

## The Effect of Lemon Aroma Therapy on Dysmenorrhoea Pain Scale in Adolescent Girls

Ima Sukmawati<sup>1</sup>, Elis Noviati<sup>1</sup>, Dewi Sekarwangi<sup>1</sup>

<sup>1</sup> Department of Nursing, STIKes Muhammadiyah Ciamis, Ciamis, Indonesia

Correspondence Author: Ima Sukmawati

Email: [imasukma90@gmail.com](mailto:imasukma90@gmail.com)

Address: Jl. K.H. Ahmad Dahlan No. 20, Ciamis, West Java, Indonesia, +6281214958445

Submitted: February 2024

Revised: March 2024

Published: 30 March 2024

Nurul Ilmi Journal is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

### ABSTRACT

**Introduction:** Lemon aromatherapy is a way of relaxing the body that is also useful as a reduction in the pain scale during menstruation. Pain caused by intense uterine contractions and then an increase in prostaglandin levels that occurs in a woman is also known as dysmenorrhoea. The impact of dysmenorrhoea is pain, disruption of physical activity, and decreased learning achievement. A complementary therapy for dysmenorrhoea is lemon aromatherapy. The content of *limeone* itself has a function or benefit to inhibit prostaglandin levels from increasing so that the content of this *limeone* reduces the pain felt during dysmenorrhoea, besides that it can also improve emotionally.

**Objective:** The purpose of this study to determine the effect of lemon aromatherapy on the dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis. **Method:** The method used in this study used quantitative methods with experimental methods and used a one-group pre-test-post-test design on 40 respondents. The total population was 67 female students who experienced dysmenorrhoea during menstruation. Sampling using the accidental *sampling* method. **Result:** The results of this study used the Wilcoxon Sigend Rank Test with a meaning level of 95% and obtained a value of  $p$  - Value 0.000 smaller than the significant value of 0.05. Where the pain scale before being given lemon aromatherapy was mostly in the mild pain category, as many as 20 (24.4%) respondents. After giving lemon aromatherapy, the pain scale in respondents decreased by 27 (32.9%). **Conclusion:** Based on the results of research conducted at SMK Miftahussalam Ciamis, it was found that there was an effect of lemon aromatherapy on the dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis because  $0.000 < 0.05$ .

**Keywords:** adolescents girls, dysmenorrhoea pain, lemon aromatherapy

## Introduction

Dysmenorrhoea is pain that occurs due to uterine contractions that occur during menstruation and an increase in prostaglandin hormones experienced by a woman (Rompas & Gannika, 2019). Dysmenorrhoea is often felt in the lower abdomen but some feel low back pain, then in the lower back (Purwati, Srinayanti, Rosmiati, & Badriah, 2020). The age of adolescents with dysmenorrhoea according to WHO (*World Health Organization*) occurs among productive age groups, also often occurs in adolescents between the ages of 15-25 years because at that age there is an optimisation of uterine function (Irianti, 2018; Sukmawati et al., 2023).

The prevalence of dysmenorrhoea in Indonesia is 72.89%, the number of women who experience primary dysmenorrhoea is 21.11%, and women who experience secondary dysmenorrhoea in productive age range from 45-95% (Febriyanti, Putri, & Yanti, 2021). In West Java in 2018, there were 11,565 women (1.31%) who felt dysmenorrhoea and visited a health facility (Nuraeni & Nurholipah, 2021; Marliany, Sukmawati, Aap Apipudin, & Deliani, 2023).

Factors that influence dysmenorrhoea include constitutional factors, psychiatric factors (Nisak & Azizah, 2017), endocrine factors, cervical canal obstruction factors and allergic factors (Megawati, 2017). Adolescents who experience emotional instability make high levels of prostaglandins and also a decrease in estrogen and progesterone, making menstrual pain worse (Purwati et al., 2020; Marliany, Sukmawati, Septiani, & Nurhidayah, 2022).

Dysmenorrhoea has a negative impact on the quality of life of female students, disrupting various activities that will be carried out or are being carried out. This occurs in adolescent girls when experiencing dysmenorrhoea, there will be limitations in carrying out various physical activities such as learning activities at school and other daily activities (Fitri & Ariesthi, 2020).

Pain is a manifestation of tissue damage or disruption that makes a person feel uncomfortable. Pain can also disturb a person's mind, and change a person's life. The scale or level of pain is different for each person and only the person who feels the pain can describe the pain (Darni, Tyas, & Khaliza, 2020).

Treatment that can be done in relieving dysmenorrhoea pain is with pharmacological therapy including the use of drug therapy. But taking drugs on a frequent scale will have unwanted negative effects such as the onset of allergies and things that can harm those who consume the drug, so a safe therapy is needed to minimise the pain caused by menstruation. Aromatherapy is a complementary therapy that can be used to reduce pain, including lemon aromatherapy (Rambi, Bajak, & Tumbale, 2019).

Lemon essential oil contains, netrol, terpine 6-14%, geranyl acetate,  $\alpha$  pinen, 1-4%, and *linalyl acetate* 66-80 (Nurpratiwi, Yousriatin, & Maulidiyah, 2019). Inhaling lemon essential oil has an effect that makes a person feel relaxed and comfortable Febriyanti *et al.*, 2021). Other benefits of lemon aromatherapy can be medicinal for the body, lower body temperature, neutralise free radicals, prevent an increase in blood pressure, and can also ease one's emotions.

The function of the lemon content here is to suppress or inhibit prostaglandin hormones to later reduce the pain that occurs. Another function is that limonene will work to control cyclooxygenase I and II so that it can control pain. Another benefit of inhaling lemon aromatherapy is that it can make you feel relaxed.

## Objective

The purpose of the study was to determine the effect of lemon aromatherapy on dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis.

## Method

The research used quantitative methods and collected data in a pre-experimental manner with a one-group pre-test and post-test design. The population of this research is class X adolescent girls who experience dysmenorrhoea. In this study, sampling was done by means of non-probability sampling, or accidental sampling. The number of samples in this study was 40 female students who experienced dysmenorrhoea from mild to severe levels and also, of course, met the predetermined criteria, namely inclusion and exclusion criteria. Instruments in the research conducted using pain observation, namely pain assessment based on the numeric rating scale, data analysis itself using the Wilcoxon test.

The research tool in this study itself uses lemon aromatherapy, then a diffuser, a piece of paper containing an assessment of the pain felt at the time of pain (NRS), and also standard operating procedures. Before the provision of food therapy, make observations on the pain scale that is felt before the therapy is carried out. Students who experience dysmenorrhoea must fill out the observation sheet according to the pain scale they are feeling at the time of the research. The initial step of lemon aromatherapy is mixing 300 ml of water in the diffuser, after which the respondent will inhale the steam coming out of the diffuser for a period of 15 minutes in accordance with existing standard operating procedures. After 15 minutes, the respondent must fill out the observation sheet again, listing the pain scale felt after receiving lemon aromatherapy.

## Result

Table 1. Frequency Distribution of the Effect of Lemon Aromatherapy Before and After

No	Category	Before		After	
		Person (f)	Percentage (%)	Person (f)	Percentage (%)
1	No Pain	0	0	27	32.9
2	Mild Pain	20	24.4	9	11.0
3	Moderate Pain	16	19.5	3	3.7
4	Severe Pain	4	4.9	1	1.2
Total		40	100%	40	100%

Based on table 1. above, the pain scale before being given lemon aromatherapy is mostly in the mild pain category for as many as 20 people (24.4%). And after giving lemon aromatherapy, the pain scale was obtained in the no-pain category for as many as 27 people (32.9%).

Table 2. Wilcoxon Test Before and After

Changes	N	(%)	P-Value
Decreased	0	0	0,000
Increase	38	95%	
Fixed	2	0,5%	
Total	40	100.0	

The results of table 2. show that there is an unequal or very clear difference between the pain scale before therapy and after therapy. With a 0.000, *p-value* of 0.000 which is smaller than 0.05. This shows that there is a change in pain felt before and after therapy, which means that lemon aromatherapy has a significant effect on the pain scale during menstruation. Most respondents said and wrote that they felt a change in pain, or more precisely, a decrease in pain after therapy; namely, there were 38 students (95%) who felt a change in pain, and 2 people (0.5%) whose pain scale remained.

## Discussion

Based on the results of the research in table 1, the scale during menstrual pain before the administration of lemon essential oil therapy was mostly in the mild pain category, with as many as 20 (24.4%) people, while moderate pain was 16 (19.5%), and severe pain was 4 (4.9%). Dysmenorrhoea is pain caused by a lack of oxygen in the cells during menstruation, making women who experience menstruation experience pain in the lower abdomen. Menstrual pain can be reduced by complementary medicine, for example, lemon aromatherapy derived from essential oils taken from lemons (Febriyanti *et al.*, 2021). In the content of lemon aromatherapy, there are substances that can soothe. To maximise the therapeutic effect, it requires 15 minutes of aromatherapy with only 1 administration (Nurpratiwi *et al.*, 2019).

The results obtained from this study are listed in table 1. shows that the level of pain after being given lemon aromatherapy to respondents has decreased mostly in the category of no pain, as many as 27 people (32.9%), mild pain, 9 people (11.0%), moderate pain, 3 people (3.7%), and severe pain, 1 person (1.2%). The results of the Wilcoxon test obtained a *p value* of  $0.000 < \alpha 0.05$ , so  $H_0$  is rejected and  $H_a$  is accepted, meaning that there is an effect of lemon aromatherapy on the dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis.

Aromatherapy is a treatment that has been used for a long time. The provision of this therapy uses materials from plants that have a certain aroma and contain substances that can be used in treatment (Christiana & Jayanti, 2020). In this study, there was a decrease in the pain scale after therapy. Students can describe the decrease in pain felt after lemon aromatherapy. The decrease in dysmenorrhoea pain scale is due to the influence of the fragrance produced, which triggers the release of substances as a natural sedative and also stimulates the thalamus to release enkephalins, which function as natural pain relievers produced by the body.

The results showed that lemon aromatherapy was very influential in reducing the dysmenorrhoea pain scale. This is supported by research by Susi Suwanti, Melania Wahyuningsih, and Anita Liliana (2018), which shows that after the provision of this therapy, there is a significant decrease that occurs before and after being given lemon aromatherapy. This is caused by lemon essence oil, which provides a calming effect for people who inhale it (Suwanti, Wahyuningsih, & Liliana, 2018). Aromatherapy itself affects smell, then the aromatherapy is absorbed by the mucosal layer in the respiratory tract, and when gas exchange occurs, this will increase the aromatherapy content in the body (Nurpratiwi *et al.*, 2019).

The results of the study in table 1. show that there is a significant difference in the level of the dysmenorrhoea pain scale before and after lemon aromatherapy. The Wilcoxon test results obtained a *p value* of  $0.000 < 0.05$ , so  $H_0$  is rejected and  $H_a$  is accepted. This means

that there is an effect of lemon aromatherapy on the dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis. With the frequency distribution, the majority of respondents experienced an increase in pain scale changes, which means that dysmenorrhoea was reduced after treatment. As many as 20 people with mild pain experienced changes in the pain scale, including 19 people who became painless and 1 person who remained; 16 people with moderate pain experienced changes in the pain scale, including 7 people with mild pain; 9 people felt no pain; 4 people with severe pain experienced changes in the pain scale, including 3 people with moderate pain; and 1 person with permanent pain.

In respondents who experienced persistent pain after being given lemon aromatherapy, there are many possibilities that can occur, including dysmenorrhoea pain felt as secondary dysmenorrhoea pain, or that lemon aromatherapy is less effective for both respondents. It can be tried to use peppermint aromatherapy, lavender aromatherapy, aromatherapy, or rose aromatherapy. Dysmenorrhoea pain can be reduced by lemon aromatherapy therapy because lemon aromatherapy oil contains 66–80% *limesone*, 66–80% geranyl acetate, netrol, terpine 6–14%,  $\alpha$  pinene 1–4%, and *myrcene*. Muscle tension that occurs as a result of uterine contractions can be reduced by aromatherapy, so that pain is reduced (Namazi *et al.*, 2014).

Based on the results of the study, it is known that most respondents in the intervention group experienced changes in pain levels after being given the intervention because lemon aromatherapy itself contains *limesone* and *linalool*. Both substances have the use or benefit of inhibiting the suppression of uterine muscle blood vessel suppression and stimulating the nervous system to cause a sense of calm, so that it affects the decrease in the dysmenorrhoea pain scale.

## Conclusion

Based on the results of research conducted at SMK Miftahussalam Ciamis, it was found that there was an effect of lemon aromatherapy on the dysmenorrhoea pain scale in class X adolescents at SMK Miftahussalam Ciamis because  $0.000 < 0.05$ .

## References

1. Christiana, I., & Jayanti, D. (2020). Pengaruh Pemberian Aroma Terapi Lavender Terhadap Tingkat Nyeri Haid (Dismenore Primer) Di Asrama Putri Stikes Banyuwangi Tahun 2020. *Healthy*, 8(2), 90–103.
2. Darni, Z., Tyas, R., & Khaliza, N. (2020). *Penggunaan Aromaterapi Lemon Untuk Mengurangi Nyeri Pada Pasien Post Operasi : Sebuah Studi Kasus*. 4(2), 138–149.
3. Febriyanti, V., Putri, V. S., & Yanti, R. D. (2021). Pengaruh Aromaterapi Lemon ( Citrus ) terhadap Skala Nyeri Dismenorea pada Mahasiswi Program Studi Ilmu Keperawatan STIKes Baiturrahim Jambi. *Jurnal Akademika Baiturrahim Jambi*, 10(1). <https://doi.org/10.36565/jab.v10i1.277>
4. Fitri, H. N. F., & Ariesthi, K. D. (2020). Pengaruh Dismenore Terhadap Aktivitas Belajar Mahasiswi Di Program Studi DIII Kebidanan. *Chmk Midwifery Scientific Journal*, 3(April), 159–164.
5. Irianti, B. (2018). Faktor-Faktor Yang Mempengaruhi Kejadian Disemenore Pada Remaja. *Menara Ilmu*, XII(10), 8–13.
6. Marlany, H., Sukmawati, I., Aap Apipudin, & Deliani, D. (2023). Effectiveness Of The Educational Intervention Program On The Level Of Knowledge About Anemia Among

- Teenage Females. *HealthCare Nursing Journal*, 5(2), 865–871. <https://doi.org/10.35568/healthcare.v5i2.3424>
7. Marliany, H., Sukmawati, I., Septiani, H., & Nurhidayah, A. S. (2022). Pengaruh Pendidikan Kesehatan Tentang Dismenore Terhadap Tingkat Pengetahuan Remaja Putri. *Health Care Nursing*, 5(1), 650–655. <https://doi.org/10.30989/mik.v6i1.180>
  8. Megawati, I. R. (2017). *Pengaruh Relaksasi Dengan Aromaterapi terhadap Intensitas Dismenore Pada Siswi Kelas 8 SMPN 1 Bendo Magetan*.
  9. Namazi, M., Ali Akbari, S. A., Mojab, F., Talebi, A., Majd, H. A., & Jannesari, S. (2014). Effects of citrus Aurantium (bitter orange) on the severity of first-stage labor pain. *Iranian Journal of Pharmaceutical Research*, 13(3), 1011–1018.
  10. Nisak, A. Z., & Azizah, N. (2017). *Respon Nyeri Dismenore Berdasarkan Karakteristik Remaja Putri*. 1(2), 86–92.
  11. Nuraeni, R., & Nurholipah, A. (2021). Aromaterapi Lavender Terhadap Intensitas Nyeri Haid (Dysmenorerhea) Pada Mahasiswi Tingkat II. *Jurnal Keperawatan Silampari*, 5, 178–185.
  12. Nurpratiwi, Yousriatin, F., & Maulidiyah, U. (2019). *Pengaruh Pemberian Aromaterapi Lemon (Cytrus) Terhadap Penurunan Nyeri Dismenore*. 38–45. <https://doi.org/10.53399/knj.v1i1.67>
  13. Purwati, A. E., Srinayanti, Y., Rosmiati, & Badriah, L. S. A. (2020). Gaya Hidup dan Kejadian Dysmenorrhea pada Remaja Putri di Pondok Pesantren Nurul Huda Bantarcingin Ciharalang Kabupaten Ciamis. *Tunas-Tunas Riset Kesehatan*, 10, 59–66. <https://doi.org/DOI:http://dx.doi.org/10.33846/2trik10112>
  14. Rambli, C. A., Bajak, C., & Tumbale, E. (2019). Pengaruh Aromaterapi Lemon (Citrus) Terhadap Penurunan Dismenore Pada Mahasiswi Keperawatan. *Jurnal Ilmiah Sesebanua*, 3, 27–34. <https://doi.org/10.54484/jjis>
  15. Rompas, S., & Gannika, L. (2019). Pengaruh Aromaterapi Lemon (Citrus) Terhadap Penurunan Nyeri Menstruasi Pada Mahasiswi Program Studi Ilmu Keperawatan Fakultas Kedokteran Universitas Sam Ratulangi Manado. *E-Journal Keperawatan*, 7. <https://doi.org/10.35790/jkp.v7i1.25196>
  16. Sukmawati, I., Silpiani, A., Noviati, E., Rahayu, Y., Marliany, H., & Rosmiati, R. (2023). The Effect of Peer Group Education on Knowledge Levels About the Dangers of Free Sex in Adolescents. *Embrio*, 15(2), 189–196. <https://doi.org/10.36456/embrio.v15i2.7768>
  17. Suwanti, S., Wahyuningsih, M., & Liliana, A. (2018). Pengaruh Aromaterapi Lemon ( Cytrus) Terhadap Penurunan Nyeri Menstruasi Pada Mahasiswi Di Universitas Respati Yogyakarta. *Jurnal Keperawatan Respati Yogyakarta*, 5(1), 345–349. <http://dx.doi.org/10.35842/jkry.v5i1.131>