INTEREST: Journal of Health Sciences
Vol. 13, No. 2, November 2024
https://doi.org/10.37341/interest.v13i2.727

Original Research

The Effect of Combined Benson Relaxation and Warm Compress Therapy on Reducing Dysmenorrhea Pain Among Adolescents

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ABSTRACT

Background: *Dysmenorrhoea is pain felt before or during menstruation, characterised by abdominal cramps that can radiate to the back. Nonpharmacological interventions such as Benson relaxation and warm compresses are effective first aid to reduce dysmenorrhoea pain. This study aims to analyse the effect of a combination of Benson relaxation and warm compresses on reducing dysmenorrhoea pain in adolescents.*

Methods: *This study used a quasi-experimental design with a pre-posttest control group design. A total of 60 adolescents were selected through purposive sampling technique and divided into two groups: intervention group (n=30) who received combination therapy of Benson relaxation and warm compress, and control group (n=30) who only received warm compress. Pain levels were measured using the Numeric Rating Scale (NRS), and data were analysed using the Wilcoxon test.*

Results: *There was a decrease in pain levels in both groups after the intervention, with a more noticeable decrease in the intervention group (mean difference = 0.8) compared to the control group (mean difference = 0.4). However, the Wilcoxon test results showed a p value = 0.542 which means there was no statistically significant difference between the two groups.*

Conclusions: *Warm compress therapy or a combination of warm compress with Benson relaxation is equally effective in reducing dysmenorrhoea pain in adolescents. Both interventions can be applied as non-pharmacological interventions in the school environment as part of promotive and preventive efforts against dysmenorrhoea pain in adolescents.*

ARTICLE HISTORY
Received: 24th April, 2025
Accepted: 24th April, 2025

KEYWORDS
Adolescents, Benson relaxation, dysmenorrhoea pain, warm compress

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Cite this as: Utami, D., Sunaryo, T., & Rohimah, Y. T. (2024). The Effect of Combined Benson Relaxation and Warm Compress Therapy on Reducing Dysmenorrhea Pain Among Adolescents. *Interest: Journal of Health Sciences*, 13(2), 203-209. https://doi.org/10.37341/interest.v13i2.727

INTRODUCTION

Adolescence is a complex and dynamic phase of development, characterised by physical, psychological and intellectual changes. One indicator of physical growth in adolescent girls is the maturity of the reproductive organs, which is characterised by the onset of menstruation. However, menstruation is often accompanied by complaints of menstrual pain or dysmenorrhoea that can affect daily activities, including learning

activities and social interactions. Dysmenorrhoea in adolescents not only causes discomfort but also has an impact on the overall quality of life of adolescents (Malita Ulfa et al., 2021; Sumdika Sari & Amalia, 2020).

Dysmenorrhoea in adolescents is caused by excessive uterine contractions and increased release of prostaglandins that trigger pain. The condition may last for several days and results in decreased physical comfort. Dysmenorrhoea often interferes with adolescents' academic and social activities. It leads to decreased productivity, including increased school absenteeism. Therefore, effective management of dysmenorrhoea is important to support adolescents' quality of life and academic achievement (Agustin et al., 2022; Khoerotun Nisa & Haniyah, 2024; Vera Iriani Abdullah & Maryati, 2022).

One effective method to reduce pain nonpharmacologically is through relaxation techniques. Deep breath relaxation, yoga, and Benson relaxation techniques have been researched and proven to have an effect on reducing dysmenorrhoea pain. Benson's relaxation technique is a form of therapy that emphasises concentration and repetition of positive sentences or words to eliminate distracting thoughts, so that the body becomes more relaxed and stress hormones such as adrenaline can be suppressed. This relaxation can also help in pain management by improving the body's emotional and physiological balance (Molazem et al., 2021).

In addition to relaxation, warm compresses are a simple intervention that has been shown to be effective in reducing menstrual pain. The heat from the compress can improve blood flow, reduce muscle tension, and reduce uterine contractions, thus reducing pain. The combination of Benson relaxation and warm compresses is expected to have a synergistic effect in overcoming dysmenorrhoea, especially in adolescents who are just experiencing menstruation and are vulnerable to emotional and physical disturbances. Combining these two methods is necessary because while warm compresses address the physiological aspects of pain by enhancing local circulation and muscle relaxation, Benson relaxation targets the psychological component by reducing stress and anxiety levels, which are known to exacerbate pain perception. Thus, integrating both interventions may provide a more comprehensive and holistic approach to pain management, leading to greater overall effectiveness (Agustin et al., 2022; Vera Iriani Abdullah & Maryati, 2022).

A preliminary study conducted in one junior high school showed that in one month there were about 15 female students who came to the UKS because of dysmenorrhoea. This shows that dysmenorrhoea is a real problem and requires effective treatment in the school environment. This study has novelty compared to previous studies. Previous studies only focused on one intervention such as Benson relaxation (Abu Maloh et al., 2024; Molazem et al., 2021; Titi et al., 2021), so this study combined two nonpharmacological interventions and was conducted on adolescents. This study aims to analyse the effect of a combination of Benson relaxation and warm compresses on reducing dysmenorrhoea pain.

MATERIALS AND METHODS

This research is a quantitative study with a quasi-experimental approach, using a pretest-posttest with control group design, which aims to determine the effect of intervention on dysmenorrhoea pain variables by involving intervention groups and control groups (Dahlan, 2021). This research was conducted at SMP N 1 Banyudono, Boyolali Regency. The research implementation time was from April to May 2022, including the preparation stage, data collection, intervention, and evaluation of results.

The sample size was determined using the Slovin formula with an error rate of 10% (e = 0.1), resulting in a sample size of 60 students which were then divided into two groups: 30 students as the intervention group and 30 students as the control group. The sampling technique used a non-probability sampling method with a purposive sampling approach, which selects subjects who meet certain criteria according to the research objectives (Dahlan, 2020).

Inclusion criteria in this study include student: (1) who experience dysmenorrhoea pain, (2) are not taking analgesic drugs, (3) have a pain scale between 4 to 6 according to the Numeric Rating Scale (NRS), and (4) are willing to become respondents by signing informed consent. Meanwhile, the exclusion criteria were students who experienced secondary dysmenorrhoea, which is menstrual pain caused by certain pathological conditions.

This study has two main variables. The independent variables were the administration of Benson relaxation and warm compress in the intervention group, and warm compress alone in the control group. The dependent variable was the level of dysmenorrhoea pain reduction, which was measured using the Numeric Rating Scale (NRS), which is a 0-10 scale that assesses pain intensity from no pain to very severe pain. The research instrument consisted of a questionnaire of respondent characteristics and an NRS scale measuring instrument to assess pain levels. The NRS scale used in this study is a standardised instrument that has been tested for validity and reliability with a validity value of 0.90 and reliability (Alpha-Cronbach) > 0.95, so it does not require retesting (Bielewicz et al., 2022).

At the implementation stage, respondents first filled out an identity questionnaire and took an initial measurement of the pain scale. Then the intervention was carried out according to the group: the intervention group received Benson relaxation for 10-20 minutes and warm compresses for 15 minutes, while the control group only received warm compresses for 15 minutes. After the intervention, the pain scale was measured again, and the data were collected.

Univariate analysis was conducted to describe the distribution of respondents' characteristics. Furthermore, bivariate analysis was used to determine the effect of the intervention on reducing dysmenorrhoea pain. Normality test using Kolmogorov-Smirnov showed that the data was not normally distributed, so bivariate analysis was performed using Wilcoxon test with a significance limit of $p < 0.05$ (Dahlan, 2021). This study obtained Ethical Clearance at dr. Moewardi Surakarta Hospital with number 217/II/HREC/2022 dated 02 March 2022.

RESULTS

Table 1. Characteristics of Adolescents by Age and Duration of Menstruation (n = 60 adolescents)

Variables	Intervention Group		Control Group	
	n	%	n	%
Age				
Early adolescence (11-12 years old)	28	93.3	28	93.3
Middle adolescence (15-17 years old)	2	6.7	2	6.7
Total	**30**	**100**	**30**	**100**

Variables	Intervention Group		Control Group	
	n	%	n	%
Duration of Menstruation				
Normal (3-8 days)	26	86.7	28	93.3
Not normal (More than 8 days)	4	13.3	2	8.7
Total	30	100	30	100

Note: n = number; % = percentage

A total of 60 students participated in this study, which were evenly divided into an intervention group (n=30) and a control group (n=30). The majority of study subjects in both groups were in the early adolescent age range (11-14 years old) by 93.3%. Characteristics of adolescents based on menstrual duration were 86.7% of adolescents in the intervention group and 93.3% in the control group experienced menstruation with normal duration (3-8 days) (Table 1).

Table 2. Analysis of Pain Scale Before and After Treatment in Intervention Group and Control Group (n = 60 adolescents)

Variables	Intervention Group (n=30)	Control Group (n=30)
Pain Scale Mean Before Treatment	5.40	5.17
Pain Scale Mean After Treatment	4.60	4.77
Mean Difference	0.80	0.40
Wilcoxon test (Before-After Group Treatment)	p value <0.001 (significant)	p value <0.001 (significant)
Wilcoxon test (Difference after treatment between groups)	p value = 0.542 (not significant)	-

Before the intervention, the average pain scale in the intervention group was 5.40 which then decreased to 4.60 after being given warm compresses and Benson relaxation with an average difference of 0.80. In the control group, the average pain scale decreased from 5.17 to 4.77 after being given a warm compress with an average difference of 0.40. Wilcoxon test showed a significant decrease in pain in both groups (p value <0.001). However, the comparison between the intervention and control groups after treatment showed no significant difference (p value =0.542).

DISCUSSION

This study aims to determine the effectiveness of warm compresses and a combination of warm compresses with Benson relaxation in reducing dysmenorrhoea pain in adolescent girls. The results showed that both interventions were effective in reducing pain intensity, although there was no statistically significant difference between the two post-treatment groups. This suggests that warm compresses alone or combined with Benson relaxation can both be effective non-pharmacological methods.

The decrease in pain scale in each group is in line with the physiological theory underlying both methods. Warm compresses are known to increase vasodilation, improve local blood circulation, and reduce uterine muscle contractions, thereby reducing tissue ischaemia and pain. These findings support the theory that local heat can improve blood flow and reduce muscle tension (Agustin et al., 2022; Vera Iriani Abdullah & Maryati, 2022)

In addition, Benson relaxation contributes to lowering pain perception through activating the parasympathetic nervous system, reducing muscle tension, as well as decreasing the body's oxygen consumption. This technique teaches mind focus and deep breathing which helps to decrease the stress response, thereby reducing perceived pain sensations (Ahmed et al., 2020; Desreza et al., 2024; Gaber Zaghloul et al., 2022). This study is also consistent with previous findings stating that a combination of physical and psychological approaches can be an effective pain management strategy. While physical interventions directly address the physiological pathways of pain, psychological techniques work through managing pain perception, so the combination of the two can provide optimal benefits (Abarghoee et al., 2022; Mirhosseini et al., 2020).

This study has several limitations that need to be considered. The intervention was only given once on the first day of menstruation, so it is not possible to observe the long-term or cumulative effects of this treatment over several menstrual cycles. To maximise the results, further research is needed with a larger sample, repetition of the intervention, as well as tighter environmental control. In addition, there is a possibility of confounding variables, such as individual pain thresholds, stress levels, physical activity, and dietary habits, which were not controlled and may have influenced the pain perception and the outcomes of the intervention.

CONCLUSION

This study shows that both warm compresses and the combination of warm compresses with Benson relaxation are effective in reducing dysmenorrhoea pain in adolescent girls. Although both interventions significantly reduced pain intensity in their respective groups, no statistically significant difference was found between the two groups after treatment. These findings suggest that both methods can be recommended as non-pharmacological approaches for the management of adolescent girls' dysmenorrhoea. The clinical implications of this study highlight that simple, low-cost, and easily implemented interventions like warm compresses and Benson relaxation can be integrated into school health programs, providing accessible options to manage dysmenorrhoea and potentially reducing the reliance on pharmacological treatments.

ACKNOWLEDGEMENT

The authors would like to thank the Director of Poltekkes Kemenkes Surakarta for the support and facilities provided for the completion of this research.

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