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Effect of Kinesio taping on pain in females with primary dysmenorrhea

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Abstract

Objective: To study the effect of kinesio taping on pain in women with primary dysmenorrhea using VAS scale.

Background: Dysmenorrhea is estimated to affect approximately 25% of women. Dysmenorrhea, also known as painful periods, or menstrual cramp is pain during menstruation. In young women painful periods often occur without an underlying problem. In older women it is more often due to an underlying issues such as uterine fibroids, adenomyosis, or endometriosis. Elastic therapeutic tape, also called kinesiology tape, Kinesio tape, k-tape, or KT, is an elastic cotton strip with an acrylic adhesive that is used with the intent of treating pain and disability from athletic injuries and a variety of other physical disorders.

Outcome Measures: Visual Analog Scale (VAS).

Method: The study included 40 subjects having primary dysmenorrhea. Kinesio tape was applied on each subject below the navel and above pubic hairline and kept until the cycle ends.

Result: The analysis between the Pre and Post VAS values was done and the mean values 5.055 ± 0.82914112 , 2.2775 ± 0.726459737 , $p = 0.00$.

Conclusions: The study showed significant result in reducing pain. This study concludes that Kinesio taping technique is effective in reducing pain in primary dysmenorrhea.

Keywords: Dysmenorrhea, pain, Kinesio taping, VAS score

Introduction

Dysmenorrhea is estimated to affect approximately 25% of women. Dysmenorrhea, also known as painful periods, or menstrual cramp is pain during menstruation^[1]. In young women painful periods often occur without an underlying problem. In older women it is more often due to an underlying issues such as uterine fibroids, adenomyosis, or endometriosis^[2] % of women^[3]. Reports of dysmenorrhea are greatest among individuals in their late teens and 20s, with reports usually declining with age. The prevalence in adolescent females has been reported to be 67.2% by one study and 90% by another^[3]. The main symptom of dysmenorrhea is pain concentrated in the lower abdomen or pelvis^[1]. Molecular compounds called prostaglandins are released during menstruation, due to the destruction of the endometrial cells, and the resultant release of their contents. Release of prostaglandins and other inflammatory mediators in the uterus cause the uterus to contract. These substances are thought to be a major factor in primary dysmenorrhea^[4].

Elastic therapeutic tape, also called kinesiology tape, Kinesio tape, k-tape, or KT, is an elastic cotton strip with an acrylic adhesive that is used with the intent of treating pain and disability from athletic injuries and a variety of other physical disorders.

The product is a type of thin, elastic cotton tape that can stretch up to 140% of its original length. As a result, if the tape is applied stretched greater than its normal length, it will "recoil" after being applied and therefore create a pulling force on the skin. This elastic property allows much greater range of motion compared to traditional white athletic tape and can also be left on for long periods of time before reapplication.

Designed to mimic human skin, with roughly the same thickness and elastic properties, the tape can be stretched 30–40% in the longitudinal direction. It is a latex free material with acrylic adhesive, which is heat activated. The cotton fibers allow for evaporation and quicker drying leading to longer wear time, up to 4 days.

Additionally, the tape is claimed to lift the skin, increasing the space below it, and increasing blood flow and circulation of lymphatic fluid. This increase in the interstitial space is said to lead to less pressure on the body's nociceptors, which detect pain, and to stimulate mechanoreceptors.

Methodology

Study Design: Experimental Study.

Study Type: Pre and Post type of experimental study. Study size: 40

Sampling method: Simple Random Sampling Method

Study population: Girls between 17 to 24 years of age with primary dysmenorrhea.

Study setting: Physiotherapy OPDs in and around the city.

Duration of study: 6 months.

Inclusion criteria

- Females with primary dysmenorrhea.
- Age below 24 years of age.
- Females with regular menstrual cycle.
- VAS score 3-7.

Exclusion criteria

- Female age above 24 years of age.
- Females with secondary dysmenorrhea.

Outcome measure

Visual Analogue Scale

- Patient will be asked to rate pain intensity by placing a mark on 10cm VAS. The VAS is horizontally positioned with the extremes labeled as “least possible pain” and “worst possible pain”. A higher score indicates greater pain intensity and lower score indicates lower pain intensity
- VAS score: 1-3cm- mild pain 4-7cm- moderate pain 8-10cm- severe pain

Sampling and study design: Subjects were chosen with simple random sampling method.

Procedure

Study began with presentation of synopsis to an ethical committee of PES Modern college of physiotherapy. Subjects were selected on the basis of the inclusion and exclusion criteria. Subjects were explained about the study. Consent was taken from the patient who wished to participate in the study. VAS scale was taken before starting with the treatment.

A piece of Kinesio tape was applied below the navel and above pubic hairline.

Tape was kept throughout the cycle and removed after the cycle stopped.

Any side effects as itching; redness around the tape etc. subjects were told to remove the tape. The tape was changed after 3-4 days if needed. VAS scale was taken at the end of the cycle and noted down.

Data and statistical analysis

- Effectiveness of kinesio taping in primary dysmenorrhea was analyzed using Visual Analog scale.
- The data was entered in excel spread sheet, tabulated and subjected to statistical analysis.

- Data entered was analyzed with the help of Graph pad Instats, checking effectiveness of Kinesio taping technique in primary dysmenorrhea.
- The data passed the normality test when demographic data was analyzed.
- The demographic data and baseline characteristics for each group (pre study) are given in the table below:

Table 1: Age Wise Distribution of Demographic Data

| Age | Total no. |
|-------|-----------|
| 17-20 | 2 |
| 21-24 | 38 |

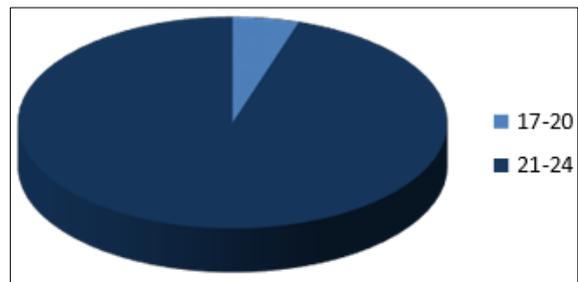


Fig 1: Distribution of Demographic Data

Baseline data analysis

Data analysis was done for the group using outcome measures Visual Analog Scale (VAS). The data passed the normality test with $p > 0.00$

Table 2: Pre and post data analysis for VAS was done by paired t test

| Visual Analog Scale | Pre treatment | Post Treatment |
|---------------------|---------------|----------------|
| MEAN | 5.005 | 2.2775 |
| Standard deviation | 0.829141122 | 0.726459737 |
| P value | 0.000000 | |
| T value | 2.02269092 | |

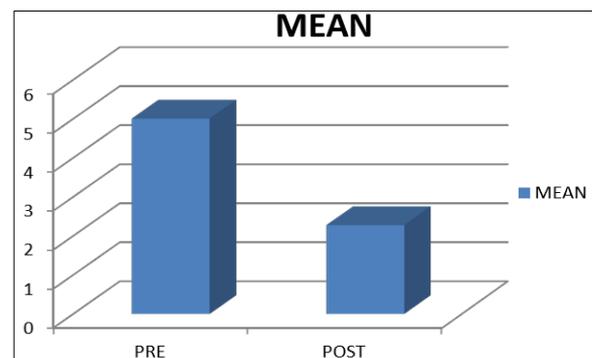


Fig 2: Pre and post data analysis for VAS

Result

Mean values for VAS scale was Pre values = 5.005 and post values = 2.2775. Paired t test was used to compare effectiveness in the group.

The p value was 0.0000 which is considered extremely significant.

Discussion

Dysmenorrhea, also known as painful periods, or menstrual cramp is pain during menstruation. In young women painful

periods often occur without an underlying problem. In older women it is more often due to underlying issues such as uterine fibroids, adenomyosis, or endometriosis. Reports of dysmenorrhea are greatest among individuals in their late teens and 20s, with reports usually declining with age. The main symptom of dysmenorrhea is pain concentrated in the lower abdomen or pelvis. Molecular compounds called prostaglandins are released during menstruation, due to the destruction of the endometrial cells, and the resultant release of their contents. Release of prostaglandins and other inflammatory mediators in the uterus cause the uterus to contract. These substances are thought to be a major factor in primary dysmenorrhea.

Kinesio tape, k-tape, or KT, is an elastic cotton strip with an acrylic adhesive that is used with the intent of treating pain. Designed to mimic human skin, with roughly the same thickness and elastic properties, the tape can be stretched 30–40% in the longitudinal direction. It is a latex free material with acrylic adhesive, which is heat activated. The cotton fibers allow for evaporation and quicker drying leading to longer wear time, up to 4-5 days. Kinesio tape decreases muscle tone and alleviates pain by inducing constant relaxation and contraction of the muscles through physical stimulation of cutaneous afferents, and is effective at maximizing natural healing power by stimulating organs through muscles right under the skin or reciprocal innervation

Present study was done to check the effectiveness of Kinesio taping technique in primary dysmenorrhea. The study involved 40 subjects in total. Age group of study was 17-24 year old female. Mean age was 22.875. Duration of the study was 6 months. There total number of 4 drop outs. The drop outs complained of itching and irritation over the area where tape was applied. Study started with taking VAS scale of the subject on day one of menstruation. Kinesio tape was applied after taking VAS score. The tape was kept during the entire cycle i.e. 6-7 days. Post values were taken. Data analysis was done with help of paired t test. The pre and post data for the group was analyzed using paired t-test for pain which showed statistical difference in the VAS score. Mean values for VAS scale pre-treatment was 5.005 ± 0.829 and for the post treatment was 2.257 ± 0.726 . Paired t test was used to compare effectiveness in pre and post VAS values within the group. The p value was <0.0001 which is considered extremely significant.

Chaegil Lim, Pt, Yongnam Park, PT in their study stated that both the taping methods were effective. Kinesio taping brought significant relief to menstrual pain, while spiral taping was an effective method of alleviating menstrual pain as well as premenstrual symptoms. The possible mechanism can be that Kinesio taping causes constant relaxation and contraction of the muscles through physical stimulation of cutaneous afferents, and is effective at maximizing natural healing power.

In this study, Kinesio taping showed significant changes in menstrual pain. Kinesio taping is an auxiliary treatment that maximizes natural recovery ability and corrects the balance of human body by adjusting electromagnetic flows on the skin, indirectly stimulating muscles or organs right under the skin using non chemically treated tape. The possible mechanism can be that Kinesio taping causes constant relaxation and contraction of the muscles through physical

stimulation of cutaneous afferents, and is effective at maximizing natural healing power.

It causes suppression of pain by stimulation of the tactile fibers in the skin through the pain gate mechanism as well.

Therefore, Kinesio tape applied to the lower abdomen would have stimulated the tactile fibers in the skin suppressing the pain sensitizing action of prostaglandin in the spinal cord, thereby reducing menstrual pain.

The possible mechanism could be that the application of Kinesio taping activates the pain gate mechanism that controls pain at the spinal cord by stimulating sensory fibers with large diameters such as tactile and vibratory senses in the skin they can control menstrual pain by suppressing the sensitizing action of prostaglandins in the spinal cord to control menstrual pain. Nevertheless this study had limitations such as secondary dysmenorrhea and women above 24 years of age.

Conclusion

The study showed significant result in reducing pain. This study concludes that Kinesio taping technique is effective in reducing pain in primary dysmenorrhea.

Limitation: Sample size was less. Few subjects complained of itching and irritation due to the tape applied.

Future scope of study

Further study with larger sample size can be conducted. Study can be carried out on older adult females. Effects of Kinesio taping can be checked in females with secondary dysmenorrhea. Study can be carried out to check the immediate effect of Kinesio taping. Effect of Kinesio taping can be combined or compared with other electro therapeutic modalities.

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