

Aromatic Abdominal Massage for Alleviating Menstrual Pain in Nursing Students at Suez Canal University

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Abstract

Background: menstrual pain is sometimes severe enough to cause women are unable to perform their normal daily activities for one to three days each month. Aromatic abdominal massage is one of non –pharmacological methods can help women copes with the menstrual pain. **Aim of study:** was to assess the effect of aromatic abdominal massage by using (lavender, clary sage dissolved in almond oil) on alleviating menstrual pain intensity. **Design:** Experimental design. **Setting:** The study was conducted at Faculty of Nursing, Suez Canal University in Ismailia city. **Sample:** purposive sample of (106) nursing students having any degree of primary menstrual pain was recruited in this study. The sample divided randomly into study and control group (53 nursing students each). **Tools of data collection:** 1) A structured interviewing questionnaire, 2) Rating Analogue Scale, and 3) McGill pain questionnaire. **Results:** It revealed that the Rating Analogue Scale in first three days of the two consecutive cycles after intervention was significantly lower in interventional group than control group except in third day of menses in second cycle after intervention. Also, the mean score of all descriptors of McGill pain questionnaire were lesser in interventional group than in control group of the two consecutive cycles after intervention, but the difference was significant in the first cycle after intervention only. **Conclusion:** Abdominal massage with lavender and clary sage was effective on alleviating menstrual pain among nursing students having primary menstrual pain comparing to abdominal massage only. **Recommendation:** Abdominal massage with lavender and clary sage should be incorporated in nursing practice as a pain relieving measures for girls suffering from menstrual pain.

Key Words: Aromatherapy - Menstrual Pain

Introduction

Menstrual pains are cramping pains felt in the lower abdomen. The pain can be slight or sometimes extremely severe (Crosta ,2014) Menstrual cramps

are throbbing or cramping pains in the lower abdomen. Many women experience menstrual cramps just before and during their menstrual periods. For some women, the discomfort is merely annoying. For others, menstrual cramps can be severe

enough to interfere with everyday activities for a few days every month (JACOBSON, 2015). Menstrual pain is caused by reduced blood flow due to uterine hyperactivity (Haeng, et al. 2012). The pain is believed as the result of excessive prostaglandin release, particularly PGF. PGF2 causes vasoconstriction of uterine blood vessels (uterine ischemia) and increases uterine smooth muscle contraction (Marzouk et al., 2013).

Dysmenorrhea is one of the most common gynecologic disorders affecting more than half of menstruating women. It is defined as a pelvic pain directly related to menstruation that interferes with daily activities. There are two types of dysmenorrhea: "primary" and "secondary" (Marzouk et al., 2013). Primary dysmenorrhea is cyclic pain with menstruation common and accompanies most menses. This pain classically described as cramping and is often accompanied by low backache, nausea and vomiting, headache or diarrhea. Secondary dysmenorrhea is pain that is caused by a disorder in the woman's reproductive organs, such as endometriosis, adenomyosis, uterine fibroids, or infection. (Schorge et al., 2008).

An epidemiological study that entailed 664 secondary school students from urban and rural areas in Mansoura, Egypt found that about 75% of the students have dysmenorrhea, rated mild in 55.35%, moderate in 30%, and severe in 14.7% (Marzouk et al., 2013). Prevalence of dysmenorrhea in Indian adolescent girls was found to be 79.67%. 37.97%, suffered regularly from severe dysmenorrhea (Anil & Anju, 2012).

A variety of alternative methods have been used for the treatment of dysmenorrhea such as acupuncture, Transcutaneous Electronic Nerve Stimulation (TENS), biofeedback, herbal therapy, aromatherapy abdominal massage, massage only, and hot compress. These different alternative therapies are safe and can be prescribed by nurses (Haeng et al.2012).

Massage therapy can be defined as a mean of manipulating soft tissues using pressure and traction and is reported as effective for menstrual pain (Haeng et al.2012). Some people use massage to ease their body aches and pains. The abdominal massage helps when trying to detoxify the body, it increases blood flow within the abdomen to increase oxygen to the organs and relaxes tension in the muscles surrounding the colon. The touch therapy aspect of abdominal massage provides soothing heat and comfort in females, it aligns the uterus and pelvic bone to their proper positions and Releases emotional tension (Rebecca, 2015).

Aromatherapy is the therapeutic use of essential oils derived from plant for relieving health problems and improves quality of life. These oils can be absorbed into the body via the skin or the olfactory system (Haeng, et al.,2012). Aromatherapy is combination from massage with essential oils (Carol, 2014) Aromatherapy is the most widely used complementary therapy in nursing practice which might help reducing the pain (Marzouk, et al.,2013) .

Essential oils and their volatile constituents are used widely to prevent and treat human diseases. The possible role and mode of action of these natural products is including their bioactivity as

antibacterial, antiviral, antioxidants and antidiabetic agents. Their application as natural skin penetration enhancers transdermal drug delivery, they include ginger, fennel, cinnamon, clove, rose, lavender, and clary sage oil (**Marzouk, et al., 2013**).

The effect of lavender is an analgesic, sedative, and anticonvulsant. Lavender oil is antibacterial, antifungal, carminative (smooth muscle relaxing), antidepressive and effective for burns and insect bites (**Carol, 2014**). Clary Sage oil is useful in the treatment of spasms and related ailments such as muscle cramps and it relaxes the nerve impulses and doesn't allow those uncontrollable spasms to occur. It furthermore is a good tonic for the womb and female functions in general, such as painful periods, scanty menstruation and relaxation during labor (**Worwood, 1991**).

Topically applied diluted essential oils in combination with abdominal massage may be beneficial in improving blood circulation. The scent of the essential oils activates the olfactory senses, which triggers the limbic system. This may be effective in helping to alleviate menstrual pain (**Haeng, et al., 2012**). There are many studies that support using aromatherapy massage for alleviating menstrual pain (**haeng hur, 2012 & Marzouk, 2013**).

Significance of the study:

Menstrual pain is a very common problem among adolescent girls, they experience a number of physical and emotional symptoms associated with menstruation. Managing of the pain that is one of the nurses' roles is important to improve girls' comfort. Aromatherapy abdominal massage is safe and expected

to be effective and hasn't any side effect; There is no any researches conducted in Suez Canal University about this topic, So this study is aimed to evaluate the effect of aromatic abdominal massage on alleviating menstrual pain in nursing student at Suez canal university.

Aim of the study

The aim of this study is to:

Reduce menstrual pain by using aromatherapy abdominal massage as a form of non-pharmacological therapy.

Study objective is to:

Investigate the effect of aromatherapy abdominal massage with lavender and clary sage and sweet almond oil versus abdominal massage only on alleviating menstrual pain among student girls at faculty of nursing, Suez Canal University.

Research question:

What is the effect of aromatherapy abdominal massage with lavender, clary sage and sweet almond oil versus abdominal massage only on alleviating menstrual pain among student girls at faculty of nursing, Suez Canal University?

Research hypotheses:

Using aromatherapy abdominal massage with lavender, clary sage and sweet almond oil will alleviate menstrual pain intensity comparing to abdominal massage only.

Subjects and Methods

Research design

Experimental design (pre-post test design) adopted in this study.

Study Setting:

The study conducted at faculty of nursing, Suez Canal University in Ismailia city.

Subjects:

The subject of this study included student girls had menstrual pain aged from 17-21.

Inclusion criteria: student aged from 17 to 21 years old; single; with regular cycle; lasting (3-7) days and had a moderate or severe menstrual pain (according to pain evaluation scale).

Exclusion criteria: women using hormonal therapy during the last 6 month; receiving analgesics during the study; complain of secondary dysmenorrhea, previous abdominal or pelvic surgery, history of endometriosis, PID, ovarian cyst, pathological vaginal secretion, chronic abdominal pain, inflammatory bowel disease, or irritable bowel syndrome.

Sample size:

The sample size was calculated according to the following equation:

$$n = \frac{k \times 2\sigma^2}{(MD)^2}$$

Where σ^2 is the difference in standard deviation between highest and lowest response of groups in VAS per mm (4.0), MD is the minimum mean difference

between groups in VAS per mm (10) and k at the significance level 99% ($\alpha = 0.01$) and power 90% ($\beta = 0.2$) = 14.9.

Power calculations suggested that a minimum of 48 subjects per group would detect the difference between the groups ($\alpha = 0.05$, $\beta = 0.2$).

Number = 48 subjects per group.

So, according to the calculations the sample size is 48 subjects within study group. A same number of control group matching age and sex of the study group will be added (48 subjects). By adding 10% dropout to every group = the sample size for each group = 53.

Total number = 106 student girls.

Tools of data collection:

Three tools used in this study:

Tool (1): A structured interviewing schedule:

It used to collect the information from the patients and it consists of 5 parts:

Part (1): sociodemographic data as (age, greed level, family income and residence)

Part (2): menstrual data as (age at menarche, length of menstrual cycle, duration of menstrual flow, intensity and duration of pain, and amount of menstrual bleeding by counting the number of saturated pads and place, onset and duration of pain).

Part (3): premenstrual symptoms (week before period) such as (frustration, anger, irritability, breast tenderness, breast enlargement, abdominal bloating, headache, constipation or diarrhea).

Part (4): menstruation associated symptoms such as (paleness, coldness, tired, food or drink cravings, frustration, anger, irritability breast tenderness, breast enlargement, headache, constipation or diarrhea, methods which reduce pain such as Pressure on abdomen, Use warm water on abdomen, Use cold water on abdomen, Use analgesics ,Do message on abdomen, Drink warm drinking, Use some herbs).

Part (5): effect of menstrual pain on daily activities (Do menstrual pain reduce studying day performance?, Do menstrual pain lead to absence from studying day?, Do menstrual pain reduce your routine daily activities?, Do menstrual pain require complete bed rest for hours or days?)

Tool (2): Rating Analogue Scale (RAS):

It is adopted in this study which is visual analogue scale was created by French rheumatologists. A simple assessment tool consisting of a 10 cm line with 0 on one end, representing no pain, and 10 on the other, representing the worst pain ever experienced, (1,2,3 presented mild pain), (4,5,6 presented moderate pain), (7,8,9 presented severe pain) which a patient indicates so the clinician knows the severity of his or her pain (Portenoy & Tanner 1996).

Tool (3): The McGill Pain Questionnaire:

The McGill Pain Questionnaire can be used to evaluate a person experiencing significant pain. It can be used to monitor the pain over time and to determine the effectiveness of any intervention. It was developed by Dr. Melzack at McGill University in Montreal Canada (Melzack 1987). It consisted of three parts : the first part , Quality of pain contains a total of 15

descriptors ; 4 affective and 11 sensory which are rated on an intensity scale : 0= none, 1= mild,2= moderate , and 3= severe . In total, three pain scores are derived: the sum of the intensity rank values for sensory words chosen that equal 33, the sum of the intensity rank values for the effective words chosen which equal 12 and the total of descriptors. The maximal values are 45.

Validity of the tools:

The tool was revised by five juries from (3 nursing and 2 medical) for clarity, relevance, applicability, comprehensiveness, understanding and ease for implementation. According to their suggestions, the modifications were applied

A pilot study will be carried out on 10% of the study sample (11 students) to test validity and applicability of the tool then necessary modifications will be done according to the results of pilot study. Those students will be excluded from the study sample

Ethical consideration

Written /or oral approval obtained from the study sample and informed about the nature, process, and expected outcomes of the study, reassured that the study will be safe, assure them that information obtained confidential and used only for the purpose of the study and informed about her rights to withdraw at any time she want throughout the study.

Statistical analysis

The collected data were organized, tabulated, analyzed using number and percentage distribution. Statistical analysis was done by computer using statistical package of social science (SPSS) program. Proper statistical tests were used to determine

whether there was a significant statistical difference between variables of the study. The following statistical techniques were used: Percentage, Mean score degree, Stander deviation, Chi-square (X^2), T test and One Way Anova Test.

Results

Demographic characteristics of studied groups was shown that less than two third of In the interventional group their age ranged from 17 to less than 20 year, but More than half of control group their age ranged from 20 to less than 22 years. The difference between two groups regarding age was statistical significance. Regarding grade level, less than one half was in first grade level of interventional group but about more than one third of control group was in fourth grade. Urban residence was a residence of less than two third of interventional group but Rural residence was a residence of more than half of control group.

Regarding to the onset of pain, the majority of interventional group complain of pain before starting the menses by few hours, but about one half of control group complain of pain in 1st day of menses. Regarding to the sites of menstrual pain, the most of interventional and control group complain from pain in lower abdomen but the more than two third complain from pain in lower back of two groups and pain in thigh was presented in more than one third of interventional group and less than one third of control group complain from pain in thigh.

Table (1) shows the comparisons between studied groups regarding RAS before and after intervention. It revealed that

the mean score of RAS in first three days of menses in menses before intervention was slightly higher in control group than interventional group. The significant different was observed in first three days of menses. But the mean score of RAS in first three days of menses in menses after intervention was higher in control group than interventional group with the significant different was observed in first three days of menses. The mean score of RAS in first three days of second menses after intervention was higher in control group than interventional group with The significant different were observed in the first and second day of menses.

Table (2) reveals that the difference between studied groups regarding mean score of MGQ before and after intervention. The mean score in three days was lesser in interventional group than control group. The results were statistically significant in the first day only. Regarding the total mean score of MGQ in the first menses after intervention was statistically significant. . In the first three days, the mean scores of the interventional group were lesser than the control group. And the totals mean score of MGQ. In the first three days of the menses, the mean scores of the interventional group were lesser than the control group, but the results are not significant.

Table (3) reveals that the total mean score of RAS and MGQ decreased after intervention comparing to before intervention. All differences were highly statistically significant. Also the mean scores of second menses after intervention were lesser than scores of first menses after intervention.

Table (1): Comparison between Studied Groups related to mean score of Rating Analogue Scale Rating Analogue Scale before and after Intervention during first three days of menses.

	Day of menses	Mean \pm SD		T test	P value
		Interventional group(n=49)	Control group group(n=49)		
Before intervention	First day	3.1 \pm 8.3	8.8 \pm .74	2.3	0.02*
	Second day	6.65 \pm 1.53	7.37 \pm .69	3.06	.004*
	Third day	4.43 \pm 1.85	5.44 \pm .81	3.85	.000**
First menses after intervention	First day	5.65 \pm 2.55	7.61 \pm .74	5.16	.000**
	Second day	3.96 \pm 2.31	5.82 \pm .88	5.20	.000**
	Third day	2.57 \pm 2.01	3.65 \pm 1.19	3.34	.002**
second menses after intervention	First day	4.18 \pm 2.84	5.98 \pm 1.06	3.86	.000**
	Second day	2.85 \pm 2.96	3.94 \pm 1.46	2.31	.025*
	Third day	1.43 \pm 1.73	2.02 \pm 1.49	1.73	.089

Table (2): Comparison between the mean score of the studied groups regarding the total score of McGill Pain Questionnaire before and after intervention during first three days of menses.

	Day of menses	Mean \pm SD		T test	P value
		Interventional group	Control group		
Before Intervention	First day	27.3673 \pm 9.92197	30.3265 \pm 3.18452	2.038	.047*
	Second day	21.0408 \pm 7.35119	21.9796 \pm 3.05839	.874	.387
	Third day	12.5714 \pm 8.28905	14.3673 \pm 4.32384	1.265	.212
First menses after intervention	First day	15.9184 \pm 10.53138	23.1020 \pm 4.31685	4.245	.000**
	Second day	10.8571 \pm 8.90225	15.3265 \pm 5.20572	8.273	.019**
	Third day	4.8980 \pm 6.16862	9.1224 \pm 4.74619	7.925	.006**
second menses after intervention	First day	11.8776 \pm 11.71472	15.1020 \pm 5.14476	1.699	.096
	Second day	8.8163 \pm 10.58236	9.8776 \pm 5.97088	.559	.579
	First day	2.8367 \pm 4.88342	4.7347 \pm 5.77269	1.625	.111

Table (3): Comparison between the total mean score of rating analogue scale and McGill Pain Questionnaire before and after intervention for interventional group.

Tool	Day of menses	Mean \pm SD			P value
		Interventional group	First cycle	Second cycle	
Rating analogue scale	First day	3.1 \pm 8.3	5.65 \pm 2.55	4.18 \pm 2.84	0.000**
	Second day	1.53 \pm 6.65	3.96 \pm 2.31	2.85 \pm 2.96	0.000**
	Third day	4.43 \pm 1.85	2.57 \pm 2.01	1.43 \pm 1.73	0.000**
McGill Pain Questionnaire	First day	27.38 \pm 9.92	15.92 \pm 10.53	11.88 \pm 11.71	0.000**
	Second day	21.04 \pm 7.35	10.8571 \pm 8.90	8.82 \pm 10.58	0.000**
	Third day	12.57 \pm 8.29	4.89 \pm 6.16	2.84 \pm 4.88	0.000**

Discussion

Menstrual pain is one of the most common gynecologic disorders affecting more than half of menstruating women that may interfere with daily activities. Egyptian young girls are not preferring to use medication for dysmenorrhea as they believe that it may affect fertility or causing some side effect. On the other hand some experimental studies have found alternative methods such as acupuncture, acupressure, stimulation, massage, and aromatherapy to be fairly effective for treatment of dysmenorrhea (Anwer, 2013).

Aromatherapy is the most widely used complementary therapy in nursing practice; it uses essential oils from plants to relieve health problems such as dysmenorrhea and improve quality of life. Nurses should move forward researches that will support claims on either side of the debate regarding use and benefit of aromatherapy (Anwer, 2013).

The present study was conducted to assess the effect of aromatic abdominal massage for alleviating menstrual pain in nursing students at Suez Canal University. In which research hypothesis that using aromatherapy abdominal massage with lavender, clary-sage and sweet almond oil have alleviated menstrual pain intensity comparing to abdominal massage only.

In the present study, the majority of interventional group complain of pain before starting the menses by few hours, and about one half of control group complain of pain in 1st day of menses. Regarding to the sites of menstrual pain, the most of interventional and control group complain from pain in lower abdomen and more than two third complain from pain in lower back. Pain in

thigh was presented in more than one third of interventional group and less than one third of control group. This result agreed with study of Gulsen Eryilmaz who found that pain was mostly initiated a day before or at the beginning of menstrual flow and. It was felt in multiple locations but most commonly in the lower abdomen and lumbar region (Eryilmaz, 2006).

The current study, the pain was assessed two times (pre and post test) for third consecutive menstrual cycles during evaluation first three days of menses. The main findings after intervention found that The total score of McGill Pain Questionnaire decreased in two menstrual cycles after aromatic abdominal massage comparing to control group, Also there were decreases of menstrual pain regarding mean and stander deviation of rating analogue scale score after intervention in the second and third day of menses. Some studies which studied the aromatherapy found that the aromatherapy is effective on alleviating menstrual pain. Haeng et al., (2011) reported that aromatherapy with clary sage, marjoram, cinnamon, ginger, and geranium in a base of almond oil is effective in alleviating menstrual pain. Also,

Buckle et al., (2006) who studied the Effect of Aromatherapy using two drops of lavender (*Lavandula officinalis*), one drop of clary sage (*Salvia sclarea*), and one drop of rose (*Rosa centifolia*) in 5 cc of almond oil. The placebo group received the same treatment but with almond oil only and the control group received no treatment On Symptoms of Dysmenorrhea. They found that there was a statistical significant after intervention between both groups related to interventional group. And Ou MC et al.,

(2012) who studied pain relief assessment by aromatic essential oil massage on outpatients with primary dysmenorrhea: a randomized, double-blind clinical trial. They found that, both the numeric rating scale and the verbal rating scale significantly decreased ($P < 0.001$) after one menstrual cycle intervention in the two groups. **Kim et al., (2011)** support us by examining Self-aromatherapy massage of the abdomen using topically applied essential oils for the reduction of menstrual pain. They found that, the menstrual pain was significantly lower in the aromatherapy group than in the other two groups after 24 h. Using multiple regression analysis, the use of aromatherapy was found to be associated with the changes in menstrual pain levels ($P < 0.001$) and the level of anxiety ($P = 0.001$). Moreover, study of **Choi EH et al.,(2011)** aimed to Comparison of Effects Lavender Abdominal Massage on Dysmenorrhea, Pain, Anxiety and Depression. They found that Lavender abdominal massage could be effective methods to reduce dysmenorrhea. However, before lavender abdominal massage can be considered as intervention

Also, **Marzouk et al.,(2012)** who conducted study in Department of Maternity and Gynecology of Nursing, Faculty of Nursing, Mansoura aimed to The Effect of Aromatherapy Abdominal Massage by using (cinnamon, clove, rose, and lavender in a base of almond oil)on Alleviating Menstrual Pain in Nursing Students: A Prospective Randomized Cross-Over Study. They found that, aromatherapy has a significant effect on pain and bleeding during menstruation. Because there were no side effects reported, aromatherapy can be regarded as a safe and effective treatment for primary dysmenorrhea.

Others studies by **Lai et al., (2012)** agreed with our result when studied the Pain relief assessment by aromatic using Essential oils blended with lavender (*Lavandula officinalis*), clary sage (*Salvia sclarea*) and marjoram (*Origanum majorana*) in a 2:1:1 ratio was diluted in unscented cream at 3% concentration for the essential oil group. And abdominal massage on outpatients with primary dysmenorrhea: A randomized, double-blind clinical trial. They noticed that both the numeric rating scale and the verbal rating scale significantly decreased ($P < 0.001$) after one menstrual cycle intervention in the two groups. The duration of pain was significantly reduced from 2.4 to 1.8 days after aromatherapy intervention in the essential oil group and suggested that Aromatic oil massage provided relief for outpatients with primary dysmenorrhea and reduced the duration of menstrual pain in the essential oil group.

In addition, **Aval, S etal.,(2014)** studied the effect of self-aromatherapy massage of the abdomen on the primary dysmenorrhea with Rose damascene; a placebo group ($n = 25$) who performed self-massage with unscented almond oil and a no treatment control group ($n = 25$) who applied just self-massage. All three groups received the intervention in the first day of menstruation in two subsequent cycles. The severity of pain was self-reported by the students before and after intervention. All three groups were matched in demographic characteristics. The baseline pain reduced in the first cycle but this reduction was not significant in the groups ($p > 0.05$). In the second cycle, the menstrual pain was significantly lower in the lavender oil group than in the other two groups after intervention (between massage with lavender oil, almond oil $p = 0.003$ and massage with lavender oil and just

massage $p = 0.000$). Massage with aromatherapy reduces the severity of primary dysmenorrhea, in comparison with massage therapy alone

The menstrual pain was decreased in this study and all other studies which used the aromatherapy because the oils used as lavender oil have effect on relieving muscular aches and pains due to its analgesics and antispasmodics properties (Ali., 2009). In addition, clary sage oil has ability to relieve spasm, muscle ache and cramping makes it extremely useful in massage and discomfort related to menstrual pain and dysmenorrhea (Enteen, 2014).

Conclusion:

Based on the finding of the present study, it can be concluded that aromatherapy abdominal massage (by lavender and clary sage dissolved in almond oils) is effective in alleviating menstrual pain comparing to abdominal massage only.

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