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Ginger as a Non-Pharmacological Intervention for Dysmenorrhea: Systematic Literature Review

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Ginger as a Non-Pharmacological Intervention for Dysmenorrhea: Systematic Literature Review

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Latar belakang: Dysmenorrhea merupakan ketidaknyamanan saat menstruasi yang terjadi akibat peningkatan prostaglandin. Dysmenorrhea dapat menurunkan produktifitas individu. Jahe memiliki senyawa aktif yang dapat menurunkan sintesis prostaglandin. Tujuan: Penelitian ini bertujuan untuk merangkum penelitian eksperimental tentang pengaruh pemberian jahe terhadap dysmenorrhea. Metode: Penelitian ini menggunakan metode PRISMA. Pencarian literature menggunakan beberapa database (ScienceDirect, crossreff, Google Scholar, willey, pubmed) dengan kriteria inklusi Bahasa Indonesia dan Inggris, terbit 2021-2025, penelitian experimental, subjek penelitian pada remaja, dan open access journal. Hasil: Terdapat 5 artikel yang memenuhi syarat. Mayoritas artikel merupakan pre eksperimental. Pengukuran skala nyeri dilakukan sebelum dan sesudah intervensi menggunakan NRS dan VAS. Kesimpulan: Jahe terbukti efektif menurunkan dysmenorrhea. Namun, terdapat beberapa keterbatasan seperti ukuran sampel relatif kecil, tidak adanya kelompok kontrol pada sebagian besar studi, belum terdapat standar dosis & durasi pemberian jahe.

Kata kunci: jahe, dysmenorrhea, remaja

Background: Dysmenorrhea is a discomfort during menstruation that occurs due to increased prostaglandins. Dysmenorrhea can reduce individual productivity. Ginger has active compounds that can reduce prostaglandin synthesis. Objective: This study aims to summarize experimental evidence about the impact of ginger administration on dysmenorrhea. Method: This study used the PRISMA method. Literature searches used several databases (ScienceDirect, crossreff, Google Scholar, willey, pubmed) with inclusion criteria of Indonesian and English, published 2021-2025, experimental research, research subjects in adolescents, and open access journals. Results: Five articles met the eligibility criteria. The majority were pre-experimental. Pain scale measurements were conducted pre and post intervention using the NRS and VAS. Conclusion: Ginger has been shown to be effective in reducing dysmenorrhea. However, several limitations exist, such as relatively small sample sizes, the absence of a control group in most studies, and the lack of standardized dosage and duration of ginger administration.

Keywords: ginger, dysmenorrhea, adolescent.

Introduction

Dysmenorrhea is a common discomfort experienced during menstruation. Pathophysiologically, dysmenorrhea is classified as primary and secondary. The difference lies in the presence or absence of pelvic pathology (1). Primary dysmenorrhea is defined as spasmodic cramps occurring in the lower abdomen that appear shortly before or at the



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beginning of menstruation until the third day. The discomfort is caused by a rapid drop in progesterone that leads to a greater release of prostaglandin F2 α and prostaglandin E2. The increase in prostaglandins causes the myometrium to contract, resulting in vasoconstriction. Vasoconstriction results in uterine ischemia and the production of anaerobic metabolites. This process leads to hypersensitization of pain fibers and the emergence of pain sensations (2).

Dysmenorrhea affects half of the world's women of reproductive age. The incidence of dysmenorrhea affects 54.89% to 64.25% of the population in Indonesia. In adolescents, it is reported to affect 60–90% of cases (3). Dysmenorrhea in adolescents generally appears 6 to 24 months after menarche. Due to this pain, dysmenorrhea increases school absenteeism, disrupting learning and concentration, resulting in decreased academic performance (4).

Dysmenorrhea can be managed pharmacologically and non-pharmacologically. This therapy aims to reduce pain and thus improve daily activity performance (5). Several studies have consistently shown a significant association between the use of pharmacological therapy, particularly NSAIDs, and the incidence of gastrointestinal disorders. These disorders include abdominal pain, nausea, dyspepsia with pyrosis, ulcers, perforation, and GI bleeding, which can lead to anemia (6–8). Given the numerous side effects, researchers have conducted extensive studies on non-pharmacological therapies, one of which is ginger.

Ginger (*Zingiber officinale*) is a spice plant that has been used as a traditional medicine for a long time. Ginger is known by the nickname "vishvabesaj," which means universal medicine. It is considered universal because ginger contains many active compounds, including gingerol, shogaol, paradol, and zingerone. These compounds function as anti-inflammatory, analgesic, antioxidant, antimicrobial, and anticancer agents (9).

Ginger consumed on days 1-3 of the menstrual cycle can inhibit the synthesis of cyclooxygenase, leukotriene, and prostaglandin (3). Administering red ginger to 25 female adolescents at SMPN 20 Bandung also resulted in a significant reduction in pain levels from moderate-to-severe to mild-to-moderate ($p < 0.001$) (10). Research conducted on female adolescents in the Gedung Sari Community Health Center area also showed the effectiveness of giving ginger water in reducing dysmenorrhea ($p=0.000$) (11).



In midwifery practice, a promotive-preventive approach using complementary therapies such as ginger is considered relevant because it is safe, affordable, and easily accessible to adolescents. To provide responsible clinical recommendations, a systematic and comprehensive synthesis of evidence is necessary. Therefore, this systematic review was conducted to examine the effect of ginger on reducing dysmenorrhea in adolescents as a scientific basis for developing herbal-based midwifery practices.

Method

This research conducts a structured examination of existing literature utilizing the PRISMA flow diagram. The PRISMA flow diagram guides the study selection process through four main stages: identification, screening, eligibility, and inclusion. Literature searches were conducted in electronic databases including ScienceDirect, CrossRef, Google Scholar, Wiley, and PubMed between February and May 2026. The search strategy employed a combination of keywords and Boolean operators (AND, OR) to maximize the retrieval of relevant studies. Keywords were developed based on the Population, Intervention, Comparison, and Outcome (PICO) framework and are presented in Table 1. Examples of search strings included combinations such as (Adolescence OR Adolescent OR Puberty OR Teenager OR "Junior High School" OR "Senior High School") AND (Ginger OR Zingiber OR "Zingiber officinale") AND (Placebo) AND (Dysmenorrhea OR "Period Pain" OR "Menstrual Cramps"), adapted according to the indexing system of each database.

During the identification stage, all records retrieved from the databases were exported and compiled into a reference management system. Duplicate articles were identified and removed prior to screening. In the screening stage, titles and abstracts were assessed according to the predefined inclusion and exclusion criteria (Table 2). Full-text articles that met the screening criteria were then evaluated during the eligibility stage. Articles that did not meet the eligibility criteria, lacked full-text availability, or did not address the research question were excluded with documented reasons. The remaining studies were included in the final review and synthesis.

The quality of the selected studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for quasi-experimental studies. Each item answered "Yes"



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received a score of 1, while other responses received a score of 0. The total score was calculated by dividing the number of "Yes" responses by the total number of checklist items and multiplying by 100%. Study quality was categorized as good (80–100%), moderate (50–79%), or low (<50%). The selected articles were subsequently reviewed and synthesized using the PICO model.

Table.1 Keyword

Population	Intervention	Comparison	Outcome
Adolescence	Ginger	Placebo	Dysmenorrhea
Adolescere	Zingiber		Period pain
Puberty			Menstrual cramps
Teenager			
Junior high school			
Senior high school			

Table.2 Inclusion and exclusion criteria

Criteria	Inclusion	Exclusion
Period	Published less than 5 years (2021-2025)	Published before 2020
Language	English, bahasa	Not English
Subject	Adolescence, girl	Adults
Research design	Experimental (pre experimental, quasi experimental & RCT)	Review article, observation
Relevation with question	Yes	article
Access status	Open access	

Result and Discussion

Data was taken from Willey, ScienceDirect, pubmed, and Google Scholar using the keywords in Table 1, resulting in 1.153 articles. After screening, five articles were selected for review (Figure 1).

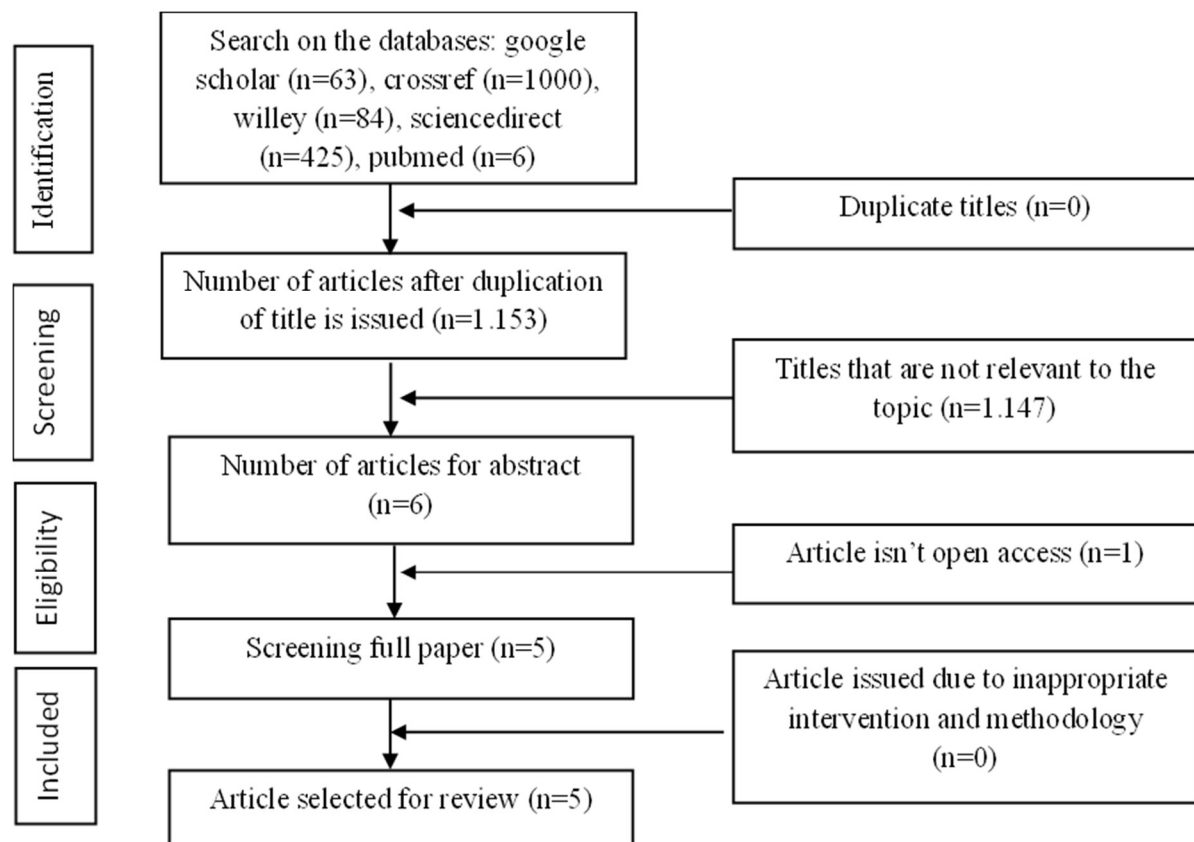


Figure.1 Article Selection Flowchart

Table 3. Quasi and pre experimental article assessment

Items	Assessment				
	1	2	3	4	5
1. Is it clear in the study what is the 'cause' dan what is the 'effect' (i.e. there is no confusion about which variable comes first)?	Y	Y	Y	Y	Y
2. Was there a control group?	Y	NA	NA	NA	NA
3. Were the participants included in any comparisons similar?	Y	Y	Y	Y	Y
4. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Y	Y	Y	Y	Y
5. Were there multiple measurements of the outcome pre dan post the intervention/exposure?	N	N	N	N	N
6. Were the outcomes of participants included in any comparisons measured in the same way?	Y	Y	Y	Y	Y
7. Were outcomes measured in a reliable way?	Y	Y	N	Y	Y
8. Was follow up complete dan if not, were differences between groups in terms of their follow up adequately described dan analyzed?	Y	Y	Y	Y	Y
9. Was appropriate statistical analysis used?	Y	Y	Y	Y	Y

Notes: Y= Yes, N= No, NA= Not Applicable

Table 4. Result of article quality assessment

Article title	Writer	Year	Critical appraised	Evaluation quality
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			Quasi experiment	
Konsumsi Air Rebusan Jahe Merah dapat Mengurangi Dysmenorrhea pada Remaja Putri (Batadi and Tondong, 2025)	Nur Azizah Batadi, Sumiaty, Henrietta Imelda Tondong, Muliani, Lisnawati, Narmin	2025	88.8%	Good
The Effect of Ginger Extract on Reducing Dysmenorrhea Pain in Adolescents (Meilani <i>et al.</i> , 2025)	Sielfi Lutfia Meilani, Diah Andriani Kusumastuti, Ummi Kulsum	2025	87.5%	Good
The Effect Of Giving Ginger Water On Dysmenorrhea In The VIII Class Of Adolescent Girl At Wahidiyah Junior High Shcool Bandar Lor Village Mojooroto District Kediri City (Agustin <i>et al.</i> , 2021)	Erda Restiya Agustin	2021	75%	Sufficient
Efektivitas Pemberian Air Rebusan Jahe Merah Terhadap Penurunan Intensitas Dysmenorrhea Pada Remaja Putri (Lestari <i>et al.</i> , 2025)	Wiwin Lestari, Ana Mariza2, Susilawati, Khoidar Amirus	2025	87.5%	Good
Pengaruh Pemberian Air Jahe terhadap Nyeri Menstruasi di Posyandu Remaja Danau Sipin Kota Jambi (Julaecha, Fatmawati and Nurita, 2025)	Julaecha, Tina Yuli Fatmawati, Suci Rahmani Nurita	2025	87.5%	Good

Table 5. Summary of article review

Journal	Desain	Populatio n	Intervent ion	Compare/con trol	Outcome	Notes
Konsumsi Air Rebusan	Quasy experim ent	32 respondent s (10-19	Given 400 ml of boiled red	Control group give mineral water only	Dysmenorr hea was measured	It is not explained when the



Jahe Merah dapat Mengurang i Dysmenorr hea pada Remaja Putri	years old) at UPTD Sangurara Health Center, Palu City experience d dysmenorr hea divided into experiment al and control groups	ginger water for 2 consecuti ve days (1 st -2 nd of menstruati on days)	using a numeric rating scale (NRS). Pre-test results showed that 100% of respondent s (control and interventio n) experience d moderate pain. Post- test results for the control group showed that 100% experience d moderate pain. Meanwhile , 62.5% of the interventio n group experience d mild pain and 37.5% experience d no pain. Red ginger water significan tly decrease pain level of	post test was conducted
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					dysmenorr hea	
The Effect of Ginger Extract on Reducing Dysmenorr hea Pain in Adolescent s	Pre experim ent	70 respondent experience d dysmenorr hea at Junior High School 2 Gebog	Ginger extract	-	A pain scale assessment was used to measure the level of dysmenorr hea. Pre- test results showed more than half experiencin g moderate pain (55.7%), while post- test results showed the majority experiencin g mild pain (75.7%). The average pain score before the interventio n was 5 and after the interventio n was 2. Adolescent at Junior High School 2 Gebog have significantl y reduced	The pain scale assessment used, the dose and duration of ginger administrati on, and the time of pre- and post- test data collection were not explained in detail



4

The Effect Of Giving Ginger Water On Dysmenorrhea In The VIII Class Of Adolescent Girl At Wahidiyah Junior High School Bandar Lor Village Mojoroto District Kediri City	Pre experiment	30 young women (13-16 tahun) who were dysmenorrhea at Wahidiyah Junior High School	Respondent give ginger water	-	dysmenorrhea pain while using ginger extract (p=0.000). 23 respondent s who experience d moderate dysmenorrhea felt benefits after being given ginger water, amounting to 81.5%. There are differences in felt dysmenorrhea after being given an intervention (p=0.000)	There is no explanation regarding the dosage & duration of ginger water administrati on, pre-test scores and questionnai res used to assess the dysmenorrhea scale.
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2

Efektivitas Pemberian Air Rebusan Jahe Merah Terhadap Penurunan Intensitas Dysmenorrhea Pada Remaja Putri Di MTS Darul	Pre experiment	37 young women in at Darul Falah Islamic junior high school in the 2023 academic year	Respondents were given 10 grams of ginger in 200 ml of water with the addition of 2 tablespoons of brown sugar.	-	Dysmenorrhea was measured using the face rating scale (FRS) on the first (pre-test) and third (post-test) days of menstruation. The average	There is no explanation of how many times ginger should be consumed per day and how long the intervention
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2

Falah

Kecamatan

Abung

Tengah

Kabupaten

Lampung

Utara

Tahun

2023

FRS score

for the pre-

test was

3.65 and

the post-

test score

was 1.65.

Giving

young

women at

Darul

Falah

Islamic

junior high

school,

Abung

Tengah

District,

North

Lampung

Regency a

ginger

based drink

significantl

y reduces

their level

of

dysmenorr

hea pain (p

value

0.000).

Dysmenorr

hea pain

was

assessed

using a

numeric

rating scale

(NRS).

Pre-test

results

showed

that the

majority

It was not

explained

when the

pre and

post data

assessment

was carried

out, the

dosage and

duration of

ginger

water

Pengaruh

Pemberain

Air Jahe

terhadap

Nyeri

Menstruasi

di

Posyandu

Remaja

Danau

Sipin Kota

Jambi

Pre

experim

ent

22

adolescent

with

dysmenorr

hea in the

Danau

sipin,

Jambi City

Ginger

water

-

13



experience administrati
d mild on.
(50%) and
moderate
(50%) pain.
Post-test
results
showed
that 63.6%
experience
d mild pain
and 13.6%
experience
d moderate
pain. The
average
pain
intensity
was 3.45
for pre-test
and 1.77
for post-
test. Giving
ginger
water had
an impact
in reducing
menstruatio
n pain,
with a P
value of
0.000.

Dysmenorrhea occurs when prostaglandin secretion is excessive due to decreased progesterone in the luteal phase. This causes intense contractions in the myometrium and vasoconstriction, causing uterine ischemia and hypoxia, leading to pain (2). Ginger can inhibit COX and LOX, thereby reducing the synthesis of prostaglandins and leukotrienes. This occurs because ginger contains complex phytochemical compounds and is rich in bioactive components (alkaloids, flavonoids, phenolics, triterpenoids, and saponins) (9,17). The available evidence suggests that ginger may be effective in reducing dysmenorrhea



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pain among adolescents, although the quality of evidence remains limited due to small sample sizes and predominantly pre-experimental study designs, which may influence the magnitude of the reported effects.

Regarding study design, most studies employed pre-experimental designs without control groups, while only one study used a quasi-experimental design with a control group receiving mineral water. The presence of a control group strengthens internal validity and provides stronger evidence that pain reduction is attributable to ginger rather than natural changes in menstrual pain over time. In contrast, pre-experimental studies are more susceptible to bias because they cannot adequately control for confounding factors. Furthermore, data were collected pre-post intervention. This design clearly explains how the independent variable (ginger) influences the dependent variable (dysmenorrhea) (18).

Variation was also observed in the dosage and form of ginger administration. One study administered 400 ml of boiled red ginger water for two consecutive days, while another used 10 grams of ginger in 200 ml of water with brown sugar added. Several studies did not clearly report the dosage or preparation method. These inconsistencies make direct comparison difficult and limit the ability to determine the optimal therapeutic dose of ginger for dysmenorrhea management.

The duration and frequency of intervention also differed among studies. Some studies provided ginger during the first and second days of menstruation, whereas others did not specify the length of treatment or the number of daily administrations. Since the anti-inflammatory and analgesic effects of ginger may depend on exposure duration, insufficient reporting reduces the reproducibility of findings and may contribute to differences in treatment outcomes.

Furthermore, different instruments were used to assess pain intensity. Two studies utilized the Numeric Rating Scale (NRS), whereas another employed the Face Rating Scale (FRS). The NRS scale represents a pain scale of 0-10 (mild-severe), while the VAS scale represents facial expressions (happy-crying). Both pain scales have high reliability and are ideal for assessing a person's pain level (19). Variations in pain assessment tools may affect sensitivity in detecting changes in pain intensity and contribute to heterogeneity in reported results. Despite these methodological differences, all studies consistently demonstrated a reduction in dysmenorrhea pain after ginger administration, suggesting that ginger may be



an effective non-pharmacological intervention for adolescents with primary dysmenorrhea. However, future studies should employ more rigorous experimental designs, standardized ginger dosages, clearly defined intervention protocols, and uniform pain assessment instruments to strengthen the evidence base.

Generalizations are challenging because the sample used in this literature review was small and restricted to a single place (20). Other factors such as stress, nutrition, exercise, and medication use were not controlled, potentially increasing the incidence of bias. Excessive fast food consumption can disrupt progesterone metabolism, leading to increased prostaglandin levels, which can lead to pain. Regular exercise can improve oxygen circulation, thereby suppressing pain. Consuming multivitamins, particularly vitamins B12 and D, can inhibit cyclooxygenase enzyme synthesis, thereby suppressing prostaglandin production (21,22).

The results of this study align with previous systematic literature reviews that found ginger to be effective in reducing dysmenorrhea pain through anti-inflammatory mechanisms and inhibition of prostaglandin synthesis (17,23,24). However, compared with previous systematic reviews, the primary studies analyzed still had methodological limitations such as small sample sizes, pre-experimental designs, and the absence of standardized doses of ginger interventions.

Conclusion

In this study, ginger was proven to have the potential to reduce dysmenorrhea. However, there is limitations in the articles reviewed include relatively small sample sizes, the dominance of pre-experimental designs, the absence of a control group in most studies, and the absence of standard doses and duration of ginger administration.

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