Effectiveness of Turmeric Tamarind and Warm Compression in the Dysmenorrhea Degression: Non Pharmacologic Therapy

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Abstract

This study is aimed at determining the effectiveness of turmeric tamarind and warm compression in the non-pharmacologic therapy to the decrease of dysmenorrhea (menstruation). This study is expected to be useful for providing information for the natural treatment of dysmenorrhea. This research is quasi experiment with pretest and postest design approaches and was conducted from February to September 2016 with the use of purposive sampling. The subjects (or respondents) were chosen from all first and second year students of Medan Midwifery Academy in Medan, who experienced dysmenorrhea and met the inclusion criteria set by the researchers. Statistical analysis used in this research is paired with *t* test with 95% in the confidence level ($\alpha = 0,05$). The results showed that based on the pairing of statistical and *t* tests it is obtained that *p* value amounts to 0.001 <0.05. It can be concluded that there are differences in the effectiveness of giving sour turmeric tamarind and warm compression to the degression of dysmenorrhea. It is expected that the students can apply warm water compression and drink turmeric tamarind in order to reduce pain during dysmenorrhea.

***Key words**:* effectiveness, dysmenorrhea, turmeric tamarind, warm compression

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1. Introduction

One of the physiological changes that occur in young women is the development of reproductive organs characterized by the onset of menstruation which firstly occurs at the age of 10-18 years (Dawood, 2006). Indeed, the bleeding is the result of decay of epithelial cells in the uterine lining and is a cumulative process of the uterus preparing to receive a fertilized egg (Notodihardjo R, 2002). Women experience menstrual problems including menstrual pain. In medical terms, menstrual pain is called dysmenorrhea (see Surtiretna 2001, Prawirohardjo 2007, Arifin 2008, and Junizar et.al. 2001).

The prevalence and complaints of dysmenorrhea usually reach 40-50% with the effect of being lazy to go to work, 15% not attending schools and 30% not being treated or 30% not getting pain relief. In Canada 60% women experienced menstruation with mild to moderate dysmenorrhea and the prevalence of primary dysmenorrhoea decreases when age develops (Dawood, 2006). The role of government of Indonesia to handle the incidence of dysmenorrhoea can be stipulated in the Act No. 13 of 2003 Article 81 paragraph 1 (Widjaya, 2007).

To handle menstrual pain can be either pharmacological or non-pharmacological. Pharmacologically menstrual pain can be treated with medication. While non-pharmacological menstrual pain can be reduced by adequate rest, regular exercise (especially walking), massage, and compressing with warm water in the abdominal area and by drinking traditional herbs such as ginger acid (Manan, 2011). The use of warm compression can make smooth blood circulation, smooth vascularization and vasodilation that relaxe the muscles

because the muscles get nutrients carried by the blood so muscle contraction decreases (Anugraheni, 2013).

2. Materials and methods

Acid sour drink is a beverage processed with the main ingredients of turmeric and tamarind which naturally contain active ingredients that can serve as analgesic, antipyretic, and anti-inflammatory (Norton, 2008) as well as Javanese tamarind which has active ingredients such as anti-inflammatory, antipyretic and sedative (Nair, Wang, Dewitt, Krempin, 2004). Instruments in this study include: acid turmeric potion, warm compression, warm compression, and turmeric acid. The variables are warm compression and non-pharmacological therapy such as turmeric acid as independent variables and dysmenorrhea as dependent variable.

The materials needed in the making of herbal turmeric tamarind include Javanese tamarind (250 gr), ripe turmeric turmer (250 gr), Javanese sugar (50 gr), boiled water (1 liter), and a small amount of salt. The making procedures are written in the followings: wash off the turmeric with running water; peel the skin and wash again, then puree the turmeric by grinding/pounding (but do not blend); the process of smoothing by pounding will maximize the extract of turmeric; after the turmeric is smooth, strain and store the water in a container for then mixed with water and boiled with medium heat; after the turmeric water is hot, put Javanese sugar, tamarind, and also salt; stir until boiling; lift and chill; and the drink can be enjoyed in a warm or cold. Meanwhile, warm compression is a procedure to provide a sense of warmth to a certain area by using a liquid or a warm-up device on the part of the body that requires it. With cloth/towel that has been dipped in warm water, it is then affixed to the body part that is painful.

3. Concepts

A. Dysmenorrhea

MIMS consultation instructions (2007/2008) denotes that dysmenorrhea is a pain that arises before and during menstruation and is characterized by symptoms of cramps in the lower abdomen. This symptom is due to the high production of prostaglandin. Dysmenorrhea is a great pain that can interfere with daily activities (Wijayanti, 2009). Dysmenorrhea is a pain that resembles a spasm in the lower abdomen, and usually begins 24 hours before menstruation, and lasts for the first 12 hours of the menstrual period (Surtiretna 2001; Prawirohardjo 2007). Dysmenorrhea or menstrual pain is a discomfort in the lower abdomen before and during menstruation and is often accompanied by nausea while according to Proverawati & Misaroh (2009), it is a menstrual pain that forces women to rest or result in performance and daily activity drops.

The term dysmenorrhea (or sometimes termed dysmenorrhoea) is derived from the Greek word dys ‘severe dyspnoea/abnormality’, meno ‘moon’ and rrhoea ‘flow’. So dysmenorrhea is a disorder of menstrual flow or menstrual pain. Hence, dysmenorrhea or menstrual pain is a pain that is felt before and during menstruation that can interfere with daily activities, characterized by symptoms of cramps in the lower abdomen. This symptom is due to the high production of prostaglandin hormone.

B. Causes of dysmenorrhea

Prawirohardjo (2006) argued that there are several factors that become the causes of primary dysmenorrhea, such as, psychological, co-factor, cervical canal obstruction, and allergic factors.

C. Classification of dysmenorrhea

1. *Primary Dysmenorrhea*

Primary dysmenorrhea (also called idiopathic, essential, intrinsic dysmenorrhea) is menstrual pain without abnormalities of the reproductive organs (without gynecological abnormalities) and appears since menarche and there are no abnormalities in the uterus (Proverawati & Misaroh, 2009). Primary dysmenorrhea arises from the first menstruation and will recover itself with the passage of time. Precisely, more stable body hormones or changes happen in uterine position after marriage and childbirth (Wijayanti, 2009). Primary dysmenorrhea also occurs sometime after menarche usually after 12 months or more, because the menstrual cycles in the first months after menarche are generally an ovulatuary type which is not accompanied by pain. Pain does not arise long before or along with the onset of menstruation and lasts for several hours, although in some cases it may last several days (Prawirohardjo, 2006). Primary dysmenorrhea usually begins 6 months to 1 year after a girl gets her first menstrual period. This is the time when the egg starts to mature every month in the ovary. Egg maturation is called ovulation. Dysmenorrhea is absent in the cycle if ovulation has not occurred. Primary dysmenorrhea is rare after the age of 20 years (Ramaiah, 2006).

2. *Secondary dysmenorrhea*

Secondary dysmenorrhoea (also known as extrinsic dysmenorrhea, acquired) is menstrual pain that occurs due to gynecologic abnormalities, such as endometriosis (mostly), fibroids, adenomyosis and occurs in women who previously did not have dysmenorrhea (Proverawati et al, 2009). It is a pain caused by gynecological abnormalities such as chronic salpingitis, endometriosis, uterine adenomyosis, uterine stenosis and others (Prawirohardjo, 2006). It is usually found in women over the age of 20 years although in some cases it can begin to appear at the age of less than 20 years (Ramaiah, 2004).

D. Pathophysiology of dysmenorrhea

1. Primary dysmenorrhoea

Primary dysmenorrhea usually occurs within the first 6-12 months after menarche (first menstruation) immediately after a regular ovulatory cycle is felt. During menstruation, the endometrial (sloughing endometrial cells) cells release prostaglandins, which cause uterine ischemia through myometrial contractions and vasoconstriction. The increasing prostaglandin levels have been found in menstrual fluid in women with severe dysmenorrhea. This level indeed increases especially during the first two days of menstruation. Vasopressin also has the same role. Recent research has shown that the pathogenesis of primary dysmenorrhoea is due to prostaglandin F2 alpha (PGF2 alpha), a potent myometrial stimulant and vasoconstrictor, present in the secretory endometrium. The response to prostaglandin inhibitors in patients with dysmenorrhea supports the assertion that dysmenorrhoea is mediated by prostaglandins (prostaglandin mediated). There is strong evidence linking dysmenorrhoea with prolonged uterine contractions and decreased blood flow to the myometrium. Increased levels of prostaglandins are found in the endometrial fluid (women's endometrial fluid) with dysmenorrhea and are associated with a degree of pain.

A 3-fold increase in endometrial prostaglandins occurs from the follicular phase to the luteal phase, with further increases that occur during menstruation. The increasing prostaglandins in the endometrium following progesterone decline at the end of the luteal phase result in increased myometrial tone and excessive uterine contractions. Leukotriene has also been postulated to enhance the sensitivity of pain fibers in the uterus. Significant leukotriene levels have been demonstrated in female endometrium with primary dysmenorrhoea that does not respond to treatment with prostaglandin antagonists. Posterior pituitary hormone and vasopressin are involved in myometrial hypersensitivity, reduce uterine blood flow, and pain (pain) in primary dysmenorrhoea. The role of vasopressin in the endometrium may be related to the synthesis and release of prostaglandins.

2. Secondary Dysmenorrhoea

Secondary dysmenorrhea can occur at any time after menarche, but most often occurs in the 20s or 30s, after years of normal, painless cycles. The increasing prostaglandins may contribute to secondary dysmenorrhoea, but, by definition, concomitant pelvic pathology should be present. Common causes include: endometriosis, leiomyomata (fibroids), adenomyosis, endometrial polyps, chronic pelvic inflammatory disease, and use of contraceptive devices (IUDs) of a number of factors involved in the secondary pathogenesis of dysmenorrhoea. The following pelvic pathological conditions can trigger or trigger secondary dysmenorrhoea: endometriosis, pelvic inflammatory disease, tumors and ovarian cysts, occlusion or cervical stenosis, adenomyosis, fibroids, uterine polyps, intrauterine adhesions, congenital malformations (e.g. uterine bicornate, uterine subseptate), intrauterine contraceptive device, transverse vaginal septum, pelvic congestion syndrome, and allen-masters syndrome.

E. Signs and symptoms of dysmenorrhea

Symptoms of dysmenorrhea is the most common cramp-like pain in the lower abdomen that spreads to the back and legs. Other related symptoms are vomiting, headache, anxiety, fatigue, diarrhea, dizziness and feeling of bloating or fullness of the stomach. Some women experience pain before menstruation begins and may last several days (Ramaiah, 2004). Dysmenorrhea or menstrual pain may be a symptom that most often causes young women to go to a doctor for consultation and treatment. Because the disorder is subjective, its intensity is difficult to assess. Although the frequency of dysmenorrhea is quite high and long, but until now its pathogenesis has not been solved. Therefore, almost all women experience discomfort in the lower part before and during menstruation and often nausea, vomiting, headache, diarrhea, and irritability, forcing the patient to rest and leave his daily job or way of life (Prawirohardjo, 2006).

F. Pain

Pain is defined as a state that affects a person and his extension is known when someone has experienced it (Tamsuri, 2007). Pain means negative tone causing unpleasant feelings and reactions. According to Scrumum pain correlates to an unpleasant condition due to the physical stimulation of nerve fibers in the body to the brain and followed by physical, physiological, and emotional reactions. The intensity of pain is a description of how severe the pain is felt by the individual, the measurement of pain intensity is highly subjective and individual and the possibility of pain in the same intensity is felt very different by two different people. Measurement of pain with the most objective approach possible is to use the body's physiological response to the pain itself (Tamsuri, 2007). Pain intensity can be assessed using the Numerical Rating Scale (NRS) Scale.

Frequency of pain is how often a person feels pain that occurs within a certain period of time. Duration of pain is defined as the length of a pain occurring. The numerical rating scale (NRS) is one of the diagnostic tools that doctors use to determine the quality of pain experienced by patients. In this case the respondents rated the pain with a scale of 0 to 10. Number 0 means the condition that the respondent did not feel the pain; number 10 indicates the most severe pain felt by the client/pain is very great. This scale is effectively used to assess pain intensity before and after therapeutic intervention (see Figure 1).

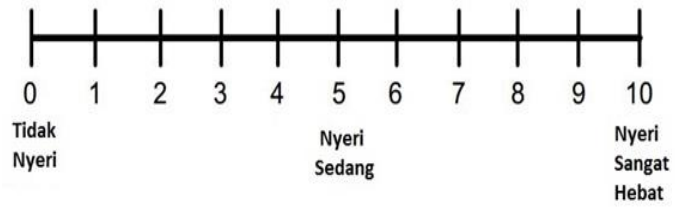

Figure 1. Pain scale of *Numerical Rating Scale (NRS*)

G. Turmeric acid

Turmeric acid contains curcumin which is an antioxidant that can prevent damage and cell mutations caused by free radicals. In addition, the content of curcumin also has the ability to inhibit the growth of cancer, especially breast, colon, stomach, lung and skin cancers. The antioxidant of curcumin makes it possible to protect colon cells from free radicals that can damage DNA. This process is particularly useful for the large intestine where cell turnover is quite rapid, which occurs approximately every three days.

Because this cell replica grows very often, DNA mutations in intestinal cells can cause the formation of cancer cells much faster. Curcumin improves liver function so it helps the body to destroy cancer cells so it can not spread throughout the body which can make the damage worse. Another mechanism of curcumin (yellow/orange-forming agent in turmeric) inhibits protein synthesis and prevents the development of additional blood supply so as to prevent tumor formation.

The study, which was demonstrated at a leukemia conference held in London, provides evidence that eating spiced foods with turmeric may combat the risk of leukemia. Moolky from Loyola in his study said that curcumin in turmeric can lessen the mutagenicity of polycyclic aromatic hydrocarbons (PAHs) (carcinogenic chemicals created by burning carbon-based fuels including cigarette smoke), the radiation damage to chromosomes, to prevent the formation of dangerous heterocyclic amines and nitroso compounds, which are present in certain processed foods, such as processed meat products containing nitrosamines, and to lower the leukemia cell multiplication in cell culture.

The benefits of turmeric can also be used to treat and prevent deep heat. Kunyti is the source of vitamin B6 needed to keep the homocysteine level from being too high. Intake of B6 is one of the high intake of vitamin B6 and is associated with decreased risk of heart disease. In a study published in the Indian Journal of Physiology and Pharmacology that of 10 healthy volunteers, consuming 500 mg of curcumin per day for 7 days can be lowering the blood oxidation rate and cholesterol by 33%; the total cholesterol decreased 11.63%, HDL (cholesterol good) increased by 29% (Sonni KB, Kuttan R).

H. Javanic acid

The content of the most important active ingredient of the tamarind fruit is xylose (18%). Other ingredients that can be obtained include galactose (23%), glucose (55%), and arabinose (4%). Other ingredients that can be obtained from this fruit through dilution using acid and heating are xyloglycans, tannins, saponins, sesquiterpenes alkaloids, and phlobatamins (Pauly, 1999). In addition to the agents that can be found above, it was also recently found an active agent that is very useful in the medical field, namely anthocyanin.

Xylose and xyloglycans are very useful in terms of medical cosmetics (Pauly, 1999). While the most useful in terms of anti-inflammatory and antipiretika is anthocyanin because the agent is able to inhibit the work of cyclooxygenase enzyme (COX) so as to inhibit the release of prostaglandins (Nair, et al., 2004). While the material tannins, saponins, sesquiterpenes, lkaloids, and phlobatamins will be very useful to calm the mind and reduce the psychic pressure.

Five benefits of Javanic acid for health are resumed in the followings: First, it helps lower cholesterol and maintain heart health. Niacin in Javanic acid can help lower LDL cholesterol levels significantly. Taking Javanese acid together with water regularly can lower LDL and triglyceride levels by more than 50%. Various antioxidants in Javanic acid can reduce the cholesterol oxidation process that can prevent blood vessel blockage due to the formation of fatty plaque in the blood vessels and prevent the occurrence of coronary heart disease. Fiber in Javanic acid can also absorb bile salts produced by cholesterol and remove it from within your body. Second, it helps lower blood sugar levels. Javanese acid can help the production of insulin so as to maintain the balance of your blood sugar levels. Consuming java acid can also help inhibit amylase work, because Javanese acid can inhibit carbohydrate effect. Tannin is an antioxidant present in the Javanic acid that can inhibit the oxidation process and prevent the occurrence of damage in the pancreas.

Third, it nourishes the skin. Javanese acid also contains many nutrients that are beneficial to the skin. Javanic acid contains vitamin C, various antioxidants, flavonoids, and alpha hydroxyl acids. All of these things can help protect the skin from harmful UV radiation and prevent stress from oxidation. Consume tamarind can prevent the formation of black spots and wrinkles on the skin and make skin feel softer and supple. Javanic acid also contains anti-inflammatory agents and antiseptic agents that can prevent the occurrence of eczema. It also helps the digestive system work. In the Javanese acid there are many vitamin C and fiber that can help the production of digestive enzymes that can help the process of digestion of food and expenditure of various toxic substances from the body. Javanese acid also contains a laxative agent that can help facilitate defecation. Last, it prevents cancer. Javanese acid contains many antioxidants that can prevent the occurrence of cancer. These antioxidants can inhibit oxidative and free radical processes. Javanese acid also contains tartaric acid which can also prevent the occurrence of colon cancer, pancreatic cancer, and skin cancer.

4. Results & Discussion

4.1 Results

The results can be summarized in the followings.

A. Using univariate analysis

Consider the Table 1, 2 3 and 4 to see the univariate analysis.

Tabel 1. Frequency distribution of dysmenorrhea rate before acid turmeric acid

No.	Dysmenorrhea level before administering turmeric herb	f	%
1	6	3	6.0
2	7	27	54.0
3	8	16	32.0
4	9	4	8.0
	Total	50	100.0

In case of the level of dysmenorrhea prior to the provision of turmeric acid and warm compression (non-pharmacologic), the Table 1 shows that the level of dysmenorrhea in pre-period sits in the scale of 7 of 27 respondents (54.0%), of 8 of 16 (35.0%), of 9 of 4 (8.0%) and of the least 6 of 3 (6.0%).

Tabel 2. Frequency distribution of dysmenorrhea rate prior to warm compression

No.	Level of dysmenorrhea before giving warm compression	f	%
1	6	5	10.0
2	7	21	42.0
3	8	18	36.0
4	9	6	12.0
	Total	50	100.0

Table 2 gives an orientation to the readers that the levels of dysmenorrhea before giving warm compression occupy the scale 7 of 21 people (42,0%), the scale 8 of 18 (36,0%), scale 9 of 6 (12.0%) and the scale of 6 of 5 (10.0%).

Tabel 3. Frequency distribution of dysmenorrhea level in post turmeric acid

No.	Level of dysmenorrhea in post-period of turmeric herb	f	%
1	3	2	4.0
2	4	9	18.0
3	5	15	30.0
4	6	17	34.0
5	7	5	10.0
6	8	2	4.0
	Total	50	100.0

Table 3 can be observed that the level of dysmenorrhea after the administration of turmeric acid are oriented to the scales of 6 of 17 (34.0%), of 5 of 15 (30.0%), of 4 of 9 (18.0%), of 7 of 5 (10.0%) and of 8 of 2 (4.0%) and of 3 of 2 (4.0%) respectively. Table 4 shows that the level of dysmenorrhea has been given warm compresses to students of Midwifery Academy in Medan more with a scale of 5 as many as 22 people (44.0%), scale 4 as many as 12 people (24.0%), scale 6 as 11 people (22.0%), scale 7 as many as 3 people (6.0%) and fewer with a scale of 3 as many as 2 people (4.0%).

Tabel 4. Frequency distribution of dysmenorrhoid after warm compression application

No.	Dysmenorrhea level after warm compression	f	%
1	3	2	4.0
2	4	12	24.0
3	5	22	44.0
4	6	11	22.0
5	7	3	6.0
	Total	50	100.0

B. Using bivariate analysis

In case of the effectiveness of acid turmeric therapy and warm compression (non-pharmacologic) against dysmenorrhea decline, consider Tables 5, 6, 7, and 8 as well as to understand the bivariate analysis.

Tabel 5. Effectiveness of acid turmeric therapy (non-pharmacologic) against dysmenorrhea decline

Variable	Mean	SD	t	Prob
Level of dysmenorrhea before administering turmeric acid herb with after giving of turmeric acid	2.020	0.869	16.442	0.000

Table 5 proves that the result of *t* test and statistic test obtained the value p = 0,000 < 0, 05 that the treatment of turmeric acid (non-pharmacologic) is effective against the decrease of dysmenorrhea.

Tabel 6. Effectiveness of giving warm compression (non-pharmacologic) in the degression of dysmenorrhea

Variable	Mean	SD	t	Prob
Level of dysmenorrhea prior to administration of turmeric acid herb after warm compression	2.480	0.886	19.78	0.000

Table 6 shows that the results of *t* test and statistical test shows achieve the value p = 0,000 < 0.05; this means that giving of warm compression (non-pharmacologic) proves to be effective to decrease the dysmenorrhea.

With respect to the differences in effectiveness between acid turmeric and warm compression in the efforrts to reduce dysmenorrhea, Table 7 can be considered to see that the result of *t* test and statistic test is successful to obtain the value p = 0,001 < 0,05. This indicates that there are differences in the effectiveness of giving turmeric acid and warm compression to decrease the dysmenorrhea.

Tabel 7. Differences in effectivity between the application of turmeric acid and warm compression

Variable	Mean	SD	t	Prob
Level of dysmenorrhea prior to administration of turmeric acid herb after warm compression	0.380	0.780	3.447	0.001

Then to see the more effective procedures to reduce dysmenorrhea by giving of turmeric acid and of warm compression can be seen in Table 8. It is then known that there are differences of mean (average) with the provision of turmeric acid to reduce dysmenorrhea and of warm compress to decrease dysmenorrhea. It proves to be more effective to decrease dysmenorrhea by giving warm compression.

Tabel 8. More effective dysmenorrhoea degression between the giving of acid turmeric herbs and warm compression

Turmeric Acid compound				Warm compression			
Pre-mean	Post-mean	Mean	SD	Pre-mean	Post-mean	mean	SD
7.42	5.40	2.02	0.869	7.50	5.02	2.48	0.886

4.2 Discussions

With reference to the effectiveness of acid turmeric therapy (non-pharmacologic) to reduce dysmenorrhea, the treatment with turmeric acid is effective. The result of pain scale level has decreased before the treatment of turmeric acid (pre-test) scale with the highest scale is 9 (the range is 6-9) and after the highest turmeric acid the is scale 8 and it is noted that there are 2 respondents (4.0%) and pain range is 3-8 scale. This suggests that acid turmeric therapy has an effect in decreasing menstrual pain so that women can apply this therapy when experiencing menstrual pain with mild or moderate pain levels.

Norton (2008) argued that sour turmeric drink is a beverage that is processed with the main ingredients of turmeric and acid. Turmeric is naturally believed to contain active ingredients that can serve as analgesic, antipyretic, and anti-inflammatory. Restu (2009) states that turmeric has anti-inflammatory activity, activity against peptic ulcer, antitoxic, anti hyperlipidemia, and anti-cancer activity.

This research is in line with what Wahyuni found that the combination of abdominal exercise and acid turmeric drink is effective to overcome dysmenorrhea in adolescent daughter (value < 0,05). A similar study by Fauziah showed that the decrease with warm compression was quite effective to decrease dysmenorrhea, most of which (59.6%) had decreased dysmenorrhea.

Meanwhile, in case of the effectiveness of warm compression (non-pharmacologic) against dysmenorrhoea decrease, it was obtained that the *t* test and statistic test was about to reach p = 0,000 < 0,05, meaning that the application of warm compression is effective against the decrease of dysmenorrhea. Students increasingly carry out warm compression. The pain scale level decreased; the warmest scale before the pre-test ranges from 6 to 9, however, after the post-test the highest pain scale is 7 for 3 (6.0%) for respondents and range pain ranges from 3 to 7. This suggests that warm compression therapy has an effect in decreasing menstrual pain so that women can adopt this therapy when they experience mild or moderate pain levels.

There are changes of attitudes during pre- and post-tests before and these changes bring positive impacts on the success of water compression which is proved to be able to reduce dysmenorrheal pain and as a result, the activities of respondents are not disturbed. This is in line with what Bobak (2005) argued that warm compression serves to overcome or reduce pain, where heat can reduce ischemia by decreasing uterine contractions and expanding blood vessels so as to relieve pain by reducing tension and increasing feelings of well-being, increasing menstrual flow, and easing vasokongesti.

Meanwhile, Anugraheni (2013), about the use of warm compression, stated that warm compression makes blood circulation, vascularization and vasodilatation smooth and produces muscle relaxation because muscles get the nutrients through blood so that muscle contraction decreases. Vasodilatation causes blood flow to each network and will reduce pain. Heat can cause dilation in the blood vessels resulting in the increase of blood circulation. Physiologically, the body's response to heat causes dilation in the blood vessels and this decreases blood viscosity, muscle tension, and tissue metabolism. This heat response is used for the therapy in various conditions and circumstances in the body.

This is in line with Fauziah's (2013) study that warm compression provides a sense of warmth to patients, reduces pain, dilates blood vessels, and increases local blood flow. Further, Gabriel (1998) argued that warm compression is aimed at (1) dilating blood vessels and improving circulation in the areas within the tissues, (2) lowering tension by heat, and (3) increasing total white blood cells and inflammatory reaction phenomena and the presence of blood vessel dilatation resulting in the increase of blood circulation and capillary pressure. The O2 and CO2 pressures in the blood increase while the blood pH decreasee.

About the effectiveness differences between acid turmeric and warm compression in the dysmenorrhoea therapy, the results showed that based on *t* test and statistical test it is obtained that the *p* value is $0.001 < 0.05$ and it can be concluded that there are differences in the effectiveness of giving turmeric acid and warm compression to decrease dysmenorrhea. Referring to the results, the respondents increasingly implement warm compression because they progressively shorten the decrease of dysmenorrhea.

The results of pain scale rate decreased after a turmeric acid mixed with a range of pain scale is 3 to 8 and after warm compression therapy, the range of pain scale is from 3 to 7. It is proved that both turmeric acid and warm compression therapy is effective in decreasing menstrual pain although hot water therapy is more effective because the pain ranges from 3 to 7 in which the mean is different with pre- and post-warm compression which shows 2.48. all in all, however, in the efforsts to decrease dysmenorrhea pain, both methods are effective.

5. Conclusions

Giving turmeric acid therapy (non-pharmacologic) proves to be more effective against the decrease of dysmenorrhea in female students at Academy of Midwifery and the provision of warm compression therapy is also effective. The difference in the effectiveness of giving sour turmeric acid and warm compression lies in the ways to reduce dysmenorrhea.

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