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# Effect of Pumpkin Seed Extract (*Cucurbita Moschata*) on Premenstrual Syndrome Pain Intensity in Adolescent Girls

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## ABSTRACT

Premenstrual Syndrome is a condition commonly experienced by young women with physical and emotional symptoms that interfere with daily activities. The prevalence of PMS in Indonesia reaches 85% of the entire female population of reproductive age, consisting of 60-75% experiencing moderate and severe PMS. This study aimed to prove the effectiveness of pumpkin seed extract (Curcubita moschata) in reducing the level of Premenstrual Syndrome pain in young women. This quantitative research, using a True Experimental design, employed a pre-test and post-test with a control group design. The study population consisted of all young women experiencing premenstrual syndrome in the Semarang Ministry of Health Polytechnic area. The sampling technique used was a randomized clinical trial with 42 samples. Ethical approval from the Health Research Ethics Commission of Poltekkes Kemenkes Semarang with Number 1185/EA/F.XXIII.38/2024. The research was conducted on three treatment groups: intervention 1 with a dose of 500 mg 2x2 a day, intervention 2 with a dose of 500 mg 2x1 a day, and the control group which received starch tablets 500 mg 2x1 a day for 10 days. The results analyzed using the Paired T-Test showed that giving pumpkin seed extract at a dose of 500 mg 2x2 a day for 10 days could most significantly reduced the intensity of premenstrual syndrome pain (p-value 0.000; mean 3.86) compared to intervention 2 and control. These findings suggest that pumpkin seed extract has the potential to be an effective natural alternative for reducing PMS symptoms in adolescent girls, particularly in pain reduction.

Keywords: adolescent girls; pain; premenstrual syndrome; pumpkin seed extract

## Introduction

Women of childbearing age are women aged between 15-49 years, who are still of reproductive age and have reproductive organs that are still functioning well. At this age, women have a 95% chance of getting pregnant, but the percentage decreases to 90% in their 30s and only 40% at the age of 40. Women's fertile age occurs more quickly than men, and peak fertility occurs in the age range of 20-29 years [1].

Premenstrual Syndrome (PMS) is a collection of physical, emotional and behavioral complaints and symptoms that occur in

reproductive women, which occur continuously within 7-10 days before menstruation [2]. Research conducted in Indonesia showed that of 260 women of childbearing age, 95% had at least one symptom of premenstrual syndrome. The age of women most affected by PMS is 20-24 years old. Other factors that lead to PMS include stress, female characteristics, obesity, and sports activities [3].

Premenstrual Syndrome (PMS) is a collection of physical, emotional and behavioral complaints and symptoms that occur in reproductive women, which occur continuously within 7-10 days before menstruation [4]. Research conducted in Indonesia showed that out of 260

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people. As many as 95% of women of childbearing age have at least one symptom of premenstrual syndrome [1]. The age of women most affected by PMS is 20-24 years old. Other factors that lead to PMS include stress, female characteristics, obesity, and sports activities [5].

PMS symptoms may be caused by changes in the hormones estrogen and progesterone during the menstrual cycle, as well as other factors such as stress, daily life, and lifestyle. Research shows that mental health plays a big role, and stressful events can worsen PMS symptoms. Premenstrual symptoms are caused by stress which alters betaendorphin release [6].

The prevalence of Premenstrual Syndrome (PMS) in Indonesia reaches 85% of the entire female population of reproductive age, consisting of 60-75% experiencing moderate and severe PMS. Moderate PMS symptoms can be quite disturbing but are still tolerable and do not completely interfere with daily activities. Severe PMS has symptoms that are so intense they interfere with daily life and often require medical treatment [7]. The incidence of PMS in Indonesia has never been studied, but from several studies that have been conducted it is known that the incidence rate is between 30-50% [8]. The prevalence of Premenstrual Syndrome (PMS) in Central Java is not yet specifically known. However, in Semarang, Central Java, the prevalence of PMS was found to be 62% of female students experiencing moderate PMS and 20% experiencing severe PMS [9].

The government program for treating premenstrual syndrome (PMS) involves several initiatives aimed at increasing teenagers' knowledge and abilities in dealing with premenstrual syndrome. Development of the Youth Care Health Services Program. This program focuses on developing specific health services for adolescents, including health education and counseling, to increase adolescents' knowledge and abilities in dealing with PMS [10].

Health education that is more specific and focuses on PMS can help increase adolescents' knowledge about the symptoms and ways to manage PMS. Wider education involving various parties, such as teachers, doctors and parents, can help increase teenagers' knowledge about PMS. More detailed, PMS-focused data collection could help increase knowledge about factors associated with PMS occurrence. The development of health programs that are more comprehensive and focus on PMS can help increase the knowledge and abilities of adolescents in dealing with PMS. Health programs that are more technology-based and use online media can also help increase teenagers' knowledge about PMS [11].

The consequences of premenstrual syndrome (PMS) which is not prevented or not treated properly will have an impact on several aspects. PMS can affect the quality of life of teenage girls, making them feel uncomfortable and unable to carry out normal daily activities and causing mood changes. Affects relationships with other people and work. PMS can affect the quality of relationships, such as disrupting communication and reducing the ability to interact with other people, thereby reducing productivity [11].

The acute impact of Premenstrual Syndrome (PMS) can vary and vary from individual to individual, but generally involves significant physical, behavioral and emotional symptoms. Some of the acute effects that can occur are divided into physical symptoms which include breast pain, weight gain, headaches, swollen hands or feet, muscle pain, stomach cramps, flatulence, acne and diarrhea or constipation [12].

Macronutrients that are useful for treating menstrual pain include vitamin B6, potassium, magnesium and calcium. Vitamin B6 can be found in eggs, bananas and meat, while potassium is found in bananas. Magnesium can be found in meat and green vegetables, while calcium can be found in yogurt. These foods can help reduce discomfort during menstruation, such as stomach cramps and bloating [13].

Pumpkin seeds are rich in macronutrients which can help treat premenstrual syndrome (PMS) pain. One of the macronutrients contained in pumpkin seeds is protein. Pumpkin seeds contain protein that can help improve hormonal balance in the body, which is often disrupted during PMS. Protein also helps strengthen muscles and reduce fatigue [13].

Pumpkin seeds are rich in vitamin B, vitamin E, and minerals such as potassium, magnesium, and phosphorus. These vitamins and minerals play an important role in maintaining general health and reducing PMS symptoms such as headaches, muscle aches and fatigue. Pumpkin seeds also contain fiber which can help maintain digestive health. Digestive disorders such as constipation or diarrhea often occur during PMS, and fiber can help treat these problems [14].

Based on the above, researchers are interested in conducting a study on the effect of pumpkin seed extract (Cucurbita) on pain in Premenstrual Syndrome. The purpose of this study is to prove the effectiveness of pumpkin seed extract (*Cucurbita*) in reducing pain levels in adolescent girls during Premenstrual Syndrome.

#### Methods

This research is a type of quantitative research with a True Experiment design using a pre-test and post-test with control group design. This design was used to determine the effectiveness of pumpkin seed extract against premenstrual syndrome. The population of this study was all young women who experienced premenstrual syndrome in the Semarang Ministry of Health Polytechnic area. The sampling technique was a randomized clinical trial sampling technique (42 samples). The research was conducted in three treatment groups, namely intervention with 1 dose of 500 mg 2x2 a day, intervention with 2 doses of 500 mg 2x1 a day, and controls receiving starch tablets 500 mg 2x1 a day for 10 days.

The research instrument used to determine the level of pain before and after using the NRS (Numeric Rating Scale) pain sheet. The Numeric Rating Scale (NRS) is a subjective measurement tool used to assess a person's pain level on a scale from 0 to 10. A score of 0 indicates no pain, 1–3 indicates mild pain, 4–6 indicates moderate pain, and 7–10 indicates severe to very severe pain. The NRS is administered by asking patients to rate their pain level by selecting a number between 0 and 10.

This research received a ethical approval from the Health Research Ethics Commission of Poltekkes Kemenkes Semarang with Number 1185/EA/F.XXIII.38/2024.

## **Results and Discussion**

 Table 1 Analysis of Differences in Pain Intensity in Adolescent Girls with Premenstrual Syndrome

 Before and After Giving Yellow Pumpkin Seed Extract (*Curcubita Moschata*)

	0			/
Pain Intensity	Intervention 1	Intervention 2	Control	n voluo
	Mean±SD	Mean±SD	Mean±SD	p-value
Pretest	6.29±1.38	4.93±1.59	3.86±1.17	0.000**
Posttest	2.43±1.02	3.64±1.01	3.29±1.07	0.011**
p-value	0.000*	0.022*	0.040*	
Δ	3.86±1.46	1.29±1.86	$0.57 \pm 0.94$	0.000**

\*Paired T-Test \*\*One Way Anova

Based on table 1.1, the results of the analysis show that there is a significant difference in pain intensity in young women with Premenstrual Syndrome (PMS) before and after administration of pumpkin seed extract (*Curcubita moschata*). In intervention group 1 which was given pumpkin seed extract (*Curcubita Moschata*) 500mg 2x2 a day for 10 days, the average pain intensity decreased from 6.29 in the pretest to 2.43 in the posttest, with a pvalue of 0.000. The average reduction in delta pain intensity of 3.86 indicates a significant effect of this intervention.

In intervention group 2 which was given 500mg of pumpkin seed extract (*Curcubita Moschata*) 2x1 a day for 10 days, the average pain intensity also decreased from 4.93 in the pretest to 3.64 in the posttest, with a p-value of 0.022. The

average decrease in delta was 1.29 smaller than in intervention group 1. Meanwhile, in the control group who were given 500mg starch capsules 2x1 a day for 10 days, the average pain intensity decreased from 3.86 to 3.29, with a p-value of 0.040. A decrease in mean delta of 0.57 indicates a smaller effect compared to both intervention groups.

Statistical test analysis using One Way Anova showed a p-value of 0.000, which indicated there was a significant difference between the three groups in terms of reducing the intensity of PMS pain. This shows that giving pumpkin seed extract, especially in intervention group 1 at a higher dose, was more effective in reducing the intensity of PMS pain compared to intervention group 2 and the control group.

Variable	Group	n value
	Oloup	p-value
Pain Intensity Pretest		
Intervention 1	Intervention 2	0.014
	Control	0.000
Intervention 2	Intervention 1	0.014
	Control	0.048
Control	Intervention 1	0.000
	Intervention 2	0.048
Pain Intensity Posttest		
Intervention 1	Intervention 2	0.003
	Control	0.034
Intervention 2	Intervention 1	0.003
	Control	0.365
Control	Intervention 1	0.034
	Intervention 2	0.365
Pain Intensity Delta		
Intervention 1	Intervention 2	0.000
	Control	0.000
Intervention 2	Intervention 1	0.000
	Control	0.205
Control	Intervention 1	0.000
	Intervention 2	0.205

 Table 2 Analysis of Further Tests (Post Hoc) of Pain Intensity in Adolescent Girls with

 Premenstrual Syndrome Before and After Administration of Yellow Pumpkin Seed Extract

 (Curcubita Moschata)

\*LSD (Least Significant Difference)

Based on Table 1.2, the results of further test analysis (Post Hoc) using the Least Significant Difference (LSD) method show significant differences in pain intensity in adolescent girls with Premenstrual Syndrome (PMS) before and after administration of pumpkin seed extract (*Curcubita moschata*).

At the pretest pain level, a comparison between Intervention 1 and Intervention 2 resulted in a p-value of 0.014, indicating a significant difference. Similarly, Intervention 1 compared to the control group yielded a p-value of 0.000, which is also significant. Comparison between Intervention 2 and control shows a p-value of 0.048, which is still significant but with a higher p-value than the other pairs.

In the posttest pain level, the results showed a significant difference between Intervention 1 and Intervention 2 with a p-value of 0.003, as well as between Intervention 1 and control with a p-value of 0.034. In contrast, the comparison of Intervention 2 with control did not show significance with a pvalue of 0.365.

For delta pain level (change in pain intensity), significant differences were found between Intervention 1 and Intervention 2 with a p-value of 0.000, as well as between Intervention 1 and control with a p-value of 0.000. However, the comparison between Intervention 2 and control was not significant with a p-value of 0.205.

Overall, administration of pumpkin seed extract showed a greater effect in the Intervention 1 group compared to the Intervention 2 and control groups, especially in reducing the intensity of PMS pain, both at the initial stage and in changes in pain after the intervention.

Giving pumpkin seed extract (*Cucurbita moschata*) to reduce its impact on the intensity of pain experienced by young women with premenstrual syndrome (PMS). Pumpkin seeds contain a variety of important nutrients, including magnesium and iron. Magnesium functions to relax muscles and can help reduce menstrual cramps, while iron plays a role in increasing hemoglobin levels and supporting overall health.

In 100 grams of pumpkin seeds there is around 569 mg of magnesium, which is known to relieve symptoms of dysmenorrhea. Pumpkin seeds also contain about 9 mg of iron per 100 grams, which is important for preventing anemia, especially in adolescent girls.

A study conducted with a quasi-experimental design showed that giving pumpkin seed extract for 21 days could have a positive effect on the intensity of PMS pain. The results showed that the group that received pumpkin seed extract experienced a

significant reduction in pain intensity compared to the control group, with a p value < 0.05, indicating statistically significant results.

Pumpkin seeds contain anti-inflammatory compounds such as flavonoids, which can help reduce inflammation and pain. The phytoestrogen content in pumpkin seeds can interact with estrogen receptors in the body, helping balance hormones and reducing PMS symptoms.

Administration of pumpkin seed extract shows potential in reducing pain intensity in adolescent girls with PMS. Its magnesium and iron content contributes to the reduction of uncomfortable physical symptoms. Although the initial results are very promising, further research is needed to substantiate these findings and explore the optimal dosage and formulation of pumpkin seed extract as an intervention for PMS management in adolescent girls [15].

The implementation of research on the administration of pumpkin seed extract (*Cucurbita moschata*) for premenstrual syndrome in adolescent girls involves many influencing variables. Future researchers are expected to include additional variables to achieve optimal results from the given intervention. The results of this study can contribute, provide input, and serve as a reference for midwifery services as an alternative therapy for managing premenstrual syndrome in adolescent girls.

## Conclusion

Giving pumpkin seed extract (*Curcubita Moschata*) to intervention group 1, intervention 2 and control significantly reduced the intensity of pain in premenstrual syndrome adolescent girls, the most significant result was in intervention group 1 with a dose of 500mg 2x2 a day for 10 days.

Pumpkin seed extract at a dose of 500mg twice a day for 10 days in the luteal phase can be an alternative complementary therapy to overcome premenstrual syndrome (PMS) pain in adolescent girls. Health workers, especially midwives, can socialize the use of this extract as a nonpharmacological therapy for adolescents who experience PMS.

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