

The Effect of Progressive Relaxation Training versus Aromatherapy on Primary Dysmenorrhea, Egypt

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Abstract

Background: Dysmenorrhea is a common gynecological complaint among young females with a major effect on work efficiency and quality of life. The most common symptoms are pain in the lower abdomen and back may reach to inner thighs, and other symptoms may occur such as breast tenderness, nausea, vomiting, diarrhea, fatigue, and headache. This study was conducted to evaluate the effect of progressive relaxation training versus aromatherapy on primary dysmenorrhea.

Aim of Study: To study the effect of progressive relaxation training versus aromatherapy on primary dysmenorrhea.

Subjects and Methods: Forty virgin girls were included in the study. Their age ranged from 16-25 years. They were randomly divided into two equal groups: Group (A): Received progressive relaxation training. Group (B): Received aromatherapy.

VAS scale and serum cortisol level blood test were used for assessment before and after successive eight weeks of treatment for both groups.

Results: Post-treatment results revealed that there was a significant improvement in (VAS) scores and serum cortisol level in both groups however the difference between groups was non-significant there was a significant decrease in VAS score and serum cortisol level in each group.

Conclusion: Aromatherapy has the same beneficial effect of progressive relaxation training on improvement of pain in primary dysmenorrhea.

Key Words: Aromatherapy – Progressive relaxation training – Primary dysmenorrhea.

Introduction

DYSMENORRHEA is a common gynecological complaint among young females with a major effect on work efficiency and quality of life [1].

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It is defined as pain during menstruation in females, always starting during adolescence; there are two types: Primary and secondary dysmenorrhea [2].

Primary dysmenorrhea occurs without pelvic pathology [3]; the most common symptoms are pain in the lower abdomen and back may reach to inner thighs, and other symptoms may occur such as breast tenderness, nausea, vomiting, diarrhea, fatigue, and headache [4].

Primary dysmenorrhea causes are not accurately identified, but most complaints may be because of prostaglandins (PG) secretion, particularly (PGF₂α). Prostaglandins are important stimulators of uterine contractility. Excessive production of endometrial Prostaglandins may be one of the main causes of strong uterine contractions and temporarily ischemia occurs in the uterus; this ischemia decreases uterine oxygen and results in severe abdominal pain [5].

Medicinal and non-medicinal treatment methods such as anti-inflammatory pain relievers, Cyclooxygenase controller drugs, contraceptives, psychotherapy, physical therapy such as use of heat and sports such as jogging and Yoga are applied for menstrual pains treatment [6].

Exercise today is an integral part of normal life for many women. It is clear that there are many health benefits for women who exercise regularly and in moderation. Exercise improves cardiovascular status, increased bone mineral content; improve dysmenorrhea and premenstrual syndrome symptoms [7].

Study found that progressive relaxation technique is easy to adopt, self-administered with no side effects which has beneficial effect in pain reduction. Reducing absenteeism thus improving quality of life, self-esteem of the subjects can also be improved by using those simple relaxation exercises [8].

One of the most popular is aromatherapy massage. It involves gentle massage of areas of the body, using aromatic essential oils extracted from plants and flowers. Its aim is to promote relaxation and release of tension. It is suggested that the aroma of the oils helps to achieve this by stimulating the limbic area of the brain associated with emotions and level of arousal [9]. From a physiological view that was explained by Re et al., [10] has an element of Linalool in lavender could inhibit the release of acetylcholine, which changes the functions related to the channels of ions on the neuromuscular synapses. Moreover, Linalyl acetate component has a narcotic effect and linalool works as a sedative agent. Accordingly, these functions rationalize the pain-reducing effect of lavender. The current study was conducted to investigate the effect of progressive relaxation training versus aromatherapy on improving primary dysmenorrhea.

Subjects and Methods

Subjects:

This study was carried upon forty virgin girls diagnosed with primary dysmenorrhea. They were selected from the outpatient clinic of Obstetrics & Gynecology and the school of nursing in Suez general Hospital in Suez, in the period from October 2017 to December 2018. On the following criteria.

Inclusion criteria:

Forty virgin girls were diagnosed with primary dysmenorrhea, their age was ranged from 16-25 years, and their body mass index was ranged from 20-27kg/m².

Exclusive criteria:

Girls were excluded from the study if they had irregular or infrequent menstrual cycles, hyperthyroidism, pelvic pathology, endometriosis and mental health problem such as depression and anxiety with BMI <25kg/m².

Methods:

- 1- Informed consent form: (Appendix I).
- 2- Recording data sheet: All data and information of each patient who participated in this study including name, age, address, weight and height

were recorded in recording data sheet (Appendix II).

- 3- Standard weight and height scale: Was used to measure weight & height to calculate Body Mass Index (BMI) for each patient in both groups (A & B) before beginning of the study.
- 4- Visual analogue scale: Was used to measure the level of pain for both groups A & B before and after treatment.
- 5- Plant materials and aromatic plant oils: Including 2% (lavender & rose mary oil).
- 6- Serum cortisol level: A sample of blood was taken and used to assess the level of cortisol in the blood which refer to level of pain for both groups A & B before and after treatment.
- 7- Progressive relaxation training: Was applied for each participant in group A and they were positioned in comfortable half lying position to apply teaching muscle sense (tense-relax) training for 30 reps once daily 3 times/week for 8 weeks for all patients in group (A).

Procedure:

All patients were given a full explanation of the protocol of the study and consent form was signed for each patient before participating in the study. Girls demographic data were recorded from the patient file including name, age, weight and height. The clinical details of girls with primary dysmenorrhea such as pain level were determined by VAS and serum cortisol level.

Results

This study was conducted on 40 women suffered from primary dysmenorrhea admitted to the outpatient clinics of Obstetrics and Gynecology in Suez general Hospital in Suez, Egypt from the period October to December 2018. They were divided into two groups. Group A, consisted of 20 patients, group B consisted of 20 patients.

1- General characteristics of the girls in both groups:

The mean values (\pm SD) of age, weight, height and BMI in group A were 18.75 \pm 2.67 yrs., 61.60 \pm 6.98 kg., 164.05 \pm 6.65 cm and 22.82 \pm 1.26 kg/m², respectively. While in group they were 18.80 \pm 2.44 yrs., 62.80 \pm 6.30 kg., 163.80 \pm 6.65 cm and 23.36 \pm 1.29 kg/m², respectively. There was no statistical significant difference between the two groups as regards age ($t=-0.062$, $p=0.951$), weight ($t=-0.570$, $p=0.572$), height ($t=t0.119$, $p=0.906$) and BMI ($t=-1.354$, $p=0.184$) (Table 1).

Table (1): Physical characteristics in the two studied groups.

	Group (A) (N=20)	Group (B) (N=20)	t-value	p-value
Age (yrs.)	18.75±2.67	18.80±2.44	-0.062	0.951 (NS)
Weight (kg.)	61.60±6.98	62.80±6.30	-0.570	0.572 (NS)
Height (cm)	164.05±6.65	163.80±6.65	0.119	0.906 (NS)
BMI (kg/m ²)	22.82±1.26	23.36±1.29	-1.354	0.184 (NS)

Data are expressed as mean ± SD.
NS: p>0.05= Not Significant.

2- Visual Analogue Scale (VAS):

Within group comparison (intragroup comparison): In group A, there was a statistical significant decrease in the mean value of VAS measured at post-treatment (4.35 ± 1.84) when compared with its corresponding value measured at pre-treatment (7.40 ± 1.67) with p-value=0.001 (Table 2). Also in group B, there was a statistical significant decrease in the mean value of VAS measured at post-treatment (4.45 ± 1.96) when compared with its corresponding value measured at pre-treatment (7.55 ± 1.79) with p-value=0.001 (Table 2). The percent decrease in VAS in both groups A and B were 41.22% and 41.06%, respectively.

Table (2): Comparison between mean values of VAS measured pre-and post-treatment in the two studied groups.

	Group (A) (N=20)	Group (B) (N=20)
Pre-treatment	7.40±1.67	7.55±1.79
Post-treatment	4.35±1.84	4.45±1.96
Mean difference	3.05	3.10
% change	41.22 ↓↓	41.06 ↓↓
p-value	0.001 (S)	0.001 (S)

Data are expressed as mean ± SD.
S: p<0.05= Significant.

Between groups comparison (inter group comparison): At pre-treatment, there was no statistical significant difference between the mean value of VAS in group A (7.40 ± 1.67) and its corresponding value in group B (7.55 ± 1.79) with F-value=0.075 and p-value=0.785 (Table 3). ANCOVA test was used to compare the post-treatment values of the two groups on controlling the effect of pre-treatment value. The results of VAS revealed that there was no statistical significant difference between its mean value in the two groups A (4.35 ± 1.84) and B (4.45 ± 1.96) (F=0.003 & p=0.958).

Table (3): Comparison between mean values of VAS in the two studied groups measured pre-and post-treatment.

	Group (A) (N=20)	Group (B) (N=20)	F-value	p-value
Pre-treatment	7.40±1.67	7.55±1.79	0.075	0.785 (NS)
Post-treatment	4.35±1.84	4.45±1.96	0.003	0.958 (NS)

Data are expressed as mean ± SD.
F-value: ANCOVA test. NS: p>0.05= Not Significant.

3- Serum cortisol level:

Within group comparison (intra group comparison): In group A, there was a statistical significant decrease in the mean value of serum cortisol level measured at post-treatment (13.75 ± 5.49) when compared with its corresponding value measured at pre-treatment (20.01 ± 6.64) with p-value=0.001 (Table 4). Also in group B, there was a statistical significant increase in the meanvalue of serum cortisol level measured at post-treatment (15.24 ± 5.77) when compared with its corresponding value measured at pre-treatment (20.45 ± 6.26) with p-value=0.001 (Table 4). The percent decrease in serum cortisol level in both groups A and B were 31.28% and 25.48%, respectively (Table 4).

Table (4): Comparison between mean values of serum cortisol level measured at pre-and post-treatment in the two studied groups.

	Group (A) (N=20)	Group (B) (N=20)
Pre-treatment	20.01 ± 6.64	20.45 ± 6.26
Post-treatment	13.75 ± 5.49	15.24 ± 5.77
Mean difference	6.26	5.21
% change	31.28 ↓↓	25.48 ↓↓
p-value	0.001 (S)	0.001 (S)

Data are expressed as mean ± SD.
S: p<0.05= Significant.

Between groups comparison: At pre-treatment, in groups A and B, the mean values (±SD) of serum cortisol level were 20.01 ± 6.64 and 20.45 ± 6.26, respectively. There was no statistical significant difference between the two groups (F=0.048 & p=0.829) (Table 5). ANCOVA test was used to compare the post-treatment values of the two groups on controlling the effect of pre-treatment value. The results of serum cortisol level revealed that there was no statistical significant difference between the two groups A (13.75 ± 5.49) and B (15.24 ± 5.77) (F=2.177 & p=0.149) (Table 5).

Table (5): Comparison between mean values of serum cortisol level in the two studied groups measured at pre-and post-treatment.

	Group (A) (N=20)	Group (B) (N=20)	F-value	p-value
Pre-treatment	20.01 ± 6.64	20.45 ± 6.26	0.048	0.829 (NS)
Post-treatment	13.75 ± 5.49	15.24 ± 5.77	2.177	0.149 (NS)

Data are expressed as mean ± SD.
F-value: ANCOVA test.
NS : p>0.05= Not Significant.

Discussion

Dysmenorrhea is cramping pain that accompanies menstruation. According to the American College of Obstetricians and Gynecologists [4],

dysmenorrhea affects more than half of all women of reproductive age. The current study was conducted to investigate the effect of progressive relaxation training versus aromatherapy on improving primary dysmenorrhea. Forty virgin girls with primary dysmenorrhea they were divided randomly into two equal groups: Group (A) received progressive relaxations training while Group (B): Received aromatherapy. Both groups received the treatment three times a week for eight successive weeks. All patients were assessed pre and post-treatment using VAS scale and serum cortisol level. Post-treatment results of this study showed that there was a significant improvement in total (VAS) scores and serum cortisol level in both groups and there was a significant decrease in VAS scores and serum cortisol level in each group.

The result of this study also revealed that the difference between two groups in (VAS) scores and serum cortisol level post-treatment was non-significant. This study suggested that topically applied diluted essential oils of lavender and rosemary are effective in alleviating the pain of menstrual cramps.

Nikkhah et al., [11] suggested that Lavender decreases significantly the pain during the early times of deliveries in women. As well, the current finding is supported by another study done by who mentioned that administration of inhaled Lavender through an oxygen face mask can be utilized to decrease the need for analgesics and opioids in immediate post-operative period of breast biopsy and in patients undergoing laparoscopic surgeries.

From a physiological view that was explained by Re et al. [10]. Has an element of Linalool in lavender could inhibit the release of acetylcholine, which changes the functions related to the channels of ions on the neuromuscular synapses. Moreover, Linalyl acetate component has a narcotic effect and linalool works as a sedative agent. Accordingly, these functions rationalize the pain-reducing effect of lavender.

In the study of Buckle [12] showed that lavender has been used as an analgesic, sedative and anti-convulsant; clary sage as an anti-convulsant, regulator of menstruation, and to support the actions of estrogen and rose to alleviate uterine problems.

Saeki and Mayumi, [13] showed that lavender is inhaled for 10 minutes, there is an increase in blood flow and a decrease in galvanic skin conduction and systolic blood pressure (indicating a reduction in sympathetic nerve activity).

With respect of the result of the study group (A) finding of this study agreed with respect of the result of the study group (A) finding of this study agreed with Kiecolt-Glaser et al., [14] study that compared progressive muscle relaxation with social support or no-contact, with the intervention groups of the elderly, seen three times a week for a month. Only the relaxation group was found to show improvement in mood—a reduction in self-reports of distress—and this was accompanied by an up-regulation of immune function indexed by an increase in Natural Killer (NK) cell activity and a decrease in antibody levels to the Herpes Simplex Virus (HSV).

With respect of the result of the study group (B) finding of this study agreed with Shaheen et al. [15]. Study that found a significant positive effect of aromatherapy in reducing pain. These results indicate that aromatherapy should be considered a safe addition to current pain management procedures as no adverse effects were reported in any of the included studies. Additionally, the cost associated with aromatherapy is far less than the cost associated with standard pain management treatment. Although the present meta-analysis indicates a large positive effect for the use of aromatherapy for pain management.

With respect of the result of the study group (B) finding of this study agreed Maasumeh et al. [16], also studied the effect of lavender aromatherapy on pain perception and intrapartum outcome in primiparous women the study was concluded that that aromatherapy decreased the labor pain. In conclusion, this research suggests that aromatherapy has a significant effect on dysmenorrhea. Because there were no side effects, aromatherapy can be regarded as a safe, simple, cost-effective, and viable method of nursing care suitable for all patients and has the same beneficial effect of progressive relaxation training.

With respect of the result of the study group (B) finding of this study agreed Han et al. [17], study that also showed that Aromatherapy is generally performed combining with massage, and it is thought to be safe and effective in treating menstrual pain or dysmenorrhea. Our previous study also showed that aromatherapy is effective in reducing the menstrual pain in college women.

Conclusion:

This research suggests that aromatherapy has a significant effect on dysmenorrhea. Because there were no side effects, aromatherapy can be regarded as a safe, simple, cost-effective, and viable method

of nursing care suitable for all patients and has the same beneficial effect of progressive relaxation training.

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Declaration of interest:

The authors declare that there is no conflict of interest in this study. The manuscript has been read and approved by authors.

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تأثير العلاج بتمارين الإسترخاء مقابل العلاج العطري في حالات عسر الطمث الأولي

خلفية وهدف البحث: تعد آلام عسر الطمث الأولي شكوى مرضية مشهوره في الفتيات حيث تؤثر بشكل كبير على كفاءه العمل وجودة الحياه. ومن أشهر أعراضه آلام أسفل البطن والظهر وتمتد أحياناً للفخذين بالإضافة إلى بعض الأعراض التي تحدث مثل الإحساس بالألم عند الضغط على الثديين، الإحساس بالقيء، الإسهال، الإجهاد والصداع. وقد إستهدف هذا البحث دراسة تأثير العلاج بتمارين الإسترخاء مقابل العلاج العطري في حالات عسر الطمث الأولي.

مواد وأساليب البحث: إشتمل البحث على أربعين فتاة مصابه بالآلام عسر الطمث الأولي حيث تراوحت أعمارهن من ١٦-٢٥ عاماً، وتم تقسيمهن عشوائياً إلى مجموعتين متساويتين: مجموعة (أ): تلقت هذه المجموعة العلاج بتمارين الإسترخاء. مجموعة (ب): تلقت هذه المجموعة العلاج العطري. وتم تقييم المرضى باستخدام مقياس شدة الألم الرقمي وتحليل معدل الكورتيزول بالدم. وتم التقييم قبل وبعد ثمانية أسابيع متتالية من التدخل العلاجي.

النتائج: أظهرت النتائج تحسن ذى دلالة إحصائية في إختبار قياس شدة الألم ومعدل الكورتيزول في الدم في كلتا المجموعتين وعلى الرغم أنه لا يوجد فرق واضح بين المجموعتين إلا أنه وجد أن هناك نقص واضح في درجة شدة الألم ومعدل الكورتيزول في الدم في كل مجموعة.

الخلاصة: إن العلاج العطري له نفس تأثير العلاج بتمارين الإسترخاء في حالات آلام عسر الطمث الأولي.