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Effect of Coconut Water on Dysmenorrhea Among Students at Senior High School 104 East Jakarta

Febry Mutiariami Dahlan[1 *], Risza Choirunissa[2], Erien Wahyu Setya[3]

[1,2,3] Midwifery Department, Faculty of Health Sciences, Universitas Nasional, Indonesia

**Corresponding Author: febrymutia@civitas.unas.ac.id*

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Abstract

According to WHO (2012), an incidence of 1,769,425 people (90%) was found in women with dysmenorrhea with 10-15% experiencing severe dysmenorrhea. Based on data from the National Health and Nutrition Examination Survey (NHANES), the average age of menarche in adolescents in Indonesia is 12.5 years with a range of 9-14. In Indonesia the incidence of primary dysmenorrhea is around 54.89% while the remaining sufferers with secondary dysmenorrhea. To examine the effect of coconut water on dysmenorrhea among students at the Senior High School 104 East Jakarta. This was a quasy-experimental design by using pre-test and post-test with control group. There were 30 participants in the experiment group and 15 others in the control group. The NRS was conducted as an instrument, the data analyzed by using Wilcoxon sign rank and Mann Whitney. The results showed thatthe pretest and posttest frequency distribution data of the experimental group found 4 people (26.7%) mild pain, 8 people (53.3%) moderate pain and 3 people (20.0%) severe pain. Whereas after the posttest treatment decreased, there were no pain 4 respondents (26.7%), mild pain 8 respondents (53.3%), moderate pain 2 people (13.3) and severe pain as much as 1 person (6, 7%). That there is an influence of coconut water on menstrual pain with a p value of 0.019 ($p < 0.05$), therefore Ho is rejected and Ha is accepted. Coconut affects the decrease in dismenorhe pain. It is recommended to young women to apply drinking young coconut water to reduce dismenorhe pain.

Keywords **:** coconut water, dysmenorrhea, female students

Introduction

According to WHO (2012) there was an incidence of 1,769,425 people (90%) women who experienced dysmenorhe with 10-15% experiencing severe dysmenorrhea.

In Indonesia, more women with dysmenorhe do not report or visit a doctor. It is said that 90% of Indonesian women have experienced dysmenorhe.[1]

According to several International Reports, dysmenorhe is very high and at least 50% of adolescent girls experience dysmenorhe throughout reproductive age. The results of recent studies show that almost 10% of adolescents with dysmenorhe experience absenteeism of 1-3 days per month or the inability of adolescents to perform their daily tasks due to severe pain.[2] The level of pain during menstruation was mild pain 47.7% and severe pain as much as 47%. Furthermore, to relieve pain, the teenager used his own medication without consulting a doctor, took analgesic drugs as much as 32.5%, did compresses with warm water 34% and the most often was to rest about 92%.[3]

The results of the 2010 Population Census show that the total population of Indonesia is 237,641,326 people, and 63.4 million or 27% of them are adolescents aged 10-24 years.[4] Based on data from the National Health and Nutrition Examination Survey (NHANES), the average age of menarche in adolescents in Indonesia is 12.5 years with a range of 9 – 14. In Indonesia, the incidence of primary dysmenorhe is around 54.89%, while the rest are patients with secondary dysmenorhe. Dysmenorhe occurs in adolescents with a prevalence ranging from 43% to 93% where about 74-80 adolescents experience mild dysmenorhe. Abnormalities occur in 60-70% of women in Indonesia with 15% of them complaining that they become limited due to dysmenorhe.[5]

Dysmenorhe can have an impact on a teenager's daily activities. The impact of dysmenorhe that is often experienced by adolescent girls includes reduced concentration while learning, absenteeism at school, hampered sports activities and reduced time in social activities.[6] Research conducted by Al Kindi and Al Bulushi (2011), found that adolescents who experience dysmenorhe experience a decline in academic performance. One indicator in knowing the state of student academic performance is based on national test scores. In addition, dysmenorhe also has a long-term impact. The long-term impact if dysmenorhe is not above properly is that it can trigger the occurrence of polycystic ovary syndrome and endometriosis.[7]

Menstrual pain can cause a person to become dizzy, nauseous, vomiting, headache and even faint. Treatment of menstrual pain consists of pharmacological and non-pharmacological therapies. Pharmacological treatment can be by taking analgesic drugs,

Non-pharmacological treatments that are often used to reduce menstrual pain include the provision of herbal medicines, giving supplements such as vitamin E, acupuncture, hypnotherapy, relaxation and exercise, therapy by exercise can relieve dysmenorrhoea through several ways such as reducing stress, reducing menstrual symptoms by increasing local metabolism and increasing local blood flow In the pelvis, besides dysmenorrhoea gymnastics can also increase the production of endorphins.[8]

Coconut is one of the types of plants from the palm tribe or Arecaceae that has the most benefits and is easy to grow in tropical land in Indonesia, so that the State of Indonesia is among the largest coconut producers in the world. Coconut water has long been known as a source of growing substances, namely cytokinins, the average caloric value found in coconut water ranges from 17 calories per 100 grams. The benefits of coconut water are rehydration of body fluids, help lose weight, improve the immune system, improve circulation, maintain electrolyte balance, reduce menstrual pain.[9]

In the research process, researchers gave 250 ml of green coconut water, and waited for 2 hours before the post-test. Before and after giving young coconut water, measurements were made with a pain scale questionnaire filled in by respondents.[10]

Method

The type of research used in this study is an experimental research design with Quasi Exsperiment Design. This study used a pretest-postest with control group design. Quasi Experiment is a type of research conducted to determine the consequences of a treatment given intentionally by researchers. Then a pretest (01) was carried out in both groups, followed by intervention (X) in the experimental group. After the intervention, posttest was carried out (02) in both groups.[11] Population is a generalized area consisting of objects / subjects that have certain quantities and characteristics determined by researchers to be studied and then drawn conclusions.[12] The population in this study was all adolescent girls who experienced dysmenorhe pain at SMAN 104 East Jakarta. The sample is the part of the population to be studied or part of the number of characteristics possessed by the population.[12] It is called a sample if the study will only examine a portion of the population. The sampling technique or sampling technique used in this study is pusposive sampling.

According to Notoatmodjo (2018), pusposive sampling is based on certain

considerations made by researchers, based on previously known characteristics or characteristics of the population. In this study, researchers took samples of 30 people, namely 15 experimental groups and 15 control groups. In sampling, inclusion and exclusion criteria are needed to reduce the risk of bias. Inclusion criteria are criteria or standards that are set before research or research is conducted. While the exclusion criterion is a criterion where the research subject cannot represent the sample because it does not qualify as a sample.[13] The data collection instrument in this study was carried out using NRS measuring instruments which in their use used observation methods. The NRS measuring instrument is the most effective for determining the rating scale for Dysmenorrhea Pain in adolescents.

Results

This study was conducted at SMAN 104 East Jakarta to determine the effect of giving young coconut water on dysmenorhe pain. The data collected was primary data in the experimental group given young coconut water 1 time a day. The time of giving young coconut water is the next 2 hours after administration is measured to reduce pain levels in respondents. The observations were then processed using SPSS and analyzed with univariate and bivariate. Univariate analysis aims to describe the characteristics of each research variable while bivariate analysis aims to determine the effect of young coconut water therapy on dysmenorhe pain.

Univariate analysis to determine the characteristics of respondents, here is an overview of the distribution of age frequency of respondents in the experimental group and control group.

Table 1. Distribution of respondents' frequency by age

Characteristic	Experimental Group		Control Group	
Age	**Frequency (f)**	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
15	5	33,3	7	46,7
16	6	40,0	6	40,0
17	4	26,7	2	13,3
Sum	**15**	**100**	**15**	**100**

Table 1 can be found data on the frequency distribution of characteristics of adolescent productive age research results obtained from 30 respondents, who were studied at the age of 15 years as many as 5 people (33.3%), aged 16 years as many as 6 people (40.0%), while the age of 17 years as many as 4 people (26.7%) in the

experimental group. While in the control group aged 15 years as many as 7 people (46.7%), aged 16 years as many as 6 people (40.0), aged 17 years as many as 2 people (13.3).

Table 2. Frequency Distribution of Pretest and Posttest Dysmenorhe Pain Scales in the Experimental Group and Control Group

Category	Experimental Group		Control Group	
		Pretest		
Menstruation	**Frequency (f)**	**Percentage (%)**	**Frequency (%)**	**Percentage (%)**
No pain	0	0	0	0
Mild pain	4	26,7	2	13,3
Moderate pain	8	53,3	9	60,0
Severe Pain	3	20,0	4	26,7
Sum	**15**	**100**	**15**	**100**
		Posttest		
No pain	4	26,7	0	0
Mild pain	8	53,3	2	13,3
Moderate pain	2	13,3	10	66,7
Severe Pain	1	6.7	3	20.0
Sum	**15**	**100**	**15**	**100**

Table 2 shows that young women of SMAN 104 East Jakarta before giving young coconut water by doing pretest treatment experienced mild pain as many as 4 people (26.7%), moderate pain as many as 8 people (53.3), and severe pain as many as 3 people (20.0). This shows that the frequency is most in adolescent girls before being given young coconut water with moderate pain category. Then after posttest treatment the proportion decreased who experienced no pain, 4 respondents (26.7%), mild pain as many as 8 respondents (53.3%), moderate pain as many as 2 respondents (13.3%), and severe pain as many as 1 respondent (6.7%).

Table 2 shows that adolescent girls of SMAN 104 East Jakarta before giving young coconut water by conducting a pretest control group experienced mild pain as many as 2 people (13.3%), moderate pain as many as 9 people (60.0%), and severe pain as many as 4 people (26.7). This shows that the frequency is most adolescent girls before being given young coconut water with moderate pain category. Then conducted a posttest control group that experienced mild pain as many as 2 people (13.3%), moderate pain as many as 10 people (66.7%), and severe pain as many as 3 people (20.0%). This shows that the frequency is most adolescent girls before being given young coconut water with moderate pain category.

Table 3. Data Normality Test

Pretest and Posttest	**Kolmogorov-Smirnov**		**Shapiro-Wilk**	
	N	*P value*	*N*	*P value*

Scale	Pretest Experiments and Controls	30	.011	30	.035
Pain	Posttest Experiments and Controls	30	.054	30	.045

Table 3 of the data normality test seen from the Shapiro-Wilk test, namely obtained data results that were not normally distributed in both groups, namely the experimental group and the control group with p values in the sig experimental group, namely (0.035) < α (0.05). In the control group p value (0.045) < α (0.05). Thus it is recommended to use the *Mann-Whitney test.*

Bivariate analysis was conducted to determine whether or not the effect of young coconut water on the dysmenorhe pain scale in adolescent girls using *Wilcoxon* and *Mann-Whitney analysis.*

Table 4. Differences in Pretest and Posttest Dysmenorhe Pain Scales in the Experimental Group of Young Coconut Water Administration in Young Women

	Pretest		***Posttest***		**Z**	***P value***
Group	M	SD	M	SD	Score	
Experiment	3,43	2.300	1.50	.509	-3,358	0.001

M = Mean, SD = Standard Deviation

From table 4 It can be concluded that there is a difference in pain scale in adolescents before and after coconut water in the experimental group with a result of 0.001 (p < 0.05).

Table 5. Differences in Pretest and Posttest Dysmenorhe Pain Scales in Control Groups in Adolescent Girls

	Pretest		***Posttest***		**Z**	***P value***
Group	M	SD	M	SD	Score	
Control	4.57	1.977	1.50	.509	-4.487	0.000

M = Mean, SD = Deviation

Table 5 concluded that there were differences in pain scales in adolescents before and after without intervention in the control group with a result of 0.000 (p<0.05). So that there is an effect of young coconut water on dysmenorhe pain, Ho is rejected, Ha is accepted.

Table 6. Effect of Young Coconut Water Scale Between Experimental Group and Control Group

	Experiment		**Control**		**Z**	***P value***
Variable	M	SD	M	SD	Score	
Posttest	3.33	2.233	1.50	.509	-2.359	.019

M = Mean, SD = Standard Deviation

Based on table 6. It can be concluded that there is a difference in posttest pain scale

between the experimental group and the control group with a pvalue value of 0.019 (P<0.05) so that there is an effect of young coconut water on dysmenorhe pain then Ho is rejected, Ha is accepted.

Discussion

Differences in Pretest and Posttest Dysmenorhe Pain Scales in an Experimental Group of Adolescent Women

From The results of the tests that have been done, it can be seen that the scale of dysmenorhe pain at the time of pretest and posttest in the experimental group there are differences with *p value* 0.001 (p<0.05). Water Coconut is very well used as a raw material in making nata, because it contains nutrients needed for the growth and breeding of bacteria *Acetobacter xylimum* to produce bacterial cellulose. Coconut water has long been known as a source of growing substances, namely cytokinins.[14]

In a study conducted by Kristina & Syahid, (2012) with 30 respondents that there was a significant difference in the scale of pain before and after in the experimental group with scores *p value* 0.045 (p<0.05).[15] According to researchers, giving young coconut water plays a role in reducing pain, because by giving young coconut water to young women, young women will no longer use analgesics.

Differences in Pretest and Posttest Dysmenorhe Pain Scales in Adolescent Women in the Control Group

From The results of the tests that have been done, it can be seen that the dysmenorhe pain scale in the pretest and posttest in the control group has differences with the value of *p value* 0.000 (p<0.05). Pain can be felt in the lower pelvic area, waist and even back. That menstrual pain often occurs is functional (natural) menstrual pain that occurs on the first day or before the first day due to emphasis on *Kranalis Servikalis* (cervix). Usually dysmenorhe will disappear or improve with the next day of menstruation.

Based on research by Nurqalbhi, the average SR pain before the intervention was 4.57, the average pain after the intervention was 1.50. With value *p value* 0.000 (p<0.05) so that there is a difference when giving young coconut water.[16] According to researchers in the control group, there were differences in pain scales before and after because in the control group there was no pain management intervention, namely giving

young coconut water, where giving young coconut water can reduce dysmenorhe pain and adolescent girls are able to control themselves when they feel pain.

Effect of Posttest Dysmenorhe Pain Scale Between Experimental Group and Control Group

Based on the *Mann Whitney* test that has been done, the p *value is* 0.19 ($p < 0.05$) which means that there is an effect of giving young coconut water on the dysmenorhe pain scale in adolescent girls. These results showed that giving young coconut water affected the reduction of pain. Young coconut water can relax the muscles caused by prostaglandin activity, because at the time of menstruation, the damaged lining of the uterus is removed and will be replaced with a new, molecular compound called prostaglandin is released. This compound causes the muscles of the uterus to contract. When uterine muscle contractions occur, the blood supply to the endometrium narrows (vasoconstriction) and this process causes pain during menstruation. Other substances known as leukotrienes, which are chemicals that play a role in the inflammatory response, are also elevated at this time and are associated with the onset of menstruation. The composition of chemical substances found in coconut water includes *carbonic acid* or Vitamin C, *protein*, fat, *charcoal hydrate*, *calcium* and *potassium. Calcium* and *Magnesium* reduce muscle tension (including uterine muscles) and Vitamin C which are natural anti-inflammatory substances that help relieve pain due to menstrual cramps by inhibiting ezimcyclooxygenase which has a role in encouraging the process of prostaglandin formation.[15]

Result This research is in line with research conducted by Lestari (2015), suggesting that there is an effect of giving young coconut water on menstrual pain. During menstruation, exfoliated endometrial cells release prostaglandins stimulating uterine muscles and affecting blood vessels causing uterine ischemia through myometrial contractions and vasoconstriction. Prostaglandin levels increase especially during the first two days of menstruation. Giving young coconut water can reduce the level of menstrual pain in women who are experiencing menstrual pain. This is because young coconut water has a lot of high nutritional content for a variety of health.[17]

Based on the results of the study, 30 respondents who experienced dysmenorhe pain felt pain on the first and or second day of menstruation and felt pain radiating from the abdomen to the waist, often accompanied by nausea, dizziness and abdominal pain

such as diarrhea. This is in accordance with what was revealed by Judha (2012) that menstrual pain arises due to the presence of prostaglandin hormones that make the uterine muscles contract.[18]

According to the researchers' assumptions, the intensity of each individual's pain is variously influenced by individual descriptions of pain, each person gives different perceptions and reactions to each other about the pain felt by each person. This is because pain is a subjective feeling that only the individual himself knows the level of pain he feels. While researchers only rely on the instruments used to measure respondents' pain.

Conclusion

There is a difference between pretest and posttest experimental group and control group, it can be concluded that there is a difference in pain scale in adolescents before and after given young coconut water in the experimental group with a result of 0.001 ($p < 0.05$). While in the control group, it can be concluded that there is a difference in pain scales in adolescent girls before and after without intervention in the control group with a result of 0.000 ($p < 0.05$). There was an effect of young coconut water on dysmenohre pain in adolescent girls carried out with posttest in the experimental group and control group with significant values showing 0.019.

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