THE EFFECT OF GIVING HOT DARK CHOCOLATE ON DYSMENORHORE IN ADOLESCENT

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ABSTRAK : PENGARUH PEMBERIAN *HOT DARK CHOCOLATE* TERHADAP DISMENORE PADA REMAJA PUTRI

Latar Belakang: Dismenore perlu diwaspadai karena dapat mengganggu aktivitas dan konsentrasi belajar dikelas, biasanya terjadi di daerah perut bagian bawah, pinggang hingga menjalar ke kaki. Di Indonesia angka kejadian dismenorea sebesar 107.673 jiwa (64, 25%), yang terdiri dari 59.671 jiwa (54, 89%) mengalami dismenore primer dan 9.496 jiwa (9,36%) mengalami dismenore sekunder. Penanganan dismenorea dapat dilakukan dengan cara non farmakologi salah satu nya dengan mengkonsumsi *hot dark chocolate.*

Tujuan: Untuk mengetahui Pengaruh Pemberian *Hot Dark Chocolate* terhadap Dismenore pada Remaja Putri Kelas IX Di SMPN 1 Muara Gembong Bekasi Tahun 2024.

Metodologi: Design yang digunakan dalam penelitian ini adalah *Quasy – Eksperimental* dengan *two group pretest – posttest*. Jumlah sampel 30 responden yang terdiri dari 15 responden pada kelompok intervensi dan 15 kelompok kontrol dengan teknik *Purposive Sampling*. Instrument yang digunakan adalah *Numeric Rating Scale* dan lembar observasi. Data dianalisis menggunakan uji *Paired T-test* dan *Independent T-test.*

Hasil Penelitian: Rata-rata nyeri haid sebelum diberikan hot dark chocolate adalah 7,67 dengan standar deviasi 1,447. Rata-rata nyeri haid setelah diberikan hot dark chocolate adalah 4,67 dengan standar deviasi 1,838.

Simpulan : Ada pengaruh pemberian *hot dark chocolate* terhadap dismenore pada remaja putri kelas IX di SMPN 1 Muara Gembong Bekasi tahun 2024.

Saran: Diharapkan remaja putri dapat mengonsumsi *hot dark chocolate* sebagai salah satu tindakan non farmakologi untuk meringankan dismenore dan membantu remaja putri untuk mengurangi mengkonsumsi obat obatan.

Kata kunci : Dismenore, *Hot Dark Chocolate*, Remaja Putri

ABSTRACT

Background: Dysmenorrhea needs to be watched out for because it can interfere with learning activities and concentration in class, usually occurring in the lower abdomen, waist and spreading to the legs. In Indonesia, the incidence of dysmenorrhea is 107,673 people (64.25%), consisting of 59,671 people (54.89%) experiencing primary dysmenorrhea and 9,496 people (9.36%) experiencing secondary dysmenorrhea. Dysmenorrhoea can be treated using non-pharmacological methods, one of which is by consuming *hot dark chocolate*.

Purpose: To determine the effect of giving *hot dark chocolate* on dysmenorrhea in young women in class IX at SMPN 1 Muara Gembong Bekasi in 2024.

Method: The design used in this research is *Quasy - Experimental* with *two group pretest - posttest*. The total sample was 30 respondents consisting of 15 respondents in the intervention group and 15 in the control group using the *Purposive Sampling* technique. The instruments used were the *Numeric Rating Scale* and observation sheets. Data were analyzed using the *Paired T-test* and *Independent T-test.*

Results: The average menstrual pain before being given *hot dark chocolate* was 7.67 with a standard deviation of 1.447. The average menstrual pain after being given *hot dark chocolate* was 4.67 with a standard deviation of 1.838.

Conclusion: There is an effect of giving *hot dark chocolate* on dysmenorrhea in class IX teenage girls at SMPN 1 Muara Gembong Bekasi in 2024.

Suggestion: It is hoped that young women can consume *hot dark chocolate* as a non-pharmacological measure to relieve dysmenorrhea and help young women reduce their consumption of drugs.

Keywords: Dysmenorrhea, *Hot Dark Chocolate*, Young Women

INTRODUCTION

Adolescents are characterized by the onset of menstruation. Menstruation occurs due to the release of the endometrial wall. The menstrual period of every teenager does not always run smoothly. One of the menstrual disorders is dysmenorrhea or menstrual pain. Dysmenorrhea consists of cramps, pain, and other discomforts associated with menstruation. In some women this pain can interfere with daily activities (Ikawati & Syamsuryanita, 2022)

WHO (*World Health Organization*) data in 2020, the incidence of dysmenorrhea is very high with 1,769,425 (90%) women suffering from dysmenorrhea, with 10-16% suffering from severe dysmenorrhea. On average, more than 50% of women suffer from dysmenorrhea. In Indonesia, the incidence of dysmenorrhea was 107,673 people (64.25%), consisting of 59,671 people (54.89%) experiencing primary dysmenorrhea and 9,496 people (9.36%) experiencing secondary dysmenorrhea. It is known that the prevalence of dysmenorrhea in West Java is 54.9% and in Bekasi City it reaches 63.2%. (Nurfitri et al., 2022)

Adolescent girls who experience dysmenorrhea when participating in learning activities that can interfere with their learning activities, can reduce concentration, disturbed sense of comfort, disturbed sleep patterns, disturbed appetite, disturbed interpersonal relationships. The impact of dysmenorrhea includes concentration in class (59%), sports (51%), class attendance (50%), social interaction (36%), homework (35%), ability tests (36%) and grades (29%). Therefore, dysmenorrhoea is significantly associated with absenteeism, schoolwork, participation in sports, and socializing with friends. (Nurfitri et al., 2022)

Dysmenorrhea can be managed by pharmacological and non-pharmacological means. Drug therapy includes the administration of analgesics or Nonsteroidal anti-inflammatory Drugs (NSAIDs) that can relieve pain. Taking painkillers has some side effects, such as nausea, vomiting, constipation, restlessness and drowsiness. To reduce the use of chemical drugs, non-drug treatments are used, such as eating foods that release endorphins and serotonin, including *dark chocolate*. Chocolate not only stimulates the production of endorphins and serotonin, but also contains flavonoids that have antioxidant effects. (Hartinah et al., 2023)

There are several types of chocolate, such as white chocolate, milk chocolate and dark chocolate. Of the three types of chocolate, dark chocolate has the most benefits. Dark chocolate has no fat and contains only a small amount of sugar. In addition, *dark chocolate* also has the highest cocoa content among other types of chocolate. Cocoa contains 13.12% antioxidants, while white chocolate only contains 6.74% antioxidants, which can protect cells in the body. (Oblitas & Ruiz, 2021) (Oblitas & Ruiz, 2021)

Dark chocolate is not only served in the form of chocolates in various forms and flavors, but is also often served in other appetizing food preparations such as cakes, ice cream, drinks, and more. Chocolate has various benefits for the body, such as releasing mood-boosting neurotransmitters and being high in antioxidants. It also contains vitamins and minerals, and stimulates the brain to release endorphins. Chocolate contains copper, which is used in the body to synthesize collagen and the neurotransmitter endorphin. Endorphin is a substance released by the body that inhibits pain impulses. The endorphin hormone will become a natural analgesic and natural tranquilizer so that it can reduce the intensity of pain such as menstrual pain(S. N. Asih et al., 2020)

The results of preliminary studies conducted by researchers on Monday, November 27, 2023 at SMPN 1 Muara Gembong obtained data on the number of ninth grade students as many as 63 people. The results of data collection were carried out to measure menstrual pain and treatment efforts made. It was obtained that 66.6% (42 adolescent girls) experienced dysmenorrhea during menstruation, with mild pain levels as much as 35.71% (15 students), moderate pain as much as 59.52% (25 students), and severe pain as much as 4.7% (2 students). The treatment carried out by some of these students was 52.38% (22 students) reducing menstrual pain with adequate rest, as many as 14.28% (6 students) stated by taking analgesic drugs and applying eucalyptus oil on the abdomen, and as many as 33.33% (14 students) with warm water compresses on the abdomen and often entering the UKS so they could not participate in learning activities. All respondents revealed that they experienced dysmenorrhea on the first and second day of menstruation with an average of moderate pain scale (4-6) as many as 70% of respondents and controlled severe pain scale (7-9) as many as 30% of respondents. While a survey of 10 respondents found the results that dysmenorrhea can interfere with daily activities such as not being able to concentrate while studying and the mood becomes chaotic. From these data, it shows that there are still many female students who experience dysmenorrhea which can interfere with school learning activities.

Based on the above background, the

researcher is interested in further research on the title " The Effect of Giving *Hot Dark Chocolate* on Dysmenorrhea in Class IX Adolescents SMPN 1 Muara Gembong Bekasi Year 2024".

RESEARCH METHODS

This research is a type of quantitative research using *quasy-experiment* (pseudo-experiment) , which is an experiment that has treatment, measurement of impact, experimental units, but does not use random assignment to create comparisons in order to conclude changes caused by treatment.

This research design uses *two group pre and post test with control group with Paired T-test* analysis, which was conducted to determine the effect of giving *hot dark chocolate* on dysmenorrhea in class IX adolescent girls at SMPN 1 Muara Gembong Bekasi in 2024. This *two group pre and post test* research design is a study that provides an initial test (*pretest*) before treatment, after treatment is given, then gives a final test (*posttest*). In this writing, the author obtained primary data collection collected directly from respondents using a questionnaire.

The population of adolescent girls in class IX at SMPN 1 Muara Gembong, namely: class 9.1 ; 16 people, class 9.2 ; 16 people, class 9.3 ; 15 people, 9.4 ; 16 people, 9.5 ; 15 people, a total of 78 people. Researchers took 30 adolescent girls in class IX SMP Negeri 1 Muara Gembong in 2023 who experienced dysmenorrhea, divided into 15 control group respondents and 15 experimental group respondents.

The sampling technique used in this study was *purposive sampling*. Non-random sampling where the researcher determines the identity that matches the research objectives so that it is expected to respond to the case. Samples that met the inclusion and exclusion criteria according to the research objectives were included in this study. The sample was 30 people, 15 interventions and 15 controls. By using *Purposive Sampling* technique, the sample size was obtained as many as 30 female students.

The research instruments used are sample identity forms (name, age of onset of menstruation, and age), *informed consent* sheets, NRS (*Numeric Rating Scale) scales* and observation sheets used to measure adolescent girls' dysmenorrhea pain scale. Univariate analysis was conducted to determine the average value of dysmenorrhea pain in the intervention group and control group on pretest and post test. Bivariate analysis was conducted to determine the effect of giving *hot dark chocolate* using the *Paired T-test*.

RESULTS AND DISCUSSION

Univariate Analysis

Based on table 1 that most respondents have age, which is 14 years old. Most experienced their first menstruation (menarche) at the age of 13 years, a total of 14 respondents, and the majority of respondents experienced a length of menstruation of 7 days, a total of 11 respondents.

Table 1
Frequency Distribution of Characteristics of Class IX Adolescents with Dysmenorrhea in 2024 (n = 30)

Variables	Frequency (f)	Percentage (%)
Intervention Group		
Age		
14 years	5	33,3
15 years	8	53,3
16 years old	2	13,3
Age of Menarche		
12 years	6	40,0
13 years	6	40,0
14 years	3	20,0
Duration of Period		
5 days	5	33,3
6 days	3	20,0
7 days	6	40,0
8 days	1	6,7
Control Group		
Age		
14 years	9	60,0
15 years	4	26,7
16 years old	2	13,3
Age of Menarche		
12 years	5	33,3
13 years	8	53,3
14 years	2	13,3
Duration of Period		
4 days	1	6,7
5 days	5	33,3
6 days	4	26,7
7 days	5	33,3

Based on table 2 shows that the average dysmenorrhea pain before giving *hot dark chocolate*

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is 7.67 with a standard deviation of 1.447 and the average dysmenorrhea pain after giving *hot dark chocolate* is 4.67 with a standard deviation of 1.838. Before giving *hot dark chocolate*, the minimum pain was 5 and the maximum was 10, after giving *hot dark chocolate*, the minimum pain was 2 and the maximum was 8. These results show that there is a difference in the average value of reducing dysmenorrhea pain in adolescent girls in the group given intervention with *hot dark chocolate*.

Table 2
The average value of dysmenorrhea pain before and after giving *hot dark chocolate* to the intervention group in class IX adolescent girls at SMPN 1 Muara Gembong Bekasi 2024

Intervention Group	N	Min	Max	Mean	Std. Deviation
Pre test	15	5	10	7,67	1,447
Post test	15	2	8	4,67	1,838

Table 3 shows that the average dysmenorrhea pain of the control group before was 7.60 with a standard deviation of 1.681 and the average level of dysmenorrhea after was 7.00 with a standard deviation of 1.772. The minimum pain before was 4 and the maximum was 10, the minimum pain after was 3 and the maximum was 10. These results show that there is a difference in the average value of the decrease in dysmenorrhea pain of adolescent girls in the control group.

Table 3
The average value of dysmenorrhea pain before and after the control group in class IX adolescent girls at SMPN 1 Muara Gembong Bekasi 2024

Control Group	N	Min	Max	Mean	Std. Deviation
Pre test	15	4	10	7,60	1,681
Post test	15	3	10	7,00	1,772

Bivariate Analysis

Table 4
Effect of reducing dysmenorrhea pain scale in adolescent girls in the intervention group and control group

Variable	Mean	Differen Mean	Std. Dev	Sig
Intervention Group				
Pre test	7.667	0,667	1.44749	0.000
Post Test	4.667		1.83874	
Control Group				
Pre test	7.600	2,33	1.68184	0.033
Post test	7.000		1.77281	

Based on the table 4 that in the intervention group there is difference in the average value of th dysmenorrhoea pain scale with a sig value of 0.000 <0.05, which means that there is an effect of the administration of hot dark chocolate in reducing the dysmenorrhoea pain scale in adolescent girls of class IX at SMPN 1 Muara Gembong Bekasi Year 2024. At control group there is a difference in the average value of the pain scale of dysmenorrhoea with a sig value of 0.033 <0.05. dysmenorrhoea with a sig value of 0.033 <0.05, which means that there is an effect of relaxation techniques in reducing dysmenorrhoea pain scale in adolescent girls IX. influence of relaxation techniques in reducing the dysmenorrhoea pain scale on adolescent girls in class I X at SMPN 1 Muara Gembong Bekasi Year 2024.

Table 5
The Effect of *Hot Dark Chocolate* on Dysmenorrhea in Adolescents

Variable	Mean	t	Selisih mean	Sig
Post test	4.667	-3.538	2,333	0.001
Intervention Control	7.000			

Based on table 5 , it can be seen that SMPN 1 Muara Gembong Bekasi calculated the average value (*mean*) of the posttest in the group given *hot dark chocolate* of 4.67 and the control group of 7.00, so that there is a difference in the average value between the intervention group and the control group with a Sig (2 tailed) value of 0.00, meaning that there is a significant difference in the average value of the dysmenorrhea pain scale in the intervention group and the control group with a difference in the average value of the dimenorrhea pain scale of -2.33, meaning that the intervention group has a lower / smaller pain scale after being given *hot dark chocolate*, it can be concluded that giving *hot dark chocolate is* more significant in reducing the dysmenorrhea pain scale.

DISCUSSION

The results showed at SMPN 1 Muara Gembong Bekasi that the intensity of dysmenorrhea pain in adolescent girls before the intervention had an average pain scale of 7.67 and the control group had an average pain scale of 7.60, while the dysmenorrhea pain scale after the intervention was 4.67 in the intervention group and 7.00 in the control group, which means that there is a decrease in the pain scale of dysmenorrhea in the intervention group.

This pain reduction mechanism can be explained by the gate control theory in (Potter, 2010)Pain intensity is lowered by blocking pain implants by endorphin whose release is triggered by the administration of *dark chocolate*, as well as the inhibition of pain implants by serotonin pain cues cannot be forwarded to the cornu dorsalis.(Arfailasufandi & Andiarna, 2018)

This study proves that there is a significantn difference between the menstrual pain scale (dysmenorrhea) before giving *hot dark chocolate* and after giving *hot dark chocolate* which has been described in data analysis. This was tested on the results of the treatment of 30 respondents in class IX SMPN 1 Muara Gembong Bekasi at the beginning before the intervention. Furthermore, after treatment, the intensity of menstrual pain (dysmenorrhea) can be reduced.

The decrease in the menstrual pain scale after giving *hot dark chocolate* has also been proven by the results of the analysis by asih with the title the effect of *dark chocolate* on reducing menstrual pain in adolescents in 2020. The average menstrual pain before being given *dark chocolate* therapy was 5.53 with a standard deviation of 0.507. The average menstrual pain after being given *dark chocolate* therapy is 3.5 with a standard deviation of 0.572.(S. N. Y. I. A. A. Asih, 2020)

Based on these facts and theories, the *hot dark chocolate* intervention has a positive effect on reducing and even eliminating menstrual pain (dysmenorrhea). The dose of hot dark chocolate according to (Fatkurrohman et al., 2023) *hot dark chocolate* was given to 1 group of 85 grams and 1 group was not given *hot dark chocolate*, it was concluded that giving *hot dark chocolate had an* effect on dysmenorrhea. The menstrual cycle in respondents for 1 month and irregular menstrual cycles are one of the risk factors that exacerbate the level of dysmenorrhea pain. The cause of the delay in menstruation is stress, the trigger for excessive stress experienced by female students because they think too much about final assignments and exams, making them stressed and eventually the menstrual cycle is late

Based on the assumptions of the researchers, the frequency of pain obtained varies in both the control and intervention groups, this depends on a person's pain threshold, on the post- test pain scale, the results of the effect of giving *hot dark chocolate are* obtained, this occurs because the endorphin hormone released by magnesium will affect the mood of adolescents, so that adolescents will be suggested to be calmer, this will divert feelings of pain in adolescents, besides that magnesium can relax the smooth muscles in the uterus.

The Effect of *Hot Dark Chocolate* on Dysmenorrhea in Adolescent Girls at SMPN 1 Muara Gembong Bekasi Year 2024

From the results of research conducted by researchers with theoretical concepts and related research results, the results of the *pre-test* and *post-test* scale reduction of 4 .67 and the control group of 7.00, so it can be seen that the difference between the two groups is 2.33 and with a p-value of 0.001 <0.05. There is a significant effect of dysmenorrhea scale value after being given the intervention .

This is also supported by the theory Pech, J.

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(2010). in (Sry Rezki Aulia, Masruroh, 2019)which explains that chocolate has various benefits for the body, such as releasing neurotransmitters that improve mood and is high in antioxidants. Chocolate also contains vitamins and minerals, and stimulates the brain to secrete endorphins. Chocolate contains magnesium which is used in the body to synthesize collagen and endorphins. Endorphins are substances released by the body that inhibit pain impulses. And serotonin will also keep the pain gate closed, serotonin deficiency will make sensitivity to pain increase, to increase serotonin levels can be stimulated in the body. pain will decrease even without intervention, because on the third day the increase in progesterone levels will decrease and the body will be able to adapt to pain so that it becomes accustomed to feelings of pain.(Rizky et al., 2022)

This research is in line with (Ikawati & Syamsuryanita, 2022)which suggests that there is an effect of giving dark chocolate on reducing the intensity of primary dysmenorhea in adolescent girls. Other similar studies have also been conducted by ((Mulyatina, 2021)obtained the results of statistical tests showing that the average menstrual pain before being given dark chocolate was 4.07 with a standard deviation (SD) value of 0.640. Meanwhile, the average value of the menstrual pain scale after being given dark chocolate is 3.00 with a standard deviation (SD) of 0.743. The statistical test results show a P value of 0.014, which means that there is an effect of the menstrual pain scale before and after being given dark chocolate to adolescent girls in Alue Padee Village, Kuala Batee District, Southwest Aceh Regency.

Based on the results of data analysis that has been carried out, researchers assume that dark chocolate is a drink that provides a relaxing effect, the group that is not given *hot dark chocolate* does not experience a significant decrease in pain compared to the group given *hot dark chocolate*. So that giving *hot dark chocolate* can be one of the non-pharmacological therapies to reduce dysmenorrhea in adolescent girls, because *dark chocolate* can stimulate the brain to secrete endorphin hormones which function to inhibit pain impulses in the body besides that chocolate is also easy to get anywhere. So that dark chocolate can be applied as an alternative in dealing with dysmenorrhea. The results showed at SMPN 1 Muara Gembong Bekasi that the intensity of dysmenorrhea pain in adolescent girls before the intervention on average experienced a varied pain scale.

CONCLUSIONS

There is an effect of giving *hot dark chocolate* on dysmenorrhea in class IX adolescent girls at SMPN 1 Muara Gembong Bekasi in 2024 with a *p value of* 0.001 <0.05.

SUGGESTION

It is expected that young women can consume hot dark chocolate as one of the non-pharmacological measures to relieve dysmenorrhea and help young women to reduce taking drugs.

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