Journal of Public Health for Tropical and Coastal Region (JPHTCR)
Journal homepage: https:/ejournal2.undip.ac.id/index.php/jphtr/index
ISSN: 2597- 4378

The Effectiveness of Herbal Interventions in Reducing Dysmenorrhea: A Scoping Review

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Abstract
Introduction: Dysmenorrhea is a prevalent reproductive condition among adolescents and women of reproductive age. The prevalence of primary dysmenorrhea in Indonesia is 91.27 %. Analgesic drugs are frequently used to relieve pain; however, their potential side effects are common. Consequently, interest in herbal treatments has increased, as they are perceived to be safer and more suitable for the sustainable long-term management of dysmenorrhea. This scoping review aimed to identify herbal remedies that can reduce dysmenorrhea symptoms and the administration method.
Methods : A scoping review was conducted following the PRISMA guidelines, searching Garuda and PubMed for articles published between 2015 and 2024 using the keywords "Dysmenorrhea" AND "Herbal Treatment." Experimental or quasi-experimental studies on herbal interventions for primary dysmenorrhea were included, and data were descriptively analyzed to assess the types of herbs, administration methods, and their effects on pain. Fourteen studies met the inclusion criteria.
Results: Herbal agents, such as ginger, mint, cinnamon, chamomile, licorice, turmeric, tamarind, evodia fruit, and traditional Thai and Chinese formulations, were found to be effective in alleviating dysmenorrhea, likely due to their anti-inflammatory, analgesic, and antispasmodic mechanisms. The administration was mostly through oral intake in the form of drinks, syrup, capsules, and infusion, and also through aromatherapy.
Conclusion: Herbs, including ginger, chamomile, cinnamon, licorice, and multi-herbal formulations, can serve as safe complementary therapies, particularly for individuals intolerant to conventional medications such as NSAIDs. Nonetheless, further research with stronger study designs and standardized dosages is required to support broader, affordable, and practical applications in the general population of the general population.

Keywords: dysmenorrhea, menstrual pain, herbal intervention, complementary therapy, scoping review.

DOI: https://doi.org/10.14710/jphtcr.v8i3.29989

Article History: Received: 07th Nov 2025, revised: 17th Dec 2025, accepted: 29th December 2025

Introduction

Dysmenorrhea refers to pain experienced during the menstrual period, typically characterized by pelvic pain. Dysmenorrhea is categorized into two types: primary and secondary. Primary

dysmenorrhea occurs in the absence of identifiable pelvic pathology, whereas secondary dysmenorrhea is associated with underlying abnormalities of the reproductive organs.[1] Dysmenorrhea is a common reproductive health problem affecting the majority of women of reproductive age worldwide. Its prevalence varies across countries and age groups, with the highest rates observed among female university students and young women in particular. In Indonesia, existing evidence suggests that the prevalence of primary dysmenorrhea is approximately 91.27%,[2] followed by Croatia (90.1 %),[3] Saudi Arabia (82 %),[4] Mexico (78.9 %),[5] Ethiopia (71.69 %),[6] and China (69.5 %).[7] Women aged 18–23 years have been identified as having a higher risk of experiencing primary dysmenorrhea of moderate intensity. This condition is frequently accompanied by a range of psychological and emotional symptoms, including irritability, anxiety, emotional hypersensitivity, altered appetite, impaired concentration, and diminished sleep quality. In addition, common physical manifestations include abdominal bloating, nausea, breast tenderness, dermatological problems such as acne, headaches, lower back or pelvic pain, diarrhea, leg pain, and joint discomfort.[8] Dysmenorrhea exerts a considerable effect on women's quality of life, contributing to physical and psychological distress and limiting their ability to perform routine activities. Approximately 65.5% of women reported leaving work or school early due to menstrual cramps, although most absences lasted for no more than two days. Moreover, dysmenorrhea symptoms can negatively affect social engagement, wth 68% of women opting to avoid meeting friends and 35% missing extracurricular activities.[9]

Dysmenorrhea can be addressed using two principal approaches: pharmacological and nonpharmacological. Pharmacological interventions for dysmenorrhea often utilize NSAIDs, such as ibuprofen and mefenamic acid, to reduce pain and discomfort associated with menstruation. NSAIDs relieve menstrual pain primarily by suppressing prostaglandin synthesis, which plays a central role in the pathogenesis of dysmenorrhea.[10] Pharmacological therapy has the advantage of providing rapid pain relief; however, extended administration may be associated with negative outcomes on cardiovascular, renal, and gastrointestinal health.[11] This is consistent with the findings of a study conducted among 129 female students at Makerere University, Uganda, which reported that the most common side effects of NSAID use were nausea (44%), ulceration (39%), and diarrhea (39%). The medications most frequently associated with these adverse effects were ibuprofen (59%), followed by diclofenac (46%), paracetamol (15%), indomethacin (7%), and aspirin (2%).[12]

Non-pharmacological therapies for managing primary dysmenorrhea include physical exercise, adequate rest, dietary modifications, cold and heat therapy, acupuncture, aromatherapy, and herbal remedies. Herbal treatments are derived from multiple plant components, including roots, rhizomes, leaves, stems, flowers, fruits and seeds. Commonly used herbal preparations include traditional Chinese medicine, plants from the Asteracea family, fennel (*Foeniculum vulgare*), and ginger (*Zingiber officinale*), which are widely utilized in countries such as Italy, South Africa, China, India, Vietnam, Pakistan, Iran, and Malaysia.[13,14] Based on the findings of a prospective observational study conducted in 33 herbal medicine clinics and one hospital in South Korea, herbal therapy, particularly personalized decoctions, was found to be effective in reducing the intensity and duration of menstrual pain and decreasing analgesic use. Compared with conventional pharmacological treatments, herbal medicines have a lower risk of adverse effects and high levels of patient satisfaction.[15] These results further support the use of herbal therapy as a safe and effective alternative or adjunctive approach for the management of primary dysmenorrhea, highlighting its potential as a viable option in addition to other non-pharmacological interventions. Thus, this scoping review aimed to identify the types of herbs that can reduce dysmenorrhea symptoms, the administration methods, and their effects on pain reduction.

Methods

This study adopted a scoping review approach. The study selection process was initiated by identifying 213 articles from the Garuda and PubMed databases using the search terms “dysmenorrhea” AND “ Herbal Treatment”. The inclusion criteria were as follows: (1) studies published between 2015 and 2024, (2) free full-text availability, and (3) research designs categorized as experimental or quasi-experimental designs. After removing duplicate records, 180 articles remained and were subjected to preliminary screening based on their titles and abstracts. During this stage, 120 articles were deemed ineligible and excluded for not meeting the inclusion criteria.

Subsequently, 60 articles were assessed for their eligibility. This resulted in the exclusion of 46 articles from the selection process due to irrelevant outcomes, the use of non-herbal interventions, and insufficient methodological rigor. In the final step, 14 studies met all the predetermined eligibility criteria and were selected for inclusion in this scoping review. These studies served as primary sources for evaluating the effectiveness and safety of herbal interventions for primary dysmenorrhea treatment.

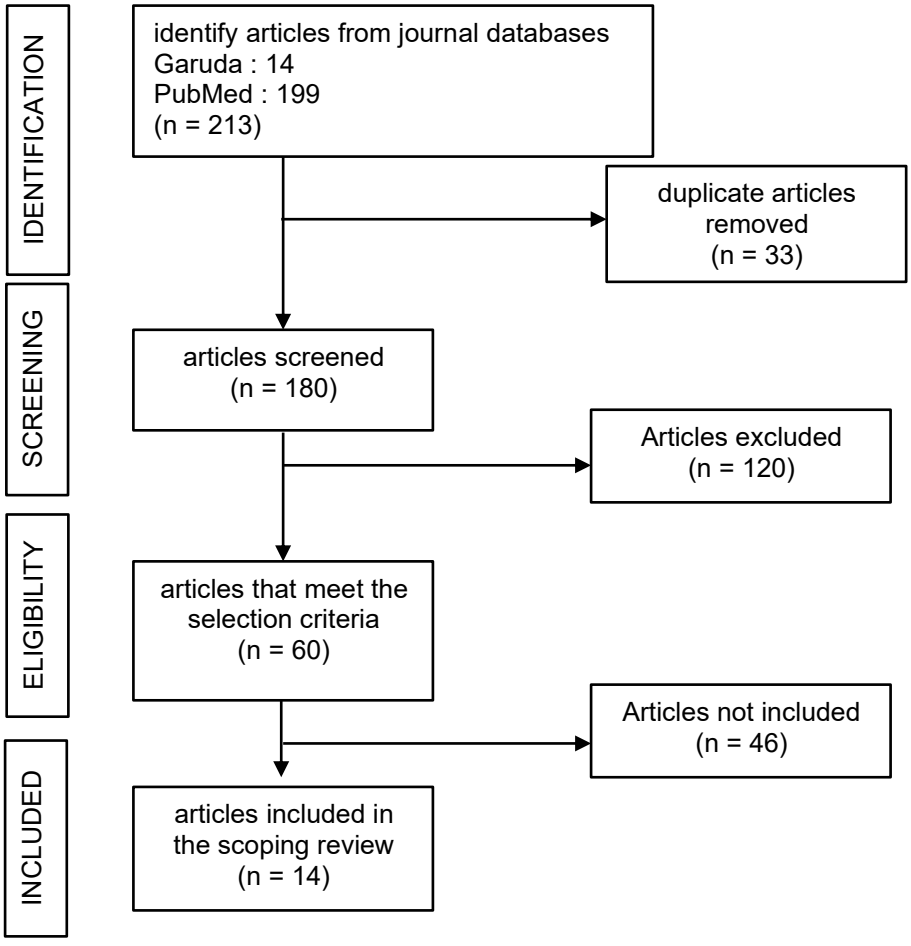

Figure 1. PRISMA Flow Diagram Showing the Study Selection Process

Results

The present study identified 14 articles that met the predetermined inclusion criteria, all of which employed experimental or quasi-experimental designs. These studies were published between 2015 and 2024, inclusive. The selected articles focused on the use of herbal therapies for alleviating primary dysmenorrhea, highlighting various

traditional medicinal plants that have been shown to reduce pain and associated symptoms through anti-inflammatory and muscle-relaxant effects of the plants. A summary of these 14 studies is presented in Table 1.

This review included 14 scientific articles that evaluated various herbal interventions for primary dysmenorrhea in adolescent girls and women of the reproductive age. The selected studies utilized various methodological approaches, including experimental and quasi-experimental designs, randomized, double-blind, placebo-controlled clinical trials, and laboratory-based and live-animal studies.

Several single-herb and polyherbal interventions have demonstrated their beneficial effects. Lavender aromatherapy is a non-pharmacological approach that effectively reduces menstrual pain. Bakhtshirin et al. (2015) reported that a 15-minute abdominal massage with lavender oil significantly decreased dysmenorrhea intensity compared to a placebo massage. Similarly, herbal capsules, including those containing cinnamon, peppermint, and ginger, have been investigated extensively. Jaafarpour et al. (2015) found that 420 mg cinnamon capsules significantly reduced menstrual pain, although their effectiveness was slightly inferior to that 400 mg ibuprofen. Masoumi et al. (2016) demonstrated that peppermint capsules administered for three days effectively alleviated pain, nausea, and diarrhea; however, mefenamic acid was more effective in reducing menstrual bleeding. Ginger (*Zingiber officinale*) was examined in studies by Adib Rad et al. (2018) as well as Kusumawati et al. (2019), indicating that 200 mg ginger capsules provided pain relief comparable to novafen, while a combination of ginger with *kunyit asam* (turmeric and tamarind) exhibited superior efficacy.

Licorice (*Glycyrrhiza glabra*) also has therapeutic potential for menstrual pain. In a triple-blind study, Jafari et al. (2019) reported that licorice syrup significantly reduced menstrual pain, with a safety profile comparable to that of ibuprofen. Similarly, Behmanesh et al. (2019) found that *Eryngium caucasicum* (eryngo) provided dysmenorrhea relief comparable to that of ibuprofen and was superior to that of placebo.

Chamomile (*Matricaria chamomilla*), commonly consumed as an herbal tea, has been found to be effective in treating adolescents. Mulyati et al. (2022) demonstrated that the intake of chamomile tea during menstruation significantly reduced pain intensity. In addition to single-herb remedies, polyherbal formulations have also been found to be effective. A multicenter study by Woo et al. (2020) confirmed that Dangguijagyag-san, a traditional Korean formula, is safe and effective when administered over two menstrual cycles. Du et al. (2021) further showed that Guizhi Fuling Wan effectively reduced menstrual pain, particularly in women diagnosed with heat-burning syndromes and blood stasis.

At the molecular and mechanistic levels, Liu et al. (2023) demonstrated that wine-processed *Evodia rutaecarpa* contains bioactive components, such as 7-hydroxycoumarin, chlorogenic acid, and limonin, which are effective in relaxing the muscular tissue of the uterus and suppressing inflammatory mediators. Supporting this finding, an in vivo study by Xie et al. (2020) on Ge-Gen Decoction revealed that this herbal preparation modulates oxytocin and estrogen signaling pathways while reducing the expression of inflammatory proteins in a rat model of dysmenorrhea.

In summary, the majority of the reviewed studies consistently indicated that herbal therapies significantly reduced the severity of primary dysmenorrhea. Whether used as monotherapy or as a complementary alternative to NSAIDs, these therapies demonstrate minimal side effects and favorable safety profiles, reinforcing their potential as effective and sustainable options for managing primary dysmenorrhea in clinical settings.

Table 1. Summary of Included Studies

No.	Author/Year/ Title/Country	Herbal formula/ Plant part used	Preparation / Form	Route / Dosing	Method	Result	Side effects
1.	Bakhtshirin F, Abedi S, YusefiZoj P, Razmjooee D, 2015[16] The effect of aromatherapy massage with lavender oil on severity of primary dysmenorrhea in Arsanjan students. Iran	Lavender (*Lavandula angustifolia*) Essential oil from flowers	Aromatherapy oil (2 mL)	Topical massage 15 minutes, first day menstruation	Clinical – RCT crossover	Massage using 2 ml of lavender oil applied to the suprapubic region and the area around the navel for 15 minutes during the first days of menstruation was found to be more effective in alleviating primary dysmenorrhea, resulting a significantly greater reduction in severity compared with the placebo massage.	None reported
2.	Jaafarpour M, Hatefi M, Khani A, Khajavikhan J., 2015[17] Comparative effect of cinnamon and Ibuprofen for treatment of primary dysmenorrhea: a randomized double-blind clinical trial. Iran	Cinnamon (*Cinnamomum verum*) Dried bark powder	Capsules 420 mg	Oral, 3 days	Clinical – RCT double blind	The consumption of 420 mg cinnamon capsules substantially alleviated the intensity and length of menstrual pain when compared with placebo; however, its effectiveness was lower than that demonstrated by the group receiving 400 mg of ibuprofen.	Mild gastrointestinal discomfort
3.	Masoumi SZ, Asl HR, Poorolajal J, Panah MH, Oliaei SR, 2016[18] Evaluation of mint efficacy regarding dysmenorrhea in comparison with mefenamic acid: A double blinded randomized crossover study. Iran	Peppermint (*Mentha piperita*) Leaf oil extract	Capsules	Oral, 3 caps/day × 3 days	Clinical – RCT crossover	Daily administration of three peppermint oil capsules for three consecutive days after menstruation onset was found to reduce nausea, diarrhea, pain, and the severity of clinical manifestations of primary dysmenorrhea. However, participants in the 250 mg mefenamic acid group experienced a significantly greater reduction in menstrual bleeding.	None significant

No.	Author/Year/ Title/Country	Herbal formula/ Plant part used	Preparation / Form	Route / Dosing	Method	Result	Side effects
4.	Vannabhum M, Poopong S, Wongwananuruk T, Nimmannit A, Suwannatrai U, Dangrat C, Apichartvorakit A, Booranasubkajorn S, Laohapand T, Akaraserenont P, 2016[19] The Efficacy of Thai Herbal Prasaplai Formula for Treatment of Primary Dysmenorrhea: A Short-Term Randomized Controlled Trial. Thailand	Prasaplai (10-herb Thai formula) Mixed roots, rhizomes, fruits	Capsules 500 mg	2 caps *ter in die* × 3 days before meals	Clinical – RCT	Administration of Prasaplai capsules (500 mg) at a regimen of two capsules taken three times daily prior to meals during the initial three days of menstruation significantly reduced dysmenorrhea in women experiencing primary dysmenorrhea, as compared to placebo.	None reported
5.	Adib Rad H, Basirat Z, Bakouei F, Moghadamnia AA, Khafri S, Farhadi Kotenaei Z, Nikpour M, Kazemi S, 2018[20] Effect of Ginger and Novafen on menstrual pain: A cross-over trial. Iran	Ginger (*Zingiber officinale*) Rhizome powder	Capsules 200 mg	Oral, 2 cycles	Clinical – RCT crossover	The consumption of 200 mg ginger capsules was found to be equally effective as 200 mg Novafen capsules in reducing menstrual discomfort among women experiencing primary dysmenorrhea.	Mild gastrointestinal symptoms
6.	Jafari Z, Emtiazy M, Sohrabvand F, Talei D, Oveidzadeh L, Abrishamkar M, Meyssami M, Kamalinejad M, 2019[21] The effect of *Glycyrrhiza glabra* L. on Primary Dysmenorrhea compared with Ibuprofen: A Randomized, Triple-Blind Controlled Trial. Iran	Licorice (*Glycyrrhiza glabra*) Root extract syrup	Syrup 150 mg/mL	5 mL *bis in die* × 5 days	Clinical – RCT triple blind	The consumption of 5 cc G. glabra syrup (150 mg/mL) twice daily along with a placebo tablet every 8 h demonstrated a similar positive effect to that of 400 mg ibuprofen tablets taken every 8 h combined with 5 cc placebo syrup in reducing the severity of menstrual pain. The interventions were administered from the first to the fifth day of menstruation across two consecutive menstrual cycles.	Minor gastrointestinal effects

No.	Author/Year/ Title/Country	Herbal formula/ Plant part used	Preparation / Form	Route / Dosing	Method	Result	Side effects
7.	Priyono PK, Pratiwi R, 2019[22] Decrease of Dismenore Scale Screening with Ginger Herbal Therapy and Yellow Acid in Female Student Muhammadiyah Vocational School 2 Klaten Utara. Indonesia	Ginger + *kunyit asam* Rhizome and fruit pulp	Herbal drink	Orally during menstruation	Quasi-experimental	Intake of ginger and *kunyit asam* (turmeric and tamarind) was demonstrated to be effective in reducing menstrual pain; however, the *kunyit asam* herbal therapy demonstrated greater efficacy.	None reported
8.	Behmanesh E, Delavar MA, Kamalinejad M, Khafri S, Shirafkan H, Mozaffarpur SA, 2019[23] Effect of eryngo (*Eryngium caucasicum Trautv*) on primary dysmenorrhea: A randomized, double-blind, placebo-controlled study. Iran	Eryngo (*Eryngium caucasicum*) Leaf and stem extract	Syrup 5 mL	3× daily × 5 days	Clinical – RCT double blind	The administration of 5 mL of Eryngo syrup three times daily, commencing one day prior to menstruation and continued for five days, was found to be equally effective as 200 mg of ibuprofen syrup in alleviating primary dysmenorrhea, while demonstrating greater efficacy compared with placebo.	None significant
9.	Woo HL, Ji HR, Kim S, Suh HS, Kim KI, Lee JM, Park KS, 2020[24] Efficacy and safety of herbal medicine (Dangguijagyag-san) for primary dysmenorrhea: study protocol for a randomized, double-blind, placebo-controlled, parallel-group, multi-center trial. Korea	Dangguijagyag-san (DJS) Mixed dried roots	Powder 3 g	*ter in die* × 2 cycles	Clinical – multicenter RCT	Daily intake of 3.0 grams of Dangguijagyag-san powder, administered three times over two menstrual cycles, effectively and safely reduced primary dysmenorrhea in women.	None reported
10.	Xie Y, Qian J, Lu Q, 2020[25] Therapeutic Effect of Ge-Gen Decoction on a Rat Model of Primary Dysmenorrhea: Label-Free Quantitative Proteomics and Bioinformatic Analyses. China	Ge-Gen Decoction (GGD) Roots of *Pueraria lobata*	Decoction 2 mL	Daily × 3 days	Preclinical – in vivo rat	Daily treatment with 2 mL of Ge-Gen decoction for three days, initiated on day 8, produced significant analgesic effects in a primary dysmenorrhea rat model by regulating the oxytocin and estrogen pathways.	Not applicable

No.	Author/Year/ Title/Country	Herbal formula/ Plant part used	Preparation / Form	Route / Dosing	Method	Result	Side effects
11.	Li G, Zhang Z, Zhou L, Liao S, Sun J, Liu Y, Wang X, Wen Z, 2021[26] Chinese herbal formula Xuefu Zhuyu for primary dysmenorrhea patients (CheruPDYS): a study protocol for a randomized placebo-controlled trial. China	Xuefu Zhuyu (XFZY) Mixed roots and resins	Capsules 20 mL	*ter in die* × 14 days × 3 cycles	Clinical – RCT protocol	Administration of Xuefu Zhuyu capsules (20 ml per dose) thrice daily for two weeks prior to menstruation across three consecutive menstrual cycles was found to be effective in reducing menstrual pain in women among females experiencing primary dysmenorrhea, relative to control intervention.	Not yet reported
12.	Du Y, Li Y, Fu X, Li C, Yanan L, 2021[27] Efficacy of Guizhi Fuling Wan for primary dysmenorrhea: protocol for a randomized controlled trial. China	Guizhi Fuling Wan (GFW) Bark, root and resin mixture	Granules 30 g	every 12 hours × 7 days pre-menses	Clinical – RCT	Administration of Guizhi Fuling Wan (herbal granules, 30 g per sachet) every 12 hours, starting 7 days prior to menstruation and continuing until the third day of menstruation for three successive cycles was shown to be both effective and safe for treating women experiencing primary dysmenorrhea associated with heat-burning syndrome and blood stasis, compared with placebo.	No serious adverse events
13.	Mulyati I, Lestari S, Yuliani M, 2022[28] Analisis Penatalaksanaan *Dismenore* Primer pada Remaja Putri dengan Penggunaan Terapi Teh Herbal *Chamomile* Disalah Satu Sekolah Menengah di Bandung. Indonesia	Chamomile (*Matricaria chamomilla*) Dried flowers	Tea infusion 10 g	Daily until pain resolved	Quasi-experimental	The administration of 10 g of chamomile tea, delivered in 10 tea bags and consumed from day one of menstruation until the resolution of dysmenorrhea, was found to be effective in reducing pain intensity in adolescent girls.	None reported

No.	Author/Year/ Title/Country	Herbal formula/ Plant part used	Preparation / Form	Route / Dosing	Method	Result	Side effects
14.	Liu Y, Li H, Chen L, Zhao H, Liu J, Gong S, Ma D, Chen C, Zeng S, Long H, Ren W, 2023[29] Mechanism and Pharmacodynamic Substance Basis of Raw and Wine-Processed *Evodia rutaecarpa* on Smooth Muscle Cells of Dysmenorrhea Mice. China	*Evodia rutaecarpa* Fruit extract	In vitro chemical extract	No dosing	Preclinical – in vitro	Differential compounds identified in raw Evodia rutaecarpa extract and wine-processed Evodia rutaecarpa included chlorogenic acid, 7-hydroxycoumarin, hydroxy evodiamine, laudanosine, evollionines A, limonin, and 1-methyl-2-[(Z)-4-nonenyl]-4(1H)-quinolone. The ion intensity of these compounds was higher in the wine-processed Evodia rutaecarpa compared to the raw form. Among them, 7-hydroxycoumarin, chlorogenic acid, and limonin have been observed to alleviate menstrual pain by relaxing uterine muscles and reducing pain-inducing substances in the body.	Not applicable

Discussion

Herbal interventions have demonstrated significant potential for reducing the symptoms of primary dysmenorrhea through established mechanisms. The primary therapeutic actions of these drugs include the inhibition of prostaglandin synthesis, hormonal regulation, anti-inflammatory effects, antioxidant activity, and enhanced peripheral blood circulation. Several randomized controlled trials and quasi-experimental studies have consistently supported these findings.

Ginger (*Zingiber officinale*), turmeric-tamarind (*kunyit asam*), *Eryngium caucasicum*, and the traditional Thai formula Prasaplai exert therapeutic effects by suppressing the cyclooxygenase (COX) pathway, consequently lowering prostaglandin production (PGE_2 and $PGF_2\alpha$), leading to decreased myometrial muscle contractions and reduced menstrual pain intensity. Gingerol, shogaol, and zingerone, the active components in ginger, have been reported to modulate the NF-κB and COX-2 pathways, resulting in a significant decline in prostaglandin concentrations in patients with primary dysmenorrhea.[30,31] These findings are consistent with those reported by Adib Rad et al.(2018), who showed that ginger capsules provide comparable pain relief to Novafen. Similarly, Priyono and Pratiwi (2019) reported that a combination of ginger and kunyit asam significantly decreased menstrual pain scores, suggesting potential synergistic effects when multiple herbs with anti-inflammatory activities are combined.

Evodia rutaecarpa and Ge-Gen Decoction (GGD) have demonstrated additional biological actions beyond conventional prostaglandin inhibition. Experimental studies have indicated reduced PGE_2 and endothelin-1 expression, accompanied by increased nitric oxide (NO) production, resulting in uterine smooth muscle relaxation and improved antispasmodic effects. Traditional Chinese Medicine (TCM) formulations, including Dangguijagyag-san (DJS), Xuefu Zhuyu (XFZY), and Guizhi Fuling Wan, act through multiple pathways such as modulation of oxytocin signaling, regulation of estrogenic activity, suppression of inflammatory cytokines, and improvement of pelvic blood circulation. This multimodal mechanism aligns with TCM theory, addressing "blood stasis" and "Qi stagnation," clinical concepts associated with menstrual pain in Asian medicine.

Herbal agents such as cinnamon, peppermint, lavender, and prasaplai exhibit notable anti-inflammatory and antioxidant properties. Menthol, the active compound in peppermint, activates TRPM8 receptors, producing a cooling sensation and reducing pain transmission. Lavender essential oil suppresses pro-inflammatory cytokines, such as tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6), both of which play a crucial role in dysmenorrhea pathogenesis.[32] These findings align with a randomized crossover study showing that peppermint capsules reduce gastrointestinal symptoms and menstrual pain.[18] In contrast, cinnamon capsules were found to be less effective than mefenamic acid in reducing bleeding,[17] indicating that cinnamon may function best as a complementary therapy rather than a primary therapy.

Clinically, several herbal remedies have demonstrated efficacy comparable to that of nonsteroidal anti-inflammatory drugs (NSAIDs), with fewer reported adverse effects. Randomized studies on *Glycyrrhiza glabra* L., *Eryngium caucasicum*, and *Cinnamomum verum* reported pain-reduction outcomes that were not significantly different from those of ibuprofen, but with a lower incidence of gastrointestinal complaints, reinforcing their potential as safe alternatives for individuals who cannot tolerate NSAIDs. Furthermore, multi-herbal formulations such as DJS and Guizhi Fuling Wan have shown consistent improvements in pain scores across multiple menstrual cycles, indicating that multi-component herbal preparations may offer broader symptom relief.

Although many studies have reported positive analgesic effects, the detailed pharmacological mechanisms of certain herbal interventions, including those of chamomile, lavender, and Guizhi Fuling Wan, remain unexplored. Future research should incorporate molecular-level analyses (e.g., protein expression and receptor interactions) and multi-center randomized controlled trials with larger sample sizes to validate these findings. Standardized dosing, phytochemical profiling, and long-term safety monitoring are also required to improve the comparability of studies and guide clinical recommendations.

To the best of our knowledge, this review is one of the few that integrates the molecular mechanisms, pharmacodynamic characteristics, and clinical outcomes of multiple herbal interventions for primary dysmenorrhea. By linking laboratory findings with evidence from randomized trials, this study underscores the significance of herbal medicine as a scientifically validated, accessible, and culturally adaptable approach for treating PCOS. These findings provide a foundation for the further development of standardized herbal formulations and their implementation in midwifery.

Conclusion

This literature review highlights that a variety of herbal interventions, including ginger, turmeric-tamarind (*kunyit asam*), peppermint, chamomile, lavender, cinnamon, licorice, and traditional formulations such as Prasaplai, Dangguijagyag-san, and Guizhi Fuling Wan have demonstrated the ability to reduce the intensity of primary dysmenorrhea. The therapeutic effects of these drugs are primarily attributed to their anti-inflammatory, antispasmodic, and hormonal regulatory mechanisms,

particularly through the suppression of prostaglandin synthesis and the promotion of uterine muscle relaxation. Some of these herbal remedies have shown efficacy comparable to that of NSAIDs without significant side effects, reinforcing their potential as safe alternatives. Integrating herbal therapies into midwifery practice may support a more holistic, promotive, and preventive approach to the management of menstrual pain. Further investigations are needed to better understand the pharmacological pathways and evaluate the long-term safety of these compounds. These findings underscore the growing scientific basis for incorporating herbal interventions as evidence-based complementary options for managing primary dysmenorrhea.

Ethics approval
Not applicable

Availability of data and materials
Not applicable

Acknowledgement
Not applicable

Funding
Not applicable

Author Contribution
MI served as the lead author and was primarily responsible for selecting and analyzing articles. S and BS provided guidance and constructive feedback throughout the manuscript-writing process.

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