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Bidirectional study comparing effect of cure tape and aromatherapy massage versus cure taping on primary dysmenorrhea

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To investigate the effect of cure tape and aromatherapy massage versus cure tape on primary dysmenorrhea. A randomized controlled trial performed on the female students along with the base line demographic data with quantitative study. Forty young (42) college going female student's participants, were selected from many collages in Prince Sattam Univresity, Kingdom of Saudi Arabia. They were suffering from severe menstrual pain. The baseline data, pain and quality of life before and after the intervention. The participants were divide into 2 groups I: the intervention done for group I was Cure tape and aromatherapy massage and for the group II, only Cure tape was applied. Both groups were assessed for menstrual pain and quality of Life pre and post intervention. The experimental group I showed a highly significant decreased in primary dsymenohrric pain symptoms and improved in the quality of life enjoyment and satisfaction in young college going female students changing in P(0.001), however, there is a slight significant change in group II regarding pain and quality of life when compared to the controlled group P(0.05). There was a significance difference between post mean values of both groups. Cure taping along with the aromatherapy massage when applied during primary dysmenhorria is an effective alternative therapy in reducing the pain during primary dysmenorrhea in young college going female students.

Keywords: Cure tape, primary dysmenorrhea, Aromatherapy Massage, Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form

INTRODUCTION

Menstrual pain (MP) is common in young females, it's the most disturbing element part in menstruation period. It can strike earlier and during the period time, numerous young female suffers from this cramps routinely. It felt often in lower abdomen as well as in the lower back. The pain is usually become severe when a girl first gets her period and become less when she have her first baby (Aguilar et al.,2014)

The cause of these cramps is due to

contraction in womb or uterus. These strong contractions press against the blood vessels in uterus leading to loss of oxygen supply in uterus resulting in pain and cramps .(Bakhtshirin et al., 2015)The prevalence of the menstrual pain symptoms during primary stages varies from 16% to 93%; and amongst the girls, there is severe dysmenorrhea that had been noticed around 2% to 29%. It represents a crucial health issues in this particular age group (Banikarim et al.,2000)

The primary dysmenorrhea has been critically affecting women population. It is also hindering the day to day activities of them, hence creating a negative impact on their health. The quality of life is been greatly reduced when compared to the female in menstrual pain to that of the female in follicular phase (Boyle et al.,1987).MP shows that a high percentage of women 60 to 93% experience menstrual pain and that 42% of them suffer from a severe level of pain. It can lead to inability to perform activity of daily living and it thought to be driving reason for absenteeism in females' students and workers (Chaegil et al.,2013) (Cornwell and Dale,1995) Many therapies including medication and thermotherapy are serves as conservative therapy that used to relieve MP as well as herbal remedies and acupunctures. Some therapies can have a harmful consequence on females such as fear and pain from acupuncture and many females still depend on analgesic drugs to cope with menstrual pain, which may result in drug abuse (De Sanctis et al., 2015)

There are other complementary therapies which are being used to reduce the pelvic pain. The very recent therapy used to reduce the pelvic pain, is the use of cinnamon 1000 mg, during the first 72 hours of the dysmenorrhea, the subjects showed a significant reduction in the symptoms. The aromatherapy of cinnamon intervention helped this specific population sample reducing the severity of pain (Djordjevic et al., 2012).The essential aroma oils can be useful for the intervention purpose. They can be absorbed through sensation of olfaction, during ingestion, on the external dermal layer and the internal dermal layer. They can be applied through skin, orally or inhalation (Forozeshfard et al., 2016) (Grandi et al.,2012)(Grandi et al., 2013) And (Iacovides et al., 2014)

The other alternate therapies such as aromatherapy massage with essential oils like lavender, rose, clay. When used as on abdominal massage during the dysmenorrhea has helped in reducing pain. The essential aroma oil is imbibed by the skin and the underlying tissues for its absorption during massage. Using essential oils especially lavender showed a better result than any other oil which has been used like a placebo effect (Jahangirifar et al., 2018) (Kenzo et al., 2015) (Lim et al., 2013) Marzouk 2013) and (Maurcio et al.,2015).

Moreover, there is another type of technique which is Cure taping (CT). It is a therapeutic tool that has become increasingly popular within the

variety of conditions like sport injury. It was developed by Japanese Chiropractor Dr. Kenzo Kase in the 1970's with the intention to alleviate pain and improve the healing in soft tissues. There are many proposed benefits related to CT, including proprioceptive facilitation, reduced muscle fatigue, muscle facilitation, reduced delayed-onset muscle soreness, pain inhibition, enhanced healing, reducing edema, and improvement of lymphatic drainage and blood flow it is characterized by the ability to stretch to 120-140% of its original length. It is comprised of polymer elastic wrapped in 100% cotton fibers. When properly applied, it will last up to 3-5 days (Ou et al., 2012) and (Ozgul et al., 2018)

Taping consider as a non-drug therapy technique that will help to reduce the pain with minimal side effect such as skin irritations. It will reduce the muscle strength, muscular tension and convulsions through homeostasis and providing muscular balance with the surroundings by improving lymphatic circulation (Roger et al.,2018).CT is applied over the abdomen and lower back in a special way in order to relax the uterus and promote some relief to the individuals, where the subject in the first group were treated with kinesio taping for the low back pain in primary dysmenorrhea (Song et al.,2018) and (Sadeghi et al., 2015).

The current study compares the effect of CT and aromatherapy versus CT alone, intervention made on primary dysmenorrhea. Therefore, it can be used as a regular treatment for lessening the menstrual pain.

MATERIALS AND METHODS

Subjects

The subjects of this study were forty young females, their age between 18-25 years old, with body mass index (BMI) between 18.8- 24.9kg/m², they were randomly selected from College of Applied Medical Sciences, Prince Sattam bin Abdul-Aziz university. The subjects were randomly divided into two equal groups, group I experimental group (EG, n=20) having aromatherapy massage and cure tape together for the intervention, while the other controlled group (CG, n=20) took treatment with only CT. The subject did not use analgesics or any other therapies to relieve the pain during the study period were included in the study, while married females, pregnant females uncontrolled diabetic, cardiovascular patients, subjects with open wounds and skin irritations were excluded from

the study. Females having regular menstrual cycle whose menstrual pain when assessed by visual analogue scale (VAS) were severe nearly 7-8 over 10.

Assessment

Anthropometric measurements

Pre-Test assessment and Post-Test assessment was taken was taken three days before menstruation and post assessment was taken at the end of the first menstrual cycle for both the groups. Assessing the body weight for both experimental group and controlled group using medical clipart weight scale. They were bare foot and no heavy objects were carried. Their height was measured with measurement tape. After then, BMI were calculated using the formula (weight (kg) ÷ height² (m²)).

Pain assessment

For assessing the degree of menstrual pain in both the groups the measurement scale was taken. The VAS on the cm scale for the severity of the pain and Q-LES-Q (SF) both were taken as Pre and Post intervention. At first, they were asked to describe the degree of pain where a score of 0 means very low degree of pain and 10 means a maximum degree of pain. They were asked to pin point over the line given on scale indicating 0 to be a minimum and 10 to be a maximum pain on cm scale, which were later assessed by measuring their points with the scale in cm units. And later, questionnaires were distributed to them and explained so that they could provide the valid information.

Assessment of quality of life

The Q-LES-Q (SF) includes 16 items that assess domains related to physical health,

subjective feelings, leisure time activities, and social relationships, general activities, work, household duties, and school/course work (Endicott et al., 1993). This 16-item short form of the questionnaire constitutes the general activities domain of the long form 93-item version of the Q-LES-Q. A total score on the Q-LES-Q (SF) is derived from the sum of scores for items 1–14, where each item is scored from very poor (1) to very good (5) based on the patient's recall over the past week. Item 15 queries patients on their satisfaction with the medication they are receiving and item 16 is a global rating of overall satisfaction and contentment. The sum of scores for items 1–14 can range from 14 to 70 and is usually expressed as a percentage (1–100) of the maximum total score that is achievable, as presented in this study.

Procedures:

Cure taping

For the group I, the CT was applied 3 days before the menstruation cycle begins. During the application of CT, skin was cleaned from dirt, creams or oils using alcohol swab. Later, the subject was instructed to stand with trunk extended, a piece of CT with 10cm in length were applied vertically over the symphysis with maximum tension (fig.5) and another piece of CT with 15 cm in length were applied horizontally over symphysis with maximum tension (fig.6). The last piece of CT was applied to subject with trunk flexed, this piece with 15cm in length were applied horizontally in the back over S1 with maximum stretch. (figure I).



Figure I; Application of cure tape

Aromatherapy massage

In addition to this, the aromatherapy massage was applied on the first day of the menstrual pain for the same above group I. During application of the abdominal massage the cure tape was removed temporary for few minutes and later continued with it. On first day of menstrual pain the abdominal massage for around 15 minutes once a day, is applied for the single month for single cycle with 2 ml of lavender oil. It acts as add on factor to relief pain during dysmenorrhoea as participant had both stimulatory effect psychologically and symptomatically.

For group II, CT was applied in the same manner before 3 days and was taken out at 5th day of the menstrual cycle.

After the application of the cure tape, the degree of MP was reassessed using VAS for both groups. Subjects were instructed to take off the tape if they noticed any skin itching or redness from the CT. Quality of the subject's life before and during 5th day the menstruation period were assessed using MQ-LES-Q-SF (appendix I).

Appendix I

Name: _____ Date: _____

Modified Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form (Q-LES-Q-SF)

Taking everything into consideration, during the past week how satisfied have you been with you're

| | Very poor | Poor | Fair | good | Very good |
|---|-----------|------|------|------|-----------|
|physical health? | 1 | 2 | 3 | 4 | 5 |
|mood? | 1 | 2 | 3 | 4 | 5 |
|work? | 1 | 2 | 3 | 4 | 5 |
|household activities? | 1 | 2 | 3 | 4 | 5 |
|social relationships? | 1 | 2 | 3 | 4 | 5 |
|family relationships? | 1 | 2 | 3 | 4 | 5 |
|leisure time activities? | 1 | 2 | 3 | 4 | 5 |
|ability to function in daily life? | 1 | 2 | 3 | 4 | 5 |
|economic status? | 1 | 2 | 3 | 4 | 5 |
| ability to get around physically without feeling dizzy or unsteady or falling?* | 1 | 2 | 3 | 4 | 5 |
|your vision in terms of ability to do work or hobbies?* | 1 | 2 | 3 | 4 | 5 |
|overall sense of wellbeing? | 1 | 2 | 3 | 4 | 5 |

*If satisfaction is very poor, poor or fair on these items, please UNDERLINE the factor(s) associated with a lack of satisfaction.

The scoring of the Q-LES-Q-SF involves summing only the first 13 items to yield a raw total score.

The minimum raw score on the Q-LES-Q-SF is 13, and the maximum score is 65

Statistical analysis:

All subjects were calculated by using the statistical package of social science (SPSS) version 16. Descriptive statistics (The mean values of pain and quality of life obtained before and after treatment in both groups and were compared using the paired "t" test. Unpaired "t" test was used for the comparison between the two groups, A value of p<0.05 was considered statistically significant.

RESULTS

This study was applied on forty young females, were suffering from severe menstrual pain. They were divided into two groups in equal number, Group I receive cure tape plus aromatherapy massage group and group II receive cure tape only. Non Statically significant difference was found in baseline characteristics of subjects in terms of age (p=0.92), weight (p=0.31), height (p=0.21), BMI (p=0.39), pain (p=0.4) and quality of life (p=0.52) between both groups (p>0.05). Hence, both groups were homogenous (table 1).

In group I, pre mean value of pain and quality of life were (7.3±1.8) and (25.3±1.7) before treatment, respectively and became (2.8±1.2) and (68.9±4.85) after treatment respectively. There were a significant difference at means of pain and quality of life in group I (table 2).

In group II, pre mean value of pain and quality of life were (7.8±1.24) and (26.3±2.1) before treatment, respectively. And became (4.03±0.67) and (50.3±3.2) after treatment respectively. There were significant differences at means of pain and quality of life in group II (table 3).

Table I: Baseline characteristics of both groups.

| characteristics | Group I (n=20) M±SD | Group II (n=20) M±SD | P-Value | SIG |
|-------------------------------|------------------------|-------------------------|---------|-----|
| Age (yr) | 21.3±2.1 | 22.1±1.06 | 0.92 | NS |
| Weight (kg) | 58.3±1.3 | 57.8±2.01 | 0.31 | NS |
| Height (cm) | 157.2±1.3 | 156.3±3.02 | 0.21 | NS |
| BMI (kg\m2) | 23.6±1.57 | 23.7±1.37 | 0.39 | NS |
| Pain (VAS) | 7.3±1.8 | 7.8±1.24 | 0.4 | NS |
| Quality of life (MQ-LES-Q-SF) | 25.3±3.7 | 26.3±2.1 | 0.52 | NS |

M= mean , SD= Standard deviation , n: number , p>0.05 , , NS : non-significant , yr : year , kg : kilogram , cm : centimeter , BMI : Body Mass Index , VAS : Visual Analogue Scale , Q-LES-Q-SF : Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form.

Table 2; Pre and post mean value of group I.

| Character | Pre- intervention M±SD | Post –intervention M±SD | p- value | SIG |
|-------------------------------|---------------------------|----------------------------|----------|-----|
| Pain (cm) | 7.3±1.8 | 2.8±1.2 | 0.001 | HS |
| Quality of life (MQ-LES-Q-SF) | 25.3±3.7 | 68.9±4.85 | 0.001 | HS |

M= mean , SD= Standard deviation , n: number , p>0.05 , HS : highly significant , , VAS : Visual Analogue Scale , Q-LES-Q-SF : Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form

Table 3. Pre and post mean value of group II.

| Character | Pre- intervention M±SD | Post –intervention M±SD | p- value | SIG |
|-------------------------------|---------------------------|----------------------------|----------|-----|
| Pain (cm) | 7.8±1.24 | 4.03±1.67 | 0.05 | S |
| Quality of life (MQ-LES-Q-SF) | 26.3±2.1 | 50.3±3.2 | 0.05 | S |

M= mean, SD= Standard deviation, n: number, p>0.05, S: significant, VAS: Visual Analogue Scale, Q-LES-Q-SF: Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form

Table 4: Post mean values of both groups.

| character | Post – intervention I M±SD | Post –intervention II M±SD | P-value | SIG |
|-------------------------------|-------------------------------|-------------------------------|---------|-----|
| Pain(cm) | 2.8±1.2 | 4.03±1.67 | 0.05 | S |
| Quality of life (MQ-LES-Q-SF) | 68.9±4.85 | 50.3±3.2 | 0.05 | S |

M= mean, SD= Standard deviation, n: number, p>0.05, S: significant, VAS: Visual Analogue Scale, Q-LES-Q-SF: Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form

Post mean value of pain in group I were (2.8±1.2) and group II were (4.03±1.67) respectively. And post mean value of quality of life in group I were (68.9±4.85) and group II were (57.3±3.2) respectively. And there were significant difference between both groups in favor of group I (table 4).

DISCUSSION

Dysmenorrhic pain is a one of the most common issue that has mostly a negative impact on females psychological, and physical well-being especially during their menstrual cycle particularly in young age, approximately 43% of them suffers with the severe dysmenorrhoea (Song et al., 2018)

The inter-menstrual pain is associated with low quality of life SF-36 and also self-rating scale for depression and mood (Sut et al., 2017)

The point of the examination was to check the effectiveness of cure tape combine together with another alternative aromatherapy massage therapy on menstrual pain in young college going female students.

Post evaluation data for the group I, there were a noteworthy comparison for the pre and post evaluation, this was identified with the utilization of cure tape on the abdomen and lower back that outcome in relieving of uterus and increment of blood circulation, likewise the material strands stretch the skin reducing the pain by decreasing the inflammatory activity of prostaglandin in the spinal cord (De Sanctis et al., 2015)

The aromatherapy and essential oils when use with massage therapy, it's also widely being used these days in nursing practices. When used appropriately for 15 minutes on the abdomen it helped in reducing the pain, by penetrating the tissues and the derma. Evidence Based Complement Alternate Med. 2013, around 5 to 6 studies showed that when lavender oil is used along with massage therapy helped in significant reduction of the pain symptoms other than when used with the placebo effect. During an abdominal massage there is a stimulatory effect on olfactory nerve, which soothes the senses to reduce the hormones of stress generators. Moreover, the essential aroma oil is imbibed by the skin and the underlying tissues for its absorption during massage. Using essential oils especially lavender showed a better result than any other oil which has been like a placebo effect. The primary dysmenorrhic pain symptoms has remarkably reduced (Jahangirifar et al., 2018) and (Lim et al., 2013)

Another study showed by Corn well, he stated

that during the childbirth only bath with lavender essential oil for 10 days, it was satisfying. Scent however the study didn't show much effects but the average mean for the discomfort was lesser than the other group who didn't bath with the oil (Kenzo et al., 2015)

According to another RCT double blind study, the outpatients were given linalyl acetate, linalool, eucalyptol, and β -caryophyllene, analgesic cream, and unperfumed cream 3 percent amalgamated with lavender oil. Thought self- lower abdominal massage each day starting with the end of menstruation till the next cycle of the menstruation. Massage with lavender showed a sedative effect and anti- spasmodic affect. It showed a complementary therapy in reducing the primary dysmenorrhic pain (Lim et al., 2013)

In another cross-sectional research, where the subject in the group I was treated with kinesio taping for the low back pain in primary dysmenorrhoea, on the other hand the group II was not given any kinesio taping. The results showed the group I intervention helped in reducing the severity of pain and the functional disability. The reason being that the on the abdomen and lower back in using specific technique which relaxed the uterus and enhanced the blood circulation to give relief from the menstrual pain during periods. Although, its shortcoming was that the intervention was applied only for the first menstrual cycle (Roger et al., 2018)

The critical outcome might be bolstered by the finding of another investigation by Chaegil Lim, detailed that cure taping effectively affected menstrual pain, while applying taping was compelling at reducing both menstrual pain and premenstrual disorder (De Sanctis et al., 2015)

The other study was done on the Korean students where the balancing tape was applied for the during menses pain versus medication, the result was significant reduction in the first 24 hours on VAS after the application of the balance tape (Wageck et al., 2016)

In contrast Aguilar-Ferr revealed that the cure taping isn't superior to anything fake treatment tape in patients with low back pain, he detailed that there a factually huge contrast between the CT versus the control group, who did not get any mediation, but rather no distinction when contrasted with the pseudo-treatment tape application (Wong, 2018)

As to satisfaction cure tape gathering, there were a noteworthy contrast among pre and post mediation and this is identified with change of mood, physical wellbeing and mental condition of

the subject functionally sound for everyday living exercises with less limitation because of pain (Yum et al., 2017).

The result on the bases o of pain and to improve the quality of life in menstrual pain in youthful college going females. It has showed that the group I, it has shown a significant improvement in the quality of life (MQ-LES-Q-SF), SF-36, and declination of the primary dysmenhorric pain. This shortcoming of this investigation was connected just for unmarried ladies in their twenties so it's hard to advance the discoveries of this investigation to females in other age gatherings like in elderly females before post-menopausal females. Moreover, there were small sample size was taken for the study as female were shy for the aromatherapy massage, the abdominal massage during the menstrual pain was not accepted by the students during menstrual pain, it could be because of their psychological misconception for the intervention. Also, the measurement pre and posttest were taken only for the single menstrual cycle. Hence, this study needs further more investigation and time. In future, long period of application of CT and aromatherapy massage could be applied for 2 or more consecutive menstrual cycle. There is no sufficient evidence based data combining the cure tape and aromatherapy massage taken together for improving the pain and quality of life (MQ-LES-Q-SF), however, based on this research study further investigation could be done to have large sample data.

Application of cure tape together with aroma massage as adjunct therapy to treat menstrual pain symptoms and thereby improving the quality of life, reducing the hindrance of day to day life which was caused due to severe pain during menses.

CONCLUSION

The young college going females suffering with primary dysmenhorric pain which hinders their day to day activities. Our studies shows that cure taping along with the aromatherapy massage when applied during primary dysmenhorrea using lavender essential oil, is an effective alternative therapy in reducing the pain as well enhancing the quality of life. This treatment could be used as conservative treatments as well as non-drug therapy amongst the young generation.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

Both the authors Mowad and Verma had together done the research designed according to the feasibility of the subjects. Add contribution of each author (with abbreviated name) here. Mowad had contributed in the theoretical framework, data analysis, writing up the manuscripts. Verma, on the other hand did intervention, collecting data and writing manuscript. All authors read and approved the final version.

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