Rocz Panstw Zakl Hig 2025;76(3) 203-210
https://roczniki.pzh.gov.pl/ https://doi.org/10.32394/rpzh/211544

REVIEW ARTICLE

ANTI-INFLAMMATORY FOOD PRODUCTS AND THE SEVERITY OF MENSTRUAL PAIN: A NARRATIVE REVIEW

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ABSTRACT

Menstruation is a natural physiological process in healthy women of reproductive age, often accompanied by physical and psychological symptoms that can impair daily functioning and quality of life. Given the established role of oxidative imbalance in menstrual discomfort, dietary products rich in anti-inflammatory and antioxidant compounds may offer a non-pharmacological approach to symptom management. However, to date, this area remains insufficiently explored in the literature. The aim of this narrative review was to assess the relationship between the consumption of foods with anti-inflammatory potential and the severity of menstrual pain. PubMed, ScienceDirect, and Web of Science were searched from inception to May 2025 using following keywords: "anti-inflammatory products", "whole grains", "fish", "seafood", "vegetables", "fruits", "legumes", "nuts", "seeds", "olive oil", "fats", "menstruation", "primary dysmenorrhea". Reference lists of included studies were also reviewed manually. Nine relevant studies were identified in the literature review (1 meta-analysis, 2 case-control, and 6 cross-sectional studies). The results showed that whole grains and fish consumption may be inversely associated with menstrual pain, though findings were inconsistent. While one meta-analysis on fruit and vegetable consumption and severity of menstrual pain found no significant association, several other studies reported a protective association with higher/more frequent intake. Evidence on legumes was inconclusive. No studies to date assessed the association between olive oil, nuts, and seeds and menstrual symptoms. Interpretation of findings was limited by methodological heterogeneity, including differences in dietary assessment, symptom measurement tools, and participant characteristics. Preliminary evidence suggests that the anti-inflammatory foods, such as whole grain, vegetables, and fish may help alleviate the severity of menstrual pain, but the current evidence is inconsistent. However, the number of studies published in this area to date is limited and generally of low quality. Therefore, further high-quality research is needed to clarify these associations.

Keywords: *anti-inflammatory products, diet, menstruation, primary dysmenorrhea, women*

INTRODUCTION

Menstruation is a natural physiological process that occurs in healthy women of reproductive age. In many cases, hormonal and physiological changes during the menstrual cycle are accompanied by various symptoms, which can be categorized as either physical or psychological. The most reported complaint is cramping pain in the lower abdomen. Other frequent symptoms include back pain, headaches, nausea, diarrhea, and general malaise [1]. The intensity and duration of menstrual symptoms can vary greatly among individuals, depending on factors such as individual sensitivity, hormonal balance, and overall health status. These symptoms may last from a few hours to several days [2-4]. Depending on their severity, menstrual symptoms may negatively affect daily functioning and quality of life [3, 5].

The pathophysiology of menstrual pain and related symptoms is not yet fully understood. However, recent theories emphasize that the severity of menstrual symptoms may be linked to inflammatory processes and oxidative stress that occur as part of the normal menstrual cycle in the endometrium. In the luteal phase, the decline in progesterone levels initiates the release of arachidonic acid and its pro-inflammatory metabolites (such as prostaglandins and leukotrienes), which contribute to vasoconstriction, uterine contractions, and ischemia. This cascade not only induces menstrual pain but is also associated with the generation of reactive oxygen species (ROS) and subsequent oxidative stress, which may amplify

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Publisher: National Institute of Public Health NIH - National Research Institute

inflammatory responses and discomfort [6, 7]. Primary dysmenorrhea, which is defined as painful, spasmodic cramps in the lower abdomen occurring during and/or before menstruation, in the absence of detectable macroscopic pelvic pathology [1], is one of the most common manifestations of these mechanisms. Szmidt et al. [8], in a systematic literature review that included six case-control studies (175 women with dysmenorrhea and 161 women in the control group), found that women with dysmenorrhea compared to the control group had higher levels of oxidative stress markers, such as 3-nitrotyrosine, protein carbonylation, 8-hydroxy-2'-deoxyguanosine, nitric oxide, and asymmetric dimethylarginine. Moreover, the authors noted limited evidence suggesting lower antioxidant status in women with dysmenorrhea compared to those without such symptoms. Only one study [9] assessed high-sensitivity C-reactive protein, making it impossible to draw conclusions about systemic inflammation in women with dysmenorrhea.

Given the established role of oxidative imbalance in menstrual discomfort, dietary strategies rich in anti-inflammatory and antioxidant compounds may offer a supportive, non-pharmacological approach to symptom management. However, to date, this area remains insufficiently explored in the literature. Thus, the aim of this narrative review was to assess the relationship between the consumption of foods with anti-inflammatory potential and the severity of menstrual symptoms.

METHODS

Review methodology was based on Academy of Nutrition and Dietetics checklist for narrative review [10]. A comprehensive search of the PubMed, ScienceDirect, and Web of Science databases was performed, covering all records available from inception of each database until May 2025. The keywords used to identify relevant studies included: "anti-inflammatory products", "whole grains", "fish", "seafood", "vegetables", "fruits", "legumes", "nuts", "seeds", "olive oil", "fats", "menstruation", and "primary dysmenorrhea". Additionally, to identify studies that may have been missed during the database search, the reference lists of selected publications were manually reviewed.

Inclusion criteria and data extraction

The following inclusion criteria were adopted for this review: (1) type of study: case-control, cross-sectional, interventional studies, or meta-analyses; (2) participants were women of reproductive age; (3) the authors of the study specified a method for assessing the severity and/or pain associated with menstruation; (4) the publication was written in either Polish or English. From the eligible studies, the following data were extracted and presented in tables: type of study, characteristics of the study population, method of assessing menstrual pain and/or severity, method of dietary assessment, and selected results. Additionally, for the purposes of this review, methodological issues identified in the reviewed publications were included in the tables under the column labelled "Notes".

Quality assessment

The quality of the studies was assessed using the Newcastle-Ottawa Quality Assessment Scale (NOS) accordingly for case-control studies [11] and for cross-sectional studies [12], as presented in Table 1. The NOS rates studies according to three pre-defined criteria: selection, comparability, and exposure, where nine points reflect the highest quality of case-control studies.

NARRATIVE REVIEW

Based on the premise that the pathophysiology of menstrual symptoms is likely driven by oxidative stress and oxidative imbalance in the female body, this literature review concentrates on the intake of foods with potential anti-inflammatory properties and their potential association with the mitigation of menstrual symptom severity.

The concept of an "anti-inflammatory diet" remains inadequately defined in the existing literature, though common examples include the Mediterranean diet and the Dietary Approaches to Stop Hypertension (DASH) diet [13]. The Mediterranean diet is typically characterized by a high consumption of whole grains, fruits, vegetables, legumes, and nuts; moderate intake of poultry, fish, and red wine; limited consumption of red and processed meats; and the use of olive oil as the primary source of dietary fat. Similarly, the DASH diet emphasizes high intakes of whole grains, fruits, vegetables, and nuts, sharing many nutrient-rich, anti-inflammatory elements with the Mediterranean diet. The rationale behind anti-inflammatory diets lies in their rich content of dietary fiber, unsaturated fatty acids, antioxidants, and polyphenols, which have the capacity to positively influence the inflammatory cascade by inhibiting the production of cytokines, reducing oxidative stress, and modulating the gut microbiota.

Whole grains

Whole grains exhibit anti-inflammatory properties due to their high content of dietary fiber (particularly soluble fiber and resistant starch), and bioactive compounds (such as phenolic acids, flavonoids, lignans, and quercetin). This components promote beneficial gut microbiota, reduce oxidative stress, decrease levels

Table 1. Quality assessment of studies

Case-control studies					
Authors	Selection (max. 4 points)	Comparability (max. 2 points)	Exposure (max. 3 points)	Total points (max. 9 points)	Quality assessment[a]
Di Cintio et al., 1997 [22]	2	1	3	6	Medium
Zeru and Muluneh, 2020 [27]	1	2	2	5	Medium
Cross-sectional studies					
Authors	Selection (max. 5 points)	Comparability (max. 2 points)	Exposure (max. 3 points)	Total points (max. 10 points)	Quality assessment[a]
Balbi et al., 2000 [21]	0	0	2	2	Low
Nagata et al., 2005 [30]	4	2	3	9	High
Tavallaee et al., 2011 [26]	2	0	3	5	Medium
Grandi et al., 2012 [23]	2	2	3	7	High
Onieva-Zafra et al., 2020 [29]	3	0	3	6	Medium
Al-Husban et al., 2022 [19]	2	2	2	6	Medium

[a]Case-control studies (range of total points 0-9): 0 to 3 points – low-quality study, 4 to 6 points – medium-quality study, and 7 to 9 points – high-quality study. Cross-sectional studies (range of total points 0-10): 0 to 3 points – low-quality study, 4 to 6 points – medium-quality study, and 7 to 10 points – high-quality study.

of systemic inflammatory markers such as CRP, IL-6, and TNF-α, and have been shown to decrease the risk of female reproductive conditions [14-18].

The relationship between the consumption of whole grain products and the severity of menstrual pain was analyzed in two studies of medium quality, including one case-control study and one cross-sectional study – Table 2. A significant association was found only in the study by Al-Husban et al. [19], which examined 660 women aged 18 to 25. The findings revealed that women who experienced severe menstrual pain were significantly more likely to report not consuming whole grain products compared to those with moderate pain (57.9% vs. 42.1%, p = 0.021).

Fish

Fatty fish are rich in omega-3 fatty acids, which help reduce inflammation by modulating immune responses and inhibiting pro-inflammatory mediators like cytokines and eicosanoids [20]. Findings on the relationship between fish consumption and menstrual pain are also inconclusive (Table 3). Balbi et al. [21] in a study of low quality reported that women experiencing menstrual pain consumed fish significantly less frequently per week compared to women without such symptoms (1.6 ± 1.3 vs. 2.3 ± 1.5 times/week, p = 0.010). Similarly, Al-Husban et al. [19] in a study of medium quality found that a significantly higher proportion of women with severe menstrual pain, compared to those with moderate pain, did not consume fish (57.5% vs. 42.5%, p = 0.004).

In contrast, both Di Cintio et al. [22] in a case-control study of medium quality and Grandi et al. [23] in a cross-sectional study of high quality reported no significant associations between fish consumption (including frequency) and the severity or intensity of menstrual pain. It is important to note that in both studies, the authors did not specify the portion size corresponding to a single serving**.**

Vegetables and fruits

Fruits and vegetables are rich in phenolics, flavonoids, carotenoids, vitamins, and minerals, which modulate inflammation by regulating inflammatory cytokines (e.g., interleukins) and inhibiting key signalling pathways such as NFκB. These compounds act as natural antiinflammatory agents, reducing proinflammatory gene expression and oxidative stress to support overall immune health [24]. However, results from a meta-analysis published in 2022, which included four cross-sectional studies examining fruit and vegetable intake, indicated no significant association between the consumption of these foods and menstrual pain (OR = 0.98, 95% CI: 0.76-1.25, p > 0.05) [25] – Table 3. Di Cintio et al. [22], in a medium quality study not included in the meta-analysis, also did not found significant association between the frequency of fruit and vegetable consumption and the occurrence of bothersome menstruation.

In contrast, four other studies not included in the meta-analysis reported differing results [19, 21, 26-27] – Table 4. In a medium quality case-control

Table 2. Research findings on the impact of frequency and quantity of whole grain products consumption on the severity of menstrual pain

Authors (country)	Type of study	Study groups (age, BMI)	Assessment of menstrual pain	Dietary assessment	Results	Notes
Di Cintio et al., 1997 [22] (Italy)	Case-control	Study group: moderate or severe menstrual pain n = 106 (median age: 27 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%) Control group: no menstrual pain n = 145 (median age: 26 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%)	Andersch and Milsom Scale	Scale of whole grain bread consumption (from occasional to high)	High vs. low whole grain product consumption: RR = 1.8 (95% CI: not reported), p > 0.05	- Portion size not specified. - RR adjusted for age, education, smoking, and selected menstruation-reyearsed characteristics.
Al-Husban et al., 2022 [19] (Jordan)	Cross-sectional	n = 660 (age range: 18-25 years, BMI: 22.4 ± 3.6 kg/m^2 for moderate pain group, BMI: 22.1 ± 3.6 kg/m^2 for severe pain group)	Menstrual pain: moderate, severe	Frequency of whole grain product consumption (from never to > 4 times per week)	Moderate vs. severe menstrual pain: (% women non-consuming): 42.1 vs. 57.9%, p = 0.021	-

RR – risk ratio

Table 3. Summary of research findings on the impact of frequency and quantity of fish consumption on the severity of menstrual pain

Authors (country)	Type of study	Study groups (age, BMI)	Assessment of menstrual pain	Dietary assessment	Results	Notes
Di Cintio et al., 1997 [22] (Italy)	Case-control	Study group: moderate or severe menstrual pain n = 106 (median age: 27 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%) Control group: no menstrual pain n = 145 (median age: 26 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%)	Andersch and Milsom Score	Frequency of fish consumption (times/week)	Study vs. control group (median): 1 vs. 1 time/week, p = 0.92	-
Balbi et al., 2000 [21] (Nepal)	Cross-sectional	n = 356 (age range: 14-21 years; BMI: not provided)	Menstrual pain: VAS (mild, moderate, severe)	Frequency of fish consumption (times/week)	Painful menstruation vs. no symptoms (mean ± SD): 1.6 ± 1.3 vs. 2.3 ± 1.5 times/week, p = 0.010	-
Grandi et al., 2012 [23] (Italy)	Cross-sectional	n = 408 women (mean age: 22.9 ± 3.0 years; BMI: 20.9 ± 2.8 kg/m^2)	Menstrual pain: VAS (mild, moderate, severe)	Fish consumption (no specification provided)	Painful menstruation vs. no symptoms (% consumers) 95.0% vs. 95.4%, p = 0.907	-
Al-Husban et al., 2022 [19] (Jordan)	Cross-sectional	n = 660 (age range: 18-25 years; BMI: 22.4 ± 3.6 kg/m^2 for moderate pain group, BMI: 22.1 ± 3.6 kg/m^2 for severe pain group)	Menstrual pain: moderate, severe	Frequency of fish consumption (from never to > 4 times/week)	Moderate vs. severe menstrual pain (% of non-consuming women): 42.5 vs. 57.5%, p = 0.004	-

SD – standard deviation; VAS – Visual Analogue Scale

study conducted among 86 Ethiopian adolescents experiencing severe menstrual pain and 166 girls without menstrual pain, Zeru and Muluneh [27] found that those who consumed fruits and vegetables at least once daily had a 68% lower risk of experiencing menstrual pain compared to those who did not consume these foods (95% CI: 2-89%, p < 0.05).

Tavallaee et al. [26], in a medium quality cross-sectional study involving 276 women, found a significant negative correlation between fruit and vegetable intake and the severity of menstruation

Table 4. Summary of research findings on the impact of frequency and quantity of vegetable and fruit consumption on the severity of menstrual pain

Authors (country)	Type of study	Study groups (age, BMI)	Assessment of menstrual pain	Dietary assessment	Results	Notes
Di Cintio et al., 1997 [22] (Italy)	Case-control	Study group: moderate or severe menstrual pain n = 106 (median age: 27 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%) Control group: no menstrual pain n = 145 (median age: 26 years; BMI: < 20 kg/m^2 – 45%, > 20 kg/m^2 – 55%)	Andersch and Milsom Score	Frequency of vegetable and fruit consumption (times/week)	Study vs. control group (median): - green vegetables (overall): 7 vs. 7 times/week, p = 0.62 - fruits: 8 vs. 10 times/week, p = 0.18 - potatoes: 1 vs. 1 time/ week, p = 0.38	-
Balbi et al., 2000 [21] (Nepal)	Cross-sectional	n = 356 (age range: 14-21 years, BMI: not provided)	Menstrual pain: VAS (mild, moderate, severe)	Frequency of fruit consumption (times/week)	Painful menstruation vs. no symptoms (mean ± SD): 4.7 ± 4.1 vs. 6.5 ± 3.7 times/ week, p = 0.037	-
Tavallaee et al., 2011 [26] (Iran)	Cross-sectional	n = 276 (age range: 16-56 years; mean age: 29.5 ± 6.0 years; BMI: mean 21.6 ± 3.0, 18.5-24.99 kg/m^2 – 70.7%, ≥ 25.0 kg/m^2 – 13.4%)	Andersch and Milsom Score	Fruit and vegetable consumption (from never to very high)	Severity vs. consumption: R_S: -0.27, p < 0.01 Very high vs. never/low consumption: OR = 0.20 (95% CI: 0.08-0.50), p < 0.01	-
Zeru and Muluneh, 2020 [27] (Ethiopia)	Case-control	Study group: severe menstrual pain preventing participation in school activities n = 86 (age range: 13-19 years; BMI: < 18.5 kg/m^2 – 27,9%; 18.5-24.99 kg/m^2 – 72.1%) Control group: no menstrual pain n = 166 (age range: 13-19 years; BMI: < 18.5 kg/m^2 – 34.9%; 18.5-24.99 kg/m^2 – 65.2%)	Menstrual pain: author's definition*	Frequency of fruit and vegetable consumption (never; < 1 time/day; ≥ 1 time/day)	< 1 time/day vs. never: OR = 0.92 (95% CI: 0.37-2.31), p > 0.05 ≥ 1 time/day vs. never: OR = 0.32 (95% CI: 0.11-0.98), p < 0.05	No information provided on what the model was adjusted for.
Al-Husban et al., 2022 [19] (Jordan)	Cross-sectional	n = 660 (age range: 18-25 years; BMI: 22.4 ± 3.6 kg/m^2 for moderate pain group, BMI: 22.1 ± 3.6 kg/m^2 for severe pain group)	Menstrual pain: moderate, severe	Frequency of fruit consumption (at least 3 servings/ day – yes/no response)	Moderate vs. severe menstrual pain (% of women not consuming at least 3 servings/day): 43.8 vs. 56.2%, p = 0.006	-
Wang et al., 2022 [25] (China)	Meta-analysis (4 cross-sectional studies)	Study group: n = 884 (age: not provided, BMI: not provided) Control group: n = 632 (age: not provided, BMI: not provided)	Menstrual pain: no specification provided	-	Study vs. control group: OR: 0.98 (95% CI: 0.76-1.25), p > 0.05	-

OR – odds ratio; CI – confidence interval; R_s – Spearman's correlation coefficient; SD – standard deviation; VAS – Visual Analogue Scale; *Primary dysmenorrhea was defined as crampy menstrual abdominal pain that begins shortly before or after the onset of menstruation and lasts from 12 hours to 3 days. School absenteeism among young female students due to painful menstruation was used as a criterion for classifying severe menstrual pain

(RS = -0.27, p < 0.01). Women with very high fruit and vegetable consumption (portion size not specified by the authors) had an 80% lower risk of experiencing bothersome menstruation compared to women with low or no consumption (95% CI: 50-92%, p < 0.01).

In a cross-sectional study of medium quality, Al-Husban et al. [19] observed that a greater proportion of women with severe menstrual pain, compared to those with moderate pain, did not consume at least three servings of fruit per day (56.2% vs. 43.8%, p = 0.006). These findings are consistent with those reported by Balbi et al. [21], who found that women experiencing menstrual pain had a 25% lower average weekly fruit intake compared to women without pain (4.7 ± 4.1 vs. 6.5 ± 3.7 times/week, p = 0.037).

Table 5. Summary of research findings on the impact of frequency and quantity of dry legume seeds consumption on the severity of menstrual pain

Authors (country)	Type of study	Study groups (age, BMI)	Assessment of menstrual pain	Dietary assessment	Results	Notes
Nagata et al., 2005 [30] (Japan)	Cross-sectional	n = 276 (age range: 19-24 years; BMI mean: 20.3 ± 2.2 kg/m^2)	Andersch and Milsom Score	Total consumption amount: miso soup, tofu, fried tofu, fried bean paste, dry bean paste, fermented soybeans, houba-miso, soy drink, cooked soybeans (g/day)	Consumption vs. menstrual severity: R_S = -0.05, p = 0.39	R_S adjusted for dietary energy intake, age, smoking status, and age at menarche.
Onieva-Zafra et al., 2020 [29] (Spain)	Cross-sectional	n = 311 (mean age: 21.2 ± 2.6 years; BMI: 22.4 ± 3.2 kg/m^2, 18.5-24.99 kg/m^2 – 78.8%, ≥ 25.0 kg/m^2 – 15.7%)	Presence of menstrual pain: yes/no VAS (mild, moderate, severe)	Likes dry legume seeds and consumes them more than once a week.	Women with menstrual pain vs. women without pain: > 1 times/week vs. < 1 time/week ↑OR = 2.32 (95% CI: 1.01-5.35), p < 0.05	OR adjusted for age, BMI, and use of hormonal contraceptives.

BMI – body mass index; OR – odds ratio; CI – confidence interval; R_S – Spearman's correlation coefficient; VAS – Visual Analogue Scale

Legumes

Legumes are a source of different types of phytochemicals. For example, contain saponins, which exhibit anti-inflammatory effects by suppressing the transcription of inflammatory cytokine genes [28]. To date, two cross-sectional studies have been published that examined the association between the consumption of dried legumes and the occurrence of bothersome or painful menstruation (Table 5). Onieva-Zafra et al. [29], in a medium quality study conducted among 311 Spanish women (mean age: 21.2 ± 2.6 years), found that consuming dried legumes at least once per week, compared to less frequent consumption, was associated with more than a twofold increased risk of experiencing menstrual pain (OR = 2.32, 95% CI: 1.01-5.35; p < 0.05). In contrast, Nagata et al. [30], in a high-quality study involving 276 Japanese women aged 19 to 24, found no significant correlations between the consumption of foods made from dried legumes and the severity of menstruation.

Other food products

Olive oil is considered one of the key nutritional components responsible for the beneficial effects of the Mediterranean diet, especially by reducing levels of inflammation markers as IL-6 [31]. Nuts and seeds, similarly to olive oil have high content of unsaturated fatty acids and phenolic compounds with antioxidant and anti-inflammatory properties [32]. However, despite their well-documented role in supporting anti-inflammatory processes, there is currently a lack of studies specifically investigating the relationship between the intake of olive oil, nuts, seeds and the severity of menstrual symptoms. Therefore, their potential role in modulating menstrual symptoms remains unclear and warrants further research.

It should be noted that, apart from the potential impact of selected anti-inflammatory foods, the overall quality of the diet may also contribute to menstrual health and pain perception. This factor, although important, was beyond the scope of our review and thus was not analyzed in detail.

RESEARCH GAPS AND FUTURE DIRECTIONS

This review aimed to present the current state of knowledge as well as highlight methodological issues identified in available literature. To date, only a very limited number of studies have examined the association between the consumption of foods with anti-inflammatory potential and menstrual symptoms (eight original studies and one meta-analysis). Specifically, two studies investigated whole grains [19, 22], four studies fish [19, 21-23], six studies fruits and vegetables (including one meta-analysis) [19, 21, 22, 25-27], and two studies legumes [29-30]. Importantly, no studies were identified on olive oil, nuts, or seeds. The existing publications were further limited to the assessment of menstrual pain only, without addressing other symptoms that contribute to the overall burden of menstruation, such as back pain, headache, nausea, diarrhea, or general malaise [1, 4-5].

Several methodological concerns hinder the comparability of available findings. Even when limited to menstrual pain, studies applied different measurement tools, not all of which were validated. Some authors used their own definitions of menstrual pain [27], while others did not clearly specify the criteria for categorizing mild versus severe pain [19]. Additional limitations include the wide age range of

participants (from adolescents to adult women), which may affect symptom severity and food consumption, and the heterogeneous reporting of BMI. In most studies, BMI was presented in different formats (mean values, subgroup means, or proportions of underweight participants) and was not always included as a covariate. This is important limitation, as obesity is a pro-inflammatory condition that increases the risk of comorbidities associated with oxidative stress and systemic inflammation [33], while underweight, on the other hand, is linked to reduced hormone secretion due to insufficient body fat stores [34]. Other methodological issues include inconsistent classification of food items into food groups, insufficiently described statistical analyses, partial presentation of results, and relatively small sample sizes.

Future studies should address the identified research gaps. First and foremost, there is a need for more research in this area, not only because existing evidence is very limited, but also because women remain consistently underrepresented in clinical and nutritional studies [35]. In particular, there is no research on the effects of olive oil, nuts, and seeds on menstrual symptoms, despite the fact that these foods are well-known for their anti-inflammatory potential [32]. Studies, should also account for diet quality indices and dietary patterns rather than single food groups in their analyses to better capture the complexity of diet–health interactions. Moreover, future research should expand beyond menstrual pain to investigate the impact of diet on the broader spectrum of menstrual symptoms and overall menstrual burden. Importantly, well-designed interventional studies with standardized and validated outcome measures are needed to provide stronger evidence and to evaluate causal relationships between anti-inflammatory foods and menstrual symptoms. Furthermore, interactions with other lifestyle factors (physical activity, stress, sleep quality) and individual differences (hormonal status, genetic factors, gut microbiota) should also be considered in order to better understand the complexity of diet–menstrual health relationships.

CONCLUSIONS

The current evidence on the relationship between anti-inflammatory foods and the severity of menstrual pain is inconsistent. Some studies suggest that higher intake of whole grains, fish, fruits, and vegetables may be associated with reduced pain, while others report no significant associations. However, it should be noted that the number of studies published in this area to date is limited and generally of low quality. Therefore, further high-quality research using standardized methods is needed to clarify these associations and support evidence-based dietary recommendations for menstrual health.

Acknowledgements

This work was funded by the Polish Ministry of Science and Higher Education within funds of the Faculty of Human Nutrition, Institute of Human Nutrition Sciences, Warsaw University of Life Sciences (WULS-SGGW) for scientific research.

Conflict of interest

The authors declare no conflict of interest.

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Received: 25.07.2025
Revised: 14.09.2025
Accepted: 30.09.2025
Published online first: 06.11.2025