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# Difference in the Effectiveness of Dysmenorrhea Exercise and Warm Compress to Relieve Menstrual Pain

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**A B S T R A C T**

Dysmenorrhea is a common complaint experienced before or during a woman's period. Dysmenorrhea can be treated by applying pharmacological and non-pharmacological methods to relief pain. Pharmacological intervention involves administration of pain medication, while non-pharmacological intervention involves Dysmenorrhea exercise and warm compress. This study aims to determine the difference in the effectiveness of dysmenorrhea exercise and warm compress to relieve menstrual pain. This was a quasi-experimental study with post-test two groups design. 20 samples were selected using purposive sampling technique and assigned into 2 groups. Data were analyzed using the Mann-Whitney statistical test. The results showed that there was no significant difference in effectiveness between Dysmenorrhea exercise and warm compress to relieve menstrual pain, with a p-value of 0.127>0.05. It can be concluded that there was no difference in effectiveness between Dysmenorrhea exercise and warm compress. However, based on the score, it was revealed that warm compress was more effective in relieving menstrual pain than Dysmenorrhea exercise.

*Dysmenorrhea adalah masalah yang sering terjadi pada wanita yang dialami sebelum ataupun saat menstruasi berlangsung Dismenore dapat ditangani dengan metode farmakologi dan non farmakologi untuk dapat meminimalkan rasa nyeri. Intervensi farmakologi, seperti pemberian obat anti nyeri. Sedangkan teknik non farmakologi, diantaranya berupa senam Dysmenorrhea dan kompres hangat. Tujuan penelitian ini adalah untuk melihat perbedaan efektivitas senam Dysmenorrhea dan kompres hangat Terhadap penurunan nyeri haid. Desain penelitian, menggunakan quasy experiment dengan* two group post-test. *Pengambilan sampel menggunakan teknik* purposive sampling *dengan jumlah sampel 20 responden terbagi dalam 2 kelompok. Analisis data menggunakan uji statistik Mann-Whitney. Hasil penelitian menunjukkan bahwa tidak terdapat perbedaan efektivitas yang signifikan antara senam Dysmenorrhea dan kompres hangat terhadap penurunan nyeri haid, dengan hasil uji menunjukkan nilai p-value 0,127 ≥ 0,05. Kesimpulan tidak terdapat perbedaan efektivitas antara senam Dysmenorrhea dan kompres hangat, namunnjika dilihat berdasarkan skor menunjukkan kompres hangat lebih efektif dalam menurunkan nyeri haid dibandingkan senam Dysmenorrhea*.

## Introduction

Dysmenorrhea or menstrual pain is the most common complaint experienced at the beginning or during menstruation (Reeder, 2013). Data derived from the World Health Organization (WHO) shows that about 50% of adolescents in the world experience menstrual pain. In America, about 90% experience dysmenorrhea and about 10%-15% experience severe dysmenorrhea which causes them to

be unable to do any activities (Rini and Nuryanti, 2020). In Indonesia, about 64.25% of adolescents experience dysmenorrhea and around 54.89% are included in primary dysmenorrhea (Rini and Nuryanti, 2020).

If left untreated, dysmenorrhea can lead to activity disorders, retrograde menstruation, infertility and infection. In addition, it can cause emotional conflict, tension and anxiety, as well as uncomfortable and strange feelings (Sarifudin, 2011). Dysmenorrhea can be managed pharmacologically and non-pharmacologically. Pharmacologically treatment involves painkillers, but the use of these drugs also have side effects. Previous studies showed that non-pharmacological treatments had a significant and safe effect. One of the non-pharmacological treatments is relaxation technique with dysmenorrhea exercise. Dysmenorrhea exercise which was performed 5 times in a row in a week was proven to help stretch the abdominal, pelvic and waist muscles (Lismaya, Sambas, and Hersoni 2021). Such finding is reinforced by a study conducted by Aidah rachmawati and Rini (2020), which revealed that dysmenorrhea exercise could relieve dysmenorrhea (Rini and Nuryanti 2020).

In addition, therapy using warm compress was proven to reduce the intensity of dysmenorrhea. Warm compress can cause vasodilation in blood vessels so as to increase blood flow to the tissues (Natali, 2013). A study conducted among adolescent girls at SMPN 1 Kartoharjo showed evidence that warm compress was effective in relieving menstrual pain from moderate pain to mild pain (Hanifah and Kuswantri, 2020). Dysmenorrhea exercise and warm compress are easy, inexpensive therapies and do not require any tool for the implementation (Anugraheni 2013). The high incidence and impact of dysmenorrhea encourages researchers to conduct a study entitle "Differences in the Effectiveness of Dysmenorrhea Exercise and Warm Compress to Relieve Menstrual Pain (Primary Dysmenorrhea). Hopefully the results of this study can be the latest evidence based in handling of pain.

**Methods**

This was a quasi-experimental research with post-test two group design approach to determine the difference between the two treatment groups. The current study was conducted at Women's Dormitory of Health Polytechnic of Sorong. The study site was chosen because the study was conducted during the Covid-19 pandemic so that students did online learning from home and did not travel to campus. The dormitory is one of the places where these students gather so that it was chosen for the reason of time effectiveness to facilitate the course of study.

The study was conducted for 1 month (April-June, 2021). The study population involved all undergraduate midwifery students of Health Polytechnic of Sorong with a total number of 123 people. The samples of this study were 20 students of applied midwifery undergraduate program who met the inclusion and exclusion criteria. The inclusion criterion in this study was respondents who experienced dysmenorrhea for 3 consecutive months during the menstrual cycle, while the exclusion criterion was respondents who had comorbidities in the reproductive system.

The sampling technique applied here was purposive sampling to determine samples based on certain considerations. Assessment of pain response applied the NRS scale instrument, while assessment

for exercise and warm compress applied the SOP sheet. Data were analyzed using the Mann Whitney test which is a non-parametric test, since the researcher would compare two means from the same population (Sugiyono, 2015).

The study implementation process began with conducting a survey on the population that met the inclusion and exclusion criteria. After that, population that met the criteria was taken as respondents. The first 10 respondents were assigned in the relaxation technique group and the next 10 respondents were assigned in the warm compress group. Before the intervention was given, an *NRS* scale instrument was delivered to each group. Furthermore, the exercise group was given a dysmenorrhea exercise intervention 3 times in a row in one week (Thursday, Friday and Saturday) while the warm compress group was given a warm compress using a hot bladder on abdominal area on the first and second day of menstruation.

## Results

The results of this study consist of univariate and bivariate data. Univariate data present data on the characteristics of respondents including age, family history of dysmenorrhea, menstrual cycle and menstrual duration. More details on data regarding characteristics of respondent are presented in table 1 below:

**Table 1.** Characteristics of Respondents

| Variable | Dysmenorrhea Exercise Group | | Warm Compress Group | |
|---|---|---|---|---|
| | Frequency | (%) | Frequency | (%) |
| **Age (years)** | | | | |
| ≤ 20 | 2 | 20.0 | 1 | 10.0 |
| 20-30 | 4 | 40.0 | 9 | 90.0 |
| ≥ 30 | 4 | 40.0 | 0 | 0 |
| **Total** | **10** | **100,0** | **10** | **100,0** |
| **Family History with Dysmenorrhea** | | | | |
| Yes | 2 | 20.0 | 3 | 30.0 |
| No | 8 | 80.0 | 7 | 70.0 |
| **Total** | **10** | **100,0** | **10** | **100,0** |
| **Menstrual Cycle** | | | | |
| Regular | 8 | 80.0 | 6 | 60.0 |
| Irregular | 2 | 20.0 | 4 | 40.0 |
| **Total** | **10** | **100,0** | **10** | **100,0** |
| **Menstrual Period (Days)** | | | | |
| 3-5 | 2 | 20.0 | 10 | 100.0 |
| ≥ 5 | 8 | 80.0 | 0 | 0 |
| **Total** | **10** | **100,0** | **10** | **100,0** |

Based on table 1, it was shown the characteristics of respondents in the dysmenorrhea exercise group. Most of respondents were included in the age range of 20-30 years and >30 years with a total of 4 respondents (40%). Regarding the family history variable, most of respondents or 8 respondents (80%) did not have a family history of dysmenorrhea. Regarding the menstrual cycle variable, most of respondents or 8 respondents (80%) were involved in the category of regular menstrual cycle. Regarding the menstrual period variable, most of respondents or 8 respondents (80%) were involved in the category of > 5 days.

In the warm compress group, most of respondents were included in the age range of 20-30 years with a total of 9 respondents (90%). Regarding the family history variable, most of respondents or 8

respondents did not have a family history of dysmenorrhea. Regarding the menstrual cycle variable, most of respondents or 6 respondents (60%) were involved in the category of regular menstrual cycle. Regarding the menstrual period variable, all respondents (100%) were involved in the category of 3-5 days.

The decrease in the level of pain after the dysmenorrhea exercise and warm compress interventions is presented in table 2:

**Tabel 2.** Distribution of Pain Levels after the Dysmenorrhea Exercise and Warm Compress interventions (n= 20).

| Groups | Pain Level | Post Test | |
|---|---|---|---|
| | | Frequency | Percentage (%) |
| Dysmenorrhea Exercise | No pain | 0 | 0 |
| | Mild pain | 2 | 20.0 |
| | Moderate pain | 8 | 80.0 |
| | Severe pain | 0 | 0 |
| | Uncontrolled pain | 0 | 0 |
| Warm Compresses | No pain | 2 | 20.0 |
| | Mild pain | 3 | 30.0 |
| | Moderate pain | 5 | 50.0 |
| | Severe pain | 0 | 0 |
| | Uncontrolled pain | 0 | 0 |

Based on table 2, it can be seen the intensity of the respondent's pain after the dysmenorrhea exercise and warm compress interventions. In the dysmenorrhea exercise group, there were 8 respondents (80%) with moderate pain intensity and 2 respondents (20%) in mild pain intensity. Meanwhile, in the warm compress group, there were 5 respondents (50%) with moderate pain intensity, 3 respondents (30%) with mild pain intensity and 2 other respondents did not experience pain.

The Mann Whitney statistical test aims to determine the difference in the effectiveness of dysmenorrhea exercise and warm compress to relieve dysmenorrhea. More details are presented in table 3:

**Table 3**. Difference in the Effectiveness of Dysmenorrhea Exercise and Warm Compress to Relieve Dysmenorrhea

| Variable | Mean difference | p-Value |
|---|---|---|
| Dysmenorrhea Exercise | 12.20 | 0,127 |
| Warm Compress | 8.80 | |
| *Mann-Whitney test | $p \geq 0{,}05$ | |
| *Significant | | |

The results of data analysis using the Mann Whitney test obtained p-value of $0.127 \geq 0.05$. Such finding indicated that there was no significant difference in the effectiveness of dysmenorrhea exercise and warm compress to relieve menstrual pain.

## Discussion

Based on the results of the study, it was revealed that there was no significant difference in effectiveness of dysmenorrhea exercise and warm compress. This was supported by the results of the Mann-Whitney statistical test which obtained a p value of 0.127, $\alpha = 0.05$ ($p > \alpha$). The researcher assumed that such finding was due to the respondents were given the similar treatment, namely dysmenorrhea gymnastic and warm compress. Dysmenorrhea exercise helps stretch the abdominal,

pelvic and waist muscles. This is a physical activity that can help relieve pain. In addition, dysmenorrhea exercise also provides a relaxing sensation. A relaxed body is able stop the production of adrenaline hormone (Hidayatunnikmah et al., 2022).

Adrenaline is a hormone that triggers stress in a person. Exercise is an activity of the body and by doing gymnastic movements, b-endorphins will be secreted and be received by receptors in the hypothalamus and limbic system which function to regulate emotions. An increase in b-endorphins can significantly reduce pain, improve memory, appetite, sexual ability, as well as blood pressure and breathing (Lismaya, Liza Aina, 2021). This study finding is in line with a study conducted by Rahayu, 2015 and Nuraeni, 2015, which showed that dysmenorrhea exercise could significantly reduce the degree of dysmenorrhea (Mutasya, Edison, and Hasyim, 2016).

A warm compress is a kind of heat transfer process that can provide comfort. While providing compress, the blood vessels in certain parts in pain will widen (Lowdermilk, D, L, Perry Shannon E, 2013). In addition, blood flow will increase and the muscles in the compressed area will relax, so that it can directly reduce pain including menstrual pain (dysmenorrhea) (Lowdermilk, D, L, Perry Shannon E, 2013). This study finding is in line with a study conducted by Restiana Saras, 2017, Asmita and Tri Veny, 2017 and Ulfa and Aris, 2019 which showed that warm compress could significantly relieve dysmenorrhea, especially among adolescent girls (Ammar, 2016).

There are several predisposing factors that influence the occurrence of dysmenorrhea including age, family history of dysmenorrhea, menstrual duration and menstrual cycles that have been presented in this study. However, the researcher did not directly conduct an in-depth study or analysis regarding these predisposing factors so that there is a need for further study (Ammar, 2016).

The results of this study indicated that dysmenorrhea exercise and warm compress had the similar effectiveness so that they can be applied for relieving dysmenorrhea.

## Conclusions

The results showed that there was no significant difference in the effectiveness of dysmenorrhea exercise and warm compress to relieve menstrual pain with a p value = 0.127, $\alpha = 0.05$ ($p > \alpha$). Such findings meant that dysmenorrhea exercise and warm compress were equally effective in relieving menstrual pain (dysmenorrhea) so that these two treatments can be applied by women who experience dysmenorrhea.

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