Journal of Advanced Nursing and Health Sciences
Vol. 5, No. 1, Februari 2024, pp. 11~19
ISSN: 2774-5821.

The Effect of Giving Warm Compresses on the Level of Menstrual Pain in Adolescent Girls at the Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan

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ABSTRACT

Dysmenorrhea is an individual response to a disruptive state of the endocrine system that can cause pain during menstruation. The cause of the pain is the imbalance of progesterone hormones in the blood. The more severe the pain can disrupt the psychological condition of the individual, where pain stimulates the brain, leading to changes in life, social relationships, feelings of anger, fear, and depression. This study aims to determine the effect of giving warm compresses on the level of menstrual pain in adolescent girls.

The research is a Pre-Experimental Design conducted from August 2023 to March 2024. The research population is 222 teenage girls from Islamic Boarding School Hidayatus Sholikin Pembuang Hulu Central Kalimantan, and the sample obtained from a calculation of 68 teenage girls. The sampling technique used is simple random sampling, with the Standard Operating Procedure for the independent variable on the application of warm compresses and the dependent variable with the observation of menstrual pain in teenage girls. Data is analyzed using the Wilcoxon Rank Test on SPSS.

The results of the research show that the characteristics of the respondents, with the majority of 43 respondents (63.3%) being 12 years old, 44 respondents (64.7%) having regular menstrual cycles, 31 respondents (45.6%) having a menstrual cycle of 28 days, 36 respondents (52.9%) experiencing menstrual pain (Dysmenorrhea) on the first day, 38 respondents (55.9%) having a high level of menstrual pain in teenage girls before being given warm compresses, and most of 35 respondents (51.5%) having a low level of menstrual pain in teenage girls after being given warm compresses. There is an impact of applying warm compresses on the level of menstrual pain in teenage girls (p value=0.000).

The conclusion of this research is that there is an impact of applying warm compresses on the level of menstrual pain in teenage girls.

Keywords: Warm Compresses, Menstrual Pain, Teenage Girls

1. INTRODUCTION

Adolescence is a transitional period from children to adulthood characterized by the growth of primary sexual signs, one of which is the beginning of the functioning of the reproductive organs (menstruation) (Masykuri, 2021). Menstruation is a natural process that occurs in adolescent girls characterized by regular bleeding every month. In the menstrual cycle, early adolescents experience emotional changes and abdominal cramps called *dysmenorrhea* which is pain during menstruation characterized by sharp pain (Suryani & Ruliati, 2018)

Dysmenorrhea, which is an individual response to conditions that interfere with the endocrine system, can cause pain during menstruation (Suryani & Ruliati, 2018). The cause of pain is due to an imbalance of the hormone *progesterone* in the blood. The more severe the pain felt can interfere with the psychological condition of the individual where the pain response provides a stimulus to the brain so that in adolescent psychology it can lead to changes in life, social relationships, feelings of anger, fear and depression (Suryani & Ruliati, 2018). Warm compresses are effective for reducing dysmenorrhea pain felt by adolescent girls both on the first day of menstruation and on the second day of menstruation. This is in accordance with research conducted by (Mahua, 2018), in adolescent girls after being given a warm compress there was a decrease in the moderate pain scale, there were also adolescent girls who did not experience dysmenorrhea pain after being given a warm compress. This is because warm compress is a very effective method in reducing dysmenorrhea pain, so that respondents feel comfortable with the warm compress given. Warm compresses can transfer heat into the body to dilate blood vessels which will cause a decrease in muscle tension.

According to the *World Health Organization* (WHO) cited in (Silviani et al., 2019) states that the incidence of dysmenorrhea is quite high throughout the world, in the average incidence of dysmenorrhea in young women between 16.8- 8% (Indrasari, 2021). In Indonesia alone, that the incidence of primary type dysmenorrhea is 54, 89% while the rest of the patients with secondary dysmenorrhea incidence (According to Nurwan in (Munthe, L.; Harahap, 2021).

There have been several studies on the incidence of dysmenorrhea. One of them is a study conducted at SMA Negeri 3 Banjarbaru, obtained a prevalence of dysmenorrhea incidence of 93.2% (Rahmah, Siti, 2016). According to research conducted at Bina Banua Husada Midwifery Academy Banjarbaru, the prevalence of dysmenorrhea was 64.6% (Dhewi, Siska, 2016). According to research conducted at SMK Negeri 1 Martapura, the prevalence of dysmenorrhea was 63.2% (Nurhuda, Syarifah Sofia, 2018). Factors associated with dysmenorrhea include age, manarche age, length of menstruation, diet, exercise, family history, nutritional status, smoking and alcohol consumption. One of the risk factors that can cause primary dysmenorrhea is diet. A diet that often causes dysmenorrhea is a diet of *fast food* consumption (Oktaviani, 2021).

Based on interviews conducted in May 2023, with 15 adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan, it was found that 12 people experienced pain during menstruation, 3 people did not experience pain during menstruation, 7 people said mild scale pain, 4 people had moderate scale pain, 1 person had severe scale pain. In 7 adolescent girls felt pain for 2 days during menstruation, 4 people felt pain on the first day of menstruation, and 1 adolescent girl felt pain for 2-4 hours on the first day of menstruation. The most common complaints felt by 3 adolescent girls said dizziness and nausea, 7 adolescent girls said abdominal pain to the lower back, 2 adolescent girls said breast pain, and weakness in the lower extremities. They said that if they experienced pain during menstruation, their activities at the cottage were disrupted or other activities were disrupted because they had to rest. The young women interviewed also said that they had never tried warm compresses on the lower back area when experiencing pain during menstruation.

Dysmenorrhea is pain before or during menstruation, it is one of the most common gynecological problems in adolescent girls (Lowdermilk et al., 2010 in (Wulandari et al., 2019).

Dysmenorrhea is pain that is felt with complex symptoms in the form of lower cramps that radiate to the back or legs (Dewi, 2012 in (Wulandari et al., 2019). Dysmenorrhea is generally caused by increased prostaglandin hormones, an increase in prostaglandin hormones caused by the decline in estrogen and progesterone hormones causing the endometrium to swell and die because it is not fertilized. The increase in prostaglandin hormones causes the muscles of the womb to contract (Sukarni & Wahyu, 2013 in (Wulandari et al., 2019)).

The appearance of menstrual pain can cause various complaints in adolescent girls such as irregular, sharp and cramping pain at the bottom of the abdomen which usually spreads to the back, continues to the legs, groin or vulva. Menstrual pain is also followed by Pre Menstrual Syndrome (PSM) which is a set of varied symptoms that appear between 7 to 14 days before menstruation begins and usually stops when menstruation starts. These symptoms include behaviors such as anxiety, depression, sensitivity, irritability, sleep disturbances, fatigue, weakness and sometimes rapid mood swings. In addition, physical complaints such as breast pain or swelling, abdominal bloating or pain, headaches, joint pain, back pain, nausea, and skin problems such as acne (Hidayat, 2008 in (Mahua, 2018)).

The impact of dysmenorrhea in addition to disrupting daily activities and decreased performance is experiencing nausea, vomiting, and diarrhea. There are still many women who consider menstrual pain as a normal thing, they think 1-2 days the pain will disappear. Whereas menstrual pain can be a sign and symptom of a disease such as endometritis which can make it difficult to get offspring (Prawirohardjo, 2016 in (Wulandari, 2021)). Efforts to reduce or eliminate pain are usually pharmacological using drugs and non-pharmacological without having to use drugs, one of which is with warm compresses (Alotibi, 2020). The act of giving warm compresses is more effective for reducing *dysmenorrhea* pain. Warm compresses are compresses performed using hot bulbs wrapped in cloth, namely by conduction where heat transfer from the bulb to the body occurs, causing dilation of blood vessels and a decrease in muscle tension so that the menstrual pain felt will decrease or disappear (Handayani & Syahadat, 2018).

Warm compresses are done using a glass bottle filled with water at a temperature of 45-50˚C coated with cloth by conduction where there is a transfer of heat from a glass bottle filled with water at a temperature of 45-50˚C coated with cloth into the body so that it will cause dilation of blood vessels and muscles will experience a decrease in tension so that the menstrual pain felt will decrease or disappear. Compressing is done 15-20 minutes or approximately 3 to 4 times compressing. Handling *dysmenorrhea* with warm compresses besides having no side effects, this method is quite efficient because it can be done alone and does not require a lot of money (Masykuri, 2021).

Based on this phenomenon, the researcher is interested in conducting research on the effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan.

2. METHOD

This type of research is quantitative research with *Pre-Experimental Designs, pre-post design* approach in one group (*one-group pre-post test design).* This study aims to describe the effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan. The population in this study were all adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan, the total respondents were 222 adolescent girls, the sample calculation using the sample size calculation obtained 68 adolescent girls. The sampling technique uses *simple random sampling which* is the simplest type of probability, for the achievement of this sample each element is randomly selected (Nursalam, 2020). The research was conducted in August 2023-March 2024. The independent variable in this study is the provision of warm compresses on adolescent girls. While the dependent variable in this study is menstrual pain (*dysmenorrhea*). The

instruments used used SOP (Standard Operating Procedure) on the provision of warm compresses and observation sheets on menstrual pain (*dysmenorrhea) of* adolescent girls. Data were analyzed using the Wilcoxon Rank Test statistical test, which was previously tested for data normality with a p value > 0.05.

3. RESEARCH RESULT

3.1 Characteristics of age, menstrual cycle, length of menstrual cycle, days of menstrual pain (Dysmenorrhea).

1. Age

Table 1. Characteristics of Respondents Based on Age at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023

Age (Years)	Frequency	P (%)
12	43	63,3
13	19	27,9
14	6	8,8
Total	68	100,0

Source: Primary Data

Based on Table 1 above, it can be interpreted that most of the 43 respondents (63.3%) were 12 years old.

2. Menstrual cycle

Table 2 Characteristics of Respondents Based on Menstrual Cycle at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023.

Menstrual Cycle	Frequency	P (%)
Regular	44	64,7
Irregular	24	35,3
Total	68	100,0

Source: Primary Data

Based on Table.2 above, it can be interpreted that most of the 44 respondents (64.7%) have regular menstrual cycles.

3. Menstrual Cycle Length

Table 3 Characteristics of Respondents Based on Length of Menstrual Cycle at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023.

Length of menstrual cycle	Frequency	P (%)
< 28 days	20	29,4
28 days	31	45,6
> 28 days	17	25,0
Total	68	100,0

Source: Primary Data

Based on Table 3 above, it can be interpreted that most of the 31 respondents (45.6%) had a menstrual cycle length of 28 days.

4. Days of Coming Menstrual Pain (*Dysmenorrhea*)

Table 4 Characteristics Based on the Coming Day of Menstrual Pain (*Dysmenorrhea*) at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023.

Days of menstrual pain (*Dysmenorrhea*)	Frequency	P (%)
Day 1	36	52,9
Day 2	18	26,5
Day 3	14	206
Total	68	100,0

Source: Primary Data

Based on Table 4 above, it can be interpreted that most of the 36 respondents (52.9%) had menstrual pain (*Dysmenorrhea*) on day 1.

5. Level of Menstrual Pain in Adolescent Girls Before Being Given a Warm Compress

Table 5. Frequency distribution of menstrual pain levels in adolescent girls before being given warm compresses at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan in November 2023.

No.	Level of menstrual pain in adolescent girls before being given warm compresses	Frequency	P (%)
		0	
1.	No pain	6	0
2.	Mild pain	/	8,8
3.	Moderate pain		35,3
4.	Severe pain	24	55,9
5.	Intense pain	38	0
		0	
	Total	68	100

Based on Table 5 above, it can be interpreted that most of the 38 respondents (55.9%) the level of menstrual pain in adolescent girls before being given a warm compress is severe pain.

6. Menstrual pain levels in adolescent girls after being given a warm compress

Table 6 Frequency distribution of menstrual pain levels in adolescent girls after being given warm compresses at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023.

No.	Level of menstrual pain in adolescent girls after being given a warm compress	Frequency	P (%)
1.	No pain	0	0
2.	Mild pain	35	51,5
3.	Moderate pain	32	47,0
4.	Severe pain	1	1,5
5.	Intense pain	0	0
	Total	68	100

Based on Table 6 above, it can be interpreted that most of the 35 respondents (51.5%) the level of menstrual pain in adolescent girls after being given a warm compress is mild pain.

3.2 **The Effect of Giving Warm Compresses on Menstrual Pain Levels in Adolescent Girls**

Table 7 Frequency distribution of the effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan in November 2023

No.	Warm compress	Menstrual pain										Total	
		No pain		Lightweight		Medium		Weight		Intense Pain			
		n	%	n	%	n	%N	%	n	%	n	%
1	Before being given	0	0	6	8,8	24	35,3	55,9	0	0	68	100
2	After being given	0	0	35	51,5	33	47,1	1,5	0	0	68	100
						20						
α=0.05 p=0.000													

on Table 7. It can be seen that the level of menstrual pain before and after being given a warm compress on adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan, the results obtained after being given a warm compress, adolescent girls who experienced severe menstrual pain decreased from 38 people (55.9%) to 1 child (1.5%) and adolescent girls with mild menstrual pain increased from 6 people (8.8%) to 35 people (51.5%). The effect test with *Wilcoxon Rank Test* shows from the rank value that the value of Negative Ranks or the difference (negative) between the level of menstrual pain in adolescent girls for Pre Test and Post Test. From the output, it appears that both the N value, Mean Rank, and Sum of Rank are 0. That is, there is no decrease (reduction) from the Pre Test value to the Post Test value. In other words, adolescent girls who have received "warm compresses" do not experience an increase in the level of menstrual pain compared to before getting "warm compresses". Positive Ranks value or the difference (positive) between the level of menstrual pain in adolescent girls for Pre Test and Post Test. From the output above, it can be seen that there are 57 positive data (N), meaning that there are 57 adolescent girls who experience a decrease in menstrual pain levels after receiving "warm compresses". Mean Rank or the average decrease is 29, while Sum of Rank or the number of positive ranks is 1653 and Ties Value = 11, meaning that there are the same values between Pre Test and Post Test. As well as at the level of significance (α = 0.05) the effect of giving warm compresses on the level of menstrual pain in adolescent girls obtained a probability number (p value) 0.000. (Significant value of both variables 0.000 <0.05) means that Ho is rejected and Ha is accepted, so it can be concluded that this value shows that there is an effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan.

4. DISCUSSION

4.1 Level of menstrual pain in adolescent girls before being given compresses

The results showed that most of the 38 respondents (55.9%) the level of menstrual pain in adolescent girls before being given a warm compress was severe pain. Primary *dysmenorrhea* is caused by natural chemicals produced by cells of the uterine wall lining called prostaglandins. Prostaglandins will stimulate the smooth muscle muscles of the uterine wall to contract. The higher the levels of prostaglandins, the stronger the contractions will be, so the pain felt is also stronger. Usually, on the first day of menstruation, prostaglandin levels are very high. On the second and subsequent days, the lining of the uterine wall will

begin to shed, and prostaglandin levels will decrease. Menstrual aches and pains will also decrease as prostaglandin levels decrease (Sinaga, 2017).

The results of this study are in line with research (Dhirah, 2019), the intensity scale of *dysmenorrhea* before being given warm compress therapy is a moderate pain scale. This is because students living in dormitories experience a lot of pressure resulting in stress, fatigue, lack of rest, lack of food intake that contains high nutrients and minerals, and lack of activities such as exercise. Primary causes are causes of dysmenorrhea that have no relationship with gynecological disorders. The cause is unclear, menstrual pain is thought to be due to hormonal imbalances and excessive stress or anxiety. Hormonal imbalances and stress or anxiety occur in students who will face semester exams, from anxiety, students who menstruate their hormones become unbalanced so that students will experience *dysmenorrhea* (Prawirohardjo, 2018).

4.2 Menstrual pain levels in adolescent girls after being given a warm compress

The results showed that most of the 35 respondents (51.5%) the level of menstrual pain in adolescent girls after being given a warm compress was mild pain. The provision of warm compresses significantly reduces the level of menstrual pain in adolescent girls, with the majority experiencing mild pain after treatment. This finding is consistent with previous research by (Dhirah, 2019), which found that before warm compress therapy, most of the female students experienced moderate pain, but after therapy, most of them experienced a decrease in pain levels to no pain.

The warm compress method has been shown to be very effective in reducing the intensity of dysmenorrhea, with the advantages of low cost, time efficiency, and without the need for heavy physical labor. However, keep in mind to avoid using too hot water as it can cause irritation to the skin. In accordance with the theory put forward by (Dewi, 2018), to deal with dysmenorrhea (menstrual pain), namely by warming the abdomen, for example with warm water compresses, light exercise such as walking or cycling, massaging the lower abdomen, taking pain relievers (analgesics) such as paracetamol, doing relaxation techniques such as yoga and meditation, avoiding drinks containing caffeine and alcohol.

4.3 The effect of giving warm compresses on the level of menstrual pain in adolescent girls

Based on the results of the study, it is known that the level of menstrual pain before and after being given a warm compress on adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan, the results obtained after being given a warm compress, adolescent girls who experienced severe menstrual pain decreased from 38 people (55.9%) to 1 child (1.5%) and adolescent girls with mild menstrual pain increased from 6 people (8.8%) to 35 people (51.5%). The effect test with *Wilcoxon Rank Test* shows from the rank value that the value of *Negative Ranks* or the difference (negative) between the level of menstrual pain in adolescent girls for Pre Test and Post Test. From the output, it appears that both the N value, Mean Rank, and *Sum of Rank* are 0. That is, there is no decrease (reduction) from the Pre Test value to the Post Test value. In other words, adolescent girls who have received "warm compress" do not experience an increase in the level of menstrual pain compared to before getting "warm compress".

Positive Ranks value or the difference (positive) between the level of menstrual pain in adolescent girls for Pre Test and Post Test. From the output above, it can be seen that there are 57 positive data (N), meaning that there are 57 adolescent girls who experience a decrease in the level of menstrual pain after receiving a "warm compress". Mean Rank or the average decrease is 29, while Sum of Rank or the number of positive ranks is 1653 and Ties Value =

11, meaning that there are the same values between Pre Test and Post Test. As well as at the level of significance ($\alpha = 0.05$) the effect of giving warm compresses on the level of menstrual pain in adolescent girls obtained a probability number (*p value*) = 0.000. (Significant value of both variables 0.000 <0.05) means that Ho is rejected and Ha is accepted, so it can be concluded that this value shows that there is an effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan.

In accordance with the theory put forward by (Smeltzer & Bare, 2016), hot compresses help to relieve pain, stiffness and muscle spasm. Superficial heat can be provided in the form of soaking baths or flush baths with warm water and warm wet compresses. Paraffin baths will provide concentrated heat and help patients with wrist and small joint disorders. Maximum benefit will be achieved within 20 minutes of heat application. More frequent applications over shorter periods of time are most beneficial.

Based on the data above, the researcher assumes that the provision of warm compresses has a significant effect on reducing the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan. This is based on the results of observations that showed a significant decrease in the number of adolescent girls who experienced severe menstrual pain after being given a warm compress, as well as a significant increase in the number of adolescent girls who experienced mild menstrual pain after the treatment.

4.4 Research Limitations

There are several limitations experienced by researchers in the study "The effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan". Some limitations that may occur are:

1. This study was conducted only on adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan, so the results cannot be directly applied to the population of adolescent girls elsewhere.
2. The number of participants in the study was limited, so the results do not reflect the variation that exists among the overall population of adolescent girls.
3. This study only involved adolescent girls of a certain age range, so the results cannot be applied to adolescent girls with a wider age range.
4. This study may have used a menstrual pain level measurement instrument that has variability in its use, which may affect the accuracy and consistency of the results.

5. CONCLUSIONS

Based on the results of the analysis, this research can be concluded as follows:

5.1. The characteristics of adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan are mostly 12 years old, the menstrual cycle is regular, the length of the menstrual cycle is 28 days and the day of menstrual pain (Dysmenorrhea) comes on day 1.

5.2. The level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan before being given a warm compress was severe pain amounting to 38 respondents (55.9%).

5.3. The level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School in Pembuang Hulu, Central Kalimantan after being given a warm compress was pain for 35 respondents (51.5%).

5.4. There is an effect of giving warm compresses on the level of menstrual pain in adolescent girls at Hidayatus Sholikin Islamic Boarding School Pembuang Hulu Central Kalimantan ($0.000 \leq 0.05$).

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