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THE EFFECT OF GIVING A COMBINATION OF AVOCADO (*PERSEA AMERICANA*) AND CHOCOLATE JUICE ON REDUCING DYSMINOREA

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ABSTRACT

Dysmenorrhea is a disorder during menstruation, and it can have an effect that can interfere with daily activities. The prevalence of dysmenorrhea in the world is still very high, 1.8-1069,425 (90%). In Indonesia, it was recorded at 64.25%, in East Java at 71.3%, while based on the results of a preliminary study in XI-grade of SMA Ibrahimy 2 of Sukorejo there was 80% of adolescents experienced dysmenorrhea. To determine whether avocado and chocolate juice reduce dysmenorrhea in XI-grade adolescents of SMA Ibrahimy 2 of Sukorejo. This study applied a quasi-experimental design with a one-group pretest-posttest design and control. Samples were taken using purposive sampling, involving 60 participants (30 in the intervention group and 30 in the control group). Data were analyzed through univariate and bivariate analysis. The prevalence of dysmenorrhea in the intervention and control groups generally showed moderate pain, with 38 cases (63.3%). The Chi-Square test revealed no significant correlation between the three categorical variables with dysmenorrhea because the p-value > 0.05. However, for the age of menarche, the p-value of 0.016 < 0.05 indicated a correlation with the level of dysmenorrhea pain. The results of the Wilcoxon test showed that both groups experienced significant changes, but the changes in the control group were more significant than the intervention group. The Mann-Whitney test with a p-value of 0.000 < 0.05 rejected H0 and accepted Ha, which means that the administration of avocado and chocolate juice significantly affects primary dysmenorrhea. The administration of a combination of avocado and chocolate juice significantly reduces primary dysmenorrhea in XI-grade adolescents at SMA Ibrahimy 2 of Sukorejo.

INTRODUCTION

Dysmenorrhea is menstrual pain caused by muscle contractions due to high levels of prostaglandins in menstrual blood, and these prostaglandins can stimulate uterine contractions (Susanti, 2021). Usually, Dysmenorrhea appears in the lower abdomen and spreads to the pelvic area due to increased prostaglandins(Susanti, 2018). Women who are menstruating have higher levels of prostaglandins compared to women who are not menstruating (Muhasshanah and Susanti, 2021). Women experience this every month, but each woman's menstrual experience is different(Neny Yuli Susanti, 2022b). Some women experience menstruation without problems, but

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many also experience discomfort and complaints, including Dysmenorrhea(Susanti and Hambani, 2021). The use of pharmaceuticals to alleviate menstrual cramps is common, but these drugs can have serious side effects when used chronically, including damage to the kidneys and other reproductive system organs. Here, we offer a non-pharmacological approach by suggesting that teenage girls try drinking avocado juice and eating chocolate instead.

Around 1.8–1069,425 individuals (or 90%) suffer from dysmenorrhea, and 10-15% of those persons have severe menstruation abnormalities, according to the World Health Organization (WHO) (Susanti, 2021). Dysmenorrhea was prevalent in Indonesia at 64.25 percent, with main occurrence in 54.98% of the population and secondary occurrence in 9.36 percent (Susanti *et al.*, 2014). The frequency of dysmenorrhea was found to be 71.3% in East Java, according to (Neny Yuli Susanti, 2022a). Based on preliminary research conducted on female adolescents at the Salafiyah Syafi'iyah Islamic Boarding School of Sukorejo, it was found that 85% experienced dysmenorrhea or pain during menstruation, with an average of 30% of the pain scale showing a score of 8 and 80% of the impact of them disrupting daily activities when experiencing Dysmenorrhea(Nik Hazlina *et al.*, 2022).

The results of a survey conducted on female adolescents at the Salafiyah Syafi'iyah Islamic Boarding School of Sukorejo showed that most of them just let it be or rest in bed when experiencing Dysmenorrhea, namely 30%, around 30% do not do any activity or just let it be, 20% consume drugs, 10% use warm water compresses and 5% consume chocolate. This Dysmenorrhea can interfere with activities, so they can not do activities for hours and days (Khotimah and Subagio, 2021).

One non-pharmacological therapy method is consuming a combination of avocado and chocolate juice. Avocado is a fruit that has many health benefits, one of which is pain relief(Neny Yuli Susanti and Isma Oktadiana, 2022). Avocado contains calcium, which can reduce body pain. Calcium has actin and myosin substances that muscles need when contracting(Kristina, Hasanah and Zukhra, 2021). According to research results of avocados contain calcium and magnesium, which play an important role in the body(Tyas, Ina and Tjondronegoro, 2018). Calcium helps reduce muscle contractions, while magnesium dilates blood vessels to prevent muscle spasms. In addition to avocados, chocolate also contains magnesium, which can help provide a sense of relaxation and help with bad moods. In addition, chocolate contains polyphenols, which function as antioxidants to fight free radicals and have anti-inflammatory properties (Sabrima *et al.*, 2020). Chocolate can release endorphin hormones to relieve the pain felt due to mood changes(Febriyanti, Putri and Yanti, 2021). The participants in this trial were teenage females, and the researchers wanted to see whether treating dysmenorrhea with a mix of avocado and chocolate would work.

METHODS

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This research employs a quantitative approach using a quasi-experimental design, namely a one-group control design with pre- and post-tests. A total of 682 female students from XI grade at SMA Ibrahimy 2 in Sukorejo make up the study population. There were 60 total samples utilized in the research, with 30 serving as controls and 30 as interventionists, selected using a purposive sampling approach. This study was conducted in June 2024. 1. Inclusion Criteria Is female students of SMA 2 Ibrahimy Sukorejo, female students who are willing to be studied by filling out the Informed Consent, female students who are menstruating (Pre Menstrual Syndrome H-1 to H-2 menstruation), female students who experience Primary dysmenorrhea, female students who do not use menstrual pain relievers. Restrictions on Inclusion Are Students' medical histories may include conditions including endometriosis, adenomyosis, uterine myoma, cervical stenosis, pelvic inflammatory illness, pelvic adhesions, irritable bowel syndrome, or cervical stenosis. Observation sheets and questionnaires served as the tools for this investigation. Data input, cleaning, editing, and coding were all part of the data processing procedures used in this investigation. Although both univariate and bivariate analyses were performed on the data. Wilcoxon, Mann Whitney, and Chi-square tests are used for analysis.

RESULTS

a. Pain Level Overview of *Dysmenorrhea*

Table 1: Pain Level Overview of *Dysmenorrhea in Adolescents*

Dysmenorrhea occurrence	Frequency (n)	Percentage (100%)
Mild pain	8	13.3%
Moderate pain	38	63.3%
Severe pain	14	23.3%
Total	60	99.9%

Table 1 shows the incidence of dysmenorrhea. Most respondents, 38 (63.3%), experienced moderate pain.

Table 2: Correlation between Respondent Characteristics and Level of Dysmenorrhea Pain in Adolescents

Characteristics	Category	Frequency (N)	Percentage (%)	Statistical Test
				P-Value (Chi-Square)
Body Mass	<18.5 Kg/M2	3	10%	

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Index	18.5-24.9 Kg/M2	24	80%	0.758
	25.0-29.9 Kg/M2	3	20%	
History of Ancestry	There isn't any	28	93.3%	
	There is	2	6.7%	0.243
Menstrual Cycle	<28 Days	20	66.7%	
	28-32 Days	9	30%	0.725
	>32 Days	1	3.3%	
Age of Menarche	<12 Years	6	20%	
	>12 Years	24	80%	0.016

Chi square test

Table 2 reveals that 24 out of the 50 respondents (or 80% of the total) had a Body Mass Index (BMI) between 18.5-24.9 kg/m2. Twenty responders (66.7% of the total) have menstrual cycles shorter than 28 days, and the majority of the participants (24 out of a total of 80) reach menarche at an age greater than twelve years. The majority of the participants (28 out of a total of 123) do not have any family history of any kind.

Table 3: Analysis of differences between intervention and control groups Control in XI-Grade in SMA Ibrahimy 2 of Sukorejo

Group	Frequency	Mean Rank	*P-Value*
Intervention	30	23.33	0.000
Control	30	37.67	

Mann-Whitney test

Table 3 shows the results of the analysis of the differences between the intervention group and the control group, namely that a combination of avocado juice (*Persea Americana*) and chocolate reduced dysmenorrhea.

DISCUSSION

Analysis of Differences between Intervention and Control Groups

Body Mass Index (BMI) affects menstrual disorders. A low BMI (thin, <18.5) can cause hormonal disorders due to drastic weight loss. Conversely, a BMI that is too high indicates excess prostaglandins, which can cause spasms in the uterine muscles. Very low BMI also results in a lack of body fat needed for the production of reproductive hormones,

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increasing the risk of dysmenorrhea or menstrual pain (Zulfa & Lestari, 2022). The results of this study found that adolescents with Body Mass Index <18.5 kg/m2 were three respondents (10%), 18.5-24.9 kg/m2 were 24 respondents (80%), and 25.0-29.9 kg/m2 were three respondents (20%). Neither the Body Mass Index nor the dysmenorrhea scale were significantly correlated at SMA Ibrahimy 2 in Sukorejo, according to the Chi-square test findings (p-value 0.758> 0.05). This confirms the results of the research by Bramatraf (2024), which similarly found no significant link between BMI and menstrual discomfort (p> 0.05), with a p-value of 0.056. Furthermore, the results demonstrated an OR-value = 2.909, indicating that the likelihood of dysmenorrhea was 2.909 times greater among respondents with an abnormal BMI as compared to those with a normal BMI. The severity of dysmenorrhea discomfort is influenced by an immutable factor: family history (Handayani, 2021). Dysmenorrhea runs in families, thus it's crucial that women take precautions to avoid it (Katharina & Pebrianti, 2019). In this research, two teenagers (or 6.7% of the total) reported a family history, while twenty-eight teenagers (or 93.3% of the total) reported none. The results of the Chi-Square test indicated that the p-value was 0.243> 0.05. This indicates that the pain scale and family history do not have a significant link, since the p-value is more than the alpha value. According to Salamah's study (2022), out of 37 participants who did not have a history of dysmenorrhea in their families, 15 of them (or 40.5% of the total) reported minor discomfort. Also, moderate discomfort was reported by 15 (or 31.3% of the total) of the 48 respondents who had a history of dysmenorrhea in their families. Statistical analysis using the Chi-square test yielded a p-value of 0.52 (p > 0.05), ruling out the possibility of a link between past medical history and the prevalence of dysmenorrhea at the Mutiara Barat Health Center's workplace.

Because the control group did not have any independent characteristics that might influence dysmenorrhea pain, the intervention group had a significantly lower average degree of pain compared to the control group (Nurcahyani, 2023). Both avocado and chocolate juice contain chemicals that may help lessen dysmenorrhea discomfort (Adri, 2020), and this research employed a combination of the two as an independent variable. Table 4.8 displays the results of the comparison between the two groups; the control group had a mean score of 37.67 and the intervention group a score of 23.33. With a p-value of 0.000, which is lower than 0.05, the Mann-Whitney test revealed statistical significance. The decision-making criteria of the Mann-Whitney test indicate that the alternative hypothesis (Ha) is accepted, suggesting that there is a substantial difference between the control and intervention groups. This notable variation allows us to address the study question, which was to determine whether or not a mixture of avocado (Persea americana) and cocoa juice may alleviate primary dysmenorrhea in eleventh graders at

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SMA Ibrahimy 2 Sukorejo.

The results of this investigation are consistent with those of Sitiyaroh (2020), who found an Asymp. Sig (2-Tailed) value of 0.006, leading to the acceptance of the hypothesis. In other words, when it comes to the impact of avocado juice on pain reduction in 2021 female students of SMA Negeri 25 Sepatan Tangerang, there is a notable disparity. These results are in line with those of Wahtini's study (2021), which likewise indicated that the intervention group significantly reduced dysmenorrhea discomfort compared to the control group (p-value 0.000 from the Mann-Whitney test). This demonstrates that midwifery students in their eighth semester had much less dysmenorrhea discomfort after receiving dark chocolate.

Analysis of the influence of pretest and posttest intervention on the intervention and control groups

The uterine muscles tense in dysmenorrhea because blood levels of the hormone prostaglandin are elevated. Increased levels of the hormone prostaglandin in women are different, this will increase more in women who are menstruating compared to women who are not menstruating (Widyanti, et al., 2021). Treatment of dysmenorrhea can be done non-pharmacologically, one of which is by using a combination of avocado and chocolate juice. because the content in avocado and chocolate can relax muscle contractions so that it can reduce dysmenorrhea pain, Avocado itself contains content that reduces menstrual pain, as well as calcium which has actin and myosin compounds that help shorten the duration of pain and relieve pain (Masruroh, et al., 2022). Chocolate contains magnesium which can reduce pain and help relax the body, as well as improve a bad mood. Magnesium functions to stimulate the brain, which in turn can trigger the release of endorphin hormones (Adri, 2020). Analysis of the effect of intervention before and after the intervention and control groups tested using the Wilcoxon statistical test is seen in table 4.7 with a mean/average value of pre-intervention 2.97 post-intervention 3.23, also seen the mean value in the control group pretest control 1.33 and posttest control 1.90. Both the intervention and control groups' p-values before and after the test show an effect, but the z-scores are different; the intervention group's is -4.832 and the control group's is -4.983. This indicates that there was a statistically significant improvement in the outcomes for the intervention group that had both chocolate and avocado juice. There is concordance between this research with the results of Ginting (2021), who used the Wilcoxon test and got a p-value of 0.002, rejecting H0. Giving female FKM UNPRI students (class of 2017) Persea americana juice significantly reduced cases of primary dysmenorrhea. The findings of the Wilcoxon test showed that chocolate

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significantly reduced menstruation discomfort (Utami, 2020, p = 0.001). Additionally, Saputra's study (2020) found that education regarding dysmenorrhea affected teenagers' attempts to diminish primary dysmenorrhea; this was supported by a z-value of -4.697 and a p-value of 0.000, which were generated by the Wilcoxon test.

The longer the menstrual cycle, the more often the uterus contracts and produces more prostaglandin hormones, which can cause pain (Wildayani D. et al., 2023). Twenty teenagers (66.7% of the total) had menstrual periods less than 28 days, nine (30%) had cycles between 28 and 32 days, and one (3.3% of the total) had cycles more than 32 days. A p-value of 0.725> 0.05 in the Chi-square test indicates that the pain scale is unrelated to the menstrual cycle. The lack of a relationship between the pain scale and the menstrual cycle (p = 0.512) is consistent with the findings of Purwaningtias's 2019 study. This study may show these results because only a small proportion of respondents have long menstrual cycles, namely 9.3% with a cycle of 32-38 days and 2% with a cycle of more than 39 days. Menarche occurring before age 12 years is associated with more prolonged exposure to prostaglandins, which contribute to increased uterine contractions and menstrual pain (Widiyanto et al., 2020). Findings from this research suggest a relationship between the age of menarche and the severity of dysmenorrhea discomfort in XI grade teenagers attending SMA Ibrahimy 2 in Sukorejo. Menarche occurred for 24 out of 30 respondents (80%) after the age of 12, with 6 respondents (20%) experiencing it before the age of 12. There was a statistically significant relationship between the pain scale and the age at which menstruation began (p=0.016). This confirms the results of Wardani's (2021) study, which surveyed 68 girls and boys, the majority of whom had menstruation before the age of twelve. A substantial association between the age of menarche and the pain scale was confirmed by the Chi-square test, which yielded a p-value of 0.000 (p <0.05) in this research.

CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that this study provides the following findings is The level of dysmenorrhea pain scale in the intervention group before being given a combination of avocado and chocolate juice showed that most of the female adolescents experienced primary dysmenorrhea, with a percentage of 56.7% in the moderate pain category, reduction in dysmenorrhea in the intervention group after being given a combination of avocado and chocolate juice, with a percentage of 66.7% in the painless category and the administration of avocado and chocolate juice significantly reduces primary dysmenorrhea in XI-grade adolescents at SMA Ibrahimy 2 of Sukorejo. The decrease of dysmenorrhea is considerably impacted by

the combination of avocado and chocolate juice, as shown by the Wilcoxon nonparametric test, which exhibits a p-value of 0.000 < 0.05.

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