E-ISSN: 3025-6437
International Journal of Health Sciences
Vol. 2, Issue 3 (2025) May

Effectiveness of Saffron Stigma Infusion on Dysmenorrhea Pain in Adolescent Girls of Bachelor of Midwifery Universitas Nasional

Eka Fitriyana[1], Putri Azzahroh[2], Vivi Silawati[3]

[123]Midwifery, Faculty of Health Sciences, National University

Jl. Sawo Manila Jakarta Selatan, Daerah Khusus Ibukota Jakarta, Indonesia

Corresponding author: Putri Azzahroh Email: putriazzahroh@civitas.unas.ac.id

Submission date: 23-05-2025 Date of received: 30-05-2025

Abstract

Menstruation is a physiological change that occurs periodically in the female body and is influenced by reproductive hormones. However, not all female adolescents experience a normal menstrual cycle. Many suffer from conditions such as oligomenorrhea, polymenorrhea, or amenorrhea, and experience dysmenorrhea pain. Dysmenorrhea management can be performed through pharmacological and non-pharmacological methods, one of which is by consuming saffron stigma infusion. This study employed a quasi-experimental design with a twogroup pretest-posttest approach. The sample consisted of 60 female adolescents experiencing dysmenorrhea, divided into two groups: the treatment group, which received saffron stigma infusion, and the control group, which received warm compress therapy. Pain levels were measured using the Numeric Rating Scale (NRS). Data analysis was conducted using the Paired T-Test with SPSS 16 software. The study revealed that saffron stigma infusion was effective in reducing dysmenorrhea pain in female adolescents ($p < 0.05$), whereas the warm compress group did not show any significant changes. Saffron stigma infusion has been proven to be effective in reducing dysmenorrhea pain in female adolescents, while warm compress therapy does not provide a significant effect.

Keywords: Saffron, Warm Compress, Dysmenorrhea, Female Adolescents

Introduction

Based on data from WHO, there are around 1.2 billion adolescents worldwide, which constitutes around 18% of the total population. Adolescence is an important phase in intellectual, psychological, and physical development that occurs rapidly. In 2021, the

United Nations Children's Fund (UNICEF) estimates that the number of adolescents in the world will reach 1.2 billion or around one-fifth of the total population (Dewi & Chasanah, 2023). The development of primordial ovarian follicles that produce the hormone estrogen during adolescence affects the reproductive organs. One of the signs that appears is menstruation, which is the process of blood coming out as part of the characteristics of secondary sex development that are influenced by changes in these hormones (Zuraida & Keta, 2020).

Scientific Reports estimates that in the Italian adolescent population, the prevalence of dysmenorrhea is 6.2%, polymenorrhea is 3%, oligomenorrhea is 3.4%, hypomenorrhea is 3.2%, menorrhagia is 19% and irregular menstrual cycles are 9%. Adolescents in India experience irregular menstrual cycles of 30.48% and menstrual pain is 56.15%. The journal "Influence of Lifestyle Factors with the Outcome of Menstrual Disorders Among Teens and Young Women in West Bengal, India" states that the prevalence of menstrual disorders (PCOS) is 28.78% among adolescent girls (Dhar et al., 2023). Around 50% of people worldwide suffer from dysmenorrhea, and 10% to 15% experience moderate cases. According to estimates ranging from 67% to 90%, the frequency is higher among young women. Menstrual pain is common in 45–97% of Europe, 52–90% of America, 44–95% of Africa, and 45–90% of Asia (WHO, 2021). In Indonesia, the prevalence of adolescent dysmenorrhea is 64.52%, with 54.89% of cases occurring in women who have never been pregnant and 9.36% of cases including genital anatomical abnormalities. In 2023, 87.5% of women in DKI Jakarta Province experienced primary dysmenorrhea, with complaints of mild pain of 20.48%, moderate pain of 64.76%, and severe pain of 14.76% (Miyatun & Irawati, 2024).

According to (Tastift et al., 2022) Saffron is widely used as a spice, dye, and for safe medicinal purposes in therapeutic doses. Saffron content that can improve health includes, crocin, crocetin, picrocrocin and safranal, namely anticancer, anti-alzheimer, anti-parkinson, improving memory and learning ability, treating anxiety disorders and schizophrenia, antinociceptive, anti-inflammatory, hepatoprotective, antidiabetic, macular degeneration protection, anticoagulant, anti-aging skin, skin lightening, antisolar and moisturizing properties. Based on previous studies, saffron can effectively reduce discomfort related to dysmenorrhea in adolescent girls. The results of the Independent T Test showed a p value of 0.041 (p value <0.05) (Rusydi, 2022).

Method

Research design is a framework used to form interactions between elements in a study. The measurement instruments and analysis methods used in this study are determined based on the selected research design. This study uses a quasiexperimental method with a two-group pretestposttest design approach, where there are two groups of research subjects, namely the treatment group and the control group, which are compared before and after the intervention (Adiputra et al., 2021). Population is a broad category consisting of people or objects with certain quantities, qualities, and characteristics used by researchers in their analysis and drawing results (Adiputra et al., 2021). The population in this study were all regular class undergraduate midwifery students at Universitas Nasional in 2024 who experienced dysmenorrhea for 3 menstrual cycles (September, October, November), totaling 68 people. The sampling technique in this study used total sampling, where the entire population of 68 people experienced dysmenorrhea for three menstrual cycles. After the intervention, the sample size was reduced to 60 people because 8 people did not follow the SOP or did not menstruate during the esearch period. The number of respondents who experienced dysmenorrhea was 60 people. Respondents were divided into two groups, namely the treatment group and the control group, each consisting of 30 respondents (ratio 1: 1). Sample distribution was carried out by maintaining the proportion of each level of severity, namely 14 respondents with mild dysmenorrhea (7 cases, 7 controls), 30 respondents with moderate dysmenorrhea (15 cases, 15 controls), 12 respondents with severe dysmenorrhea (6 cases, 6 controls), and 4 respondents with very severe dysmenorrhea (2 cases, 2 controls). The selection of respondents was carried out randomly based on the serial number in the dysmenorrhea data table.

E-ISSN: 3025-6437
International Journal of Health Sciences
Vol. 2, Issue 3 (2025) May

Results

Univariate Analysis

Table 1.

Pain Scale Level Before Being Given Saffron Flower Pistil Soaking Water

Skala Nyeri	N	Persentase (%)
Nyeri Ringan	7	23.3
Nyeri Sedang	16	53.3
Nyeri Berat	5	16.7
Nyeri Berat Sekali	2	6.7
Total	30	100

Before being given saffron flower pistil soaking water, 7 respondents experienced mild pain (23.3%), 16 respondents experienced moderate pain (53.3%), 5 respondents experienced severe pain (16.7%) and 2 respondents experienced very severe pain (6.7%).

Table 2.

Pain Scale Level Before Being Given Warm Compress

Skala Nyeri	N	Persentase (%)
Nyeri Ringan	7	23.3
Nyeri Sedang	15	50
Nyeri Berat	7	23.3
Nyeri Berat Sekali	1	3.3
Total	30	100

Before being given a warm compress, 7 respondents (23.3%) experienced mild pain, 15 respondents (50.0%), 7 respondents (23.3%) experienced moderate pain, and 1 respondent (3.3%) experienced very severe pain.

Table 3.

Pain Scale Level After Being Given Saffron Flower Pistil Soaking Water

Skala Nyeri	N	Persentase (%)
Nyeri Ringan	19	63,3
Nyeri Sedang	11	36,7
Total	30	100

After being given saffron flower bud soaking water, out of 30 respondents, 19 (63.3%) experienced mild pain, 11 (36.7%) experienced moderate pain.

Table 4.

Pain Scale Level After Being Given Warm Compress

Skala Nyeri	N	Persentase (%)
Nyeri Ringan	6	20
Nyeri Sedang	18	60
Nyeri Berat	6	20
Total	30	100

After being given a warm compress, 6 respondents (20%) experienced mild pain, 18 respondents (60%) experienced moderate pain, and 6 respondents (20%) experienced severe pain

Table 5.

Average Pain Scale in the Treatment Group

Dismenorea	Mean	Median	Std Deviation	Max	Min	N
Pre test	5,13	5,00	2,113	10	2	30
Post test	3,13	3,00	1,456	6	1	30

The average results of the dysmenorrhea pain scale in the treatment group (saffron flower bud air soaking) with 30 respondents, before being given the intervention was 5.13 with a median value of 5.00, a standard deviation of 2.113, and a maximum value of 10 and a minimum value of 2. While the average dysmenorrhea pain scale after being given the intervention was 3.13 with a median value of 3.00, a standard deviation of 1.456 and a maximum value of 6 and a minimum value of 1.

Table 6.

Average Pain Scale in the Control Group

Dismenorea	Mean	Median	Std Deviation	Max	Min	N
Pre test	5,13	5,00	2,270	10	1	30
Post test	4,93	5,00	1,874	8	1	30

The average result of the dysmenorrhea pain scale in the control group (warm compress) with 30 respondents, before being given the intervention was 5.13 with a median value of 5.00, a standard deviation of 2.270, and a maximum value of 10 and a minimum value of 1. Meanwhile, the average dysmenorrhea pain scale after being given the intervention was 4.93 with a median value of 5.00, a standard deviation of 1.874, and a maximum value of 8 and a minimum value of 1.

Bivariate Analysis

1. Normality Test

Table 7.

Results of Pain Scale Normality Test

Dismenorea	N	*P-Value*	Keterangan
Pre Test Perlakuan	30	0,061	Normal
Post Test Perlakuan	30	0,054	Normal
Pre Test Kontrol	30	0,493	Normal
Post Test Kontrol	30	0,087	Normal

Results of dysmenorrhea pain scale normality test in the treatment group and control group. The Shapiro-Wilk significance value shows that the p-value> 0.05, which means that the data is normally distributed. If the data is normally distributed, then the requirements for the peered sample t-test can be met.

Table 8.

Effectiveness of Giving Saffron Flower Pistil Soaking Water and Warm Compresses Before and After Intervention

Skala Nyeri	Kelompok	N	Pre Test	Post Test	Selisih Mean	*P-Value*
	Perlakuan	30	5,13	4,93	0,700	0,000
	Kontrol	30	5,13	5,00	0,067	0,489

The results of the paired sample t-test showed that the p-value in the treatment group was 0.000, with a value less than 0.05. This result shows that the difference before and after the intervention produced significant results. While the control group showed a pvalue of 0.489, which is greater than 0.05. indicating no significant effect.

Discussion

1) Average Pain Scale in the Treatment Group
(Saffron Flower Scent Soaked Water) Before and After Intervention

Univariate analysis was conducted to see the distribution of data for each variable, namely the pain scale before and after the intervention in the group given saffron flower bud soaking water and warm compresses. The results of the analysis showed that the average pain scale in the group given saffron flower bud soaking water before the intervention was 5.13 with a standard deviation of 2.113, while after the intervention it decreased to 3.13 with a standard deviation of 1.456. The difference in the average pain scale before and after the intervention was 0.70, indicating that theadministration of saffron flower bud soaking water contributed to

reducing the level of pain.

The results of this study are in line with previous research conducted by Syamsuryanita & Ikawati (2022), which stated that menstrual pain is caused by increased levels of prostaglandins in menstrual blood, which triggers uterine hyperactivity. In addition, this study also supports the findings of Luky (2021), which revealed that variations in endorphin levels affect pain levels. High levels of endorphins can help reduce pain, while low levels actually increase the intensity of pain. In addition, prostaglandins also play a role in stimulating pain nerves in the uterus, which further exacerbates the sensation of pain felt.

2) Average Pain Scale in the Control Group (Warm Compress) Before and After InterventionKnowledge in the Control Group Before and After

The results of the analysis in the group given warm compresses, the average pain scale before the intervention was 5.13 with a standard deviation of 2.270, while after the intervention it became 4.93 with a standard deviation of 1.874. The average difference between before and after the intervention was 0.067, which indicates that the warm compress method did not provide a significant effect in reducing dysmenorrhea pain. Menstrual pain is caused by increased production of prostaglandins, which are compounds that stimulate excessive uterine muscle contractions. These contractions trigger pain that is often not disturbed. Saffron works by reducing prostaglandin levels in the body, so that uterine contractions become more controlled and pain is reduced. Saffron flowers, produced from the pistils of Crocus sativus flowers, are one of the most expensive spices in the world and have long been used in various cultures for health, beauty, and culinary benefits. As an antioxidant, saffron benefits are important for the body such as vitamins (thiamine or B1 and riboflavin or B2), protein, flavonoids. With this mechanism, saffron not only relieves pain locally but also provides an overall calming effect (Sudirman, 2024).

In terms of women's reproductive health, saffron appears promising for managing dysmenorrhea, reducing menstrual pain, regulating hormones, and improving overall menstrual health. Safety considerations emphasize the importance of adhering to the prescribed dosage, as excessive intake maylead to toxicity. However, within the therapeutic range, saffron is considered safe, providing

symptomatic relief without serious side effects, according to clinical studies (Goyal et al., 2024).

For menstrual cramps, a warm compress is recommended. This compress can be applied for about 30 minutes using a warm water bath between 37 and 40°C. Warm compresses work very well to relieve muscle spasms and menstrual cramps (dysmenorrhea). Blood vessels can dilate in response to high temperatures. In this situation, using a warm compress to circulate the high temperature will help reduce pain. The immediate reaction to pain after using a hot compress is psychological comfort and relaxation, which can be enhanced by the warmth in the abdomen (Aisyah et al., 2023). According to this description, experts believe that giving green coconut water is a useful way to reduce dysmenorrhea or menstrual pain. After receiving saffron flower buds, most of the study participants reported a decrease in menstrual pain levels

3) Effectiveness of Giving Saffron Flower Bud Soaked Water and Warm Compresses Before and After Intervention

The results of the paired t-test showed that in the group given saffron flower bud water, there was a significant difference between the pain scale before and after the intervention with a p-value of 0.001 (<0.05). This indicates that the intervention using saffron flower bud water immersion is effective in reducing the pain scale. Meanwhile, in the group given warm compresses, a significant difference was also found with a p-value of 0.489 (>0.05), indicating that the warm compress intervention did not have a significant effect.

Many women who experience dysmenorrhea ignore the pain they feel during menstruation, but this has negative impacts, including decreased concentration. In addition, it can cause delayed menstruation, rupture of cysts, and even cause infection if dysmenorrhea is not treated (Saputra et al., 2021). Both pharmacological and nonpharmacological therapies can be used to treat dysmenorrhea. NSAIDs, or non-steroidal antiinflammatory drugs, are pharmacological treatments that work by preventing the production of prostaglandins. Long-term side effects on the heart, heart, kidneys, and other organs are common due to pharmacological treatment. Meanwhile, non-pharmacologicalefforts that can be done include exercise, giving warm compresses, giving aromatherapy, and consuming herbal medicines and music

therapy (Shifa et al., 2021). In this study, researchers used saffron flower buds to treat dysmenorrhea pain. Crocin, crocetin, safranal, and flavonoids are some of the active substances found in saffron flower buds. These substances are known to have antispasmodic, anti-inflammatory, and antioxidant properties. Powerful antioxidants such as crocin and crocetin help fight oxidative stress, which is often the cause of inflammation during menstruation. Safranal, another compound in saffron, has a relaxing effect on smooth muscles, including uterine muscles, thereby helping to reduce menstrual cramps. In addition, flavonoids play a role in inhibiting the inflammatory process which is the main cause of dysmenorrhea pain (Afifah & Hasanah, 2020).

The results of the independent sample test of the effect of saffron administration on dysmenorrhea pain in female adolescents of class XI SMA Negeri 2 Purbalingga with a significance level of 95% showed a significant difference between the control group and the intervention group, with a mean value = 0.527 and a p value = 0.041 (p value <0.05) which is in accordance with previous research (Rusydi, 2022). The results of this study indicate that saffron is a very good medicine for treating dysmenorrhea pain in female adolescents of class XI SMA Negeri 2 Purbalingga. Ha is accepted, while Ho is rejected. This is in line with research (Azimi & Abrishami, 2016) which states that administering saffron on dysmenorrhea pain is more effective than administering mefenamic acid. This is indicated by a decrease in the average prepost pain intensity (3.6) and posttest (3.0). The results of the ANOVA test with a significance level of 95% obtained a p value of 0.001 (p value <0.005) so that there is effectiveness in using saffron. In another study stated by (Ann Hausenblas et al., 2015) it was found that the use of saffron can improve symptoms of premenstrual syndrome (PMS).

According to research (Erynda et al., 2024) that, with a p value of 0.000 at a significance threshold of $\alpha = 0.05$, the findings of statistical analysis indicate that warm compress treatment significantly reduces discomfort associated with dysmenorrhea in midwifery students. For students who suffer from dysmenorrhea, warm compresses are a great choice because they area safe, effective, and side effect-free substitute. It is recommended that health care professionals, especially nurses and midwives, offer comprehensive care to patients who complain of menstrual

discomfort. Based on the results of this study, the average menstrual pain of adolescents was 4.7 before being given warm compresses and 1.4 after being given warm compresses, which is in accordance with the study (Wati et al., 2024). In 2024, adolescent girls at SMP N Satap 1 Pagar Dewa West Lampung reported less menstrual pain when using warm compresses (p value = 0.000). Warm compresses are recommended as one way for adolescent girls to relieve menstrual pain.

From the results of the existing research, researchers assume that the active ingredients in saffron, such as crocin, crocetin, and safranal, play a role in the analgesic and antiinflammatory effects. Warm compresses have a vasodilating effect that helps relax muscle tension, reduce pain intensity, and increase blood flow to the uterine area. Therefore, it can be said that warm compresses and saffron flower buds help reduce dysmenorrhea, or menstrual discomfort. This suggests that the use of warm compresses with saffron flower buds can help reduce menstrual discomfort, or dysmenorrhea.

Conclusion

1) Giving saffron flower buds soaked in water effectively reduces the level of dysmenorrhea pain in adolescents, as evidenced by a decrease in the average pain scale from 5.13 to 3.27 after the intervention.
2) The results of the Paired Samples Test statistical test obtained a p-value of 0.000 (<0.05) there is an Effect of Giving Saffron Flower Buds Soaked in Water on Dysmenorrhea Pain in Adolescent Girls with Bachelor of Midwifery at the National University.

References

1. Adiputra, I. M. S., Trisnadewi, N. W., Oktaviani, N. P. W., Munthe, S. A., Hulu, V. T., Budiastutik, I., Faridi, A., Ramdany, R., Fitriani, R. J., Tania, P. O. A., Rahmiati, B. F., Lusiana, S. A., Susilawaty, A., Sianturi, E., & Suryana. (2021). Metodologi Penelitian Kesehatan(R. Watrianthos & J. Simarmata (eds.); Pertama). Yayasan Kita Menulis
2. Afifah & Hasanah. (2020). Saffron (Crocus sativus L): Kandungan dan Aktivitas Farmakologinya. Majalah Farmasetika, 5(3).

https://doi.org/10.24198/mfarmasetika.v5i 3.26291

3. Afifah, M. N., & Hasanah, A. N. (2020). Saffron (Crocus sativus L): Kandungan dan Aktivitas Farmakologinya. Majalah Farmasetika, 5(3) 116–123. https://doi.org/10.24198/mfarmasetika.v5i 3.26291
4. Ait Tastift, M., Makbal, R., Bourhim, T., Omari, Z., Isoda, H., & Gadhi, C. (2022). Safety Assessment and Pain Relief Properties of Saffron from Taliouine Region (Morocco).Molecules, 27(10), 20. https://doi.org /10.33 90/ molecules27103339
5. Aminah, E., Saputri, M. E., & Wowor, T. J. F. (2022). Efektivitas Kompres Hangat Terhadap Penurunan Nyeri Pada Penderita Gout Arthritis Di Wilayah Kerja Puskesmas Pulosari Kabupaten Pandeglang Banten Tahun 2021. Jurnal Keperawatan, 10(1), 1. https://doi.org/10.35790/jkp.v10i1.37704
6. Arini, D., Indah Saputri, D., Supriyanti, D., & Ernawati, D. (2020). Pengaruh Senam Yoga Terhadap Penurunan Intensitas Nyeri Haid Pada Remaja Mahasiswi Keperawatan Stikes Hang Tuah Surabaya. Borneo Nursing Journal (Bnj), 2(1), 46–54.
7. Azimi & Abrishami. (2016). Comparison of the Effects of Crocus Sativus and Mefenamic Acid on Primary Dysmenorrhea. J Pharm Care, 4(3–4), 1–4. www.random.org
8. Bamasri, T. H. (2021). Potensi Manfaat Konsumsi Saffron Pada Masa Kehamilan. Jurnal Penelitian Perawat Profesional, 3(2), 261–268. https://doi.org/10.37287/jppp.v3i2.411
9. Bayu Argaheni, N., & Kostania, G. (2022). Sistematik Review: Saffron Pada Persalinan. Jurnal Kebidanan Indonesia, 13(2), 40–52. https://doi.org/10.36419/jk i.v 13i2.627
10. Dewi, I. M., & Chasanah, S. U. (2023). The Relationship Between Exam Preparation Anxiety and the Menstrual Cycle in Adolesecent Ika. The Indonesian Journal of Health Promotion, 6(8), 1646–1651.
11. Dhar, S., Mondal, K. K., & Bhattacharjee, P. (2023). Influence of lifestyle factors with the outcome of menstrual disorders among adolescents and young women in West Bengal, India. Scientific Reports, 13(1), 1–11. https://doi.org/10.1038/s41598-023-35858- 2

12. Goyal, A., Raza, F. A., Sulaiman, S. A., Shahzad, A., Aaqil, S. I., Iqbal, M., Javed, B., & Pokhrel, P. (2024). Saffron extract as an emerging novel therapeutic option in reproduction and sexual health: recent advances and future prospectives. Annals of Medicine & Surgery, 86(5), 2856–2865. https://doi.org/10. 1097/ms9.0000000000002013
13. Hadianti, D. N., & Ferina, F. (2021). Senam Yoga Menurunkan Dismenorea Pada Remaja. Jurnal Riset Kesehatan Poltekkes Depkes Bandung, 13(1), 239–245.https://doi.org/10.34011/juriskesbdg.v13i1. 1910
14. Hamdanah, & Surawan. (2022). Remaja Dan Dinamika. In Muslimah (Ed.), K-Media (1st ed.). K-Media.
15. Hanifah. (2024). Perbandingan Pemberian Jus Wortel Dan Kompres Hangat Terhadap Penurunan Nyeri Dismenorea Pada Remaja Putri Di PMB H Kabupaten Garut Tahun 2024. Journal of Innovation Research and Knowledge, 4(6), 1–12.
16. Hapsari, A. (2019). Buku Ajar Kesehatan Reproduksi Modul Kesehatan Reproduksi Remaja. In UPT UNDIP Press Semarang (1st ed.). Wineka Media.
17. Hidayah & Fatmawati. (2020). Manajemen Nyeri Haid Pada Remaja. Yuma Pustaka. http://repository.itspku.ac.id/315/1/buku% 20MANAJEMEN %20NYERI%20HAID%20PADA%20REMAJA.pdf
18. Khotimah, D. K. (2019). Pengaruh pemberian Yoga terhadap penurunan intensitas nyeri haid pada remaja putri di MTsN Sidorejo Kab.Madiun. STIKes Bhakti Husada Mulia Madiun, 117.
19. Lestari, W., Mariza, A., Susilawati, S., & Amirus, K. (2025). Efektivitas Pemberian Air Rebusan Jahe Merah terhadap Penurunan Intensitas Dismenoreaa pada Remaja Putri di MTS Darul Falah Kecamatan Abung Tengah Kabupaten Lampung Utara. Malahayati Nursing Journal, 7(1), 150–161. https://doi.org/10.33024/mnj.v7i1.11614
20. Luky. (2021). Pengaruh Air Kelapa Hijau Terhadap Penurunan Nyeri Haid (Dismenorea) Pada Remaja Putri Di Smp Negeri 02 Kota Bengkulu Tahun 2021 [Skripsi]. In Skripsi : Poltekkes Kemenkes Bengkulu. Poltekkes Kemenkes Bengkulu.
21. Midaoui, A., Ghzaiel, I., Vervandier- Fasseur, D., Ksila, M., Zarrouk, A., Nury,

T., Khallouki, F., El Hessni, A., Ibrahimi, S. O., Latruffe, N., Couture, R., Kharoubi, O., Brahmi, F., Hammami, S., Masmoudi- Kouki, O., Hammami, M., Ghrairi, T., Vejux, A., & Lizard, G. (2022). Saffron (Crocus sativus L.): A Source of Nutrients for Health and for the Treatment of Neuropsychiatric and Age-Related Diseases. Nutrients, 14(3). https://doi.org/10.3390/nu14030597

22. Miyatun, & Irawati, E. (2024). Pengetahuan Remaja Dalam Mengatasi Rasa Nyeri Saat Haid Pada Remaja Di Akademi Kebidanan Keris Husada Jakarta. Jalinan Jurnal Ilmiah Kesehatan Akademi Kebidanan Keris Husada Jakarta, 6(1), 6.
23. Monica, L. P., Ulfa, M., & Wibisono, W. (2022). Pengaruh Kompres Panas Terhadap Penurunan Intensitas Dismenorea Primer. JPK; Jurnal Penelitian Kesehatan, 12(2), 1–5.
24. Nagy, H., Carlson, K., & Khan, M. A. B. (2023, November 12). Dysmenorrhea. National Library Of Medicine.
25. Napu, L. A., Taqiyah, Y., & Asnaniar, W. O. S. (2023). Pengaruh Kompres Air Jahe terhadap Penurunan Dismenoreaa Primer pada Remaja. Window of Nursing Journal, 4(1), 33–39.
26. Nurhayati, N., & Yuliwati, N. (2023). Hubungan Tingkat Stres dengan Gangguan Siklus Menstruasi pada Remaja Putri. Journal of Pharmaceutical and Health Research, 4(1), 74–78. https://doi.org/10.47065/jharma.v4i1.3182
27. Rahayu & Safitri. (2021). Manfaat Saffron dalam Meringankan Sindrom Pramenstruasi. Jurnal Kesehatan Reproduksi, 8(2). https://doi.org/10.22146/jkr.60016
28. Rumanti Maya. (2021). Efektivitas senam yoga dan kompres hangat terhadap penurunan tingkat nyeri dimenore padaremaja di SMA Negeri 7 Kota Bengkulu. Politeknik Kesehatan Bengkulu, 90.
29. Rusydi. (2022). Efektifitas Pemberian Saffron (Croccus Sativus) Terhadap Nyeri Dismenorea Pada Remaja Putri Kelas XI di SMA Negeri 2 Purbalingga [Skripsi]. Unit Perpustakaan Poltekkes Semarang Kampus I.
30. Rusydi, R. S. (2022). Efektivitas Pemberian Safron (Croccus Sativus) Terhadap Nyeri Dismenorea Pada Remaja Putri. Politeknik Kesehatan Semarang, 1, 83.

31. Safitri, I., Fitria, N. E., & Furwasyih, D. (2023). Pengaruh Pemberian Kompres Hangat Terhadap Nyeri Menstruasi (Dismenorea) Pada Remaja Putri Di SMA N 7 Kerinci Tahun 2023. Menara Ilmu : Jurnal Penelitian Dan Kajian Ilmiah, 17(1), 1–7.
32. Saputra, Y. A., Kurnia, A. D., & Aini, N. (2021). Pengaruh Pendidikan Kesehatan terhadap Upaya Remaja untuk Menurunkan Nyeri Saat Menstruasi (Dismenorea Primer). Jurnal Kesehatan Reproduksi, 7(3), 177. https://doi.org/10.22146/jkr.55433
33. Saputra, T. R. (2023). Pengaruh Penambahan Sari Buah Mangga Arumanis (Mangifera Indica) Terhadap Karakteristik Fisikokimia Dan Organoleptik Permen Jelly Dari Ekstrak Saffron (Crocus Sativus). Skripsi, 1–70.
34. Sari, T. O. (2024). Alfazza Drink, Peluang Bisnis Minuman Sehat Olahan Dari Tanaman Kurma (Phoenix dactylifera) di Masa Pandemi Covid-19. Jurnal Ilmiah Mahasiswa Pertanian [JIMTANI], 1(4), 1–
35. Shifa, A. R. A., Mahmud, N. U., & Sartika. (2021). Pengaruh Kompres Hangat Terhadap Penurunan Intensitas Dismenorea Pada Remaja Putri Di Madrasah Aliyah Ddi Mangkoso Kabupaten Barru. Window of Public Health Journal, 2(4), 707–715.
36. Sudirman. (2024, September 24). Inilah Manfaat Bunga Saffron Yang Perlu Di Ketahui Untuk Kesehatan Tubuh. Radio Republik Indonesia.
37. https://www.rri.co.id/fak- fak/kesehatan/996111/inilah-manfaat- bungasaffron-yang-perlu-di-ketahui-untuk- kesehatan-tubuh
38. Sugiyono. (2022). Metode Penelitian Kuantitatif, Kualitatif dan R&D. CV.
39. Alfabeta. Swandari. (2022). Buku Ajar: Intervensi Fisioterapi P a d a Kasus Dismenorea. UM Publishing. https://p3i.um- surabaya.ac.id/assets/files/596 df149-7c4a- 11ed-ba29-000c29cc32a6_Buku%20Ajar%20Dismen orea%20 kirim%20pak%20dayat1.pdf
40. Syamsuryanita & Ikawati. (2022). Perbedaan Pemberian Air Jahe Dan Air Kelapa Terhadap Penurunan Nyeri Haid Pada Remaja Putri Di SMAN 3 Makassar Tahun 2020. Jurnal Inovasi Penelitian, 2(9), 1–8.
41. Tianotak, A. (2022). Pengaruh Yoga Terhadap Penurunan Nyeri hiad Pada Remaja putri : Systematic Literature Riview. STIKES Guna Bangsa, 79.

42. Wahyuni, W., Putri, N. T., Putri, D., & Nilam, R. (2024). Manfaat Kompres Hangat Terhadap Pengurangan Nyeri Dismenoreaa Primer Pada Remaja Putri Tahun 2024. Empowering Society Journal, 5(2), 118–123.
43. Wati, M., Ningrum, S., Sutini, S., Dari W., Febrianti, H., & Putri, N. A. (2024). Pengaruh Kompres Hangat Terhadap Penurunan Nyeri Dismenorea Pada Remaja Putri Di SMP N Satap 1 Pagar Dewa Lampung Barat. INNOVATIVE: Journal Of Social Science Research, 4(6), 5730–5745.
44. WHO. (2021). World Health Statistics 2021 Monitoring Health For The SDGs. In World Health Organization (Vol. 7, Issue 2).
45. Widhyasih, R. M., Suminar, N., & Lestari, D. (2022). Pengaruh Penambahan Saffron (Crocus sativus) Pada Yoghurt Terhadap Pertumbuhan Pseudomonas aeruginosa. Anakes : Jurnal Ilmiah Analis Kesehatan, 8(1), 79–87. https://doi.org/10.37012/anakes.v8i1.800
46. Wildayani, D., Lestari, W., & Ningsih, W. L. (2023). Dismenorea: Asupan Zat Besi, Kalsium Dan Kebiasaan Olahraga (1st ed.). Pustaka Galeri Mandiri.
47. Windayanti, H., Khayati, Y. N., Veftisia, V., Widyaningsih, A., Dewi, M. K., Izzah, L. F., Mulyani, M., Aprilia, N., Sabwan, I. K., & Sari, L. A. (2021). Yoga untuk Mengurangi Nyeri Haid Primer pada Remaja Putri. Indonesian Journal of Community Empowerment (Ijce), 3(2), 5. https://doi.org/10.35473/ijce.v3i2.1186
48. Yuliani, I., Verawati, B., Wijayanti, H., Sugathot, A. I., & Suhartati, S. (2023). Pengaruh Senam Dismenorhea Terhadap Dismenorea Pada Remaja. Publikasi PenelitianTerapan Dan Kebijakan, 6(2), 8.
49. Zuraida, Z., & Keta, D. P. (2020). Pengaruh Kombinasi Yoga Dan Aroma Terapi Lavender Terhadap Tingkat Nyeri Dismenorea Pada Remaja Putri Di Pondok Pesantren Sumatera Thawalib Parabek. Maternal Child Health Care, 2(2), 330. https://doi.org/10.32883/mchc.v2i2.1046