

The Effectiveness of Gym Ball and Ambon Banana Consumption Against Menstrual Pain Reduction in Teenagers

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ABSTRACT

Background: There are many ways to eliminate or reduce pain, both pharmacologically. Non-pharmacological pain management is safer to use because it does not cause side effects like drugs, because non-pharmacological therapy uses physiological processes. Research Objectives The purpose of this study was to analyze the effectiveness of the Gym Ball and bananas on the reduction of menstrual pain in adolescents.

Subjects and Method: A quasi research without a control group was conducted at SMP N 23 Surakarta, Central Java, from April to September 2019. A sample of 46 students was selected by accidental sampling. The dependent variable is menstrual pain. The independent variable is gymball and the provision of ambon bananas. Pain scale was measured by a verbal rating scale questionnaire. Data were analyzed by paired t-test.

Results: Pain scores after treatment (Mean= 0.76; SD= 0.60) were lower than before treatment (Mean= 1.93; SD= 0.39), and were statistically significant ($p= 0.001$).

Conclusion: There is an effect of gym ball and banana consumption to reduce menstrual pain.

Keywords: gymball, ambon banana consumption, menstrual pain, teenagers.

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Cite this as:

Hidayah N, Fatmawati R (2022). The Effectiveness of Gym Ball and Ambon Banana Consumption Against Menstrual Pain Reduction in Teenagers. *J Matern Child Health*. 07(03): 238-242. <https://doi.org/10.26911/thejmch.2022.07.03.01>.



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BACKGROUND

Adolescence is a period of transition from puberty to adulthood or a process of growth and development towards mental, emotional, social and physical maturity. Puberty is a stage of development marked by the maturity of sexual organs and the achievement of the ability to reproduce, one of the characteristics of which is experiencing the first menstruation (menarche). Menstruation or menstruation is periodic vaginal bleeding due to the release of the uterine endometrial lining (Baziad, 2009).

Menarche or first menstruation is periodic vaginal bleeding due to the release of the uterine endometrial lining (Baziad, 2009). The highest prevalence of dysmenorrhea is often found in adolescent girls, which is estimated to be between 20-90%, depending on the research method used. Approximately 15% of adolescents reported experiencing severe dysmenorrhea. In the United States, dysmenorrhea is recognized as the most common cause of absenteeism from school in adolescent girls. In addition, a survey was also conducted on 113 women from the University

of North Sumatra 6 in the United States and stated that the prevalence was 29-44%, mostly at the age of 18-45 years (Gunawan, 2011).

Dysmenorrhea causes 14% of adolescent girls to miss school. In addition, dysmenorrhea is more common in black teenagers than whites. Various efforts have been made to reduce pain, both pharmacologically using drugs and non-pharmacological methods, including herbal medicine, acupressure, exercise, massage, nutrition and others (Gunawan, 2011).

The gym ball is a physical therapy tool or simple exercise using a ball. The benefits of the gym ball include training balance, training muscle strength, training muscle flexibility and reducing anxiety and pain.

Bananas are a local Indonesian fruit, some literature says that bananas come from Southeast Asia, including Indonesia. Bananas have good nutritional content, including calories, carbohydrates, sugar, fiber, phosphorus, potassium, magnesium, minerals, vitamins, and water. The potassium content in bananas is useful in nerve transmission and muscle relaxation (Mahan, 2012).

The research that has been done by Tuti et al. (2011) showed that acupressure had an effect on reducing menstrual pain. Research conducted by Roiela (2015) can be concluded that the consumption of dark chocolate can reduce menstrual pain in primary dysmenorrhea. Faris' research (2018) shows that there is a significant effect of abdominal stretching exercises on the level of menstrual pain (dysmenorrhea). Another study showed that consumption of plantains was effective in reducing menstrual pain in primary dysmenorrhea in female students of SMA Muhammadiyah 1 Malang (Sugiarta, 2016).

According to Abbaspour, women who regularly exercise can reduce the prevalence of dysmenorrhea, due to hormonal effects associated with exercise on the uterine surface, or increased circulating levels of endorphins, endorphins are substances produced by the brain resulting from the achievement of a person's pain threshold (Abbaspour, 2005).

The difference with previous research on management in reducing menstrual pain is by giving gymball therapy and Ambon bananas, gymball therapy is an easy, simple method and can be done anywhere and anytime. While the provision of Ambon banana is a local Indonesian fruit that is easily obtained around respondents whose potassium content is not inferior to plantain.

The purpose of this study was to analyze the effectiveness of gym balls and bananas on reducing menstrual pain in adolescents. With this research, it is hoped that there will be an increase in non-pharmacological treatment in reducing menstrual pain with stretching techniques using gymball and consumption of Ambon bananas.

SUBJECTS AND METHOD

1. Study Design

This was an experimental study with no control group. The study was conducted at Junior High School 23 Surakarta, Central Java, from April to September 2019.

2. Population and Sample

The study population was junior high school students. A sample of 46 students was selected by accidental sampling.

3. Study Variable

The dependent variable is the decrease in menstrual pain, the independent variable is Gymball and the provision of Ambon banana.

4. Operational Definition of Variables

Pain is a cramp-like pain in the lower abdomen that radiates to the waist and thighs that occurs during menstruation.

Gym ball therapy is therapy using a therapy ball (gymball), the gymball technique is carried out during menstrual pain with movements that have been taught by previous researchers, do the gymball que until the pain subsides.

Consumption of bananas are Ambon bananas consumed during menstruation, 2 times a day, during the menstrual period.

5. Instrument

Pain scale was measured by a verbal rating scale questionnaire (scale 0 to 4).

6. Data Analysis

Differences in pain scores before and after gym ball therapy and banana consumption were analyzed by paired t-test.

7. Research Ethics

Table 1. Characteristics of categorical data samples

Variable	Frequency (N)	Percentage (%)
Pain management		
Drink Herbal/Medicine	16	34.8
Drink ICE	2	4.3
Water	2	4.3
Sleep	20	43.5
Activities	3	6.5
Sit down	1	2.2
Oil	2	4.3
left	5	10.9

Table 2. Characteristics of continuous data samples

Variable	N	Mean	SD	Min	Max
Age of menarche	46	11.74	0.91	10	14
Pain score	46	1.93	0.39	1	3

Table 3. Differences in pain scores before and after gym ball therapy and consumption of bananas

Group	Mean	SD	Min.	Max.	p
Pre	1.93	0.39	1	3	<0.001
Post	0.76	0.60	0	2	

This research has received permission from the ethics committee of LPPM ITS PKU Muhammadiyah Surakarta with Number 04/O.09/KEPK-LPPM.ITS.PKU/V/2019.

RESULTS

1. Sample Characteristic

Table 2 shows that the most common treatment for pain was sleeping by 20 subjects (43.8%) and the least treatment was sitting by 1 subject (2.2%).

2. Univariate Analysis

Table 1 shows that the average age at menarche is 11.74. While the average pain score is 1.93.

3. Bivariate Analysis

Table 3 shows the difference in pain scores before and after gym ball therapy and banana consumption. Table 2 shows that post-therapy pain scores (Mean= 0.76 SD= 0.60) were lower than before (Mean= 1.93; SD= 0.39), with p< 0.001.

DISCUSSION
According to Petty and Potter (2006) that

one of the factors that influence pain is age, different ages will give different responses

to pain.

Methods to eliminate or reduce pain, both pharmacologically such as analgesic drugs or eliminating non-pharmacological methods. Non-pharmacological pain management is safer to use because it does not cause side effects like drugs, because non-pharmacological therapy uses physiological processes (Anurogo et al., 2012).

Menstrual pain is caused by a combination of physiological and psychological processes, the reaction to pain is an individual response, namely a response that depends on the personality, emotional condition and level of understanding of students, cultural background, family education and previous experience (Petty et al., 2006).

Pain resolves as soon as the painful stimulus is treated and the body has healed, but sometimes the pain is still there even after treatment and the body has healed. And sometimes pain arises in the absence of a detectable stimulus, damage or disease, there are several theories about the process of the mechanism of pain stimulation and several recent research studies state that basically pain impulses can be regulated or inhibited by defense mechanisms throughout the central nervous system. Pain impulses are delivered when a barrier is opened and impulses are blocked, from the analysis of this theory emerged various efforts to reduce labor pain either based on treatment methods without or with tools, such as relaxation techniques either touch or aroma therapy, acupressure and massage (Gélinas et al., 2004).

Gymball is a light exercise that has the benefit of relieving menstrual pain by using a ball. One of the gym ball exercise movements in the form of sitting on the ball by shaking the pelvis is considered to be able to provide comfort to the lower back through the gate control mechanism. This gate

control mechanism can modify in changing the sensation of pain that comes before it reaches the cerebral cortex and causes pain (Mutoharoh et al., 2019).

Based on the research of Veena et al. (2018) showed that twelve weeks of gym ball exercise had sufficient potential to reduce stress levels during menstruation and associated pain among women with primary dysmenorrhea when compared to yoga asanas.

Gym ball is a ball that is dynamic, meaning it can move with students when the uterus contracts, movements during menstrual pain include tilting the pelvis, rotating the pelvis, rotating the thigh and shaking the pelvis. Students can move according to their instincts, in the final phase of movement the ball can be used to support the legs at rest/ supine and also reduce cramps in the thigh. Gym ball exercises will increase the strength of the trunk stabilizer muscles such as the multifidus, erector spinae and abdominal muscles (transversus, rectus, and oblique). Another positive effect of gym ball training is to reduce imbalances in muscle work thereby increasing movement efficiency (Wijayanti, 2020).

Based on research by Gim et al. (2018) found that gymball exercise and music therapy for 3 weeks before menstruation until the last day of menstruation can reduce menstrual discomfort.

AUTHORS CONTRIBUTIONS

All authors took participation in writing the manuscript, running data analysis, and suggesting the discussion based on their competencies. All authors read and approved the final version of the manuscript.

FUNDING AND SPONSORSHIP

This study received funding from the Directorate of Research and Community Ser-

vice (DRPM) in the 2019 fiscal year.

CONFLICT OF INTEREST

There are no conflicts of interest.

ACKNOWLEDGMENT

Kemenristek dikti which has provided research grants for novice lecturers, principals, teachers, and students of SMP N 23 Surakarta.

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