

## Comparison of the effectiveness of giving warm compresses and cold compresses in handling dysmenorrhea: Systematic review

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### Abstract

Dysmenorrhea is the onset of pain during menstruation. More than 50% of women of reproductive age in the world experiencing dysmenorrhea. In Indonesia, 54.89% experienced primary dysmenorrhea, 9.36% experienced secondary dysmenorrhea with more than half (64.8%) feeling disturbed and experiencing decreased activity. The method of warm compresses and cold compresses are a form of non-pharmacological treatment that aims to reduce the degree of dysmenorrhea. The purpose of this study is to compare the effectiveness of giving warm compresses and cold compresses to the treatment of dysmenorrhea, so a deeper analysis is needed regarding this matter. This study used a systematic review method on articles obtained from databases that is ScienceDirect, Pubmed, Scopus and Google Scholar. The results of literature selection based on MMAT and inclusion-exclusion characters obtained 5 literatures that matched the topic. 3 of the 5 selected literatures states that giving cold compresses is more effective in reducing the degree of dysmenorrhea pain compared to giving warm compresses. Giving cold compresses is stated to be more effective than giving warm compresses in reducing the degree of dysmenorrhea.

**Keywords:** Menstrual; Menstruation; Period; Warm Compresses; Cold Compresses; Dysmenorrhea

### 1. Introduction

Menstruation is the process of shedding the uterine lining with blood which occurs repeatedly every month with a period of 3-7 days<sup>1</sup>. Abdominal pain that occurs during menstruation and even before menstruation occurs is called dysmenorrhea<sup>2</sup>. More than 50% of women of reproductive age in the world experience dysmenorrhea and in Indonesia as many as 54.89% experience primary dysmenorrhea and 9.36% experience secondary dysmenorrhea with more than half (64.8%) feeling disturbed and experiencing a decrease in activity<sup>3</sup>. Menstrual disorders are also caused by several factors, namely psychological, nutritional status, hormonal disorders, etc<sup>4</sup>. Pharmacological and non-pharmacological therapy can be carried out to reduce the degree of dysmenorrhea pain. One of the two examples of non-pharmacological therapy is giving warm compresses and cold compresses.

As many as 82 respondents (93.2%) chose non-pharmacological therapy to reduce the degree of dysmenorrhea pain and only 6 respondents chose pharmacological therapy<sup>9</sup>. Adolescents with primary dysmenorrhea as much as 32.5% take analgesic drugs and as many as 34% choose to do warm compress therapy<sup>10</sup>.

Warm compresses provide a warm sensation to create a feeling of comfort in areas that feel pain, reduce pain, reduce the tension of uterine muscle contractions and cause vasodilation to increase blood flow in blood vessels<sup>5</sup>. Meanwhile, cold compresses function to relieve pain due to edema or trauma by increasing the production of endorphins, preventing head congestion, slowing the heart rate, narrowing blood vessels and reducing local blood flow<sup>6</sup>.

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As many as 9 respondents stated a change in the degree of pain which initially felt severe pain turned into mild pain after being given a warm compress<sup>7</sup>. More than half (66.6%) of respondents stated that the dysmenorrhea pain scale decreased by one level after being given a cold compress<sup>8</sup>.

The large percentage of knowledge of women of reproductive age in Indonesia regarding non-pharmacological treatment of dysmenorrhea, especially warm compresses. So this research was conducted to find out and analyze more deeply about the comparison of the effectiveness of giving warm compresses and cold compresses in the treatment of primary dysmenorrhea in women of reproductive age where cold compresses have the same working system, namely through skin stimulation which produces a feeling of comfort in areas that feel pain.

## 2. Method

This study uses a systematic review method on articles obtained from database sources, namely ScienceDirect, Pubmed, Scopus and Google Scholar. The selected literature is based on the selection of PRISMA flowcharts, MMAT and inclusion exclusion criteria.

## 3. Result

The results of a literature search based on prism flowcharts were searched using the Boolean operators “Mentrual” OR “Menstruation” OR “Period” AND “Warm compress” AND “Cold compress” AND “Dysmenorrhea” NOT “Review” NOT “Male” also based on inclusion exclusion criteria 5 literatures are obtained that are appropriate to the topic and a deeper analysis is carried out.

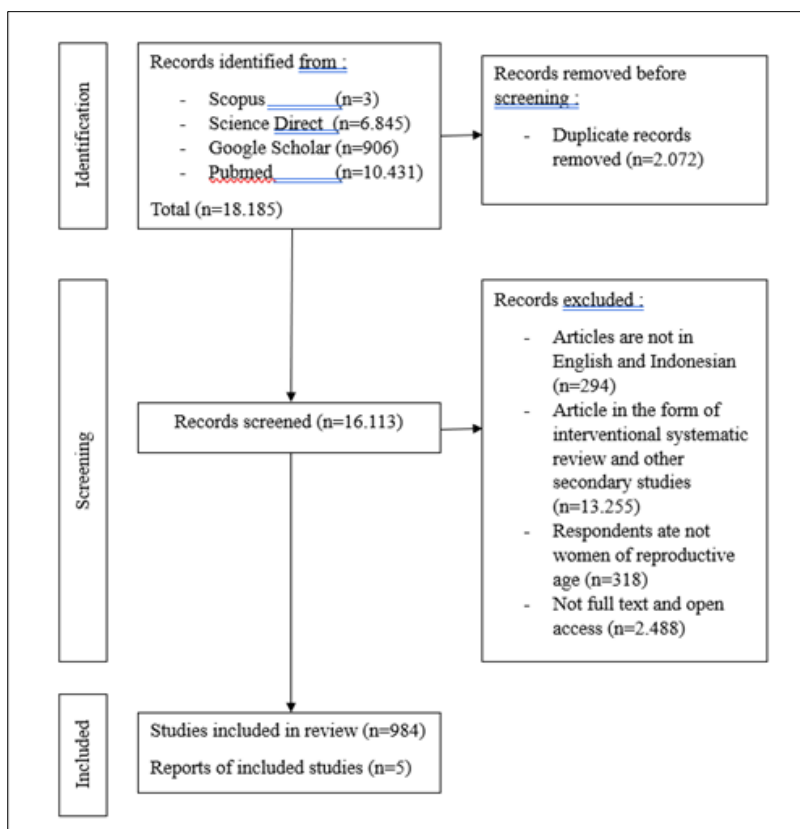


Figure 1 PRISMA Diagram

Literature characteristics are carried out by entering data from selected literature for further review.

Table 1 Literature Characteristics

No.	Authors	Details
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1.	Amrina <i>et al</i> (2020)	<p>Title : The Effectiveness of Warm and Cold Water Compresses on Reducing Pain Intensity in Young Women with Dysmenorrhea</p> <p>Place : Kendal Regency, Central Java</p> <p>Purpose : To determine the difference in the effectiveness of warm compresses and cold compresses on reducing pain intensity in adolescents with primary dysmenorrhea</p> <p>Method :</p> <p>D : Quasi-experimental</p> <p>S : 34 people</p> <p>V Inde : Reduction of pain intensity in young women with dysmenorrhea</p> <p>V Depen: Effectiveness of Compress Warm Water and Cold Water</p> <p>I : Pretest and Posttest</p> <p>A : Wilcoxon and Man Withney</p> <p>Results: Based on the research, it was found that the average difference between the warm water group (2.65) and the cold water group (1.41). So it was concluded that warm water compresses are much more effective in reducing the intensity of dysmenorrhea pain than cold water compresses</p>
2.	Rahmadaniah <i>et al</i> (2018)	<p>Title : Comparison of Giving Warm Compresses and Cold Compresses to Menstrual Pain Levels</p> <p>Place : Akbid Abdurrahman Palembang</p> <p>Purpose : Knowing the comparison of giving warm compresses and cold compresses to the level of menstrual pain at the Abdurahman Palembang Academy of Medicine</p> <p>Method :</p> <p>D : Pre-experimental</p> <p>S : 40 women who experience menstruation</p> <p>V Inde : Menstrual pain level</p> <p>V Depen: Comparison of giving warm compresses and cold compresses</p> <p>I : Pretest and posttest</p> <p>A : Chi square</p> <p>Results : In this study it was said that cold compresses were far more effective than warm compresses. Because there were 11 out of 20 respondents (55%) who still felt severe pain after being given warm compresses. While cold compresses, only 4 out of 20 respondents (20%) felt severe pain.</p>
3.	Mukhoirotin <i>et al</i> (2018)	<p>Title : The Effects Of Cold Compress And Warm Compress On <math>\beta</math> -Endorphin Levels, IL-6 And TNF<math>\alpha</math> Among Adolescent With Dysmenorrhea</p> <p>Place: Faculty of Health Sciences Unipdu Jombang</p> <p>Purpose : To determine the differences in the effect of cold compresses and warm compresses on levels of <math>\beta</math> Endorphin, IL-6 and TNF<math>\alpha</math> in adolescents with dysmenorrhea</p> <p>Method :</p> <p>D : Post test only</p> <p>S : 40 people</p> <p>V Inde : Changes in the levels of <math>\beta</math> Endorphin, IL-6 and TNF<math>\alpha</math></p> <p>V Depen: The effect of cold compresses and warm compresses</p> <p>I : Numering rating scale and ELISA</p> <p>A : Independent T-test</p> <p>Results : The results of the study stated that there were no significant differences in the levels of <math>\beta</math> Endorphin, IL-6 and TNF<math>\alpha</math> after being given warm and cold compresses. Both are equally effective in reducing dysmenorrhea. However, based on the assessment of endorphins levels,</p>

		a higher value was obtained, 171.43 pg/ml after being given a warm compress, so based on this assessment, warm compresses were considered more effective.
4.	Mukhoirotin <i>et al</i> (2020)	Title : The Influence of Slow Back Stroke Massage, Cold-compress and Warm-compress to the Level of Prostaglandin F2 $\alpha$ (PGF2 $\alpha$ ) in Primary Dysmenorrhea
		Place : Faculty of Health Sciences Unipdu Jombang
		Purpose : To determine the effect of SSBM, cold compresses and warm compresses on PGF2 $\alpha$ levels in primary dysmenorrhea
		Method : D : post test only S : 76 female students V Inde : Effect on PGF2 $\alpha$ levels in primary dysmenorrhea V Depen: SSBM values, cold compresses and warm compresses I : NRS and ELISA A : Paired sample T-test, One way ANOVA and Kruskal Wallis test
		Results : This study resulted in SSBM, cold compresses and warm compresses being declared effective in reducing pain levels. But in detail, get the difference in the difference in the average value which is greater on cold compresses 3.92 which means cold compresses are more effective than warm compresses
5.	Gyan Karla Advincola dos-Santos <i>et al</i> (2020)	Title : Effect of Cold Versus Hot Compress On Pain In University Students With Primary Dysmenorrhea
		Place : Private university in the city of Sao Paulo
		Purpose : To identify the effect of cold or hot compresses on pain intensity and pressure pain tolerance threshold in women with primary dysmenorrhea
		Method : D : Individual assessment S : 111 students V Inde : Influence on the intensity and threshold of pain tolerance V Depen: The effect of cold or hot compresses on women with primary dysmenorrhea I : VAS and PPT A : Two way ANOVA test and T test
		Results : No change in pain pressure tolerance threshold was found in women with primary dysmenorrhea. However, the results showed that cold compresses had a more significant effect on reducing pain intensity compared to warm compresses

#### 4. Discussion

The results of the distribution of the research area were found in several regions in Indonesia, namely Jombang, Kendal, Palembang and were found to be in one area abroad, namely in Brazil, to be precise, in the city of Sao Paulo, with female respondents of reproductive age experiencing primary dysmenorrhea. The research methods used in the literature are quasi-experimental, pre-experimental, experimental study, post-test only and individual assessment.

The difference in the amount of literature originating from Indonesia compared to foreign countries is due to differences in assumptions and actions taken in dealing with a disease. Most Indonesian people choose to do alternative medicine compared to taking drugs due to economic and cultural factors which assume that alternative medicine does not need to cost money, has minimal risk and can be done independently at home<sup>11</sup>. In addition, side effects were also found after taking non-steroidal anti-inflammatory drugs (NSAIDs)<sup>12</sup>. In contrast to the habits of foreigners where health workers recommend taking pain relievers that are sold freely and without a doctor's prescription the day before menstruation occurs<sup>13</sup>.

Selected literature discusses the effectiveness of giving warm compresses and cold compresses in the treatment of dysmenorrhea with an outcome in the form of a decrease in the degree of dysmenorrhea. Research conducted on 64 students of class X MAN Kendal found that warm compresses were stated to be more effective in reducing the degree of dysmenorrhea compared to giving cold compresses<sup>14</sup>. Done by giving warm compresses with a temperature of 40°C-45°C for 5 minutes to areas that feel sore can cause a feeling of comfort, reduce pain, prevent muscle tension and improve blood circulation<sup>15,16</sup>. Research discussing the same thing in 40 FIK Unipdu Jombang students stated that warm compresses and cold compresses were considered equally effective in reducing the degree of dysmenorrhea, but based on the production value of the hormone endorphins warm compresses were higher at 171.43 pg/ml compared to cold compresses which were only 143.03 pg/ml<sup>19</sup>.

Research on 40 students at the Abdurrahman Palembang Academy stated that cold compresses were more effective than giving warm compresses in reducing the degree of dysmenorrhea<sup>17</sup>. Cold compress is an act of stimulating the production of endorphins, the sensation of cold after being given a cold compress with a temperature of 10°C-15°C for 15 minutes can predominantly close pain and cause vasoconstriction of blood vessels<sup>18</sup>. Research in the city of Sao Paulo on 111 college students stated that there was no change in the pain pressure tolerance threshold but cold compresses provided more significant results in reducing the intensity of dysmenorrhea pain<sup>20</sup>. Research discussing the same thing in 76 FIK Unipdu Jombang students found that cold and warm compresses were considered equally effective. However, based on the large difference in the mean value, it was found that it was greater for cold compresses (3.92) while for warm compresses (2.46) it was concluded that cold compresses were more effective in reducing the degree of dysmenorrhea pain<sup>21</sup>.

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## 5. Conclusion

After conducting a more in-depth analysis, the results obtained were as many as 3 out of 5 in the literature stating that giving cold compresses was stated to be more effective in reducing the degree of dysmenorrhea pain compared to warm compresses.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

No conflict of interest founded.

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