

The Effect Of Turmeric On The Quality Of Primary Dysmenorrhea Pain To Students

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ABSTRACT

Introduction: Dysmenorrhea is a painful felt in women when menstruation. The factor is the increase in prostaglandin in endometrium. Dysmenorrhea has differentiated become two primer dysmenorrhea and secondary dysmenorrhea. The incident rate of dysmenorrhea 64, 25% which are 54, 89% primer dysmenorrhea and 9, 36% secondary dysmenorrhea. From the interview result to 5 girls' adolescent, 3 of them said that painful when they have menstruation every month. Many handlings use anti-inflamasi medications which have dangerous negative effect if used in the long term, such as skin rash and thrombocytopenia. **Objective:** To aim is to know the effect of giving traditional turmeric drink to pain quality of primer dysmenorrhea for girl teenager SMPN 7 Jember period 2017. **Methods:** quasi experiment (experiment semu) with research method used One Group Pretest Posttest Design. Approach model cross sectional with amount sample 50 adolescents who experience primer dysmenorrhea. The instrument in the research used painful scale Numeric Rating Scale (NRS) data analysis used paired t-test / Wilcoxon Matched Pair Test. **Results:** They got the result $p\text{-value } 0.000 < \alpha (0.05)$ so, H_0 has rejected the meaning is there is influence for giving traditional turmeric drink to pain quality of primer dysmenorrhea for girl teenager SMPN 7 Jember period 2017. **Conclusion:** Adolescents should be able to limit the use of the smartphone according to their needs and minimise smartphone use before going to bed at night. Turmeric can reduce painful quality dysmenorrhea.

ABSTRAK

Latar belakang: Agregat remaja merupakan salah satu kelompok usia yang memiliki angka kecanduan smartphone yang tinggi. Kualitas tidur yang buruk pada remaja merupakan salah satu dampak negatif dari adanya kecanduan penggunaan smartphone tersebut. **Tujuan:** Untuk mengetahui pengaruh pemberian minuman kunyit tradisional terhadap kualitas nyeri dysmenorrhea primer pada remaja putri SMPN 7 jember tahun 2017. **Metode:** Desain penelitian menggunakan quasi experiment (eksperimen semu) dengan metode penelitiannya menggunakan one Group Pretest Posttest design. Model pendekatan cross sectional dengan jumlah sampel 50 remaja yang mengalami dysmenorrhea primer. Instrumen dalam penelitian menggunakan skala nyeri Numeric Rating Scale (NRS) Analisis data menggunakan paired t-test / Wilcoxon Matched Pair Test. **Hasil:** Didapatkan hasil $p\text{-value } 0.000 < \alpha (0.05)$ dengan demikian H_0 ditolak Artinya Terdapat pengaruh pemberian minuman kunyit tradisional terhadap kualitas nyeri dysmenorrhea primer remaja putri SMPN 7 Kabupaten Jember. **Kesimpulan:** Kunyit mampu menurunkan kualitas nyeri dysmenorrhea.

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Introduction:

Every woman who enters reproductive age must experience a condition called menstruation. Menstruation is the release of the uterine wall (endometrium) which is accompanied by bleeding and occurs every month except during pregnancy (Sibagariang, 2016). Menstruation usually occurs at the age of 11 years and lasts until women experience menopause, which is around the age of 44-55 years. Another source states that menstruation is a complex problem that is not only based on changes in the endometrium and uterine stroma but also involves other reproductive tissue functions involving hormone interactions (Karjatin, 2016).

In the discharge of the endometrium there are some women who experience pain or cramps in the lower abdomen. Cramps caused by uterine contractions that are too strong due to excessive production of prostaglandins are called dysmenorrhea (Arma, Karlinah, & Yanti, 2015). Dysmenorrhea is divided into two forms, namely primary dysmenorrhea and secondary dysmenorrhea (Sari, Indrawati, & Harjanto, 2012). Primary dysmenorrhea is pain since the first menstruation without any uterine abnormalities, while secondary dysmenorrhea is pain that occurs during menstruation and is accompanied by abnormalities of the uterus such as endometriosis, or a tumor in the uterus.

Dysmenorrhea occurs in more than half of reproductive women with varying prevalence. Adolescents around the world 90% experience problems during menstruation, even more than 50% of women who menstruate experience primary dysmenorrhea (Larasati & Alatas, 2016). In Indonesia, the incidence of dysmenorrhea is 64.25% consisting of 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea (Marlina, 2012). Meanwhile, out of 5 young women who were asked about menstrual pain, 3 of them experienced dysmenorrhea every month.

The problem that often occurs in adolescent girls is the high morbidity rate due to dysmenorrhea where treatment is still a lot using analgesic and anti-inflammatory medication mefenamic acid, ibuprofen and the

like. Meanwhile, long-term use of analgesic medication, for example, can cause irritation of the stomach and worse, it can cause gastric ulcers (Mediansyah & Rahmanisa, 2017). Besides curing diseases, pharmaceutical (synthetic) drugs also have side effects, so that many people turn to traditional medicines made from plants. And the turmeric plant is an alternative herbal treatment that can be used to treat dysmenorrhea pain.

Dysmenorrhea itself occurs due to an increase in prostaglandin (PG) F₂-alpha which is a cyclooxygenation (COX-2) resulting in hypertonus and vasoconstriction in the myometrium resulting in ischemia and menstrual pain. In addition, there is also PGE-2 which also causes primary dysmenorrhea. Where the increase in PGF-2 alpha and PGE-2 levels will clearly increase the pain during menstruation.

This dysmenorrhea can interfere with the daily life of women and encourage sufferers to carry out examinations or consultations with health workers (Sibagariang, 2016). The intense pain forces the sufferer to rest, and leave work for several hours or even days.

Several ways to relieve the symptoms of dysmenorrhea are pharmacological and non-pharmacological. Pharmacological drugs that are often used are analgesic and anti-inflammatory, but the use of pharmacological drugs often causes side effects. While non-pharmacological treatments that are mostly done to relieve symptoms of dysmenorrhea are the use of warm compresses, regular exercise and consuming herbal products that have been trusted to have their properties (Marlina, 2012).

One of the herbal products used to reduce menstrual pain is turmeric. Turmeric drink is commonly consumed by Indonesian people to reduce menstrual pain, but most people do not know the content of turmeric. Turmeric drink itself is a drink that is processed with the main ingredient of turmeric starch which contains an active compound or an ingredient called curcumin. Curcumin will work to inhibit the cyclooxygenase (COX-2) reaction so that it inhibits or reduces the occurrence of inflammation which can reduce

uterine contractions (Marlina, 2012). Meanwhile, the amount of curcumin that is safe for human consumption is 100 mg / day (Rahayu, 2010).

Based on the description above, the researcher is interested in conducting research on the effect of giving traditional turmeric drinks on the quality of primary dysmenorrhea pain in adolescent girls.

Methods:

The research design uses research type which quasi experimental aims to determine a change that arises as a result of certain treatments. The research method used is one Group Pretest Posttest design (Nursalam, 2008). The sample was assessed for the quality of the dysmenorrhea pain, then given traditional turmeric and the quality of the dysmenorrhea pain was assessed again. Likewise, the other groups before and after consuming analgesics were measured the quality of the dysmenorrhea pain. The approach model used is cross sectional, so there is no follow-up (Siyoto & Sodik, 2015).

This research was conducted at SMPN 7 Jember Regency in August - December 2017. The population used was all students of SMPN 7 Jember Regency in 2017. The sample used was 25 students as the intervention group and 25 students in the control group. The sampling technique used was simple random sampling. Using measurement tool Standard Operational Procedure (SOP) and NRS scale checklist.

The data collection technique is to record each class who has primary dysmenorrhea. Then explain the description of the research and ask the willingness to be a respondent. Then the researcher gave informed consent and measurements were taken before treatment then given 1g turmeric powder drink with a dose of 0.5 mg each or with a dose of 50 mg of curcumin in each package, then explained the rules of drinking 3 times a day with an interval of 8 hours for each drink turmeric for 5 days. To avoid mistakes in making traditional turmeric drinks, the respondents were also given SOPs on making traditional turmeric drinks. On days 3 and 5 after drinking

turmeric, the researchers re-observed the quality of pain.

After the data was collected, it was checked, then coded and tabulated. To look for changes in the pain scale before and after the data were processed using the Wilcoxon Matched Pair Test. This research was conducted after obtaining a research ethics eligibility letter and a permit to conduct research.

Results:

The results of the study were obtained from collecting data on 50 adolescents with dysmenorrhea who met the inclusion criteria. The following are the characteristics of respondents based on age, ethnicity, religion, age at menarche for adolescents at SMPN 7 Jember Regency.

Table 1. Frequency distribution based on age, ethnicity, religion, age at menarche and the activities of adolescents experiencing primary dysmenorrhea at SMPN 7 Kabupaten Jember.

	Category	Control		Treatment	
		f	%	f	%
Age	13 years	5	20	10	40
	14 years	17	68	10	40
	15 years	3	12	5	20
Total		25	100	25	100
Age Menarche	11 years	3	12	2	8
	12 years	16	64	14	56
	13 years	5	20	7	28
	14 years	1	4	2	8
Total		25	100	25	100
Ethnic	Javanese	3	12	2	8
	Madurace	22	88	23	92
	Total	25	100	25	100
Religion	Islamic	24	96	25	100
	Catholic	1	4	0	0
	Total	25	100	25	100
Activity During pain	Resting	3	12	4	16
	Exercise	2	8	3	12
	As usual	20	80	18	72
	Total	25	100	25	100
Length of menstruation	< 3 days	4	16	4	16
	3-7 days	18	72	15	60
	>7 days	3	12	6	24
	Total	25	100	25	100

From Table 1, it is obtained an overview of most respondents' ages are 14

years old, most of whom experience primary dysmenorrhea occur at the age of 12-13 years of menarche, and many occur in respondents whose menstrual duration is 3-7 days. Specific data about the quality of dysmenorrhea pain before carrying out the paired t-test were carried out by testing the basic assumptions to determine whether the data was normally distributed or not.

Table 2. The results of the data normality basic assumption test in the treatment group were given traditional turmeric and the control group used analgesics.

Type of data	<i>p-value</i> <i>Shapiro</i> <i>Wilk (data</i> <i><50)</i>	Information
Pain before taking analgesics	0.054	Data are not normally distributed
Pain after taking analgesics on day 3	0.000	Data are not normally distributed
Pain after taking analgesics on day 5	0.000	Data are not normally distributed
Pain after drinking traditional turmeric on day 3	0.145	Data is normally distributed
Pain after drinking traditional turmeric on day 5	0.000	Data is not normally distributed
Pain before being given turmeric treatment	0.096	Data is normally distributed

Data is normally distributed if $p\text{-value} > \alpha (0.05)$.

Based on Table 2, there is data that is not normally distributed, so the statistical test used is a non-parametric statistical test, namely the Wilcoxon Matched Pair Test.

Table 3. The results of the statistical analysis of the quality of dysmenorrhea pain in adolescents before and after being given traditional turmeric and analgesic drinks at SMPN 7 Jember Regency

Pain Quality	N	Mean	SD	SE	Sig
Pain before taking analgesics	25	5.58	1.661	0.332	0.000
Pain after taking analgesics on day 3		0.48	0.714	0.143	

Pain before taking analgesics	25	5.58	1.661	0.332	0.000
Pain after taking analgesics on day 5		0	0	0	
Pain before given turmeric treatment	25	5.52	1.735	0.347	0.000
Pain after drinking traditional turmeric on day 3		2.32	1.345	0.269	
Pain before being treated with turmeric	25	5.52	1.735	0.347	0.000
Pain after drinking traditional turmeric on day 5		0.32	0.267	0.125	

The test is significant if the $p\text{-value}$ is $< \alpha (0.05)$.

Analysis of the data from the table above shows that the $p\text{-value}$ of the control group's pain quality before being given analgesics and the control group's pain quality after being given analgesics up to day 3 is $0.000 < \alpha (0.05)$, so it can be concluded that there is a significant difference in pain quality. The $p\text{-value}$ of pain quality in the control group before being given analgesics and pain quality in the control group after being given analgesics up to day 5 is $0.000 < \alpha (0.05)$, so it can be concluded that there is a significant difference in pain quality. Furthermore, the $p\text{-value}$ of pain quality in the treatment group before being given turmeric and pain quality in the treatment group after being given turmeric up to day 3 is $0.000 < \alpha (0.05)$, so it can be concluded that there is a significant difference in pain quality. and finally the $p\text{-value}$ of the quality of pain in the treatment group before being given turmeric and the quality of pain in the treatment group after being given turmeric up to day 5 is $0.000 < \alpha (0.05)$, so it can be concluded that there is a significant difference in pain quality.

Discussion:

Based on the results of research on the characteristics of the respondents above, most of the respondents were 14 years old. The incidence of primary dysmenorrhea is very much influenced by age. The pain that is felt a few days before and during menstruation is

usually due to increased secretion of the hormone prostaglandin, a chemical in the body that causes contractions, in excess amounts can cause nausea, vomiting, headaches, back pain, and severe cramps during menstruation (Setyowati, 2018). Disminore primer will usually disappear in the mid-20s or later than after delivery. Based on a national survey, the average age at first menstruation for young women in Indonesia is 12.96 years (Larasati & Alatas, 2016), Meanwhile, based on (Lestari, 2013) primary dysminorrhea occurs in adolescence, usually after 12 months after the first menstruation. Based on the data of students who experienced primary dysminorrhea at most at 14 years, this shows that there is an agreement between the theory and the results of the research. The reproductive organs develop at that age, besides that there is still a narrowing of the cervix, causing pain when menstrual blood comes out. The older a person is, the more often he experiences menstruation and the wider the cervix, the less prostaglandin secretion will be (Lestari, 2013). In addition, as time goes by when the body's hormones are more stable or changes in the position of the uterus after marriage and escaping dysmenorrhea, it will decrease.

The results also showed that the majority of primary dysmenorrhea occurred in respondents with menarche age of 12-13 years. The results of this study indicate that with normal menarche age, they still experience primary dysmenorrhea. The results of this study are different from the opinion (Angelia, Sitorus, & Etrawati, 2017) that menarche at an earlier age can increase the incidence of primary dysmenorrhea, while the results of this study indicate that at a normal age of menarche there are still quite a lot of primary dysmenorrhea. The transition from children to adolescence, namely 12-21 years, is a period of physical, biological and psychological maturation. In the process towards biological maturation, adolescents will experience menstruation which is a physiological matter but can also experience problems resulting from menstruation such as dysmenorrhea (Lestari, 2013).

Based on research, primary dysmenorrhea occurs mostly in respondents whose menstrual duration is 3-7 days when compared to respondents whose menstrual duration is > 7 days and < 3 days. However, from the results of the study it is known that respondents with a duration of menstruation < 7 days, it turns out that there are still many who experience primary dysmenorrhea. According to (Lestari, 2013) the longer menstruation occurs, the more frequent the uterus contracts, consequently the more prostaglandins are released. Due to the excessive production of prostaglandins, there is pain. In addition, continuous uterine contractions also cause the blood supply to the uterus to temporarily stop, resulting in primary dysmenorrhea. Although based on the theory, it is explained that the length of menstruation has an effect on the incidence of primary dysmenorrhea, because in the results of this study the difference in the percentage of respondents experiencing primary dysmenorrhea in various categories of menstrual duration is not very significant, so after statistical testing was not found a significant effect So it can be explained that the length of menstruation has no effect on the incidence of primary dysmenorrhea.

Based on the quality of dysmenorrhea pain in the treatment group, it can be seen that of the 25 adolescents who experienced dysmenorrhea pain before being given treatment, the average pain quality was 5.52 with SD 1.735 while after being given treatment by giving traditional turmeric drinks for 5 days the average pain quality was 0.32 with SD 0.267. After analysis, it was found that the p-value of pain quality in the treatment group before being given turmeric and pain quality in the treatment group after being given turmeric up to day 5 was $0.000 < \alpha (0.05)$, so it can be concluded that there is a significant difference in pain quality.

The pain that occurs in adolescents before being given treatment is due to the presence of large amounts of prostaglandins in menstrual blood, especially PG2 which is known as a vasoconstrictor. The production of large amounts of prostaglandins is influenced by cyclic AMP, decreasing amounts of

estrogen and progesterone, and tissue trauma (Manuaba, 2010)

This prostaglandin hormone appears rapidly as a response to inflammation and tissue hypoxia. Hydrolysis of membrane glycerophospholipids is accelerated by tissue trauma, this results in the release of arachidonic acid (a prostaglandin precursor), which is the main route for arachidonic acid metabolism. The formation of prostaglandins in the endometrium is assisted by hypoxia which is caused by blood static in the spiral arteries which are very winding in the phase of endometrial growth regression. Prostaglandin formation may also be a cause of vasodilation which is often accompanied by static blood flow in the spiral arteries. PGE2 and PGI2 (prostacyclin) both cause vasodilation. As a result, the acceleration of prostaglandin formation in the endometrium is most likely the result of tissue hypoxia and menstruation.

These prostaglandins undergo a very fast metabolism and the results of their metabolites because myometrium contraction, vasoconstriction of blood vessels, tissue ischemia, impaired menstrual blood flow, endometrial disintegration and pain followed. This pain is caused by a combination of tissue ischemia due to vasoconstriction, increased intrauterine pressure and impaired menstrual blood flow (Manuaba, 2010).

Several studies have suggested that prostaglandins are the cause of dysmenorrhea, namely, giving PG2 α to women can cause symptoms similar to those of dysmenorrhea, which are often associated with normal ovulatory menstruation (menstruation after progesterone withdrawal). Administration of PG2 α to non-pregnant women will also cause dysmenorrhea, this response is predicted by endometrial spiral artery vasoconstriction triggered by PG2 α . The researcher is able to conclude that the main point of dysmenorrhea is prostaglandin F2 α (PGF2 α). It can be concluded that the main cause of dysmenorrhea is prostaglandin F2 α (PGF2 α) which is produced in the endometrium. In adolescents with dysmenorrhea, PGF2 α production was higher than normal. The act of reducing the

amount of PGF2 α available in the body is the main method that can reduce dysmenorrhea (Varney, 2003)

Primary dysmenorrhea can also be caused by psychological stress or stress. The psychological stress that a person experiences will increase catecholamines. This results in vasoconstriction and ischemia of uterine cells. Then an inflammatory process will occur which is a triggering factor for the occurrence of primary dysmenorrhea, besides the stress that occurs can cause suppression of the sensation of the hip nerves and muscles of the lower back, causing dysmenorrhea (Lestari, 2013).

Giving turmeric drink has basic properties as analgesic and anti-inflammatory. The active agent in turmeric that acts as an anti-inflammatory and antipyretic is curcumin. Meanwhile, curcumenol is used as an analgesic. Turmeric contains medicinal compounds called curcuminoids. Curcuminoids consist of curcumin, demethoxycurcumin, and bisdemethoxycurcumin (Andareto, 2015).

Curcumin will work to inhibit the cyclooxygenase reaction, thereby reducing the occurrence of inflammation. And curcuminol as an analgesic will inhibit the release of excessive prostaglandins through the uterine epithelial tissue and inhibit uterine contractions, thereby reducing the occurrence of dysmenorrhea (Anindita, 2010).

The most important biochemical mechanism that is inhibited by curcumin is the influx of calcium ions into the epithelial cells of the uterus, so that uterine contractions can be reduced or even eliminated so that dysmenorrhea does not occur. This is in accordance with the theoretical review that has been previously disclosed regarding the active ingredients contained in turmeric and tamarind as anti-inflammatory, analgesic and antipyretic, as well as a sedative that can prevent sympathetic nervous stimulation from stress that is often experienced by young girls due to their daily activities

So overall, according to the opinion of the researchers previously mentioned, regarding turmeric which is then processed

into drinks, that this component contains various natural active ingredients that can reduce the activity of the cyclooxygenase enzyme so that it can reduce inflammatory reactions, reduce the release of prostaglandins during menstruation, suppress the activity of the nervous system. autonomous so as to suppress the occurrence of excessive uterine contractions and vasospasm, and reduce emotional stress acting through the autonomic nervous system.

So that this study can be concluded that there is an effect of giving traditional turmeric drinks on the quality of primary dysmenorrhea pain in young girls at SMPN 7 Jember Regency Giving turmeric drinks can reduce the pain scale of primary dysmenorrhea.

In table 5.3 it can also be seen that the administration of analgesics as a pain reliever for dysmenorrhea is much faster than giving turmeric. Where the average on day 3 is 0.48 with SD 0.174 compared to giving traditional turmeric drink on day 3 which is 2.32 with SD 1.345.

The way herbal medicines work longer than medical drugs is probably because the original composition is very complex, one type of plant still contains various types of substances, it has not been extracted per element). The lack of clinical trials and the effect of therapy will be longer which is the shortage of coated drugs. And also the nutritious compounds in herbal medicine take time to integrate in the body's metabolism. Unlike chemical drugs which work by reducing pain and symptoms, herbal remedies work by focusing on the source of the cause.

Conclusion:

The quality of dysmenorrhea pain before being given treatment was 5.52 on average, whereas after being given treatment by giving traditional turmeric drinks for 5 days, it decreased until the average pain quality was 0.32 so it can be said that traditional turmeric drinks are proven to be effective in reducing dysmenorrhea pain, while the quality of dysmenorrhea pain before taking analgesics averaged 5.48 decreased after taking analgesics to 0.00 on the third day and the decrease was

much faster than giving analgesics. From the two treatments, it can be concluded that there is an effect of giving traditional turmeric drinks and analgesics on the quality of primary dysmenorrhea pain in female adolescents at SMPN 7 Jember Regency.

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