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CARROTS JUICE FOR DYSMENORRHEA

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ABSTRACT

Background: The incidence of dysmenorrhea (menstruation pain) was reported at a moderate level (64.25%), ranged from 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea. Most Indonesian women used herbs to reduce the pain, yet, only few who understood that carrots can be used. Carrots contains a lot of beta carotene, flavonoids and saponins that works as analgesic and anti-inflammatory effect. It inhibits the enzyme phospholipase and lipooksigenase enzymes that would inhibit prostaglandin release.
Aims: The objective of this research is to analyze the effect of carrots juice to reduce dysmenorrhea in midwifery student.
Method: this research employed pre-experimental design, with pretest-posttest one group design. The carrot-free varieties of water was set as independent variable, whilst different levels of dysmenorrhea pain as dependent variable. Twenty five female students was selected randomly as sample from 172 students' population. Prior to treatment, respondents were asked to fill out a questionnaire about the degree of pain experienced, then given carrot juice made from 250 grams of carrots, 100 cc of water and 2 tablespoons of sugar and drink 2 times (morning and evening). After administering carrot juice, respondents again filled out questionnaires about the level of dysmenorrhea pain.
Results: Prior to the intervention, 72% participant experienced mild pain whilst 20% suffered from moderate pain and 8% felt severe pain. After the provision of carrots juice, the vast majority experienced no pain (68%), 24% mild and 8% felt moderate pain. No participants reported suffered from severe pain. The results of Wilcoxon Match Paired Test analysis shows that there is influence of giving of carrots juice to various level of dysmenorrhea in student with $p = 0.001$.
Conclusion: There is an effect of giving carrots water to various levels of dysmenorrheal pain in the students. So it is advisable for teenagers or adults to increase knowledge related to dysmenorrhea and to provide carrot juice as an alternative to overcome dysmenorrhea pain.

Keywords: dysmenorrhea, pain, carrots

INTRODUCTION

Dysmenorrhea is commonly occuring in the first 3 years after menarche (primary dysmenorrhea), although it may occur in late reproductive life (secondary dysmenorrhea) [1]. In Indonesia, the incidence of dysmenorrhea is 64.25% consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea [2].

Dysmenorrhea can affect daily activities. The effect of dysmenorrhea is reduced quality of life. Sometimes the students just have to leave the class because of dysmenorrheaa [3-5]. Most of women with dysmenorrhea use drugs (analgesic and antispasmodic) to reduce pain, and few use natural ingredients available at home [3, 5, 6]. Indonesian women used natural ingredients to prevent health problems since several thousand years ago. For example, in overcoming illness at the time of menstruation (dysmenorrhea), women in Indonesia make use of turmeric and tamarind which made as beverages [7]. Many women use herbs to alleviate primary dysmenorrhea. in a systematic review, analysed 24 studies on effects of herbs on dysmenorrhea and found that thyme (*Thymus vulgaris*), chamomile tea (*Matricaria chamomilla*), St. John's wort (*Hypericum perforatum*), fennel (*Foeniculum vulgare*), cinnamon (*Cinnamomum*), dill (*Anethum graveolens*), saffron (*Colchicum*), celery (*Apium graveolens*), anise (*Pimpinella anisum*), balm (*Balsamum),* valerian (*Valeriana officinalis*), mint extract (*Menthe longifolia*) and organic honey were effective in alleviating primary dysmenorrheal [8].

The other natural ingredients can be used to treat dysmenorrhea is carrot. But only a little women who use carrots to treat menstrual pain. Carrots contains a lot of beta carotene, flavonoids and saponins that can work as analgesic and anti-inflammatory effect. It can inhibit the enzyme phospholipase and lipooksigenase enzymes that would inhibit prostaglandin release when given in a certain dose [2, 9, 10]. The purpose of this research is to know the effect of carrots juice to treat dysmenorrhea pain in the students.

METHODS

This research used pre experimental design, with pretest and posttest one group design. Carrot juice was the independent variable and the dependent variable was the level pain of dysmenorrhea. The population in this study was all the midwifery students in Diplom III Midwifery program in Purwokerto (172 students), 57 students from first grade, 39 students in second grade and 76 students in third grade. Sampling technique used simple random sampling obtained 25 respondents who met the criteria for inclusion and exclusion. Inclusion criteria are students in Prodi DIII Kebidanan Purwokerto who experience menstrual pain and are willing to become respondents. While the exclusion criteria of respondents who at the time of sampling are not in place or cannot be found by researchers or drinking water squeezed carrots are not in accordance with the provisions.. Prior to treatment, respondents were asked to fill out a questionnaire about the degree of pain experienced, then given carrot juice made from 250 grams of carrots, 100 cc of water and 2 tablespoons of sugar and drink 2 times (morning and evening). After administering carrot juice, respondents again filled out questionnaires about the level of dysmenorrhea pain.

This research data analysis used univariate and bivariate. Univariate analysis to review the percentage of each scale of pain before and after given carrot juice. To calculate the pain used Verbal Rating Scale (VRS) by gave respondents the questioner to the intensity of perceived pain. The scale of pain does not pain (0), mild pain (1-3), moderate (4-6), severe (7-9) and unbearable pain (10). Bivariate analysis used to know the existence of various levels of dysmenorrhea disease in respondents before and after gave the juice of carrots. In this study bivariate analysis using Wilcoxon Match Paired Test analysis..

RESULTS

Characteristics of respondents

Table 1. Characteristics of respondents

NO	CHARATERISTICS	Amount (n)	Percentages (%)
1	Age		
	a. 18 years old	2	8
	b. 19 years old	9	36
	c. 20 years old	10	40

NO	CHARATERISTICS	Amount (n)	Percentages (%)
	d. 21 years old	3	12
	e. 22 years old	1	4
2	Age of menarche		
	a. 10 years old	1	4
	b. 11 years old	3	12
	c. 12 years old	10	40
	d. 13 years old	8	32
	e. 14 years old	3	12
3	Body Mass Index (BMI)		
	a. Underweight	0	0
	b. Normal	22	88
	c. Overweight	2	8
	d. Obesity	1	4

The results of univariate analysis of respondents can be seen in table 1. The table shows that the percentage of respondents distributed almost equally at the age of 19 and 20 years, which ranged between 36-40%. Menarche age is the fastest at the age of 10 years and the slowest at the age of 14 years, with an average age of menarche 12.36 years. Nutritional status of respondents based on Body Mass Index (BMI) is mostly with normal nutritional status is 88% and only 4% are obese.

Level pain of dysmenorrhea in student before given carrots juice

Table 2. Level pain of dysmenorrhea in student before given carrots juice

Levels of pain	Frequencies	%
No pain	0	0
Mild	18	72
Moderate	5	20
Severe	2	8
Unbearable	0	0
Total	25	100

Based on table 2, before being given carrot juice, most respondents have a mild pain up to 72%, and there were 8% of respondents who have severe pain. However, no one has experienced unbearable pain.

Level pain of dysmenorrhea in student after given carrots juice

Table 3. Level pain of dysmenorrhea in student after given carrots juice

Levels of pain	Frequencies	%
No pain	17	68
Mild	6	24
Moderate	2	8
Severe	0	0
Unbearable	0	0
Total	25	100

Based on table 3, after drinking carrot juice twice a day, we found the differences of level pain. After drinking carrot juice, most of the respondents felt no pain, which is equal to 68%, and no longer felt severe pain.

The effect of carrots juice to reduce dysmenorrhea

The bivariate analysis on the effect of carrot juice on the various levels of dysmenorrhea pain in the students using the test at significance level p <0.05 and 95% confidence interval using wilcoxon analysis. The results of the analysis can be seen in the following table 4.

Tabel 4. The effect of carrots juice to reduce dysmenorrhea

Levels of pain	Before drinking carrot juice	%	After drinking carrot juice	%	p-Value
No pain	0	0	17	68	0.001
Mild	18	72	6	24	
Moderate	5	20	2	8	
Severe	2	8	0	0	
Unbearable	0	0	0	0	
Total	25	100	25	100	

From result of analysis of Wilcoxon Match Paired Test got Asymp result. Sig 0.001 (P <0.05), so Ha accepted and H_0 rejected. It shows that there is effect of giving carrots juice to various level of dysmenorrhea in student with p = 0,001.

DISCUSSION

Dysmenorrhea is painful at the time of menstruation, the pain is usually felt in the lower abdomen or waist, can also be accompanied by nausea, headaches, and unconscious and without any signs of infection or pelvic disease [1].

Pain occurs shortly before or coincide with the onset of menstruation and lasts for several hours, although in some cases it may last several days. The nature of the pain is spasm, usually limited to the lower abdomen, but can spread to the waist or thighs. Coincide with the pain can be found nausea, vomiting, headaches, diarrhea, irritability, etc [11].

From this research, mostly respondents who experienced dysmenorrhea is 19 and 20 years old. It have similar results with the other researc who have respondents with the average age 19-20 years [12, 13]. Primary dysmenorrhea usually begins as teens reach the ovulatory cycle, generally in the first year after menarche. This is caused by the overproduction of prostaglandins in the endometrium during the ovulatory cycle [12]. The same survey was conducted at Jimma University. Ethiopia with an average age of 20 respondents and the results mentioned that 99.6% of respondents had premenstrual syndrome. This can have an impact on students' academic activities [12-14]. It also congruent with the results carried out in Egypt, regarding to the age of the participants in the current study the results revealed that the mean age of the respondents was 20 ±1.3 [14].

Menarche age is further impaired in the incidence of dysmenorrhea. In this study, respondents experienced menarche at the age of 12 years. Characteristic of female puberty that signifies reproduction with menarche. Most women experience it at the age of 10-16 years, varying according to nutrition, pictures and environment. Young women have a common problem for some time after menarche, for the example is dysmenorrhea [15] Primary dysmenorrhea, also called idiopathic, essential, intrinsic dysmenorrhea is menstrual pain without abnormalities of reproductive organs (without gynecological abnormalities). This

form usually begins 2-3 years after menarche and reaches maximal between the ages of 15 and 25 years. The frequency decreases with age and usually stops postpartum.

The incidence of dysmenorrhea is related to the nutritional status of a woman. One measure of nutritional status is built on Body Mass Index (BMI). In this study, most of the respondents had normal BMI only a few were overweight and obese. However, respondents with normal BMI also experienced dysmenorrhea. The incidence of dysmenorrhea is associated with a woman's nutrient unit. Women with a Body Mass Index (BMI) of less than normal weight and overweight are more likely to suffer from dysmenorrhea than women with normal BMI. Women with a weight less than normally found chronic energy deficiency that can lead to decreasing endurance. Whereas in women with overweight tend to have excess fat that can interfere with the reproductive system at the time of menstruation so that it can cause pain. It was found that overweight had a primary dysmenorrhea frequency twice as large as that of underweight and allowed for longer pain [13, 16-18]. However, in this study, respondents with normal BMI were most likely to experience dysmenorrhea. This can be due to other factors, such as stress. Several factors that play a role as the cause of primary dysmenorrhea include psychological factors. For girls who are emotionally unstable, it is easy to experience dysmenorrhea. This unbalanced emotional state can occur in adolescence [19]. Dysmenorrhea is also associated with hormonal changes and anxiety levels. When the stress, the peptide hormone will be removed and will cause more and more to form prostaglandin and vasopressin so that the uterine muscles will be more contracted and will cause the nerve ends to be pinched, stimulation is channeled through the sympathetic and parasympathetic nerves and will arise pain [19]. Pain is complex and many factors affect a person's pain level. Factors that affect individual pain include attention, anxiety, past experience, fatigue, coping patterns, family and social support, culture, pain perception and nutritions [19-21].

The results of the study based on table 2 we know that various levels of dysmenorrheal pain in the student before given carrot juice with the greatest is mild pain (72%). The results of this study are different from the research by Kartika Siahaan, “Decreasing of the Dismenore Rate on Student Faculty of Nursing Unpad Using Yoga” where the result shows before yoga, 50% of respondents have dysmenorrhea in moderate pain category and 10% have controlled severe pain [2].

After respondents consumed carrot juice there are difference pain level of dysmenorrhea. After consumed carrots juice twice a day, respondents who fell no pain until 68% and no one who felt severe pain again. It has similar result with Handhika's study (2015) on the effectiveness of carrot juice (*Daucus carota*) to decrease the degree of dysmenorrhoea in young women in female dormitories of Stikes' Aisyiyah Yogyakarta students. In the control group did not occur much decrease while in the experimental group there was much decrease so that carrot juice (*Daucus carota*) can decrease the level pain of dysmenorrhoeal [2].

Dysmenorrhea is associated with endometrial prostaglandins and leukotrienes. After ovulation occurs in response to increased progesterone production, fatty acids will increase in cell membrane phospholipids. Then arachidonic acid and other omega-7 fatty acids are released and initiate a flow of prostaglandin and leukotriene mechanisms in the uterus. It results in the termination of inflammatory and tense responses during menstruation [22].

In this study respondents were given carrot juice with carrots 250 gr, water 100 cc and sugar 2 tablespoons. How to make by cleaning the carrots then wash them thoroughly and cut them into pieces. Mix all ingredients in a blender. Blend all ingredients until well blended. Pour in a glass then serve. Results of analysis of Wilcoxon Match Paired Test results obtained Asymp. Sig 0.001 ($P < 0.05$) then Ha accepted and Ho rejected. It shows that there is effect of carrots juice for dysmenorrhea in midwifery students with $p = 0.001$. There are diference level pain of dysmenorrhea before and after given carrots juice. Carrots in 100 grams contain Beta Carotene of 754 mcg. Beta-carotene other than as an antioxidant, also has the effect of analgesic and anti-inflammatory. Based on research conducted by Jeane Esvandiary et al from Sanata Dharma University in Yogyakarta it is known that the consumption of beta-carotene as much as 3,071,93

SI / kgBB can give analgesic and anti-inflammatory effect to body [9, 23]. Beta carotene contained in carrots can reduce the pain due to its inhibition of arachidonic acid oxidation. Such oxidation inhibition results in inhibition of reactive oxygen formation and prostagladin. In addition, beta carotene is also an antioxidant capable of capturing reactive oxygen and peroxyl radicals and neutralize it, inhibiting the oxidation of arachidonic acid into endoperoksida and decrease the activity of lipooksigenase enzyme [2, 10].

Carrots also contains flavonoids and saponins that can work as anti-inflammatory. The 5.11% flavonoid content is thought to inhibit the enzyme phospholipase and lipooksigenase enzymes that would inhibit prostaglandin release [9]

The discomfort of menstruation is based on the explanation given by Clitheroe and Pickles because the endometrium in the secretory phase produces Prostaglandin F2 which causes contraction of the smooth muscles. If excessive amounts of prostaglandins are released into the bloodstream, other than dysmenorrhea, common effects, such as diarrhea, nausea, vomiting flushing, are present. Cramping pain starts 24 hours before menstruation and may last for 24-36 hours, although severe pain lasts only during the first 24 hours. Cramps are felt in the lower abdomen, but can spread to the back or to the inner surface of the thigh. In severe cases, cramping pain may be accompanied by vomiting and diarrhea [24-26]

LIMITATIONS

The pain is subjective, to illustrate the pain are many aspects that can be used to observe such as observations of behavior that describes pain, facial expression observation, listening to complaints, measuring vital signs and so on. But in this study, it was not done, whereas if done could strengthen the observation of pain felt by the respondents. Not only measure the scale of the pain alone, but his observations are better able to describe the patient's pain perception.

In this study there was only the treatment group at the level of dysmenorrhea pain before and after carrot juice given, so it is likely that many things outside of carrot juice can affect the pain level. However, researchers used homogeneous respondents in this study to minimize the limitations.

CONCLUSION

The level of dysmenorrhea pain in the student before was given carrot juice at least painless and unbearable respectively 0%, severe pain 8%, moderate pain 20% and minor frequency pain 72%. The level of dysmenorrhea pain in the students after giving the carrots juice of the least amount of severe pain and unbearable respectively 0% and moderate pain 8%, light pain 24% and the greatest frequency no pain that is 68%. There was an effect of giving carrots juice to various level pain of dysmenorrhea in students with $p = 0.001$. It is recommended to make carrot juice as an alternative to overcome dysmenorrhea pain. This study can be developed by experimental research design by increasing the control group as respondents and varying the dose of carrot juice.

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