Effect of Kinesio Taping Versus Spiral Taping on Premenstrual Syndrome

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ABSTRACT

Background: Premenstrual symptoms are common, a smaller proportion of women meet clinical criteria for premenstrual syndrome (PMS), which affects their daily activities and quality of life. **Purpose**: This study was conducted to compare between Kinesio taping versus spiral taping as methods for alleviating premenstrual syndrome. **Materials and Methods**: Sixty virgin women were selected from Faculty of Pharmacy Zagazig University to share in the study. Their ages ranged from 20-25 years and their body mass index was ≤ 30 kg/m^2. The subjects were randomly divided into three equal number groups; a Kinesio taping group (A), a spiral taping group (B) and a control group (C). Subjects with a regular menstrual cycle underwent taping three times per week for about six weeks starting from 14 days before menstruation until its end. Degrees of menstrual pain was measured by using Visual analogue scale (VAS) and premenstrual syndrome were assessed using Menstrual Distress Questionnaire (MDQ). **Results:** The results of this study revealed that there was statistically significant decrease in mean value of VAS of Kinesio group (A) when compared with its corresponding value in group (B) and (C) with p-value = 0.003**.**There was a highly statistically significant decrease in symptoms of premenstrual syndrome in the group (A) (kinesio group) compared with those in other groups. **Conclusion:** Both taping methods before menstruation brought significant relief to menstrual pain, which suggests that kinesio taping is more effective than spiral taping method in alleviating premenstrual symptoms.

Key words: Kinesio taping, premenstrual syndrome, Spiral taping.

INTRODUCTION

Premenstrual syndrome (PMS) can be defined as recurrent luteal-phase condition characterized by physical, psychological, and behavioral changes of sufficient severity to result in deterioration of interpersonal relationships and normal activity. Premenstrual dysphoric disorder (PMDD) is considered a severe form of PMS (1).

Women with PMS tend to have a significantly lower quality of life, increased absenteeism from work, decreased work productivity, impaired relationships with others, and more frequent visits to health providers than those who do not experience PMS (2).

Up to 80% of women of child-bearing age report having some symptoms prior to menstruation. These symptoms qualify as PMS in 20 to 30% of women and in three to eight percent are severe (3).

The causes of PMS are not clear, but several factors may be involved; changes in hormones during the menstrual cycle seem to be an important factor. Changing hormone levels affect some women more than others. The lost of progesterone, a central nervous system depressant, is the base of the PMS (4).

Chemical changes in the brain, stress, emotional problems, such as depression, do not seem to cause PMS but they may make it worse, low levels of vitamins and minerals, high sodium, alcohol, and/or caffeine can exacerbate symptoms such as water retention and bloating (5).

Risk factors of PMS; family history of PMS, sedentary life style, unhealthy diet, alcohol, smoking heavily, below 30 years of age, high sugar diet, having more than two children. high-stress levels, diet low in vitamin B, calcium, and magnesium and taking a lot of caffeine (6).

Symptoms of premenstrual syndrome include three aspects: emotional, physical and behavioral which occur in a monthly sequence and lasts for about one week (1).

The complications of PMS include: depression, severe anxiety, thoughts of suicide, severe mood swings, substance abuse due to severe depression ,existing medical conditions (such as migraines, asthma, seizure disorders, multiple sclerosis, systemic lupus erythematosus, inflammatory bowel disease, and irritable bowel syndrome) may exacerbate, trouble thinking or focusing, painful cramps ,lack of interest in daily activities and extreme anger (7).

Many therapies including medication and thermotherapy and other self-treatment methods have been prescribed to alleviate

symptoms. For example, several medical therapies, herbal remedies and acupuncture have been reported to relieve menstrual pain (8).

One treatment possibility is taping therapy. Application of kinesio taping in the sacroiliac joint, showed reduced levels of menstrual pain, which are believed to be the direct result of elimination of muscle tension in the pelvic area by taping, thereby alleviating compression against the uterus and thus increasing blood flow (9).

The spiral taping has significant changes in breast tenderness, tension of anxiety, eases pain, reduces inflammation, and induces muscle relaxation by restoring a normal energy flow of the circulating energy in the human body to a spiral shape (9).

MATERIALS AND METHODS

Design of the study: Three groups pre-test post-test design.

Subjects:

This study was carried out on Sixty virgin women diagnosed clinically by the gynecologist as having PMS were selected randomly from Faculty of Pharmacy Zagazig University. Their age ranged between 20-25 years. Their menstrual pain scores were five or higher on a visual analogue scale (VAS) and their body mass index (BMI) was not exceed 30 kg/m². Subjects were excluded from participation in this study if there were any Pathologic findings in the pelvic cavity and having irregular menstruation. The study was conducted from March 2019 to November 2019.

The participated women were divided into three groups; Group (A): they were treated using kinesio taping on abdominal and back regions, group (B): they were treated using spiral taping on the tender points of the antigravity muscles and group(C): as a control group, received advice about premenstrual syndrome and how to relieve symptoms. Subjects in group (A&B) underwent taping three times per week for about six weeks starting from 14 days before menstruation until its end for three consequent menstruation.

Procedures:

A. Measurement procedures:

The following evaluations were done for all women in the three groups (A, B&C):

1. Weight and height scale:

Was used to measure while the woman wearing a thin layer of clothes to calculate the BMI according to the following equation: BMI = Weight / height² (Kg/m²).

2. Visual analogue scale (VAS):

Degrees of menstrual pain was assessed using a VAS, which is a method of representing subjects' pain on a 10 cm linear scale. In

this study, a score of 0 meant 'a very low degree of pain' and 10 meant 'a very high degree of pain. It was used before and after end of treatment (3 months) **(10)**.

3. Menstrual Distress Questionnaire (MDQ):

The subjects' decreased activity, lower back pain, tension or anxiety, breast tenderness, and headaches were assessed using the Menstrual Distress Questionnaire (MDQ), each item is scored on a 5-point Likert scale, with 1 being 'no pain at all,' followed by 'mild pain,' 'moderate pain,' 'slightly severe pain,' and 'extremely severe pain. It was used before and after end of treatment (3 months) **(11).**

B. Treatment procedures:

- ✓ All subjects agreed to participate in the study by completing an informed consent.
- ✓ Subjects were given verbal instructions concerning the purpose and procedure of the study.

1. **Group A:** Twenty patients received kinesio taping , a piece of Kinesio tape,5 cm in width and 7–8 cm in length was applied right from below the navel and reached to where the pubic hair began, and another piece of tape 10 cm in length was applied to make a cross shape with the first piece.
2. **Group B:** Twenty patients received spiral taping. spiral tape was applied to the lower abdomen, the chief complaint area.
3. **Group C:** Twenty patients received a pamphlet which discussed some of the emotional and physical symptoms of PMS, suggesting ways to manage discomfort and reducing stress and talking about medical treatments and the same instructions were given to group (A&B).

Data analysis

- Descriptive statistics and ANOVA-test were carried out for comparison of the mean age between the four groups.
- MANOVA test was carried out for comparison of NPRS and PPT between groups. Tukey post hoc test was conducted for pairwise comparison.
- Chi squared test was carried out for comparison of daily activities affection between groups.
- The level of significance for all statistical tests was set at $p < 0.05$.
- All statistical measures were performed through the statistical package for social studies (SPSS) version 25 for windows.

RESULTS

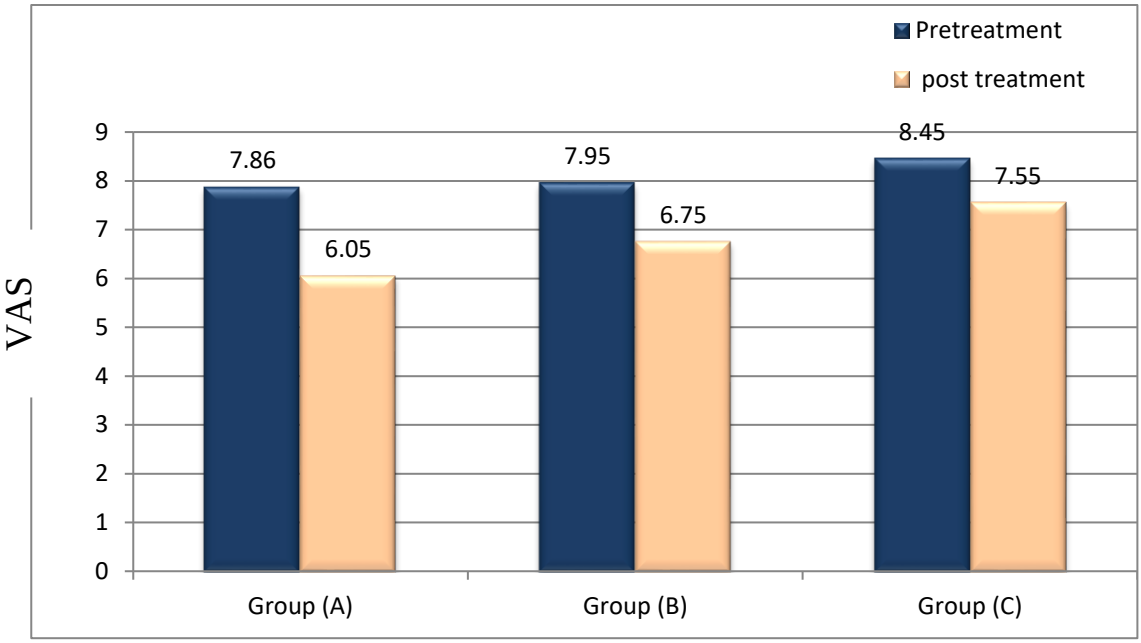
1. ***General characteristics of the subjects:***

There were a statistically non-significant differences between the three groups (A, B &C) in their ages with P value < 0.955. There were a statistically significant differences between groups (A, B &C) in their weight with P values < 0.029, while there were a non-statistically significant differences between groups (A, B &C) in their height and BMI with P values < 0.292 and 0.135 respectively (Table 1).

Table (1): Descriptive statistics and ANOVA test for the mean age, weight, height and BMI of groups A, B and C:

Variables	Group (A) (n = 20)	Group (B) (n = 20)	Group (C) (n = 20)	F	P value
Age (years)					
Mean ± SD.	22.55 ± 1.61	22.40 ± 1.64	22.45 ± 1.50	0.047	0.955
Median (IQR)	22.50 (21.0 –24.0)	22.0 (21.0 – 24.0)	22.50 (21.0 – 23.5)		
Weight (kg)					
Mean ± SD.	72.20 ± 6.69	66.95 ± 6.08	68.30 ± 6.05	3.769 *	0.029 *
Median (IQR)	72.0 (66.5 –77.0)	67.0 (63.5 – 71.0)	70.0 (65.0 – 73.0)		
Height (m)					
Mean ± SD.	163.4 ± 4.92	160.8 ± 5.38	163.1 ± 6.58	1.259	0.292
Median (IQR)	163.0 (160.0 –165.5)	159.5 (156.0 –165.0)	162.5 (157.5 –168.0)		
BMI (kg/m^2)					
Mean ± SD.	26.86 ± 1.96	25.91 ± 2.35	25.54 ± 1.98		
Median (IQR)	26.65 (25.6 –28.3)	25.90 (23.6 – 28.4)	25.55 (24.4 – 26.3)		

F: **F for ANOVA test**.



Bar charts showing comparison between the three studied groups according to VAS at pre and post -treatment.

3- Mean values of Menstrual Distress Questionnaire (MDQ) in the three groups (A, B &C) at pre and post-treatment:

At pre-treatment time there was statistically non-significant difference between mean value of total score of Menstrual Distress Questionnaire in the three groups (A, B &C) with p value = 0.210 ,while at post-treatment time there was statistically significant decrease in mean value of total score of Menstrual Distress Questionnaire in group (A) when compared with its corresponding value in groups (B&C) with p-value = 0.03 which means Kinesio Group (A) is better than other groups (B&C) (Table 2).

Table (2): Comparison between mean values of Menstrual Distress Questionnaire in the three groups (A, B&C) at pre and post-treatment:

Total score of MDQ	Group (A) (n = 20)	Group (B) (n = 20)	Group (C) (n = 20)	F	p
Pre-treatment					
Min. – Max.	62 – 87	67 – 95	75 – 92	2.615	0.210
Mean ± SD.	76.55 ± 5.75	82.8 ± 7.38	84.35 ± 5.03		
Post-treatment					
Min. – Max.	58 – 79	59 – 84	69 – 85	4.621*	0.03*
Mean ± SD.	70.4 ± 2.22	72.6± 7.1	78.5 ± 4.62		

F: **F for ANOVA test**.

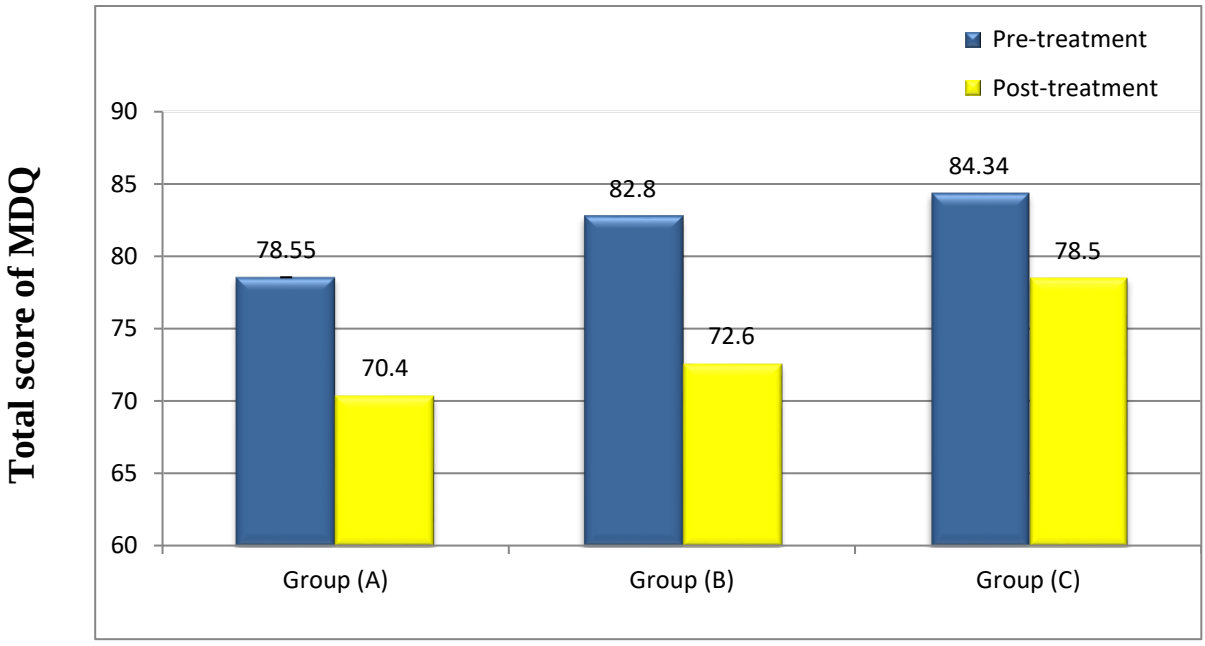


Fig (2): Bar charts showing comparison between mean values of Menstrual Distress Questionnaire in the three groups (A, B&C) at pre and post-treatment.

DISCUSSION

This study was conducted to compare the effect of Kinesio taping and spiral taping for alleviating premenstrual syndrome.

Sixty virgin women diagnosed clinically by the gynecologist as having PMS, were divided into three groups; Group (A): they were treated using kinesio taping on abdominal and back regions, group (B): they were treated using spiral taping on the tender points of the antigravity muscles and group(C): as a control group, received advice about premenstrual syndrome and how to relieve symptoms. Subjects in group (A&B) underwent taping three times per week for about six weeks starting from 14 days before menstruation until its end for three consequent menstruation.

The subjects' menstrual cycles would be first checked and then degrees of pain will be assessed before the application of taping by Visual analogue scale (VAS) and Menstrual Distress Questionnaire (MDQ).

The results of this study showed that there was a highly statistically significant decrease in premenstrual pain and other symptoms of premenstrual syndrome in the group (A) who treated with kinesio taping compared with those in group (B) who received Spiral taping and group (C) as control group.

These results agreed with Donec and Kubilius (12) as they found Significantly higher and clinically meaningful reduction of pain intensity in the Kinesio taping group after the treatment month, in comparison with the control group ($p<0.05$). The study results show that kinesio taping can safely relieve knee pain and reduce the need for pharmacological management in knee osteoarthritis.

The results of the current study were accordance to Ulu et al. (13) ,they stated that VAS scores were significantly lower in the kinesio taping group compared to the non-kinesio taping group at all time points ($P < 0.05$). The highest level of significance was revealed for the days 1, 2, 5, and 7 ($P = 0.001$). The study results showed that the application of kinesio taping after maxillofacial surgery reduced the pain and swelling in the postoperative period.

The results of this study came in the line with Lim et al. (9) who demonstrated that kinesio taping relieves not only musculoskeletal pain but also menstrual pain, also spiral taping seems to have relieved premenstrual syndrome by restoring the abnormal energy flow during menstruation. In other words, when experiencing such symptoms, these taping methods can be added to the list of existing treatments as medically recognized methods.

The results of this study are supported by Gürşen et al. (14) who showed that the addition of kinesio taping to abdominal exercises in the postnatal physiotherapy program provides greater benefit for the abdominal recovery in women with cesarean section.

This study is supported Kuciel et al. (15) who indicated that kinesio taping significantly reduces pain in the studied group of pregnant women and this effect is maintained even after its removal. Therefore, it is recommended that kinesio taping method decreases pain and improve functionality in pregnancy-related pelvic girdle pain which deteriorates the quality of life for pregnant women.

The results of this study were in consistent with that of Choi (16) who studied Effects of kinesio taping and hot packs on premenstrual syndrome. Premenstrual syndrome was assessed using the Menstrual Distress Questionnaire in each participant prior to intervention and was re-assessed after applying kinesio taping. In terms of the differences in the Menstrual Distress Questionnaire total score among the groups, the taping with hot pack and hot pack groups showed a significant difference which indicate that kinesio taping is an easy, non-drug intervention for female college students with premenstrual syndrome.

The results of this study came in the line with Kelle et al. (17) who showed that Kinesio taping provided significant improvements in pain and disability. The relief of pain in acute low back pain syndrome is likely to be owing to the normalized muscle functions, so it can be used as a complementary method in acute non-specific low back pain.

The results of this study agreed with Kalinowski and Krawulska (18) who confirmed that low back pain in pregnant women decreased significantly after Kinesio taping when compared to placebo. This study stated that Kinesio taping is an effective method to combat lower back pain and may provide a safe complement to other therapies.

The result of this study agreed with those of Choi et al. (19) who examined the effect of spiral taping therapy on low back pain or neck pain patients by using pressure pain threshold ,VAS and range of motion. In spiral taping therapy group, the pressure pain threshold of the all points was significantly increased and VAS was significantly decreased than control group. These imply that spiral taping therapy is useful in low back pain and neck pain.

The current study findings are in line with Forozeshfard et al. (20) who showed that there is significant reduction in VAS, McGill pain score and functional disability by using

kinesio taping during menstrual cycle in young females with menstrual low back pain. The findings may support the clinical application of kinesio taping in young females with menstrual low back pain.

Also, the results of this study may be explained by Macedo et al. (21) who evaluated the effect of kinesio taping on individuals with non-specific low back pain using outcomes of pain, disability, range of motion, strength and electromyographic amplitude. They confirmed that kinesio taping was capable of reducing pain when applied with or without tension, and improving disability, even after its withdrawal, when applied with tension.

On contrast to this study, Araujo et al. (22) found that kinesio taping was not better than sham taping (kinesio taping without convolutions) for patients with chronic low back pain. Improvements over time in both groups can be attributed to the natural history of the condition and concluded that the effects of this intervention are due to placebo.

On the other hand the results of this study disagree with the systematic review of the effectiveness of kinesio taping in addition to conventional rehabilitation treatment on pain, cervical range of motion and quality of life in patients with neck pain of Puerma-Castillo et al. (23) who found that the addition of supplementary therapies such as Kinesio taping does not appear to significantly affect clinical parameters. The study concluded that no evidence of additional benefits from the use of kinesio taping.

CONCLUSION

Based on the scope and findings of this study, the following conclusion appeared to be warranted:

Both taping methods before menstruation brought significant relief to menstrual pain, which suggests that kinesio taping is more effective than spiral taping method in alleviating premenstrual symptoms.

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