The Effectiveness of Abdominal Stretching Exercises and Dysmenorrhea Gymnastics Against Dysmenorrhea Pain Intensity in Adolescent Girls

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Open Access Health Scientific Journal
https://[illegible]
Vol. 2 No. 2 August 2021, pp. 34-41
Research article

The Effectiveness of Abdominal Stretching Exercises and Dysmenorrhea Gymnastics Against Dysmenorrhea Pain Intensity in Adolescent Girls: Literature Review

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ARTICLE INFO

Keywords:
Abdominal Stretching, Dysmenorrhea, Dysmenorrhea Gymnastics.

ABSTRACT

Background: Abdominal pain during menstruation (dysmenorrhea) that is felt by every woman is different, some are slightly disturbed but some are so disturbed that they cannot carry out daily activities and make them have to rest and even have to be absent from school or work. This study aimed to explore the differences between abdominal stretching exercises and dysmenorrhea exercises to reduce dysmenorrhea in adolescent girls. **Method:** the researcher used a literature review design. This literature study uses two databases (Proquest & Google Scholar) with the majority of the research design using quasi-experimental, randomized control, case-control, cross-sectional, qualitative studies, literature/systematic reviews. Picos is used to select studies which include journals of the last ten years and in both English and Indonesian languages, titles, and abstracts. With a total of 11 journals identified. **Results:** Abdominal stretching exercises can be done anywhere and anytime so it is not difficult for teenagers who want to do the exercises. **Conclusion:** This exercise is also very suitable to be applied to teenagers who have a high desire for motion, where this exercise if done regularly can also burn calories which can help shape the body.

I. Introduction

Adolescence is a period of transition from puberty to adulthood or a process of growing towards maturity which includes mental, emotional, social and physical maturity. Puberty is one of the stages of development marked by the maturity of sexual organs and the achievement of the ability to reproduce, where one of the hallmarks of a woman's puberty is the occurrence of the first menstruation (menarche). Menstruation or menstruation is periodic vaginal bleeding due to the detachment of the uterine endometrial lining (Janiwarty and Pieter, 2013).

In general, women feel complaints in the form of abdominal pain or cramps before menstruation which can last up to 2-3 days, starting the day before the start of menstruation. Abdominal pain during menstruation (dysmenorrhea) that is felt by every woman is different, some are slightly disturbed but some are so disturbed that they cannot carry out daily activities and make them have to rest and even have to be absent from school or work. Dysmenorrhea is defined as cyclic uterine pain that occurs before or during menstruation (Andriyani, 2013).

Received 2 June 2021; Accepted [illegible] 2021; Published 1 August 2021
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DOI: https://doi.org/[illegible]

Based on WHO criteria, adolescents' age ranges from 10-19 years. The incidence of menstrual pain in the world is quite large, on average more than 50% of women in every country experience menstrual pain. In America the percentage is around 60%, in Sweden it is around 72%, while in Indonesia it is 55% (Proverawati and Misaroh, 2009). Based on research conducted by Wong and Khoo in Malaysia, it was found that 74.5% of girls who had reached menarche experienced dysmenorrhea. Meanwhile, according to a study conducted by Kumbhar et al in India from 183 adolescents aged 14-19 years, it was found that 119 or 65% of adolescents experienced dysmenorrhea.

For some adolescents, primary dysmenorrhea is a torment that must be experienced every month, so that adolescents must be able to find the right solution to overcome it. There are many ways to relieve menstrual pain, both pharmacologically and non-pharmacologically. Non-pharmacological management is safer to use because it does not cause side effects such as drugs (Ningsih, 2011). Non-pharmacological according to Lusa (2010) include things that can be done such as warm compresses or warm baths, massage, physical exercise (exercise), adequate sleep, hypnotherapy, distractions such as listening to music and relaxation such as yoga or gymnastics dysmenorrhea and deep breathing.

According to Thermacare (2010) there are physical exercises that can be used to reduce menstrual pain (dysmenorrhea) during menstruation, namely by doing abdominal stretching exercises which are physical exercises that stretch the abdominal muscles for approximately 10-15 minutes to increase muscle strength, endurance and strength, muscle flexibility so that it is expected to reduce dysmenorrhea pain that occurs in adolescents.

Light sports exercises are also highly recommended to reduce dysmenorrhea, such as dysmenorrhea gymnastics. Sports or gymnastics is one of the relaxation techniques that can be used to reduce pain. This is because when doing sports or gymnastics the body will produce endorphins. Endorphins are produced in the brain and spinal cord. This hormone can function as a natural sedative produced by the brain, causing a sense of comfort. Marlinda, R, et al (2012) that dysmenorrhea exercise is effective for reducing the intensity of menstrual pain (dysmenorrhea). This research was conducted by providing treatment with abdominal stretching exercises and dysmenorrhea gymnastics to see a decrease in menstrual pain (dysmenorrhea) in respondents.

From the description above and considering the frequent occurrence of dysmenorrhea problems in adolescents that can interfere with teaching and learning activities, the authors are interested in researching the differences between abdominal stretching exercises and dysmenorrhea gymnastics to reduce menstrual pain (dysmenorrhea) in adolescent girls.

II. METHODS

In this study, the researcher used a literature review design. Literature review is to provide a framework related to new findings and previous findings in order to identify indications of whether or not there is progress from the results of a study through comprehensive research and interpretation of the results of the literature related to a particular topic which identifies research questions by searching and analyzing relevant literature, using a systematic approach (Randolph, 2009). The method used in the literature review is through a systematic approach to analyze the data in a simplified approach. The articles used are focused on original empirical research articles or research articles that contain the results of actual observations or experiments where there are abstracts, introductions, methods, results, and discussions.

Based on the results of a literature search through Google Scholar & ProQuest publications using the keywords dysmenorrhea and adolescent girls and abdominal stretching and gymnastics dysmenorrhea (dysmenorrhea and young women and abdominal stretching and gymnastics dysmenorrhea), the researchers found 110 journals that matched these keywords. A total of 31 journals were excluded because they were published in 2010 and below. After that a total of 43 journals were excluded because they were not full text, paid journals, multiple journals, using other than Indonesian and English languages. The feasibility assessment of 36 journals, duplicated journals and journals that did not meet the inclusion criteria were excluded, so that 11 journals were reviewed where the journals

after inclusion and exclusion selection were the most appropriate journals to answer the research objectives.

III. RESULTS

This literature review was synthesized using a narrative method by grouping similar extracted data according to the results measured to answer the objectives. Research journals that match the inclusion criteria are then collected and a journal summary is made including the name of the researcher, year of publication, title, research methods and results as well as the database.

According to research conducted by Ryu et al (2017), the comparison of the three groups before and after the intervention showed significant differences in VAS and MDQ scores. The post-intervention reduction in VAS scores of the stretching group was more significant than that of the control group. Comparison of hip alignment before and after intervention in each group showed that sling exercise significantly reduced sagittal imbalance, coronal imbalance, hip inclination, and hip torsion. In addition, stretching significantly reduces sagittal imbalance, coronal imbalance, hip inclination, pelvic torsion, and hip oblique. The control group, however, showed no reduction in any of the variables, except for coronal imbalance. In the stretching group, in particular, the post-intervention hip tilt was significantly lower than in the control group.

Based on the results of research conducted by Setyawati (2018), the results of the study using the Wilcoxon test obtained a significant value of 000 ($p < 0.05$), meaning that there was a significant effect of abdominal stretching on the effectiveness of primary dysmenorrheal pain reduction. Abdominal stretching exercises are recommended for use by adolescents and as part of a midwifery intervention to treat dysmenorrhea.

According to Mey (2018), the age of menarche ranges from 11 years to 14 years. Based on the Wilcoxon statistical test, it was found that there was a significant difference between the pain intensity of the intervention group and the control group after the intervention group performed abdominal stretching exercises and classical music in reducing the dysmenorrhea pain scale, the results were $p = 0.001$, where the p value < 0.05

Meanwhile, according to Amalia (2018), the results showed that before the abdominal stretching exercise most of them experienced moderate pain as many as 10 female students (66.7%), after being given the treatment there were no pain as many as 9 female students (60%) and obtained a p value of 0.000 (

Another study Faridah (2017) The results of the study showed that the average menstrual pain before and after abdominal stretching exercise was 4.88 and 2.69. In addition, the results of this study indicate that there is an effect of abdominal stretching exercise on decreasing the intensity of menstrual pain with p value = 0.000

According to Farir's research (2017), the average level of menstrual pain (dysmenorrhea) in adolescent girls before abdominal stretching exercises is 4.58 and after doing abdominal stretching exercises it decreases to 1.46. There is a decrease in the average level of menstrual pain (dysmenorrhea) after doing abdominal stretching exercises with a minimum pain level of 0 and a maximum of 2. There is an Effect of Abdominal Stretching Exercises on Menstrual Pain Levels for Teenage Girls at SMAN 3 Brebes as evidenced by the results of the Wilcoxon test with a value of $p = 0.000$.

According to research conducted by Mima (2018), the results of the Wilcoxon sing rank test for group I $p = 0.004$ ($p < 0.005$) and group II $p = 0.003$ ($p < 0.005$), this shows that both treatments have an effect on decreasing menstrual pain. The results of the different test of hypothesis III with Mann-Whitney showed p-value $p = 0.260$ ($p < 0.005$).

Based on research conducted by Noor (2017), the results of the Pearson correlation test on the pretest and posttest pain scales for the intervention group-pain scale are 0.823**, so there is a significant relationship because the Pearson correlation value is close to 1 and the sign value (2 tailed) is 0.000, so there is a also significant relationship because the value of the sign (2 tailed) < 0.05. This means that there is a significant difference in the level of dysmenorrhea pain before and after the Abdominal

Stretching Exercise is given, so it can be concluded that there is an effect of Abdominal Stretching Exercise on the reduction of menstrual pain in MA Hasyim Asyari Bangsri Jepara.

Meanwhile, according to Intan (2014) The results of this study indicate that the results of statistical tests using Paired T-Test, Abdominal stretching exercise test in group 1 with p value = 0.001 and deep breath relaxation in group 2 with p value = 0.003. Meanwhile, by using the Independent T-Test between abdominal stretching exercise and deep breathing relaxation there was no significant difference with a p value of 1,000 (p > ; = 0.05).

Annisa (2018) The results show that the age of most respondents is 16 years old (52.9%) and the most menarche is 12 years old (38.2%). Giving abdominal stretching exercises to the experimental group can reduce the intensity of dysmenorrhea where the results of the Paired Sample T test show significance with p value (0.000) < (0.05). In the control group, there was an increase in the intensity of dysmenorrhea where the Wilcoxon test results showed no significance with p value (0.025) < (0.05).

And also according to research in May (2017). The results obtained are dysmenorrhoea exercise can reduce menstrual pain with a mean value of 4,006. Conclusion: dysmenorrhoea exercise can reduce the level of menstrual pain and is better done in the afternoon.

DISCUSSION

The Effect of Abdominal Stretching Exercises on Decreasing Dysmenorrhea in Adolescent Girls

Adolescents who experience menstrual pain (dysmenorrhea) are caused by uterine muscle spasms that can begin 24 hours before menstrual bleeding occurs and can last for 24-36 hours, generally lasting the first 24 hours when menstrual bleeding occurs (Hendrik, 2006). Dysmenorrhea is a normal condition, especially in women who are menstruating, but menstrual pain can appear excessive because it is influenced by several factors such as physical, psychological such as stress and high prostaglandin hormones. The excessively secreted prostaglandin hormone will diffuse into the endometrial tissue which will increase the amplitude and frequency of uterine contractions, resulting in uterine ischemia and hypoxia in uterine tissue, and endometrial disintegration, bleeding and lower abdominal cramps that stimulate pain during menstruation (Morgan & Hamilton, 2009).).

Research by Ernawati., Hartiti, Hadi (2010) regarding relaxation therapy for dysmenorrhea pain in UNIMUS students shows that the level of dysmenorrhea pain before relaxation is 62% of respondents experiencing moderate pain, and 20% experiencing severe pain. This is related to the release of prostaglandins which are influenced by the hormone progesterone, causing uterine hyperactivity. Prostaglandins also cause myometrial hypertonus and vasoconstriction, causing pain.

Salbilah's research (2016) on abdominal stretching on reducing the level of menstrual pain (dysmenorrhea) in AKPER Tjoet Nyai Dhien Banda Aceh female students showed that students who experienced menstrual pain (dysmenorrhea) before the intervention were mostly at moderate pain levels, with a total of 37 respondents (66.1%) the results showed that the average pain level before the intervention was at a moderate pain level.

One of the exercises to reduce the intensity of menstrual pain is to do abdominal stretching exercises. Abdominal stretching exercise performed during dysmenorrhea to increase muscle strength, endurance, and muscle flexibility, reduce muscle pain and muscle tension so as to reduce the intensity of menstrual pain (dysmenorrhea). The purpose of muscle stretching exercises is to help increase oxygenation (the process of exchanging oxygen and carbohydrates in cells) and stimulate lymph drainage flow, so that it can increase muscle flexibility and can maintain its function properly and improve the elasticity and flexibility of body tissues thereby reducing muscle cramps. Ningsih, 2011).

Ningsih's research (2011) on adolescent girls at SMAN Cungp District found that the group of adolescents with pain relief packages could reduce the intensity of menstrual pain compared to the control group after being controlled by anxiety and fatigue. In other words, the relief package consisting of drinking water therapy and abdominal stretching was proven to be effective in reducing pain intensity in adolescents with dysmenorrhea.

According to researchers Abdominal stretching is an exercise that is oriented to stretching the abdominal and pelvic muscles so that the muscles around the abdomen become relaxed due to stretching and smooth blood going to the uterus so that it can reduce the intensity of dysmenorrhea pain. Abdominal stretching exercises can be done anywhere and anytime so it is not difficult for teenagers who want to do the exercises. This exercise is also very suitable to be applied to teenagers who have a high desire for motion where this exercise if done regularly can also burn calories that can help shape the body. Abdominal stretching therapy can be given with a duration of 3 times a week, 2 times a day in the morning and evening.

The Effect of Dysmenorrhea Gymnastics on the Decrease of Dysmenorrhea in Young Women

Menstruation is periodic and cyclic bleeding from the uterus, accompanied by the release (desquamation) of the endometrium (Proverawati & Misaroh, 2009). Menstruation begins at puberty and a woman's ability to bear children or the reproductive period. Menstruation begins between the ages of 12 – 15 years, depending on various factors such as a woman's health, nutritional status and body weight relative to height. Menstruation lasts until the age of 45-50 years (Progestian, 2010). Menstruation is normal in teenagers. However, there are teenagers who experience problems during menstruation. Various problems that arise during menstruation are gynecological problems that are often complained of by adolescents, such as menstrual irregularities, menargia, dysmenorrhea (menstrual pain) and other related symptoms. Dysmenorrhea experienced by adolescents is related to the occurrence of previous ovulation and there is a relationship with uterine muscle contractions and prostaglandin secretion (Ningsih, Setyowati & Rahmah, 2011).

Dysmenorrhea can have an impact on the activities of women if not treated, especially teenagers. Dysmenorrhea causes activity intolerance, and severe pain can result in absenteeism from work or school. This causes a decrease in work output and attention in class. (Anisa, 2015). For example, a student who experiences dysmenorrhea cannot concentrate on studying and learning motivation will decrease due to the dysmenorrhea that is felt in the teaching and learning process and there are even students who ask permission to go home because they cannot stand the dysmenorrhea that is being experienced (Ciela et al, 2013 in Fauziah, 2015).). It is proven by the research of Woo and McEneaney (2010) that primary dysmenorrhea affects the quality of life by 40-90% of women, where 1 in 13 who experience primary dysmenorrhea does not attend work and school for 1-3 days per month (Ningsih, 2011).

Pharmacological therapy uses drugs to reduce pain, including analgesics (pain relievers), non-steroidal anti-inflammatory drugs (NSAIDs), such as paracetamol or acetaminophyll (sumagesic, panadol, etc.), mefenamic acid (ponstelax, nechostan, etc.), ibuprofen (ribunal, ostarin, etc.), methamizole or metampirone (pyronal, novalgin, etc.) and other pain relievers (Proverawati & misaroh, 2009). Non-pharmacological therapies according to Lusa (2010) include those that can be done such as warm compresses or warm baths, massage, physical exercise (exercise), adequate sleep, hypnotherapy, distractions such as listening to music and relaxation such as yoga and deep breathing. Salbilah (2016) many researchers say exercise (physical exercise) can overcome dysmenorrhea and exercise is safer and does not contain side effects because it uses the body's physiological processes.

Exercise has been proven to increase endorphins 4-5 times in the blood, so the more you exercise, the higher the endorphin levels will be (Harry, 2007). According to Thermacare (2010) there are physical exercises that can be used to reduce menstrual pain (dysmenorrhea) during menstruation, namely by doing abdominal stretching exercises which are physical exercises that stretch the abdominal muscles for approximately 10-15 minutes to increase muscle strength, endurance and strength, muscle flexibility so that it is expected to reduce dysmenorrhea pain that occurs in adolescents. This is supported by research by Daley (2008) in Fauziah (2015) that exercise is effective in reducing dysmenorrhea pain. Marlinda, R, et al (2012) that dysmenorrhea exercise is effective for reducing the intensity of menstrual pain (dysmenorrhea).

According to researchers, dysmenorrhea is menstrual pain, pain begins to arise shortly before or during menstruation which causes pain in the lower abdomen, pain can radiate to the lower back. Prevention can be done by doing gymnastics dysmenorrhea. Dismenor exercise can reduce pain because when doing exercise the brain and spinal cord will produce endorphins, hormones that function as natural sedatives and cause a sense of comfort. So it can be concluded that there is an effect of dysmenorrhea exercise on reducing dysmenorrhea pain in adolescent girls. Adolescent girls who experience dysmenorrhea pain should do dysmenorrhea exercise in order to reduce dysmenorrhea pain. Dysmenorrhea exercise therapy can be given with a duration of 3 days before the menstrual schedule 2 times a day in the morning and evening.

Differences in Abdominal Stretching Exercises and Dysmenorrhea Gymnastics Against Dysmenorrhea Reduction in Young Women

Menstruation is periodic bleeding in the uterus that begins about 14 days after ovulation where the average length of menstrual blood flow is 5 days (3-6 days) which occurs every month. Normal menstrual cycles generally occur in intervals of 21-35 days (average 28 days), and the average blood loss 50-100 cc (Indriyani, 2013). Menstruation comes every month at reproductive age, and at this time almost all women experience physical discomfort such as discomfort in the lower abdomen. This physical discomfort is known as menstrual pain. Menstrual pain can get worse or called dysmenorrhea, so it can interfere with activities and require medication (Sukami & Wahyu, 2013).

Dysmenorrhea occurs due to uncoordinated uterine contractions, this is caused by an increase in the production of prostaglandin that are released into the blood circulation (Mitayani, 2011). Dysmenorrhea is classified into primary dysmenorrhea and secondary dysmenorrhea. It is called primary dysmenorrhea if no underlying cause (idiopathic) is found, while secondary dysmenorrhea if the cause is uterine abnormalities (Nugroho & Utama, 2014).

Physical activity plays a special role in reducing anxiety, mental stress, and biochemical changes in the body's immune system that can reduce dysmenorrhea. Stress is considered a major factor related to physical activity and dysmenorrhea. Dysmenorrhea can be caused by an increase in uterine muscle contractions which are innervated by the sympathetic nervous system. Stress should increase dysmenorrhea by increasing the intensity of uterine contractions. So, based on the fact that exercise can reduce stress, the effect is that sympathetic nerve activity can decrease so that the intensity of dysmenorrhea can also decrease (Anisa, 2015).

This is reinforced by research by Marlinda (2013) which states that light sports exercises such as gymnastics are highly recommended to reduce dysmenorrhea. Gymnastics is one of the relaxation techniques that can be used to reduce pain because when doing exercise, the brain and spinal cord will produce endorphins, hormones that function as natural sedatives and create a sense of comfort.

Ernawati's research (2010) also explains that relaxation technique therapy has an effect on dysmenorrhea in Muhammadiyah Semarang students. Another supporting research is research by Anugraheni (2013) which states that warm compresses have an effect on reducing the intensity of dysmenorrhea in STIKes students at Baptist Hospital Kediri.

The results of research by Nurjannah (2014) explained that there was an effect of low impact aerobic exercise on the reduction of primary dysmenorrhea in Diploma III physiotherapy students at Muhammadiyah University of Surakarta. Exercise is believed to be able to produce endorphins which function as natural pain relievers in dealing with dysmenorrhea in adolescents, because it is useful for relaxation during menstrual pain, flexing uterine muscles, strengthening pelvic muscles, increasing circulation and controlling pain.

Abdominal stretching exercise itself is not much different from gymnastics, which can help increase oxygenation or the process of exchanging oxygen and carbohydrates in cells and stimulate the flow of lymph drainage system, so as to increase muscle flexibility by returning the muscles to their natural length and can maintain function properly and improve the elasticity or flexibility of body tissues

and reduce muscle cramps (Ningsih, 2011). Abdominal stretching exercises can be used as a non-pharmacological therapy to reduce the intensity of dysmenorrhea.

The results of this study are in accordance with Ernawati's (2010) research on relaxation technique therapy which has proven to be effective in reducing dysmenorrhea. Another supporting research is Anggraheni (2013) which states that warm compresses have an effect on reducing the intensity of dysmenorrhea. This shows that giving abdominal stretching exercises as non-pharmacological therapy can reduce pain intensity.

According to the researchers, the provision of physical exercise therapy in the form of abdominal streaking or dysminor exercise was equally effective in reducing pain in the incidence of dysminor in adolescent girls. Where this is caused when doing sports or gymnastics, the body will produce endorphins. Endorphins are produced by the brain and spinal cord. This hormone acts as a natural sedative produced by the brain causing a sense of well-being. So it can be concluded that there is an effect of abdominal stretching on the reduction of menstrual pain in adolescent girls, and there is also an effect of giving dysmenorrhoea exercise to reducing menstrual pain in adolescent girls, there is no difference between giving abdominal stretching and dysmenorrhoea exercise to reducing menstrual pain in adolescent girls.

V. CONCLUSION

Based on the results of a literature study conducted, it can be concluded that there is an effect of abdominal stretching on reducing menstrual pain in adolescent girls, and there is also an effect of giving dysmenorrhoea exercise to reducing menstrual pain in adolescent girls, there is no difference between giving abdominal stretching and dysmenorrhoea exercise on reducing menstrual pain. in teenage girls.

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