JOURNAL OF COMPLEMENTARY NURSING
http://journals.sagamediaindo.org/index.php/JCN

Giving Warm Compresses with Progressive Muscle Relaxation Techniques Can Reduce Pain Intensity in Dysmenorrhea

Yuliana Agustin[1], Rina Afrina[2], Nining Rukiah[3]
Nursing Study Program, Indonesia Maju University
Jl. Lenteng Agung Jakarta Selatan
Email Corespondent : katanyayuliana@gmail.com[1]

Research Article
Volume: 01
Issues: 03
Years: 2022

Editor: HF

Received: 11/04/2022

Reviewed: 31/08/2022

Published: 01/10/2022

Available Article : (doi)
10.53801/jcn.v1i3.51

Abstract

Background: Dysmenorrhea is a menstrual disorder in the form of severe pain or tenderness in the lower abdomen caused by the activity of prostaglandins, during menstruation the damaged uterine lining is expelled by new compounds called prostaglandins. Intervention in adolescent girls who experience dysmenorrhea can be done by non-pharmacological techniques, namely by warm compresses and progressive muscle relaxation.
Objectives: To determine the effectiveness of giving compressed warm with progressive muscle relaxation techniques to intense pain in dysmenorrhea.
Methods: This study used a quasi-experimental with a pre-posttest approach, and a non-equivalent control group design. The research instrument used on the compress variable warm with progressive muscle relaxation techniques, namely SOP (Standard Operational Procedure) and pain intensity variable, namely using the NRS (Numeric Rating Scale). The population in this study found 95 female students, the samples were taken using purposive sampling, and samples in research this group collects 54 female students who are calculated using the formula slovin and drop out a formula.
Results: Based on the results of statistical tests, namely the Mann Withney. Test obtained p-value 0.187>0.05.
Conclusion: In this study, there were no significant differences between the warm compress intervention and the technique of progressive muscle relaxation or both have an effect on a decrease in pain intensity in the incidences of dysmenorrhea.

Keywords: dysmenorrhea, pain intensity, progressive muscle relaxation techniques, warm compresses

Introduction

Adolescence is a period of transition from childhood to adulthood. Teenage life is a very sure life for their next future life. Adolescents also have very complex cases along with the transition period experienced by adolescents. One of them is an unhealthy lifestyle.[1] Adolescence is a time when a person faces changes in cognitive (knowledge), emotional (feeling), social (interaction) and moral (moral) aspects.[2]

Menstruation is periodic bleeding from the uterus that begins about 14 days after ovulation periodically due to the shedding of the endometrial lining of the uterus. This condition occurs because there is no fertilization of the egg by sperm so the thickened lining of

the uterine wall (endometrium) in preparation for pregnancy is shed. If a woman is not pregnant, her menstrual cycle will occur every month. Generally, a normal woman's menstrual cycle is 28-35 days and the length of menstruation is between 3-7 days. The menstrual cycle in women is said to be abnormal if the menstrual cycle is less than 21 days or more than 40 days.[3]

According to data from the World Health Organization (WHO) in 2018 that the incidence of dysmenorrhea in the world is very large. On average, more than 50% of women in every country experience dysmenorrhea, such as in America the presentation rate is around 60%, in Sweden it is around 72% and in England, it is stated that 10% of high school adolescents appear to be absent 1-3 days each month because of dysmenorrhea. The highest prevalence of dysmenorrhea is often found in adolescent girls, which is estimated to be between 20-90%. In Indonesia, the incidence of dysmenorrhea occurs in adolescents with a prevalence ranging from 43% to 93%, of which about 74-80% of adolescents experience mild dysmenorrhea, while the incidence of endometriosis in adolescents with pelvic pain is estimated at 25-38%, while in adolescents who do not provide a positive response to treatment for menstrual pain, endometriosis was found in 67% of cases. The disorder occurs in 60-70% of women in Indonesia with 15% of them complaining that their activities are limited due to dysmenorrhea.[4]

Dysmenorrhea is a menstrual disorder in the form of pain or severe pain in the lower abdomen caused by the activity of prostaglandins, where during menstruation the damaged uterine lining is removed and replaced by new compounds called prostaglandins. This prostaglandin compound causes the uterine muscles to contract. When the uterine muscles contract, the blood supply to the endometrium is narrowed (vasoconstriction). Generally, uterine muscle contractions are not felt, but the contractions are severe and often cause blood flow to the uterus to be disrupted, causing pain.[5] Dysmenorrhea is classified into 2 parts, namely primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is caused by very intense uterine muscle contractions, which are meant to shed the lining of the uterus that is no longer needed. Primary dysmenorrhea is caused by natural chemicals produced by the cells lining the lining of the uterus called prostaglandins. Prostaglandins will stimulate the smooth muscles of the uterine wall to contract. The higher the levels of prostaglandins, the stronger the contractions, so the pain you feel is also getting stronger.[6]

Acute pain is a sensory or emotional experience associated with actual or functional tissue damage, of sudden or late onset and of mild to severe intensity lasting less than 3 months.[6] Measuring the pain scale using the Numeric Rating Scale (NRS) pain scale. The NRS pain scale is a pain scale that is used to assess the level of pain felt, which can determine how it feels. The NRS pain scale consists of 1 straight horizontal line indicating the numbers 0-10. A scale of 0 means no pain, 1-3 means mild pain (felt cramping in the lower abdomen, can still be held, can still move, can still concentrate on studying), 4-6 means moderate pain (felt cramping in the lower abdomen, pain radiates to the lower abdomen). waist, lack of appetite, activity can be disturbed, difficulty concentrating on studying), 7-9 means severe pain (severe cramping in the lower abdomen, pain radiating to the waist, thighs, or back, no appetite, nausea, weakness, no strong in activities, unable to concentrate on studying) and 10 means the most severe pain (feeling very heavy cramps in the lower abdomen, pain spreading to the waist, legs and back, not wanting to eat, nausea, vomiting, headache, the body no energy, unable to stand or get out of bed, unable to move, sometimes to the point of fainting).[8]

Nursing interventions in adolescent girls who experience dysmenorrhea can be done with pharmacological and non-pharmacological techniques. Pharmacological techniques are techniques that use chemical therapy or therapy that uses drugs such as analgesics to reduce pain. While non-pharmacological techniques are one of the independent nursing interventions

to reduce pain. Some examples of non-pharmacological therapies are warm compresses, massage, yoga, hypnotherapy, and progressive muscle relaxation techniques.[9]

Warm compresses are one of the non-pharmacological methods that are considered very effective in reducing pain or muscle spasms. Heat can be transferred by conduction, convection, and conversion. Therefore, an increase in temperature transmitted through a warm compress can relieve pain by removing inflammatory products such as bradykinin, histamine, and prostaglandins that cause local pain.[9] Dysmenorrhea can be reduced by providing non-pharmacological therapy in the form of warm compresses with a temperature of 40^{o}C and compressing time for 15-20 minutes on the lower abdomen that feels pain.[11]

Progressive muscle relaxation therapy is a therapy that combines deep breathing exercises and a series of specific muscle contractions and relaxations. The technique focuses on muscle activity by identifying tense muscles and then reducing tension by relaxing to get a relaxed feeling.[12] Progressive muscle relaxation techniques are performed for 15 to 30 minutes and may be accompanied by instructions recorded in the brain that direct the individual to pay attention to the sequence of muscles being relaxed.[13]

The purpose of this study was to determine the effectiveness of giving warm compresses with progressive muscle relaxation techniques to the intensity of pain in the incidence of dysmenorrhea.

Method

This research uses qualitative research by using the Quasy-Experiment is an that has treatment, impact measurements, and experimental units but does not use random placement.[13] This study used a Pre-test-Post-test, Non-Equivalent Control Group Design approach. This design is almost the same as the pre/post-test control group design, only in this design the experimental group and control group are not chosen randomly.[15]

The research instrument used in the variable warm compress and progressive muscle relaxation technique is SOP (Standard Operating Procedure) and the variable pain intensity is used NRS (Numeric Rating Scale). Variables analyzed univariately include giving warm compresses and progressive muscle relaxation techniques on pain intensity in the incidence of dysmenorrhea in female students. The characteristics of the respondents that will be discussed are age, menarche, and BMI (Body Mass Index). Whereas in the bivariate analysis, normality and statistical tests were carried out, the normality test in this study was carried out using the Kolmogorov-Smirnov because the number of samples was more than 50 and the statistical test used was a the Mann-Whitney test. After all, the results of the normality test were not normal.

The population in this study amounted to 95 female students, the sample was taken using purposive sampling and the sample in this study amounted to 54 female students who were calculated using the slovin formula and the drop-out formula. The research place used by researchers is the Advanced Indonesian College of Health Sciences. This research was conducted from September 2021 to January 2022.

Results

Univariate Analysis

Table 1. Characteristics of Respondents (Age, Menarche, BMI)

Characteristics	Information	Frequency (n)	Percentage (%)
Age	19 years old	3	5.6
	20 years	35	64.8
	21 years	16	29.6

	Total	**54**	**100**
Menarche	12 years old	17	31.5
	13 years old	20	37.0
	14 years	16	29.6
	15 years	1	1.9
	Total	**54**	**100**
BMI	Underweight	8	14.8
	Normal	30	55.6
	Overweight	16	29.6
	Total	**54**	**100**

Table 1 above shows the characteristics of respondents based on the age of the respondents, most of them are 20 years old, as many as 35 people (64.8%). Based on menarche, most of the respondents were 13 years old, as many as 20 people (37.0%). Based on the Body Mass Index (BMI), most of the respondents were normal, as many as 30 people (55.6%).

Table 2. Effect of Warm Compress on Pain Intensity on Dysmenorrhea Incidence

Intervention	Mean	SD	N	Sig P Value
Warm Compress Pretest	5.58	1.397	27	0.000
Warm Compress Posttest	2.74	0.984		
Progressive Muscle Relaxation Pretest	5.56	1,121		
Progressive Muscle Relaxation Posttest	3.22	1.251		

Table 2 above shows that there is an effect of giving warm compresses on the intensity of pain in the incidence of dysmenorrhea. The results of statistical tests obtained a p-value of 0.000 < 0.05 and showed that there was an effect of giving progressive muscle relaxation techniques to pain intensity in the incidence of dysmenorrhea. Statistical test results obtained p-value 0.000 < 0.05 .

Bivariate Analysis

Table 3. The Effectiveness of Giving Warm Compresses with Progressive Muscle Relaxation Techniques Against Pain Intensity in the Incidence of Dysmenorrhea

Group	Mean	SD	Sign p -value	N
Warm Compress (Control)	2.54	1.041	0.187	54
Progressive Muscle Relaxation Technique (Intervention)				

Table 3 above shows that the average value of dysmenorrhea pain before and after being given warm compresses with progressive muscle relaxation is 2.54 with SD = 1.041. Based on the results of statistical tests, namely the Mann-Withney test, p-value = 0.187 > 0.05, which means that there is no significant difference between the warm compress intervention and progressive muscle relaxation techniques in reducing pain intensity in the incidence of dysmenorrhea.

Discussion

Characteristics of Respondents (Age, Menarche, BMI)

Based on table 1, the results of the research on age characteristics, respondents aged 19 years were 3 people (5.6%), respondents aged 20 years were 35 people (64.8%), and respondents aged 21 years were 16 people (29.6%).

The results of this study are in line with the research conducted by Ghina Tsamara et al

(2020) under the title of the relationship between lifestyle and the incidence of primary dysmenorrhea in students of the medical education study program at the Tanjungpura University medical faculty. In this study, students who experienced dysmenorrhea were mostly female students aged 20 years as many as 30 people (62.5%), aged 18 years as many as 1 person (2.1%), aged 19 years as many as 11 people (22.9%), as many as 21 years old (10.4%), and 1 person aged 22 years (2.1%).[16]

According to Lowdermilk (2013), young adult women aged 17-25 years most often experience pain during menstruation, known as dysmenorrhea. Lowdermilk added that at that age, dysmenorrhea will often occur. The menstrual cycle at this young age has irregular menstrual periods, so this will increase the incidence of dysmenorrhea.[11]

Researchers assume in this study that at the age of 19-21 years, the average respondent experiences dysmenorrhea during menstruation, this is due to irregular menstrual periods and increased blood volume or the amount of blood during menstruation on the first or second day. The results of the research on the characteristics of menarche, respondents who experienced menarche at the age of 12 years were 17 people (31.5%), respondents who experienced menarche at the age of 13 years were 20 people (37.0%), respondents who experienced menarche at the age of 14 years as many as 16 people (29.6%), respondents who experienced menarche at the age of 15 years were 1 person (1.9%).

The results of this study are in line with research conducted by Aulia Justia (2018) with the title the relationship between body mass index and the incidence of primary dysmenorrhea in adolescent girls in MAN Palangkaraya. In this study, most of the young women who experienced dysmenorrhea experienced menarche, namely in the age range of 12-13 years as many as 45 people (64.3%), in the age range <11 years as many as 12 people (17.1%), and those who aged >14 years as many as 13 people (18.6%).[17]

According to WHO data, most of the first menarche occurred at the age of 12 years, while the respondents in this study on average occurred at the age of 13 years. So at the age of 13 years, there was a decline in his menarche. Therefore, the respondents experienced dysmenorrhea on average.[4] Researchers assume that in this study most of the first menarche occurred at the age of 13 years. In this case, respondents experienced a delay or decline in menarche, because the first time menarche should occur at the age of 10-12 years.

The results of the research on the characteristics of Body Mass Index (BMI), respondents with an underweight BMI were 8 people (14.8%), respondents with normal BMI were 30 people (55.6%), and respondents with overweight BMI were 16 people (29, 6%).

The results of this study are in line with research conducted by Ulya Rohima Ammar (2016) with the title risk factors for primary dysmenorrhea in women of childbearing age in Ploso village, Tambaksari district, Surabaya. The results of the study were based on the age of respondents who experienced dysmenorrhea, most of the respondents with normal BMI were 26 people (45.6%), respondents with overweight BMI were 12 people (21%), while respondents with underweight BMI were 7 people (12,3%).[18] According to Paath (2004), a nutritional status that is lacking or limited will not only affect the growth and function of body organs but will also disrupt reproductive function. Adolescent women need to maintain good nutritional status, by consuming a balanced diet because it is needed during menstruation.[19]

Researchers assume that those who experience dysmenorrhea should be respondents with a body mass index (BMI) underweight or overweight. However, in this study respondents with a normal body mass index (BMI) experienced dysmenorrhea because several nutrients or nutrients were not fulfilled such as protein, calcium, minerals, vitamins, B6, B12, and iron. This substance is needed for the menstrual process because if it is not fulfilled it will have an

impact on menstrual disorders if the intake of nutrients is not good or bad.

The Effectiveness of Giving Warm Compresses with Progressive Muscle Relaxation on Pain Intensity in the Incidence of Dysmenorrhea

Based on table 3 above, shows that the average value of dysmenorrhea pain before and after being given warm compresses with progressive muscle relaxation is 2.54 with SD = 1.041. Based on the results of statistical tests, namely the Mann-Withney test, p-value = 0.187 >= 0.05, which means that there is no significant difference between the warm compress intervention and progressive muscle relaxation techniques in reducing pain intensity in the incidence of dysmenorrhea.

This is in line with a study conducted by Lia Natalia (2018) under the title the effect of warm compresses on the intensity of menstrual pain (dysmenorrhea) in class X students at SMK YPIB Majalengka, Majalengka Regency in 2018 obtained before the intervention was less than half (29.4%) students experienced severe pain intensity, while after intervention more than half (52.9%) of Class X SMK YPIB Majalengka, Majalengka Regency in 2018 experienced moderate pain intensity. The average intensity of menstrual pain before the intervention was 56.47 with a standard deviation of 16.934, while the average intensity of menstrual pain after the intervention was 33.52 with a standard deviation of 13.200 and the magnitude of the decrease in pain intensity before and after the intervention was 22.95 with a p-value of 0.00001.[20]

This is in line with the research conducted by Chandra Sulistyorini et al (2019) under the title the effectiveness of progressive muscle relaxation on reducing the intensity of dysmenorrhea pain in adolescent girls that the results of the pain intensity value before the progressive muscle relaxation technique intervention was 5.00 and the pain intensity value after the intervention was 3.00 with p-value <0.05, which means that there is a significant difference in pain intensity between the pre-test and post-test values with 0.000 (<0.05).[21] Bobak (2005) warm compresses serve to overcome or reduce pain, where heat can relieve ischemia by reducing uterine contractions and smoothing blood vessels so that it can relieve pain with the duration of the compression, of course, it can further reduce tension and increase feelings of well-being, increase menstrual flow, and relieves pelvic vasocongestion.[22] Benson & Proctor (2005) progressive muscle relaxation techniques can reduce muscle spasm/tension causing vasodilation of blood vessels in the abdomen so that circulation in the blood becomes smooth, prevents ischemia, and prevents the production of chemicals that will stimulate pain.[23]

During menstruation, there will be vasodilation of blood vessels in the endometrium, therefore the area around the endometrium will be ischemic. The shedding of the functional layer of the endometrium is stimulated by prostaglandins. The more menstrual blood that comes out and the lining of the uterus is shed, the more prostaglandins will be produced. This will result in the central nervous system, namely the A-beta fibers and the C nerves, which will cause vasoconstriction in the blood vessels. The more menstrual blood that comes out and the lining of the uterus is shed, the more prostaglandins will be produced. This will result in the central nervous system, namely the A-beta fibers and the C nerves, which will cause vasoconstriction in the blood vessels.[3]

The researcher assumed that in this study when female students experienced menstruation, most of the female students said the intensity of pain increased on the first and second days. This is due to increased prostaglandins. Giving a warm compress will cause the constricted blood vessels to turn into vasodilation, so that blood flow will flow smoothly to the lower leg abdomen and waist to the lower extremities. This can be seen from the respondents after giving warm compresses to the painful parts such as the abdomen, the waist will decrease

with the category of mild pain on a scale of 1-3 and respondents said after the intervention the symptoms felt such as abdominal cramps, dizziness, low back pain, back pain, weakness, and some other symptoms are felt to be reduced. Muscle relaxation techniques Progressive will result in muscles that experience spasm/tension due to vasoconstriction of blood vessels will turn into vasodilation. This can be seen from the respondents after the progressive muscle relaxation technique was carried out, respondents said the pain felt during dysmenorrhea was reduced with a mild pain category on a scale of 1-3 and respondents said after progressive muscle cramps the symptoms of abdominal cramps and muscle tension decreased. In this study, warm compresses and progressive muscle relaxation were both equally influential or effective.

Conclusion

Adolescent girls often experience dysmenorrhea with mild, moderate, and severe pain scales. One of the ways to treat dysmenorrhea pain is by giving warm compresses and progressive muscle relaxation techniques. After doing warm compresses and progressive muscle relaxation, the intensity of pain in the incidence of dysmenorrhea can decrease or decrease. Thus, the intervention of warm compresses and progressive muscle relaxation techniques is very influential in reducing the intensity of pain in the incidence of dysmenorrhea.

References

1. Kusmiran E. Kesehatan Reproduksi Remaja dan Wanita. Jakarta: Salemba Medika; 2014.
2. Kusmiran E. Kesehatan Reproduksi Remaja dan Wanita. Jakarta: Salemba Medika; 2012.
3. Sinaga E, Suprihatin S, Sribanon N. Manajemen Kesehatan Menstruasi. Universitas Nasional; 2017.
4. Organization WH. WHO recommendations on adolescent sexual and reproductive health and rights. 2018;
5. Anurogo D, Wulandari A. Cara Jitu Mengatasi Nyeri Haid. Yogyakarta: CV. Andi Offset; 2011.
6. Andira D. Seluk-beluk Kesehatan Reproduksi Wanita. A-Plus Books; 2013.
7. PPNI. Standar Diagnosis Keperawatan Indonesia: Definisi dan Kriteria Hasil. Jakarta: DPP PPNI; 2019.
8. Ningsih R, Setyowati, Rahmah H. Efektivitas Paket Pereda Nyeri Pada Remaja Dengan Dismenore. 2013;16(2):67–76.
9. Muttaqin. Asuhan Keperawatan Gangguan Sistem Integumen. Salemba Medika; 2013.
10. Price SA, Wilson LM. Buku Ajar Patofisiologi: Konsep Klinis Proses-Proses Penyakit. EGC; 2014.
11. Lowdermilk DL, Perry SE, Cashion K. Keperawatan Maternitas. Jakarta: Salemba Medika; 2013.
12. Bambang S. Kegawatdaruratan Penyakit Dalam (Emergency In Internal Medicine). Jakarta: EGC; 2011.
13. Johnson R, W T. Buku Ajar Praktik Kebidanan. Jakarta: EGC; 2005.
14. Sugiyono. Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta; 2014.
15. Sugiyono. Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D. Bandung: Alfabeta; 2013.
16. Tsamara G, Raharjo W, Putri EA. Hubungan Gaya Hidup dengan Kejadian Dismenore Primer pada Mahasiswi Program Studi Pendidikan Dokter Fakultas Kedokteran Universitas Tanjungpura. J Nas Ilmu Kesehat. 2020;2(3):130–40.
17. Justia A. Hubungan Indeks Massa Tubuh Dengan Kejadian Dismenore Primer Pada Remaja Putri di MAN Kota Palangka Raya. Hub Indeks Massa Tubuh dengan kejadian dismenore Prim pada remaja putri. 2018;1(2):123–9.
18. Ammar UR. Faktor Risiko Dismenore Primer pada Wanita Usia Subur di Kelurahan Ploso Kecamatan Tambaksari Surabaya. J Berk Epidemiol. 2016;4(1):37–49.
19. Paath EF. Gizi Dalam Kesehatan Reproduksi. 1st ed. Jakarta: EGC; 2005.
20. Natalia L. Pengaruh Kompres Hangat Terhadap Intensitas Nyeri Menstruasi (Dysmenorrhea) Pada Siswi Kelas X Di SMK YPIB Majalengka Kabupaten Majalengka Tahun 2018 Oleh : Lia Natalia (STIKes YPIB Majalengka). 2018;VII(14):27–37.
21. Sulistyorini C, Mukaromah S, Pongsibidang FT. Efektivitas Relaksasi Otot Progresif Terhadap Penurunan Intensitas Nyeri Dismenore Pada Remaja Putri. 2019;4(1):10–5.
22. Bobak. Obstresi William. 1st ed. Jakarta: EGC; 2005.
23. Benson RC, Martin. Buku Saku Obstresi & Ginekologi. Makassar: EGC; 2008.