

The Effectiveness of Yoga to Treat Premenstrual Syndrome in Young Women in the Archipelago

Kartika Sri Dewi Batubara¹ (corresponding author), Rita Ridayani², Mardiah³

¹Midwifery Department, Poltekkes Kemenkes Tanjungpinang, Indonesia; kartikasridewibatubara@poltekkes-tanjungpinang.ac.id

²Midwifery Department / Center of Excellence on Island Community Health, Poltekkes Kemenkes Tanjungpinang, Indonesia

³Midwifery Department / Center of Excellence on Island Community Health, Poltekkes Kemenkes Tanjungpinang, Indonesia

Submitted: January 18, 2022 -Revised: February 21, 2022 -Accepted: February 28, 2022 -Published: February 28, 2022

ABSTRACT

Menstrual pain (dysmenorrhea) is pain felt before or during menstruation. Dysmenorrhea can be felt as a sensation of pain, cramps, and contractions in the uterus that are more than usual in intensity, frequency, and duration. Dysmenorrhea can occur even without problems in the reproductive organs. If not handled, This can be troublesome for the daily activities of young women. Several non-pharmacological therapies, such as yoga, attempted to overcome menstrual pain complaints in adolescent girls. Aim: Determining the effectiveness of the yoga method on the intensity of menstrual pain (dysmenorrhea) in adolescent girls on Kelong Island, Bintan Regency, in 2022. Method: This quantitative study uses a quasi-experimental one-group pre-test and post-test design for 35 samples. The design of this study used a pre-test before being given treatment; thus the results would be more accurate because it could compare the conditions before and after being given treatment. Data were collected from January to May 2022, then measured using a numerical scale. Data analysis using t-test dependent and independent. Results: Based on the statistical test in yoga treatment, the p-value is 0.000 ($p < 0.05$). It proves a significant relationship exists between yoga practice and decreasing menstrual pain intensity (dysmenorrhea), with an average difference of 2.50 in decreasing pain intensity. Conclusion: Yoga is effective in reducing the intensity of menstrual pain (dysmenorrhea) in adolescent girls.

Keywords: premenstrual syndrome; young women; islands

INTRODUCTION

Adolescence is a phase of dynamic development in the life of a human being. This period is a transition from childhood to adulthood marked by accelerated physical, mental, emotional, and social development. Adolescence is closely related to puberty, an essential part of adolescence. At this time, young women will experience ovulation and menstruation. In menstruation, the problem that often arises is menstrual pain or dysmenorrhea. This condition will get worse if accompanied by unstable psychological conditions. Menstrual pain often occurs at the age of 17-24 due to the optimization of the function of the uterus. Dysmenorrhea can be felt as a sensation of pain, cramps, and contractions in the uterus that are more than usual in intensity, frequency, and duration, even though there are no problems with the reproductive organs ⁽¹⁾.

Several theories state that the cause of primary dysmenorrhea is the release of prostaglandins (PG) during menstruation. PG is a biosynthetic product of arachnoid acid from the hydrolysis of phospholipids by phospholipases through the Cyclo Oxygenase (COX) system (Dawood, 2006). PG can be rapidly produced in the endometrium during menstruation in response to inflammation, hypoxia, and trauma (Cunningham et al. 2006). PG is an oxygenated fatty acid classified as a hormone in the endometrium (PGF₂α) and affects smooth muscle contraction. In dysmenorrhea, excessive secretion of PGF₂α increases the amplitude and frequency of uterine smooth muscle contractions; it causes vasospasm in uterine arterioles, which causes ischemia and lower abdominal cramps ⁽¹⁾.

Adinma's research in 2008 stated that 66.2% of adolescents complained of abdominal pain during menstruation ⁽²⁾. Dawood's research states that the symptoms of dysmenorrhea can be in the form of fluctuating pain and cramps that are generally felt which begin a few hours before menstruation and can last two to three days, in addition to back pain, dizziness, nausea, vomiting, and diarrhea ⁽³⁾. Symptoms of different sensations such as pain or discomfort in the breast can also be found when experiencing dysmenorrhea ⁽⁴⁾. Disorders from the psychological side in the form of mood disorders can be found in adolescents with dysmenorrhea ⁽⁵⁾.

A person generally perceives pain as an uncomfortable sensation that can be influenced by age, gender, anxiety, culture, fatigue, experience, coping in meaning and concern for pain, and family support ⁽⁶⁾. Knowledge is said to influence change in a person's health behavior ⁽⁷⁾. Lestari's research and the team stated that knowledge affects adolescent attitudes in implementing self-care during menstruation ⁽⁸⁾. Other research states that knowledge about menstruation also affects pain management abilities ⁽⁹⁾.

Women tend to withdraw from daily activities when experiencing dysmenorrhea⁽¹⁰⁾. In line with this research, Harel⁽¹¹⁾ also found that dysmenorrhea can cause no appetite, sleep disturbances, helplessness, and depression. Dysmenorrhea can reduce women's quality of life⁽¹²⁾.

Independent or non-pharmacological techniques to overcome menstrual pain continue to develop to help adolescent girls reduce menstrual pain⁽¹³⁾. Through this, adolescents can choose their independent intervention based on evidence in addition to consuming chemical drugs to help daily activities while experiencing dysmenorrhea. Non-pharmacological therapy to overcome dysmenorrhea is exercise, such as menstrual exercise, warm compresses, massage, and yoga.

Yoga is a relaxation technique that is recommended to relieve menstrual pain. Directed and continuous training is believed to cure menstrual pain and nourish the body. Yoga can reduce the sensation of pain because it can provide a relaxing effect by reducing sympathetic nerve activity, lowering pulse rate, and increasing respiratory volume. Deep breathing techniques that are applied along with body movements during yoga can provide extra oxygen supply to the body so that the body can release endorphins; hormones to provide a calming effect⁽¹⁴⁾.

Warm temperatures can also be used as an alternative to reduce pain by utilizing temperature conduction which has a relaxing effect and vasodilation of blood vessels so that oxygen as a carrier of food essence can be absorbed more in the tissues⁽¹⁵⁾. The principle of this warm compress is safe to apply to cases of dysmenorrhea for adolescents as a form of first aid in finding solutions to dysmenorrhea pain.

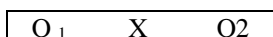
In Kelong Island, Bintan Regency, Riau Islands Province, there has been no intervention related to handling adolescent reproductive health, especially the treatment of menstrual pain or dysmenorrhea. This is due to the lack of knowledge and communication of adolescents about dysmenorrhea or menstrual pain, also limited access to health workers considering the extreme geographical conditions on Kelong Island so that the teenagers choose to be quiet and keep it to themselves if they are suffering from menstrual pain (dysmenorrhea).

This study aimed to determine the effectiveness of yoga in adolescents to overcome Pre-Menstrual Syndrome on Kelong Island, Bintan Regency, Riau Islands Province in 2022.

METHODS

This quantitative study used a quasi-experimental one-group pre-test and post-test design. This study used a pre-test before being given treatment; thus, the results would be more accurate because it could compare the conditions before and after being given treatment.

In the pre-test, female adolescents are given a questionnaire to assess their knowledge about pre-menstrual syndrome and menstrual pain (dysmenorrhea). After that, the teenagers were given intervention in yoga practice and guided gradually. The final stage was a post-test using the same questionnaire as the pre-test and reassessing the knowledge and attitudes of adolescents towards the Application of Yoga in Adolescents in Overcoming Pre-Menstrual pain using the same checklist as the pre-test. The research design model is as follows:



Information: O₁ = pretest, O₂ = posttest, X: treatment (yoga)

Figure 1. Design of research

This study was conducted after getting ethical clearance LB.02.03/1/01/2022 from the ethics committee of the health ministry of Riau.

RESULTS

Table 1. The characteristics of the research subject

Characteristics	Amount	
	Frequency	Percentage
Age		
16 years	10	28
17 years	20	57
18 years	5	15
Age of menarche		
<12 years old	15	43
>12 years old	20	57
Long dysmenorrhea		
<1 week	20	57
>1 week	15	43
Menstrual cycle length		
<1 week	15	43
>1 week	20	57

Table 1. shows that of the 35 young women studied, the majority were in the age range of 17 years (57%), with menarche age >12 years (57%), dysmenorrhea duration <1 week (57%), and menstruation duration > 1 week (57%).

Table 1. Distribution of pain intensity scale before and after yoga practice treatment

Pain scale (NRS)	Yoga			
	Before		After	
	Frequency	Percentage	Frequency	Percentage
Mild pain	17	49	30	85
Moderate pain	13	37	5	15
Severe pain	5	14	0	0

Of the 35 respondents studied, there was a change in the treatment pain scale, as shown in table 2. In the yoga practice treatment, before being given the exercise, the menstrual pain (dysmenorrhea) varied between mild pain (17 people or 49%), moderate pain (13 people or 37%), and severe pain (5 people or 14%). After the yoga intervention, there was a decrease in the pain scale, 30 people with mild pain (85%), only 5 people with moderate pain (15%), and no one complained of severe menstrual pain (dysmenorrhea).

Bivariate analysis was used to determine the relationship between the variables studied. In this case, to find out whether the yoga practice method effectively reduces the intensity of menstrual pain (dysmenorrhea) in adolescent girls on Kelong Island, Bintan Regency, Riau Islands Province.

Before the average difference in the yoga treatment was tested, the data normality test was carried out using the One Samples Kolmogorov-Smirnov test with the results of p-value = 0.267, which means the data was normally distributed. The homogeneity variance test was carried out using the Oneway ANOVA test with the results p-value = 0.770 (p>0.05) for the before-treatment group and p-value = 0.568 (p>0.05) for the after-treatment group. This shows that the variance of each yoga group was the same (homogeneous).

Based on the normality and homogeneity variance test results, the hypothesis test to be used is the paired samples t-test for in-group differences and the independent samples t-test for between-group differences.

Measurement of the menstrual pain intensity (dysmenorrhea) in adolescent girls with yoga treatment using the Numeric Rating Scale (NRS) instrument obtained the following results:

Table 3. Results of analysis of decreased intensity of menstrual pain (dysmenorrhea) in yoga treatment

Measurement	Mean	SD	p
Before	4.97	2.008	0.000
After	2.47	1.584	

Based on the results of the dependent samples t-test, as shown in Table 3, there is a significant relationship between yoga practice and menstrual pain intensity (dysmenorrhea) in adolescent girls. The p-value obtained is 0.000 (p<0.05), so it can be concluded that yoga practice is effective in reducing the intensity of menstrual pain (dysmenorrhea) in adolescent girls.

DISCUSSION

Based on the statistical analysis, there is a significant relationship between yoga practice and decreasing menstrual pain intensity (dysmenorrhea); in other words, yoga exercise effectively reduces menstrual pain (dysmenorrhea) in adolescent girls with an average difference of 2.50 decreasing pain intensity. These findings indicate that the yoga method is effective in reducing the intensity of menstrual pain (dysmenorrhea) even though there is some pain left.

Menstrual pain (dysmenorrhea) in adolescent girls is mainly caused by primary dysmenorrhea due to the release of prostaglandins (PG) during menstruation. PG is the product of the biosynthesis of arachnoid acid from the hydrolysis of phospholipids by phospholipases through the Cyclo Oxygenase (COX) system⁽³⁾. PG can be rapidly produced in the endometrium during menstruation in response to inflammation, hypoxia, and trauma⁽¹⁶⁾. PG is an oxygenated fatty acid and is classified as a hormone in the endometrium name PGF₂α and affects smooth muscle contraction. In dysmenorrhea, excessive secretion of PGF₂α increases the amplitude and frequency of uterine smooth muscle contractions, which causes vasospasm in uterine arterioles and causes ischemia and lower abdominal cramps⁽¹⁾. In this study, all respondents complained of menstrual pain (dysmenorrhea), varying from mild to severe pain. To reduce these complaints, yoga practice can be chosen as a non-pharmacological therapy and is safely applied to adolescent girls.

Martin & Silva's research comparing yoga methods and postural orientation also prove that yoga is more effective than postural orientation in reducing lumbopelvic pain in pregnancy. Yoga is recommended as a non-pharmacological therapy to reduce menstrual pain (dysmenorrhea) during pregnancy. Yoga is part of non-pharmacological therapy that can reduce pain. Yoga is an effort to harmonize the body, mind, and spirit and helps form a firm posture, building flexible, strong muscles and purifying the central nervous system in the spine. Yoga performed during pregnancy (prenatal yoga) is a modification of yoga movements adapted to young women's conditions. It aims to physically, mentally, and spiritually prepare young women to undergo daily activities.

Yoga in reproductive health, especially pre-menstrual syndrome, combines particular postures and techniques that are beneficial for young women to help relieve discomfort caused by changes in the body during menstruation. Furthermore, yoga done by young women can make the body more flexible and comfortable, support blood circulation, and overcome back pain, waist, soreness, and swelling.

The yoga movements can flex the back muscles, accelerate blood circulation, and increase the client's awareness to efficiently respond to pain in the body. The poses in the yoga movement can also stimulate the back muscles to lengthen to block the pain onset in the back, smooth blood circulation and stimulate the brain to secrete physiological painkillers.

Statistically, the yoga practice method in adolescents is effective in reducing the intensity of menstrual pain (dysmenorrhea). This shows that yoga practice significantly influences the intensity of menstrual pain (dysmenorrhea); in other words, yoga practice is effective in reducing the intensity of menstrual pain (dysmenorrhea) in adolescent girls.

CONCLUSION

Yoga effectively decreases menstrual pain in adolescent girls and could be used as alternative non-pharmacology therapy for menstrual pain. It is hoped that the yoga method of stretching exercises can be practiced to reduce complaints of menstrual pain (dysmenorrhea) as teenage girls get older and increase comfort in carrying out daily activities, especially for adolescents on Tanjungpinang Island, Riau Islands Province.

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