psychological causes were reported as the cause of dysmenorrhea. During a period, the uterine muscle contracts to shed the lining away, compressing the blood vessels that line the uterus. Consequently, without oxygen, the tissues in the uterus release pain-triggering chemicals, along with prostaglandins that promote further contractions, which worsen the pain. Obviously, it is unknown why some women experience more severe dysmenorrhea than others, but it may be due to excessive production of prostaglandins causing stronger contractions; it is considered the main cause of dysmenorrhea which causes cramping and other symptoms.[2,3]

Primary dysmenorrhea is common in young women, can reduce productivity and work performance and includes symptoms as intermittent spasms of pain, usually centered in the supra-pubic region, pain radiated to the lower back or legs, nausea, vomiting, fatigue, fever, headache, diarrhea, and vertigo.[4,5] Menstrual cramp is a very common complaint, experienced by 45-95 % of female reproductive age. Many women are suffering menstrual cramps just before and during their menstrual periods. The discomfort is merely annoying for some women, for others it could be severe enough to interfere with everyday activities a few days every month. [6]

A variety of complementary and alternative methods have been used for the treatment of dysmenorrhea including; herbal therapy, complementary medicine, acupuncture, biofeedback, trans-cutaneous electronic nerve stimulation, and so on. Shiatsu treatment is one of the alternative methods, which becomes more widely accepted. [7]

Shiatsu is a physical therapy means 'finger pressure' originating from Japan that supports the body's natural ability to self-heal, practice of a massage therapy, which incorporates gentle manipulations, stretches combined with pressure techniques by fingers, thumbs, elbows, knees and feet. [8, 9] It is working on a holistic level, addresses emotional, spiritual and physical aspects of health, musculoskeletal and psychological problems are the most common conditions presenting for treatment. This therapy can be used to reduce the stress and promote the overall health and well-being. [10,11]

Shiatsu is a Japanese form of massage therapy, reinforces holistic healing and self-healing. Studies have shown that Shiatsu massage, self-administered or done by a professional Shiatsu practitioner used to stimulate the “sea of energy” point, help relieve the menstrual cramps. Unlike acupuncture, shiatsu therapy uses acupressure, applied by hand to key areas on the body, to release discomfort, pain, bloating and tension [1]. Also, it is effective to regulate the menstrual cycle, improve energy, digestion, and can be used to prevent or treat acute cramps, vaginal discharge, constipation, headache and general weakness.[12,13]

“Sea of Energy” point is one of the most important points for treating the dysmenorrhea, located by two fingers width below the navel; stimulation of this point helps in treating dysmenorrhea and associated symptoms. The practice uses comfortable pressure, touch and manipulative techniques; this balances the energy flow and adjusts the body's physical structure elements[13]. Shiatsu point is easy accessible, can be simply found and massage with pressure can be exerted on it without the help of medical staff, nurses have a crucial role to encourage the women to cope with dysmenorrhea through using safe alternative methods instead of medical chemical drugs.

Significant of the study:

Primary dysmenorrhea with an estimated prevalence of 43% to 90% is one of the most common health problems among women younger than 25 years and one of the main reasons for short-term school or work absence, resulting in a significant economic loss. [1]The use of non-pharmacological therapy is a time-honored approach in modern investigation and research, to strengthening the body and treating the disease without side-effects. Therefore, using shiatsu therapy is effective for management of primary dysmenorrhea. There are few studies indicate that shiatsu therapy can reduce menstrual cramps and associated symptoms; however, it is used in Europe to relieve health problems[15].Improvement of research evidence was found in quality, quantity and reporting, but still more studies are needed, particularly for Shiatsu. Shiatsu is a natural way to relieve menstrual pain and symptoms. It is safe, non-invasive, economical and cost free pain relieving technique. So the purpose of the present study was to evaluate the efficacy of using shiatsu therapy at “Sea of Energy” point on relieving primary dysmenorrhea.

Aim and Objectives of the Study: to study the efficacy of using shiatsu therapy at “Sea of Energy” point on relieving the primary dysmenorrhea through:

1. Identifying the severity of primary dysmenorrheal cramps and the associated symptoms in nursing students.
2. Evaluate the effectiveness of using shiatsu therapy at “Sea of Energy” point on relieving primary dysmenorrheal cramps and the associated symptoms.

Research question and hypothesis:

Is the using of shiatsu therapy at “Sea of Energy” point effective in relieving the primary dysmenorrheal cramps and the associated symptoms?

H1. The using of shiatsu therapy at “Sea of Energy” point will be effective in relieving the primary dysmenorrheal cramps and the associated symptoms.

SUBJECTS AND METHODS

1. Research Design, setting and timing: A Quasi-experimental study design was conducted in college of applied medical sciences, Shaqra University during the academic year 2015-2016.

2 .Sampling size and technique:

A total of 82 nursing students was allocated into two groups; shiatsu group (n= 46) and non-shiatsu group (n= 36) during the academic year 2015-2016. They participated in the current study by using the convenience sampling technique. Note: Shaqra University system works by academic levels with credit hours from level 3 to 8, so the researchers selected the groups according to levels; shiatsu group included the students in level 4, 6 and 8, while non-shiatsu group included the students in level 3, 5 and 7.

Inclusion criteria: unmarried students have regular menstrual cycles of 21-35 days and suffer from menstrual pain and discomforts.

Exclusion criteria: included pelvic diseases, abdominal and pelvic surgeries or having severe psychological stress (parents’ divorce, death of close relatives, etc.) and taking sedatives.

Tools for data collection: Three tools were used for data collection. These consisted of students` structured interviewing questionnaire sheet regarding to primary dysmenorrhea, visual analogue scale and follow-up chart.

1) A Structure Interviewing Questionnaire; was developed by the researchers to collect data after extensive literature review related to: 1-a) demographic characteristics (age, name, educational level...) and 1-b) menstrual characteristics.

2) Visual Analogue Scale (VAS): was adopted from **Gould et al., 2001** used to assess menstrual pain intensity. It consists of a blank line anchored at each end of the line by adjectives that describe the extremes of pain. The anchoring adjectives commonly used are “no pain” (zero score) and “severe pain” (the worst possible pain) the top score (ten). The student was asked to place a mark on the line that best indicates the pain being experienced. This tool takes 2 to 5 minutes to be completed; it was divided into three main parts: the first part graded from 0-3.5 cm which reflects mild pain, the second part graded from 4-7.5 cm for moderate pain and the third part graded from 8-10 cm for severe pain. These scores were recorded before and after intervention [16].

3) Follow-up chart: It is a daily chart developed by the researcher after extensive review of relevant and recent literature. Students recorded the severity of dysmenorrhea (**pain**) for two consecutive cycles (before and after using the shiatsu therapy at different time intervals; at immediately, 1,2 then3 hours after intervention). Also, to prospective record the impact and severity of menstrual symptoms.

Fieldwork:

Collection of data covered a period of 9 months from October 2015 to June 2016. All of nursing students had been fully informed about the research and consented to participate in the research, followed by a baseline interview. During the interview, data included student's age, age of menarche, length of menstrual cycle, duration of menstrual flow, regularity of menstruation, amount of blood flow, severity, onset and duration of pain were collected by the students in shiatsu and non-shiatsu groups which were selected according to levels, where the odd level numbers were recruited as a non-shiatsu group and the even numbers are recruited as a shiatsu group.

- **Shiatsu group:** The researchers provided a personal training of self-care shiatsu therapy to all the participants in the shiatsu group. Additionally, they provided information about shiatsu therapy through (video, pictures, text) as follows: Stimulate the "sea of energy" point located in the abdominal area by measuring two fingers width below navel, then, light pressure with manipulation or light massage is applied to this area by fingers with deep breathing, for one to two minutes. These steps applied three times daily during the menstruation for two consecutive menstrual cycles.
- **Non-shiatsu group:** The researchers provided them with health education about the usual care of menstruation as (hygiene and diet)
- Both groups were instructed to assess pain intensity and severity of symptoms before and after the intervention for two consecutive menstrual cycles.

Content validity and reliability:

Study tools were submitted to a panel of five experts in the field of maternity nursing, to test the content validity. Modifications were done according to the panel's judgment on the clarity of sentences and content appropriateness. Reliability analysis was conducted to investigate the instrument internal consistency which used in the study. Internal consistency describes the extent to which all the questionnaire items measure the same concept or construct. Cronbach alpha coefficients were calculated to examine the measurement reliability with multipoint items. The accepted values of Cronbach alpha coefficient range from 0.60 to 0.95.[17,18]The questionnaire items of the present study were proven reliable where $\alpha = 0.91$

Pilot Study:

It was conducted on 10% of the participants, were selected randomly and excluded from the main study sample. Its aim was to evaluate the simplicity and clarity of the tools. It also helped in the estimation of the time needed to fill in the forms. According to the pilot study results, simple modifications were done as rephrasing or canceling some questions.

Ethical consideration:

An official permission was granted from the dean of applied medical sciences' college, Shaqra University. The researchers introduced themselves to the students who met the inclusion criteria and informed them about the purpose of this study in order to obtain their acceptance to share in this study. The researchers ensured that, the study posed no

risk or hazards to their health and their participation in the study is voluntary. Nursing students who were willing to participate in the study and met the inclusion criteria were approached by the researchers and asked for verbal consent to confirm their acceptance, and all events that occurred during data collection were considered confidential.

Statistical design:

All statistical analyses were done using SPSS version 20. Initially, the internal consistency coefficients were examined to ensure the reliability of the used instrument for the present samples. Frequencies, means and standard deviations were calculated to describe the samples. T-test and ANOVA were used to compare the means of two different groups. Statistical significance was considered at p-value <0.05.

RESULTS

Table (1) Showed that the mean ages of students in the Shiatsu and Non-shiatsu groups was (22.4±4.5) and (19.89±1.75), While the mean ages of menarche was (13.35 ± 1.4) and (13.06±1.28) for both groups respectively. Also, it was found that the mean duration of menstrual cycle for shiatsu and non-shiatsu groups was (5.65±4.1) and (5.5± 3.0), meanwhile the mean length of the menstrual cycle was (27.0 ± 3.4) and (28.3 ± 3.5) for both groups respectively. Most of them had a moderate amount of blood flow in both groups.

Table (2) illustrated that about half of the nursing students (52.2 %) had moderate pain and (41.3%) of them had severe pain in the shiatsu group compared to (27.8%) and (61.1%) of the students had moderate and severe pain in the non-shiatsu group respectively. Regarding to the onset and duration of the menstrual pain among the students, it was found that, more than half of the students had pain before the beginning of the menstruation and up to 24-48 hours in the shiatsu at (54.3%) and non shiatsu at (66.7%), while 37% and (33.3%) of the shiatsu and non shiatsu groups respectively, had pain from the beginning of the menstruation and up to 24-48 hours.

Figure (1) showed decreases of the menstrual pain mean scores among the nursing students in the shiatsu group at the initial assessment (pre-intervention), then at immediately, at 1, 2, and 3 hours after the intervention for two consecutive menstrual cycles.

Table (3) revealed that there was no statistically significant difference between the shiatsu and the non-shiatsu groups related to pain scores before the intervention at (p= 0.29), while there were highly statistically significant differences between groups at different time intervals for two consecutive menstrual cycles after the intervention at (p < 0.001).

Table (4) indicated that there was no statistically significant difference between groups on mean scores of menstrual symptoms at (t= -1.86, p-value 0.066) before the intervention while there was highly statistically significant differences between groups at (t= -7.29, p-value 0.000*) after the intervention.

Table (1): General and menstrual characteristics of the studied students.

Items	Shiatsu (N= 46)		Non-Shiatsu (N= 36)	
	No.	%	No.	%
Age:				
≤ 20 years	13	28.3	28	27.8
21-25 years	28	60.9	8	22.2
>25 years	5	10.9	0	0
Mean ±SD	22.4±4.5		19.89±1.75	
Age of Menarche				
9-12 years	10	21.7	10	27.8
13-16 years	35	76.1	26	72.2
> 16 years	1	2.2	0	0
Mean ±SD	13.35 ± 1.4		13.06±1.28	
Duration of menstrual cycle				
1-3 days	0	0	2	5.6
4-6 days	31	67.4	22	61.1
> 6 days	15	32.6	12	33.3
Mean ±SD	5.65±4.1		5.5± 3.0	
Length of menstrual cycle				
21-25 days	16	34.8	10	27.8
26-30 days	23	50.0	14	38.9
31-35 days	7	15.2	12	33.3
Mean ±SD	27.0 ± 3.4		28.3 ± 3.5	
Amount of blood flow				
Mild	3	6.5	0	0
Moderate	40	87.0	32	88.9
Severe	3	6.5	4	11.1

Table (2): Characteristic of the menstrual pain among the students before the intervention.

Items	Shiatsu (N= 46)		Non-Shiatsu (N= 36)	
	No.	%	No.	%
Severity of pain:				
- Mild (1-3)	3	6.5	4	11.1
- Moderate (4-7)	24	52.2	10	27.8
- Severe (8-10)	19	41.3	22	61.1
Onset & duration of pain				
- Before menstruation and up to 24-48 hours	25	54.3	24	66.7
- With onset of menstruation and up to 24-48 hours.	17	37.0	12	33.3
- After 24 hours of menstruation and continue with it.	4	8.7	0	0

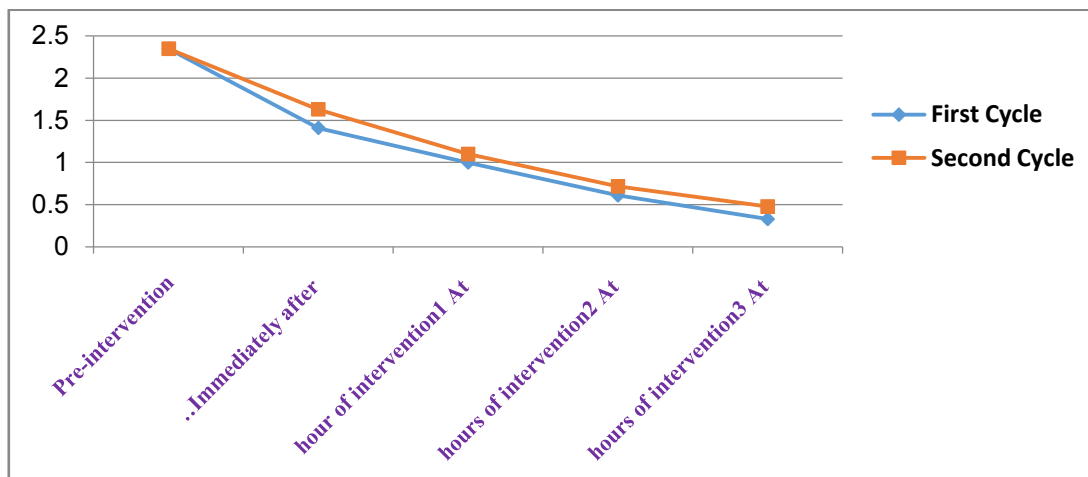


Figure (1). Mean menstrual pain Scores for the shiatsu Group.

Table (3). Comparison of pain sever ity scores between groups during two menstrual cycles at different time intervals.

Pain score at different time intervals	Shiatsu (N= 46)	Non-Shiatsu (N= 36)	F	P- value
	Mean ± SD	Mean ± SD		
Pre intervention pain score	2.34± .60	2.5± .697	1.12	.29
Post intervention pain score				
At First Menstrual Cycle:				
- Immediately after intervention.	1.41 ±.88	2.2±.66	23.9	0.001*
- At 1 hour after intervention.	1.0 ±.84	1.7± .88	14.2	0.001*
- At 2 hours after intervention.	.61 ±.77	1.7± .66	47.5	0.001*
- At 3 hours after intervention.	.33 ±.59	1.3±.74	41.4	0.001*
At Second Menstrual Cycle:				
- Immediately after intervention.	1.6±.93	2.3±.65	12.6	.001*
- At 1 hour after intervention.	1.1±.87	1.7± .8	9.8	.002*
- At 2 hours after intervention.	.72±.81	1.7± .65	36.6	.000*
- At 3 hours after intervention.	.48±.78	1.2±.73	22.1	.000*

* Highly statistically significant at p< 0.001

Table (4). Comparison of symptoms severity scores between Shiatsu and Non-Shiatsu groups.

Symptoms	Shiatsu (N= 46)		Non-Shiatsu (N= 36)	
	Before Mean ± SD	After Mean ± SD	Before Mean ± SD	After Mean ± SD
Tension and Anxiety	0.72 ± .86	0.39 ± 0.68	1.22 ± 1.19	1.11 ± 0.19
Bowel Disturbances	0.72 ± .93	0.09 ± 0.28	1.11 ± 1.16	1.11 ± 0.54
Constipation	0.74 ± 0.83	0.30 ± .62	1.28 ± 1.05	1.08 ± .84
Abdominal Distension	1.70 ± 1.20	0.59 ± 0.90	1.28 ± 1.05	1.67 ± 1.12
Backache	1.20 ± 1.31	0.46 ± 0.62	1.67 ± 1.12	1.06 ± 1.09
Breast tenderness	1.41 ± 1.34	0.30 ± 0.59	1.06 ± 1.09	1.28 ± 1.11
Legs pain	0.63 ± .92	0.48 ± 0.75	1.28 ± 1.11	0.97 ± 0.16
Nausea and vomiting	1.35 ± 1.32	0.43 ± 0.68	.83 ± .97	1.28 ± 1.25
Anorexia	1.07 ± 1.12	0.33 ± 0.59	1.28 ± 1.25	1.72 ± 1.21
Fatigue	0.85 ± 1.13	0.41 ± 0.80	1.72 ± 1.21	1.78 ± 1.37
Nervous	0.98 ± 1.20	0.17 ± 0.48	1.78 ± 1.37	1.22 ± 1.09
Vertigo	0.54 ± .80	0.11 ± 0.37	1.22 ± 1.09	0.61 ± 0.49
Pre intervention symptoms score	11.98±6.2		15.1 ± 8.96	
	t= -1.86		p-value= .066	
Post intervention symptoms score	4.5±3.9		14.25±7.9	
	t= -7.29		p-value.000 **	

** Highly statistically significant at p< 0.001

DISCUSSION

Dysmenorrhea is the pain and discomfort experienced during, or just before, a menstrual period. The intention of this study was to study the efficacy of Shiatsu therapy at “Sea of Energy” Point on Primary dysmenorrhea in nursing students. The findings of the current study were discussed within the following frame of references; identifying the severity of pain and symptoms of primary dysmenorrhea and evaluate the efficacy of using shiatsu massage therapy at “Sea of Energy” Point on primary dysmenorrhea.

Regarding the severity of pain and symptoms of primary dysmenorrhea, the present study illustrated a high prevalence of dysmenorrhea among nursing students, most of them had moderate and severe pain and very low rate had mild pain in both groups (shiatsu and non-shiatsu groups). On the same line with a study conducted by *Mohamed and Neaem, (2013)* in Mansours, Egypt indicated a high prevalence of dysmenorrhea (78.8%) among technical secondary school girls. However, our finding was in contrary to *El-Gilany et al.,(2005)* who studied primary dysmenorrhea among 664 secondary school students from urban and rural areas in Mansoura, Egypt, reported that 75%

of the students' had dysmenorrhea, most of them had mild and moderate pain; rated mild in (55.3%), moderate in (30%) and severe in (14.7%). The differences could be related to different culture, study population type and size.

Various menstrual symptoms were reported in the present study included; tension, anxiety, bowel disturbances, constipation, abdominal distension, backache, breast tenderness, leg pain, nausea, vomiting, anorexia, fatigue, nervousness and vertigo with mean symptom scores (11.98 ± 6.24) and (15.1± 8.96) in the shiatsu and non-shiatsu groups respectively. The finding of the present study was in agreement with *Peter, (2012)* who found in his study that dysmenorrhea varies from mild discomfort to severe pain; with one fifth of women complaining that the pain prevents everyday activity. Pain is usually localized to the lower abdominal area, affect the lower back and thighs. Other associated symptoms include nausea, vomiting, headache, fatigue, dizziness or fainting and diarrhea were reported.

Regarding the efficacy of shiatsu therapy on primary dysmenorrhea, the present study indicated that using the Shiatsu therapy was safe and effective in relieving menstrual pain and symptoms; this was supported by *Long, (2009)*

who reported that Shiatsu is an inherently safe treatment. Also, our finding in accordance with **Beresford-Cooke, (2003)** who reported that there are several health problems may be amenable to treatment by Shiatsu include; headaches, backaches, menstrual problems, insomnia, tension, anxiety and depression, fatigue and weakness, digestive disorders and bowel trouble, and others.

On the other hand, **Robenson et al.,(2001)** conducted a study of the evidence for Shiatsu: a systematic review of shiatsu and acupressure, reported that some evidence found shiatsu was effective, but not safe as in neck massage, and some others reported it is effective and safe in other problems. This could be due to Shiatsu is practiced in many countries, but varies in styles and points of practice. Also, very little Shiatsu studies were conducted, suggesting well designed studies are needed.

The current study revealed that, there were highly statistically significant differences between the shiatsu and the non-shiatsu groups regarding to menstrual pain at different time intervals for two consecutive cycles after the intervention and this congruent with a randomized control trial study conducted by **Wong et al.,(2010)** who determined the effect of alternative therapy as acupressure on relieving primary dysmenorrhea and the study showed statistically significant decrease in pain score using Visual Analogue Scale. Also, a clinical trial conducted by **Ggharloghis et al.,(2012)** in which the results showed that the severity of pain, decreased significantly for up to two hours following intervention with acupressure technique.

In the same line with **Mirbagher et al.,(2011)** which estimated that there were significant differences in Visual Analogue Scale at immediately, one, two, and three hours after intervention of acupressure technique. Furthermore, this result congruent with **Mohamed et al.,(2015)** who reported that using Femi-band acupressure on SP6 point for one minute three times daily alleviated the primary dysmenorrhea. This was explained by alternative therapies are widely used in Asia and Europe to avoid the pharmacological methods ' side-effects; Shiatsu therapy is one of the alternative methods, which is considered a natural way to relieve pain, safe, non-invasive, economical and cost free. Also, it is self-administered technique for relieving primary dysmenorrhea.

The current study illustrated that there was decreasing of the menstrual symptom severity scores between the shiatsu and non-shiatsu groups after using shiatsu massage therapy with highly statistically significant differences between groups. This finding was supported by **Bipasha, (2015)** who reported that "**Sea of Energy**" point is one of the most important points for treating dysmenorrhea, located below the navel by two fingers width; stimulating this point helps in normalizing irregular periods, menstrual cramps, treats vaginal discharge and problems of constipation. Stimulation of this point also helps in relieving digestive disorders such as gas and irritable bowel syndrome, headache and general weakness.

Tension and anxiety were reported symptoms in our study, which improved after the intervention. This was congruent

with **Long, (2008)** who illustrated that shiatsu was a holistic and natural therapy, can benefit most people. Many women use it as a form of stress management or as part of a preventative health care program. Help maintain balance; the therapy can promote overall well-being, even if the women are fit and healthy. Also, this result was congruent with **Beresford-Cooke, (2003)** who reported that shiatsu therapy was useful in the treatment of tension, anxiety and depression. This also supported by **Proctor et al.,(2007)** study, which illustrated that shiatsu therapy relived tension and anxiety of primary and secondary dysmenorrhea.

Furthermore, other symptoms were reported in the current study, as headache, backache, nausea and vomiting, which improved after the use of shiatsu therapy. This finding was in the same line with **Hsieh et al.,(2006)** provided pragmatic evidence for the long-term effects of acupressure/Shiatsu as individualized treatment for low back pain, headache, nausea and vomiting. This finding was also in agreement with **Shin and Song, (2005)** who found that Shiatsu or acupressure is considered an effective intervention for reducing nausea and vomiting in pregnant women having hyper emesis gravidarum than the placebo and the control group at ($F=8.259, p=.001$).

CONCLUSION

Based on the findings of the present study, it was concluded that the shiatsu group had a significant reduction in the severity of primary dysmenorrhea pain and symptoms after using the shiatsu therapy at "sea of energy" point.

RECOMMENDATIONS

Based on the findings of the current study, the following was recommended: 1) Encouraging the use of shiatsu therapy at "sea of energy" point during the first days of menstruation to reduce the menstrual pain and symptoms. 2) The findings of the current study can be used as a guideline for further research on effect of shiatsu therapy at "sea of energy" point using a combination of different points. 3) Further investigations are necessary to replicate the beneficial findings of the present study on large populations. 4) Also, further studies are needed to investigate the effect of other shiatsu points in relieving other health problems.

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