

THE EFFECT OF GIVING GREEN COCONUT WATER ON REDUCING DYSMENOREA IN STUDENTS OF SMPN 1 KENDAL NGAWI

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Abstract

Dysmenorrhea is a complaint of pain during menstruation that is commonly experienced by adolescent girls and can interfere with daily activities. One alternative nonpharmacological treatment to reduce dysmenorrhea is to consume green coconut water which is rich in electrolytes, magnesium, calcium, and folic acid. This study aims to determine the effect of green coconut water on the reduction of dysmenorrhea in SMPN 1 Kendal Ngawi students. The method used is pre-experimental with a one-group pretest-posttest design. A sample of 24 respondents was selected using a simple random sampling technique. Data collection was carried out using the Numeric Rating Scale (NRS) instrument and analyzed using the Wilcoxon test. The results showed that before the intervention most of the respondents experienced dysmenorrhea on a scale of 5 (29.2%), while after the intervention most of the respondents were on a scale of 0 or no pain (37.5%). The Wilcoxon test showed a value of $p = 0.000 (<0.05)$ which means that there is a significant influence between the administration of green coconut water on the reduction of dysmenorrhea. The conclusion of this study is that green coconut water is effective as an alternative therapy to reduce the intensity of dysmenorrhea in adolescent girls.

Keywords: Dysmenorrhea, Green Coconut Water, Adolescent Girls, Nonpharmacological Treat

INTRODUCTION

Adolescence is a transitional period toward adulthood characterized by biological, cognitive, and psychosocial changes. One of the main biological changes is puberty, during which adolescent girls experience menstruation accompanied by various complaints, particularly among women of reproductive age. These complaints can affect reproductive health and daily productivity, with dysmenorrhea being the most common menstrual-related issue (Rifiana et al., 2021).

Dysmenorrhea is pain that occurs before or during menstruation. An imbalance in prostaglandin production during menstruation causes uterine contractions, leading to pain (Sari, 2023). Dysmenorrhea can cause discomfort or cramping in the lower abdomen.

Adolescent girls experiencing dysmenorrhea often also suffer from other biological symptoms such as fatigue, back pain, nausea, dizziness, sweating, mood disturbances, and even fainting. These symptoms can interfere with daily activities, often forcing them to rest (Realita et al., 2021).

In Indonesia, the prevalence of dysmenorrhea among women aged 14–19 years is 64.25%, consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. In East Java, the prevalence among adolescent girls is 72%, with 60% experiencing primary dysmenorrhea and 12% secondary dysmenorrhea, leading to 14% of students frequently missing school activities (Meinawati & Malatuzzulfa, 2021). The government has made efforts to address adolescent health problems such as dysmenorrhea. However, many still believe dysmenorrhea is a normal condition for menstruating women, especially adolescent girls. Consequently, the pain is often ignored without seeking proper treatment, which may endanger their health if left untreated (Realita et al., 2021).

Both pharmacological and non-pharmacological treatments are available to reduce dysmenorrhea. Pharmacological treatments include analgesics, hormonal therapy, nonsteroidal prostaglandin inhibitors, and cervical canal dilation. Non-pharmacological methods include hot or cold compresses, aromatherapy, relaxation techniques, and the use of herbal remedies such as green coconut water (Sari et al., 2023).

Coconut (*Cocos nucifera*) is a common fruit that is easy to obtain, especially in Ngawi Regency, making it one of the leading commodities in the plantation sector. Green coconut water is popular among the public, particularly adolescents, because it is sweet, refreshing, hygienic, requires no processing, and can be consumed directly at any time. Green coconut water contains tannins or antidotes (anti-toxins) at higher levels compared to other coconut varieties and is known to contain various nutrients, particularly vitamins and minerals (Widowati et al., 2021).

Non-pharmacological treatment using green coconut water can be an alternative to reducing dysmenorrhea because water is an essential component of the body, as cell function depends on the fluid environment. Water constitutes 60–70% of the human body. Green coconut water therapy aims to replace lost fluids and reduce dysmenorrhea. Herbal therapies such as green coconut water are considered effective in alleviating menstrual pain (Mubarokah, 2024).

Previous studies by Hasrita et al. (2024), Nurul and Marlina (2024), and Lulu and Maryati (2023) reported that green coconut water administration significantly reduced dysmenorrhea in adolescent girls, although conducted in different settings and with different characteristics. Green coconut water prevents dehydration caused by fluid and blood loss, while its magnesium content helps reduce muscle tension, particularly in the uterus. Its high calcium content is also crucial, as calcium deficiency increases the likelihood of experiencing dysmenorrhea.

A preliminary study conducted in January 2025 by the researcher at SMPN 1 Kendal, Ngawi Regency, involving interviews with 13 female students, found that 92% experienced dysmenorrhea. Most did not manage their pain due to concerns about the side effects of long-term pharmacological treatment and a lack of knowledge about alternative remedies. Those experiencing dysmenorrhea reported that the pain disrupted their daily activities and reduced their concentration during class lessons.

Based on this background, the researcher is interested in conducting a study on students experiencing dysmenorrhea with the title: "The Effect of Green Coconut Water Consumption on the Reduction of Dysmenorrhea in Female Students of SMPN 1 Kendal Ngawi."

IMPLEMENTATION METHOD

This study employed a quantitative research design using a pre-experimental method with a one-group pretest–posttest design. The study was conducted on a single group, namely the intervention group, with measurements taken before and after the intervention. The objective of this research was to determine "The Effect of Green Coconut Water Consumption on the Reduction of Dysmenorrhea in Female Students of SMPN 1 Kendal Ngawi." The research design can be summarized as follows:

Pre-Test → Treatment → Post-Test

O₁ → X → O₂

Description:

- O₁: Initial measurement (pretest)
- X: Treatment or intervention
- O₂: Final measurement (posttest)

The study was conducted at SMPN 1 Kendal, Ngawi Regency, in 2025, from March to April. The population consisted of all ninth-grade female students at SMPN 1 Kendal who experienced dysmenorrhea, totaling 48 individuals. The sampling technique used was Simple Random Sampling, in which samples were selected randomly without considering strata, giving each subject in the population an equal chance of being included. The sample size was determined using Roscoe's formula, resulting in 24 respondents. The inclusion and exclusion criteria were applied to determine the eligible participants.

The research variables consisted of an independent variable (green coconut water consumption) and a dependent variable (dysmenorrhea). The research instrument used was the Numeric Rating Scale (NRS) ranging from 0–10. Data analysis included univariate and bivariate analyses. The normality test using Shapiro–Wilk indicated that the data were not normally distributed; therefore, the Wilcoxon test was used for further analysis.

RESULT

a) Research Location Description

SMP Negeri 1 Kendal, with NPSN 20508547, is located on Jl. Raya Kendal, Ngawi Regency, East Java. Established on September 3, 1979, the school has been recognized for its educational quality, earning an "A" accreditation based on Decree No. 164/BAP-S/M/SK/XI/2017, dated November 17, 2017. The school operates under the supervision of the central government and occupies a total land area of 19,920 square meters. The facilities provided at SMP Negeri 1 Kendal support optimal teaching and learning activities, including internet access and electricity supplied by the national power company (PLN). The school's location is highly accessible as it is situated near a main road, making it easy to reach by public transportation. It is also close to healthcare facilities such as a public health center

(Puskesmas) and several clinics, as well as public amenities including markets, senior high schools/vocational schools, and banks. Therefore, the school can be considered strategically located.



Figure 1. Research Location

b) Univariate Analysis

Table 1. Dysmenorrhea Levels Before and After the Administration of Green Coconut Water for Reducing Dysmenorrhea among Female Students at SMPN 1 Kendal Ngawi

Dysmenorrhea Level	BEFORE		AFTER	
	Frequency	Percentage	Frequency	Percentage
0	0	0%	9	37,5%
1	0	0%	7	29,2%
2	0	0%	3	12,5%
3	0	0%	5	20,8%
4	4	16,7%	0	0%
5	7	29,2%	0	0%
6	5	20,8%	0	0%
7	3	12,5%	0	0%
8	3	12,5%	0	0%
9	2	8,3%	0	0%
Total	24	100%	24	100%

Based on Table 1, it can be seen that before the intervention, out of 24 respondents, most experienced dysmenorrhea at level 5 (29.2%), with the highest dysmenorrhea level recorded at level 9 (8.3%) and the lowest at level 4 (16.7%). Meanwhile, after the intervention, among the 24 respondents, the highest dysmenorrhea level was recorded at level 3 (20.8%), and most of them experienced no dysmenorrhea or were at level 0 (37.5%).

Table 2. Distribution of the Mean Dysmenorrhea Levels Before and After the Administration of Green Coconut Water for Reducing Dysmenorrhea among Female Students at SMPN 1 Kendal Ngawi

Dysmenorrhea Level	Mean	SD	Min	Max	Mode
Before Administration of Green Coconut Water	6,00	1,560	4	9	5
After Administration of Green Coconut Water	1,17	1,167	0	3	0

c) Bivariate Analysis

Normality Test

The purpose of the normality test is to determine whether the data come from a normally distributed population (Sugiyono, 2020). The normality of the data was tested using the Shapiro–Wilk test because the number of respondents was less than 50. The interpretation of the normality test values is as follows:

Table 3. Shapiro–Wilk Normality Test

	Statistic	df	Sig.
<i>Pre-Test</i>	.909	24	.034
<i>Post-Test</i>	.817	24	.001

From Table 3, the results of the normality test using the Shapiro–Wilk method showed significance values for the pretest and posttest therapy variables of 0.034 and 0.001, respectively, which are both less than 0.05. This indicates that the data are not normally distributed; therefore, the hypothesis testing was continued using the Wilcoxon test.

Bivariate Analysis

The Effect of Green Coconut Water Administration on Reducing Dysmenorrhea among Female Students at SMPN 1 Kendal Ngawi

Table 4. Effect of Green Coconut Water Administration on Reducing Dysmenorrhea among Female Students at SMPN 1 Kendal Ngawi

Green Coconut Water Administration	Frequency	Z	P-Value
Posttest-Pretest Negative Ranks			
Positive Ranks	24	-4,317	0,000
Ties	0		
	0		
Total	24		

From Table 4, it can be seen that all 24 respondents had lower dysmenorrhea levels after the administration of green coconut water compared to before the intervention. The results of the Wilcoxon signed-rank test also showed that the $p\text{-value} = 0.000 < \alpha = 0.05$, indicating that H_0 is rejected and H_a is accepted. This means that there is a significant effect of green coconut water administration on reducing dysmenorrhea among female students at SMPN 1 Kendal Ngawi.

DISCUSSION

1) Distribution of the Mean Dysmenorrhea Levels Before and After

Administration of Green Coconut Water to Female Adolescents at SMPN 1 Kendal Ngawi based on the table, it was found that the mean dysmenorrhea level before the intervention was 6.00, with the highest level being 9, the lowest level being 4, the most frequent level being 5, and a standard deviation of 1.560. Meanwhile, after the therapy, the mean dysmenorrhea level was 1.17, with the highest level being 3, the lowest level being 0, the most frequent level being 0, and a standard deviation of 1.167. This indicates that there was a decrease in the mean dysmenorrhea level before and after the administration of green coconut water among the female students at SMPN 1 Kendal Ngawi.

A study by Pattihha et al. (2021) on the distribution of menstrual pain scale categories before the administration of green coconut water to adolescents in Ampera Hamlet, based on observations using a questionnaire with 30 respondents, found that 11 respondents (36.7%) experienced moderate pain and 10 respondents (33.3%) experienced severe pain, with ages ranging from 15 to 19 years. The pain scale was divided into four categories: no pain (0), mild pain (1–3), moderate pain (4–6), and severe pain (7–10).

According to Rismaya et al. (2020), the intensity of pain varies among individuals and is influenced by their description, perception, and experience of pain. Each person perceives and reacts differently to the pain they feel. This is because pain is a subjective sensation known only to the individual experiencing it, while researchers rely solely on the instruments used to measure the respondents' pain.

The researcher's assumption regarding the effect of green coconut water administration on reducing dysmenorrhea among female students at SMPN 1 Kendal Ngawi in 2025 is that, at this age, many adolescents experience dysmenorrhea due to various changes, including hormonal, physical, psychological, and social changes, a stage known as puberty. The pituitary gland releases luteinizing hormone (LH) and follicle-stimulating hormone (FSH), influenced by releasing hormone (RH), in response to the production of gonadotropins containing estrogen and progesterone. These hormones affect the growth of the endometrium, and if fertilization does not occur, regression of the corpus luteum will take place, leading to a decrease in progesterone levels and an increase in prostaglandins. This stimulates the myometrium, causing ischemia and reduced blood flow to the uterus, which results in pain.

According to Santa et al. (2020), the reduction in menstrual pain intensity experienced by respondents may be attributed to the calcium and magnesium content in green coconut water, which can relax the uterine muscles affected by increased prostaglandins. Elevated prostaglandin levels cause myometrial ischemia and hypercontractility of the uterine muscles, leading to dysmenorrhea. Green coconut water also contains vitamin C, which acts as a natural anti-inflammatory agent that helps alleviate menstrual cramps by inhibiting the cyclooxygenase enzyme, which plays a role in stimulating prostaglandin production.

2) Effect of Green Coconut Water Administration on Reducing Dysmenorrhea among Female Students at SMPN 1 Kendal Ngawi

Based on the results table, it was found that the $p\text{-value} = 0.000 < \alpha = 0.05$, indicating that H_0 was rejected and H_a was accepted. This means there is a significant effect of green coconut water consumption on reducing dysmenorrhea among female students at SMPN 1 Kendal Ngawi. From the initial data collection of 24 respondents, most experienced dysmenorrhea at pain scale 5 (29.2%), with the highest pain recorded at scale 9 (8.3%) and the lowest at scale 4 (16.7%). Respondents were then given green coconut water twice on the first day of menstrual pain, followed by a post-test. The post-test results showed that among the 24 respondents, the highest pain level was at scale 3 (20.8%), while the majority reported no pain (scale 0) at 37.5%.

According to Nugraheni, Asroyo, and Masfiroh (2024), menstruation is the periodic and cyclic bleeding from the uterus accompanied by the shedding of the endometrium. Various factors can trigger dysmenorrhea, but endocrine factors play a crucial role. During menstruation, endometrial cells release prostaglandins, which contribute to the pain. Herbal remedies are also a primary alternative for adolescent girls who wish to alleviate dysmenorrhea without experiencing side effects.

One factor affecting dysmenorrhea is age and menstrual duration. In adolescents aged 12–15 years, prostaglandin levels are often unstable, leading to an imbalance with prostacyclin during menstruation. This imbalance can cause myometrial contractions and vasodilation, resulting in myometrial ischemia and uterine hypercontractility, which in turn triggers dysmenorrhea (Nabillah et al., 2021). Dysmenorrhea pain in adolescent girls is largely caused by hormonal imbalances—particularly elevated prostaglandin levels—which tighten the cervical opening and make it narrower, causing uterine muscle contractions to expel menstrual blood, thereby inducing cramps (Realita et al., 2021).

Hisyam (2021) states that dysmenorrhea can be treated with herbal medicine. In Indonesia, medicinal plants have long been used to address health problems, and herbal treatments are now widely accepted globally. The World Health Organization (WHO) has recommended the use of traditional medicine for public health maintenance, disease prevention, and treatment.

Water is essential for the body since cell function depends on a fluid environment. Water makes up about 60–70% of the body's total composition. Green coconut water therapy aims to replace lost fluids and reduce menstrual pain. Herbal remedies such as green coconut water are highly effective in relieving menstrual pain and promoting smooth menstrual blood flow, thereby reducing discomfort (Khodijah, Putri, & Herfanda, 2020).

Coconut water contains electrolytes—ions that help transport nutrients to cells, maintain acid–base (pH) balance, regulate fluid levels, and prevent dehydration. It is effective for long-term use without the risk of dependency, side effects, or allergies, as coconut allergies are rare compared to other food allergies. When they do occur, symptoms can range from mild to severe, such as itching, swelling, nausea, vomiting, diarrhea, breathing difficulties, and anaphylaxis; however, such cases are estimated to affect less than 1% of the population.

Folic acid in coconut water also helps replenish lost blood. Folic acid is essential for red blood cell production, which improves blood circulation, ensuring adequate oxygen and nutrient supply to cells. This helps reduce the pain sensation associated with dysmenorrhea.

The one-group pre-test–post-test design used in this study is consistent with the design employed by Metha Fahriani (2022) in her research on the effect of green coconut water on reducing dysmenorrhea in adolescents. That study used a pre-experimental design with a one-group pre-test–post-test approach conducted from July 1 to July 30, 2022. The instrument used was the Numeric Rating Scale, and the data were analyzed using normality tests, univariate, and bivariate analysis. Before the intervention, the average pain score among 20 respondents was 7.85 (severe pain). After consuming 250 ml of green coconut water twice daily for three days during menstruation, the average pain score decreased to 4.7 (moderate pain). Eighteen respondents reported reduced pain, while two had no change (Fahriani, 2022).

Similarly, Suri Gusmiyanti (2020) reported that green coconut water contains electrolytes, minerals, folic acid, and vitamins. Folic acid helps form red blood cells, replacing blood lost during menstruation. Menstrual pain is caused by uterine hypercontraction and hormonal imbalances between progesterone and prostaglandin. The vitamins and minerals in coconut water help stabilize progesterone and prostaglandin production, which accelerates endometrial shedding and reduces pain. Pain tends to decrease after sufficient menstrual blood flow is achieved.

These findings align with the study by Rismaya and Mariza (2020), where respondents in the intervention group consumed 250 ml of green coconut water twice daily for three days. The average dysmenorrhea score in the intervention group decreased from 8.40 (pre-test) to 2.73 (post-test), while in the control group it decreased from 8.67 to 4.00. This indicates that green coconut water significantly reduces dysmenorrhea.

The Wilcoxon test used in this study is similar to that in Puadiah and Sutarno (2023), which found a significant difference before and after green coconut water consumption. Among 69 respondents, 75.4% had moderate pain and 24.6% had severe pain before the intervention. After the intervention, 72.5% reported mild pain and 27.5% reported moderate pain. The Wilcoxon test results showed $p = 0.000 < 0.05$, indicating that green coconut water significantly reduced menstrual pain among students at Daarul Ahsan Jayanti Islamic Boarding School.

This is consistent with the study by Sari & Poltekkes Surakarta (2023), which examined the effect of green coconut water on dysmenorrhea reduction among adolescents in Ampere Village, Teluti Subdistrict, Central Maluku Regency, Maluku Province. Among 30 adolescents given green coconut water therapy, 53.3% reported no pain after the intervention. The p-value was $0.000 < 0.05$, confirming a significant difference between pre-test and post-test scores, and thus indicating that green coconut water effectively reduces dysmenorrhea.

CONCLUSION

Based on the results of the study on the effect of green coconut water consumption on reducing dysmenorrhea among female students at SMPN 1 Kendal Ngawi in 2025, it was found that prior to consuming green coconut water, most respondents experienced dysmenorrhea at pain scale 5 (29.2%), with the highest pain recorded at scale 9 (8.3%) and the lowest at scale 4 (16.7%). After consuming green coconut water, the majority of respondents reported no dysmenorrhea (scale 0) at 37.5%, while the highest pain reported was at scale 3 (20.8%). These findings indicate that green coconut water can be used as an alternative treatment to reduce dysmenorrhea. Furthermore, statistical analysis confirmed that there is a significant effect of green coconut water consumption on the reduction of dysmenorrhea among female students at SMPN 1 Kendal Ngawi.

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