

The Effect of Carrot Juice on Reducing Dysmenorrhea Pain Scale In Adolescent Girls At Ngoro Public Health Center

Cindy Elisa Lukita Sari¹, Gempi Tri Sumini², Sukati sarmin³
^{1,2,3} Husada Jombang College of Health Sciences, East Java, Indonesia
Email: cindyelisa093@gmail.com

Abstract

Adolescence is the transition to adulthood between the ages of 10 and 19. One of the biological signs of this stage is early menstruation (menarche). Dysmenorrhea occurs at the onset of menstruation. Uterine pain that happens before or during menstruation is a sign of dysmenorrhea. This discomfort disrupts adolescents' activities, making it difficult for them to concentrate while studying, due to dysmenorrhea. The aim of this study is to determine the effectiveness of carrot juice in reducing the intensity of dysmenorrhea pain in adolescents. The design of this study is a one-group pretest-posttest design. All adolescent girls aged 14-19 years at the Ngoro Adolescent Posyandu in Ngoro District participated in this study. A purposive sampling technique was used in this study, with a sample size of 37 adolescent girls. Observation sheets and facial pain scales were used to measure dysmenorrhea in adolescent girls. The independent variable in this study is carrot juice, and the dependent variable is menstrual pain. The results of the Wilcoxon test showed that 20 adolescent girls (54.1%) experienced less pain before carrot juice therapy, and 22 adolescent girls (59.5%) experienced no pain after carrot juice therapy. On the third day, the P-value = 0.000 < 0.05, indicating that H1 is accepted, meaning that the administration of carrot juice has an effect on the intensity of dysmenorrhea pain in adolescent girls in the working area of the Ngoro Public Health Center, Ngoro District, Jombang Regency.

Keywords: Adolescent Girls, Carrot Juice, Dysmenorrhea, Pain Scale.

INTRODUCTION

According to the World Health Organization (WHO), the rate of dysmenorrhea pain in women of reproductive age is 50% in each country. The highest rates are found in America, nearly 90%, followed by Africa at 85.4%, and Sweden at 72%. According to a study by Wijayanti & Selvina (2019), 52.7% of adolescents of productive age will experience primary dysmenorrhea, starting

from menarche until the age of 20 or even until they have children. The impact of dysmenorrhea includes reduced activity in adolescent girls.

In Indonesia, about 55% of women of reproductive age experience pain during menstruation. Dysmenorrhea is menstrual pain without congenital abnormalities, known as primary dysmenorrhea, but when accompanied by pathological conditions

such as ovarian cysts, it is called secondary dysmenorrhea. The severity of dysmenorrhea is classified into mild, moderate, and severe. The pain threshold of dysmenorrhea affects daily activity levels. Dysmenorrhea results from gynecological disorders such as endometritis, malposition of the uterus, pelvic inflammation, and others. Mood disturbances are one consequence of dysmenorrhea in women, making it difficult for sufferers to stand, walk, and consequently leading to a reduction in physical activity, sometimes causing them to stop working for a moment or an entire day (Putri et al., 2020).

Based on a survey on adolescent reproductive health in East Java Province, 4,653 adolescents suffered from dysmenorrhea pain in 2021. The incidence of primary dysmenorrhea was 4,297, while 365 experienced secondary dysmenorrhea. The survey results indicated that 40 to 70% of dysmenorrhea pain interfered with physical activity, causing discomfort at school and work for women of reproductive age. The impact of dysmenorrhea pain on academics, social activities, and sports increased significantly, with rates ranging from 70 to 90% (Putri et al., 2020).

Signs that appear during menstruation include mood swings, breast pain, lower back and abdominal pain, facial acne, and headaches (Putri et al., 2020)..

Primary dysmenorrhea pain is caused by increased prostaglandin hormones, leading to uterine contractions for expelling blood through the cervix, causing pain due to a narrow cervical canal. Age and pregnancy can eliminate dysmenorrhea pain as they lead to the regression of uterine nerves (Andreyani & Bhakti, 2023).

Functional dysmenorrhea occurs on or before the first day of menstruation due to pressure on the cervical canal. As menstruation progresses, the pain typically disappears. The most common suspected causes of severe, continuous pain are endometriosis or ovarian cysts, referred to as non-functional (abnormal) dysmenorrhea (Widyanthi et al., 2021).

Prostaglandins are the main hormones causing uterine contractions. Increased prostaglandin secretion leads to vasospasm and ischemia, resulting in nausea, vomiting, dizziness, and decreased concentration. During menstruation, prostaglandin F2a secretion increases in the luteal phase, causing ischemic responses (Andreyani & Bhakti, 2023).

Dysmenorrhea can be treated with pharmacological and non-pharmacological treatments. Pharmacological treatments include pain relievers. Non-pharmacological treatments involve warm compresses on the abdomen, massage, acupuncture, acupressure, physical exercise, and herbal

remedies such as ginger, turmeric, carrots, and coconut water.

Carrots contain vitamins A, B, C, D, and E, beneficial for the human body. One of the benefits of carrots is reducing dysmenorrhea pain due to vitamin E and beta-carotene. Vitamin E and beta-carotene block prostaglandins, reducing prostaglandin hormones in the uterus (Rahmayani et al., 2017).

According to Kurniati (2017), administering carrot juice to students with dysmenorrhea showed that the highest pain scale before treatment was 8, which reduced to 2 after treatment. The study showed a significant difference in average pain levels before and after carrot juice administration (p value = 0.000, $\alpha=0.05$), indicating an effect of carrot juice on dysmenorrhea pain scale changes.

Interviews revealed that 17 adolescent girls did not take pain relievers due to concerns about dependency, while 3 used warm compress therapy and iron tablets during dysmenorrhea (Ngoro Public Health Center, 2024).

RESEARCH METHOD

The design of this study is a one-group pretest-posttest design. This pre-experimental design involves a pretest (test before treatment) and a posttest (test after treatment) within a single group. This study consists of one group receiving the

treatment of drinking 250 cc of carrot juice. The population of this study includes all adolescent girls at the Ngoro Public Health Center's adolescent Posyandu in Ngoro District, Jombang Regency, totaling 58 girls. The sampling technique used in this study is purposive sampling.

The sample size for this study is 37 adolescent girls. Data collection used observation sheets and the Faces Pain Scale, a pain measurement scale developed by Donna Wong and Connie Baker. The inclusion criteria for the sample are adolescent girls willing to be respondents, aged 14-19 years, experiencing dysmenorrhea during their menstrual cycle, and not using pharmacological therapy such as analgesics or Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) during the study.

RESEARCH RESULT AND DISCUSSION

RESULT

Table 1 Pain Levels Before Carrot Juice Therapy in Adolescent Girls at the Youth Posyandu, Ngoro District, Jombang Regency, Year 2024

Number	Pain Level	F	(%)
1	No pain at all	0	0
2	Slight pain	11	29,7
3	Less pain	20	54,1
4	Moderate pain	5	13,5
5	Severe pain	1	2,7
6	Extremely severe pain	0	0
Total		37	100%

From Table 1, the results show that before receiving carrot juice therapy, 11 respondents (29.7%) experienced only slight pain, 20 respondents (54.1%) experienced slightly more pain, 5 respondents (13.5%) experienced more pain, and 1 respondent (2.7%) experienced much more pain.

Table 2 Pain Levels After Carrot Juice Therapy at the Youth Posyandu, Ngoro District, Jombang Regency, Year 2024

Number	Pain Level	F	(%)
1	No pain at all	22	59,5
2	Slight pain	7	18,9
3	Less pain	6	16,2
4	Moderate pain	2	5,4
5	Severe pain	0	0
6	Extremely severe pain	0	0
Total		37	100%

From Table 2, the results after receiving carrot juice therapy show that 22 respondents (59.5%) experienced no pain, 7 respondents (18.9%) experienced only slight pain, 6 respondents (16.2%) experienced slightly more pain, and 2 respondents (5.4%) experienced more pain.

Table 3 Bivariate Statistical Test Results

Variabel	Mean	SD	P-value	N
Pretest	1.89	0.737	0.000	37
Posttest	0.68	0.944		

From Table 3, the analysis of the effect of carrot juice on dysmenorrhea pain using the Wilcoxon test shows a P-value of $0.000 < 0.05$. This indicates a significant difference in pain reduction between respondents before and after receiving carrot juice, meaning H1 is accepted and H0 is rejected. Thus, carrot juice has an effect on dysmenorrhea pain.

Table 4 Cross-tabulation of Age Distribution of Adolescent Girls against Pain Levels at the Youth Posyandu, Ngoro District, Jombang Regency, Year 2024

Pain Level	Age (year)								Total		P-value
	15	%	16	%	17	%	18	%	f	%	
Slight pain	5	13,5	2	5,4	2	5,4	2	5,4	11	29,7	0.000
Less pain	6	16,2	6	16,2	8	21,6			20	54,1	
Moderate pain	2	5,4	2	5,4	1	2,7			5	13,5	
Severe pain			1	2,7					1	2,7	
Total	13	35,2	11	29,7	11	29,7	2	5,4	37	100	

The cross-tabulation above shows that of the 37 respondents, the age of the adolescent girls correlated with the pain levels at the Ngoro District Posyandu, Jombang Regency. Adolescent girls with only slight pain at age 15 were 5 (13.5%),

age 16 were 2 (5.4%), age 17 were 2 (5.4%), and age 18 were 2 (5.4%). For slightly more pain, at age 15 there were 6 (16.2%), age 16 there were 6 (16.2%), and age 17 there were 8 (21.6%). For more pain, at age 15 there were 2 (5.4%), age 16 there were 2 (5.4%),

and age 17 there was 1 (2.7%). For much more pain, at age 16 there was only 1 (2.7%) girl.

Table 5 Cross-tabulation of Educational Level of Adolescent Girls against Pain Levels at the Youth Posyandu, Ngoro District, Jombang Regency, Year 2024.

Pain Level	Education				Total		P-value
	Junior high school	%	High school	%	f	%	
Slight pain	7	18,9	4	10,8	11	29,7	0.000
Less pain	10	27	10	27	20	54,1	
Moderate pain	3	8,1	2	5,4	5	13,5	
Severe pain	1	2,7			1	2,7	
Total	21	56,7	16	43,3	37	100	

Based on the cross-tabulation, the education level of the adolescent girls also correlated with pain levels at the Ngoro District Posyandu, Jombang Regency. The results show that for only slight pain, junior high school girls were 7 (18.9%) and senior high school girls were 4 (10.8%). For

slightly more pain, junior high school girls were 10 (27%) and senior high school girls were 10 (27%). For more pain, junior high school girls were 3 (8.1%) and senior high school girls were 2 (5.4%), and for much more pain, junior high school girls were 1 (2.7%).

Table 6 Cross-tabulation of Age at Menarche of Adolescent Girls against Pain Levels at the Youth Posyandu, Ngoro District, Jombang Regency, Year 2024.

Pain Level	Age at Menarche				Total		P-value
	<12	%	>12	%	f	%	
	Year		Year				
Slight pain	8	21,6	3	8,1	11	29,7	0.000
Less pain	12	32,4	8	21,6	20	54,1	
Moderate pain	5	13,5			5	13,5	
Severe pain	1	2,7			1	2,7	
Total	26	70,3	11	29,7	37	100	

The cross-tabulation also shows that of the 37 respondents, the age of menarche correlated with pain levels at the Ngoro District Posyandu, Jombang Regency. The results show that for only slight pain, menarche age <12 was 8 (21.6%) and menarche age >12 was 3 (8.1%). For slightly more pain, menarche age <12 was 12 (32.4%) and menarche age >12 was 8

(21.6%). For more pain, menarche age <12 was 5 (13.5%) and for much more pain, menarche age <12 was 1 (2.7%)

DISCUSSION

Description of Dysmenorrhea Pain Levels Before Carrot Juice Therapy

From Table 1, before the carrot juice therapy, the results show that among the

respondents experiencing dysmenorrhea, 11 (29.7%) had only slight pain, 20 (54.1%) had slightly more pain, 5 (13.5%) had more pain, and 1 (2.7%) had much more pain.

The data above can be explained as follows: before the carrot juice therapy, respondents experienced moderate pain. According to Perry & Potter's theory, an increase in prostaglandins during menstruation causes strong uterine contractions, leading to pain. Hamdiyah. (2020) stated that lower abdominal pain during menstruation is a sign of dysmenorrhea. This pain, occurring before or during menstruation, spreads to the lower abdomen, waist, and pelvis due to the shedding of the endometrium in the absence of fertilization, which, along with prostaglandin hormones, increases uterine contractions during menstruation. Based on these results, the observed pain scale for dysmenorrhea before carrot juice therapy was moderate. More adolescent girls experienced moderate pain, as indicated by the study data at the adolescent Posyandu, particularly among 15-year-olds.

Description of Dysmenorrhea Pain Levels After Carrot Juice Therapy

The level of dysmenorrhea pain after carrot juice therapy showed a decrease. After treatment, Table 2 shows that 22 respondents (59.5%) experienced no pain, 7 respondents (18.9%) had only slight pain, 6 respondents (16.2%) had slightly more

pain, and 2 respondents (5.4%) had more pain.

Dysmenorrhea is a common pain experienced by adolescent girls during menstruation, occurring before or during menstruation and gradually diminishing as the period ends. Several theories suggest that the pain during menstruation is due to an increase in prostaglandin hormones, causing uterine contractions (Damayanti et al., 2020). Based on these facts and theories, the researcher concludes that primary dysmenorrhea often results in physical and psychological symptoms. Symptoms during menstruation vary according to an individual's pain threshold, including mood disturbances, nausea, vomiting, dizziness, lower abdominal pain, and back pain, which can interfere with daily activities (Wulandari, Hasanah, & R, 2018).

Impact of Carrot Juice Therapy on Dysmenorrhea Pain at the Youth Posyandu, Ngoro Community Health Center Area, Year 2024

In this study, almost all respondents experienced dysmenorrhea before the carrot juice therapy, with 20 girls (54.1%) reporting slightly more pain. After the carrot juice therapy, there was a reduction in dysmenorrhea pain levels, with 22 girls (59.5%) reporting no pain. The Wilcoxon test before and after carrot juice therapy on the third day yielded a P-value of $0.000 < 0.05$, thus accepting H1, indicating that

carrot juice therapy influences the intensity of dysmenorrhea pain in adolescent girls at the Ngoro Public Health Center's adolescent Posyandu.

According to existing theories, dysmenorrhea can be managed pharmacologically and non-pharmacologically. Some people use pharmacological therapy for quick pain relief, but long-term use has side effects that can harm the body. Traditional treatments with fewer side effects, such as using carrot plants to reduce prostaglandin levels and alleviate dysmenorrhea pain, can be recommended. Carrots contain vitamin E and beta carotene, which help reduce dysmenorrhea pain (Wulandari, Hasanah, & R, 2018).

Various vitamins in carrots include 754 mcg of beta carotene per 100 g. Beta carotene acts as an antioxidant but also has analgesic (pain-relieving) and anti-inflammatory benefits. Magnesium in carrots activates vitamin B, relaxing muscles and nerves, which helps alleviate menstrual muscle tension. As a natural analgesic, consuming carrots containing vitamin E 2-3 days before and after menstruation can reduce uterine contractions and mood disturbances. Vitamin E also reduces menstrual blood flow. Carrot components that help alleviate dysmenorrhea include calcium, magnesium, vitamins A, E, B6, and C. Beta

carotene in carrot juice has an analgesic effect, converting to vitamin A, improving blood flow, and reducing dysmenorrhea pain (Wulandari, Hasanah, & R, 2018).

Early menarche, starting at age 12, has been reported in girls younger than 12 and as old as 16. Factors influencing menarche include lifestyle, environment, socioeconomic status, and hormonal factors (Trisnadewi et al., 2022). In this study, 26 respondents (70.3%) who had menarche before 12 experienced slightly higher dysmenorrhea pain levels than those who had menarche after 12. This supports Mulyani et al. (2022) that early menarche (<12 years) can cause issues because reproductive organs are not fully mature, leading to dysmenorrhea. This study aligns with Lail (2019), showing a relationship between menarche age and dysmenorrhea, with younger menarche (<12 years) increasing the risk of dysmenorrhea compared to normal menarche age (Ambarwati & Hestiyah, 2022).

Anemia, a decrease in blood capacity, particularly red blood cells, is classified with normal ranges of 13.5 g/dl (men), 11.5 g/dl (women), and 11.0 g/dl (children). Individual side effects of reduced blood capacity vary. Lower hemoglobin levels can trigger dysmenorrhea, as reduced hemoglobin can cause anemia, leading to oxygen deficiency and ischemia during menstruation. Lower blood levels in

adolescent girls increase uterine contractions, causing pain exacerbated by prostaglandins, resulting in hypoxia (Ambarwati & Hestiyah, 2022).

As knowledge advances, individuals' awareness increases through formal and informal education. Knowledge is gained not only through education but also through mass media, influencing individuals' understanding. Higher education levels facilitate information reception and selection, preventing misinformation. Conversely, lower education levels hinder information reception and selection. Adolescent girls with good knowledge of dysmenorrhea management can better handle dysmenorrhea pain than those with limited knowledge. Most adolescents in this study were in the intermediate stage, aged 15 (35.2%), meaning they socialized more and spent time with friends. Regarding personal issues like menstruation, they are more open with peers than parents. Knowledge about dysmenorrhea treatment depends on individual education levels. Most respondents (56.2%) were in junior high school. Some respondents find treating dysmenorrhea with medication practical and quick. Common pain relievers like aspirin and ibuprofen effectively prevent cramps by blocking prostaglandins, which cause pain. However, pharmacological therapy has side effects. This study shows 97% have a positive attitude toward

dysmenorrhea treatment. Chi-square test results show $P < 0.05$ ($P=0.042$), indicating a significant relationship between dysmenorrhea and its treatment (Destariyani et al., 2023).

The Wilcoxon test analysis of 37 respondents shows differences before and after carrot juice therapy: 11 respondents (29.7%) experienced only slight pain, 20 (54.1%) had slightly more pain, 5 (13.5%) had more pain, and 1 (2.7%) had much more pain before therapy. After therapy, 22 respondents (59.5%) experienced no pain, 7 (18.9%) had only slight pain, 6 (16.2%) had slightly more pain, and 2 (5.4%) had more pain. This aligns with Wiyani (2018), who found that carrot juice reduces prostaglandin levels, which convert arachidonic acid to prostaglandins causing menstrual pain. Carrots contain beta carotene and vitamin E, acting as natural analgesics and anti-inflammatories (Wiyani, 2020).

CONCLUSION

The intensity of dysmenorrhea before being given carrot juice therapy at the youth posyandu in the working area of the Ngoro Community Health Center, Ngoro District, Jombang Regency, was at a slightly more painful scale for 20 teenage girls (54.1%). The intensity of dysmenorrhea after being given carrot juice therapy was at a pain-free scale for 22 teenage girls (59.5%). There

was a difference in the intensity of dysmenorrhea after the administration of carrot juice therapy, with a P-Value of $0.000 < 0.05$, leading to the conclusion that H_1 is accepted and H_0 is rejected.

SUGGESTIONS

For the research site teach the benefits of carrot juice to teenage girls in the community, not just limited to the youth posyandu, so they can practice it themselves if they experience dysmenorrhea. For teenage girls It is recommended to use non-pharmacological carrot juice therapy to reduce dysmenorrhea, thereby reducing the use of medications that have side effects on the body. For future researches develop research on midwifery science about adolescent reproductive health with a larger number of respondents, standardize the time of pain measurement to avoid bias, and combine non-pharmacological methods to reduce dysmenorrhea.

REFERENCE

- Amdadi, Z., Nurdin, N., Eviyanti, & Nurbaeti. (2021). Overview of Adolescent Girls' Knowledge about the Risks of Early Marriage during Pregnancy at Sman 1 Gowa. *Inovasi Penelitian*, 2 no.n7(7), 2067–2074. <https://stp-mataram.e-journal.id/JIP/article/view/1053>
- Ambarwati, D., & Hestiyah, H. (2022). Relationship between Knowledge Levels about Dysmenorrhea and Management Behaviors among Adolescent Girls in Karanggintung Village. *Pro Health Jurnal Ilmiah Kesehatan*, 4(1), 191–196. <https://doi.org/10.35473/proheallth.v4i1.1812>
- Andreyani, L., & Bhakti, Wida Kuswida. (2023). Validity of Analog and Numerical Visual Pain Measuring Scales (Vanrs) in Pain Assessment. *Jambura Journal of Health Science and Research*, 5(2), 730–736. <https://ejurnal.ung.ac.id/index.php/jjhsr/article/view/19140/pdf>
- Dewi, N. L. Y. J., & Runiari, N. (2019). Degree of Dysmenorrhea with Management Efforts in Adolescent Girls. *Jurnal Gema Keperawatan* | December, 12, 114.
- Destariyani, E., Apsara, I. K., & Baska, D. Y. (2023). Relationship between Age at Menarche and Menstrual Cycle with Dysmenorrhea. *Jurnal Kebidanan*, 12(02), 140–144. <https://doi.org/10.35890/jkdh.v12i02.281>
- Durmaz, B. (2017). Validity and Reliability of Geriatric Depression Scale - 15 (Short Form) in Turkish Older Adults. *Northern Clinics of Istanbul*. <https://doi.org/10.14744/nci.2017.85047>
- Fajar Tri Waluyanti, Happy Hayati, M. K. R. (2019). Factors Associated with Pain Reaction Due to Invasive Procedures in Children Under Treatment. *Jurnal Ilmiah Keperawatan Altruistik*, 2(2), 13–21. <https://doi.org/10.48079/vol2.iss2.37>
- Firmansyah, M. A., Rahayu, W., & Liana, T. (2018). Carrot Fertilization Package on Clayey Sandy Lowland in Palangka Raya, Central Kalimantan. *Berita Biologi*, 17(2). <https://doi.org/10.14203/beritabiologi.v17i2.2838>
- Hamidah, S., & Rizal, M. S. (2022). Journal of Community Engagement in Health, 5(2), 237–248. <https://jceh.org/index.php/JCEH/article/view/384>
- Hasanah, H. (2017). Observation Techniques (An Alternative Method

- of Qualitative Data Collection in Social Sciences). *At-Taquaddum*, 8(1), 21.
<https://doi.org/10.21580/at.v8i1.1163>
- Hamdiyah. (2020). Relationship between Anemia and Dysmenorrhea (Menstrual Pain) in Adolescent Girls at Aisyiyah Sidrap Orphanage. *Jurnal Kesehatan Madu*, 9(1), 8–16.
<https://doi.org/http://dx.doi.org/10.31314/mjk.9.1.8-16.2020>
- Ilham, M. A., Islamy, N., Hamidi, S., & Sari, R. D. P. (2022). Menstrual Cycle Disorders in Adolescents: A Literature Review. *Jurnal Penelitian Perawat Profesional*, 5(1), 185–192.
- Larasati, T. A., A., & Alatas, F. (2016). Primary Dysmenorrhea and Risk Factors for Primary Dysmenorrhea in Adolescents. *Majority*, 5(3), 79–84.
- Latifah, S., Mardiah, S. S., & Kurniah, H. (2023). Effect of Carrot Juice Administration on Primary Dysmenorrhea Pain Levels in Grade XI Female Students at SMA Negeri 3 Tasikmalaya. *IMJ (Indonesian Midwifery Journal)*, 4(2).
<https://doi.org/10.31000/imj.v4i2.4276>
- Lail, N. H. (2019). Relationship between Nutritional Status, Age at Menarche, and Dysmenorrhea in Adolescent Girls at SMK K in 2017. *Jurnal Ilmiah Kebidanan Indonesia*, 9(02), 88–95.
<https://doi.org/10.33221/jiki.v9i02.225>
- Mirontoneng, R., Longdong, I. A., & Lengkey, Lady. (2020). Quality Study of Vacuum-Packed Minimal Processed Carrots (*Daucus carota* L.). *Jurnal COCOS*, 4(4), 1–8.
- Mulyani, Sudaryanti, & Dwiningsih. (2022). Relationship between Age at Menarche and Menstrual Duration with Incidence of Primary Dysmenorrhea. *Journal of Health, Education and Literacy (J-Health)*, 4(2), 104–110.
<https://doi.org/https://doi.org/10.31605/jhe.alt.v2i1>
- Nabilla, D. R., & Hasin, A. (2022). Analysis of Effectiveness of Standard Operating Procedures (SOP) Application in the Community & Academy RUN System Department (PT Global Sukses Solusi Tbk). Nabila, Dian Ratna Hasin Al, 01(06), 58–75.
<https://journal.uui.ac.id/selma/article/view/26602%0Ahttps://journal.uui.ac.id/selma/article/download/26602/14474>
- Obstetric, H., & Nurses, N. (2022). Perinatal Mood and Anxiety Disorders. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 51(4), e1–e4.
<https://doi.org/10.1016/j.jogn.2022.03.007>
- Pinzon, R. T. (2016). Classification of Pain. In *Book of Pain Assessment*.
- Putri, N. E., Wilson, & Putri, E. A. (2020). Relationship between Emotional Regulation and Intensity of Menstrual Pain (Dysmenorrhea) in Junior High School Students at State Junior High School 8 Pontianak. *Jurnal Nasional Ilmu Kesehatan*, 3(2), 51–61.
- Rahmayani, R., Yaumi, N., & Agustini, F. (2017). Carbed (Carrot Bread) as Instant Vegetable for Vitamin A Deficient Children. *Prosiding Industrial Research Workshop and National Seminar*, 8, 110–116.
<https://doi.org/10.35313/IRWNS.V8I3.708>
- Suryana, E., Hasdikurniati, A. I., Harmayanti, A. A., & Harto, K. (2022). Early Adolescent Development, Middle and Its Implications for Education. *Jurnal Ilmiah Mandala Education*, 8(3), 1917–1928.
<https://doi.org/10.58258/jime.v8i3.3494>
- Trisnadewi, E., Irlah, R., Putri, G., & Dasril, O. (2022). Faktor-faktor yang berhubungan dengan kejadian menarche dini pada remaja putri di SMP Negeri 15 Padang. *Jurnal Kesehatan Saintika Meditory*, 5(2), 55–64

- Usman, H., Tondong, H. I., & Kuswanti, F. (2022). Efforts to Face Menarche by Increasing Knowledge of Adolescent Girls through Menstrual Hygiene Management Comic Book at Pondok Pesantren Hidayatullah. *Jurnal ABDINUS: Jurnal Pengabdian Nusantara*, 6(2), 475–485. <https://doi.org/10.29407/ja.v6i2.16353>
- Wati, N. K., Kesumadewi, T., Inayati, A., Dharma, A. K., & Metro, W. (2022). Application of Guided Imagery on Pain Scale of Thalassemia and Dyspepsia Patients in Rsud Jend. Ahmad Yani Metro City. *Jurnal Cendikia Muda*, 2(3), 375–382.
- Widyanti, N. M., Resiyanti, N. K. A., & Prihatiningsih, D. (2021). Description of Non-pharmacological Management of Dysmenorrhea in Grade X Adolescents at SMA Dwijendra Denpasar. *Jurnal Inovasi Penelitian*, 2(6), 1745–1756