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THE IMPACT OF SELECTED DIETS AND NUTRIENTS ON THE DEVELOPMENT AND PROGRESSION OF ENDOMETRIOSIS: A LITERATURE REVIEW

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ABSTRACT

Introduction: Endometriosis is a chronic inflammatory disease that significantly reduces women's quality of life, leading to chronic pain and infertility. Despite developments in research, there is still no effective treatment that can cure patients completely. Recent findings suggest that dietary interventions can alleviate symptoms and slow the progression of this disease.

Aim: The aim of this article is to review the latest research on the impact of specific diets and nutrients on endometriosis.

Material and methods: A literature review was conducted using the PubMed and Google Scholar databases. The analysis focused primarily on scientific publications published between 2016 and 2026.

Results: Recent reports indicate the role of dietary interventions in the treatment of endometriosis. It has been shown that certain nutrients can improve symptoms and slow the progression of the disease by reducing inflammation, lowering oxidative stress, and regulating estrogen levels. Appropriately selected dietary strategies can not only alleviate pain or help limit the growth of endometriotic lesions, but also improve fertility. However, despite the promising results, the available data are partially inconclusive and require additional clinical trials.

Conclusions: A properly tailored diet can be an important part of supporting endometriosis treatment. However, additional well-designed randomized trials are needed to unequivocally determine the impact and effectiveness of dietary interventions on the development and progression of this disease. The obtained data may contribute to the formulation of precise dietary recommendations.

KEYWORDS

Endometriosis, Diet, Nutrition, Complementary Treatment, Anti-inflammatory Foods, Nutritional Factor, Dietary Supplements

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Introduction

Endometriosis is a chronic, hormone-dependent inflammatory disease in which endometrial glands and stroma develop outside the uterine cavity. (Neri et al., 2025) Data indicate that approximately 10% of women of reproductive age worldwide currently have the disorder. However, among women with painful menstruation, the prevalence is 30–40%. (Martire et al., 2025)

The symptoms of endometriosis are very diverse, depending on the stage of the disease and the location of the endometriotic lesions. However, the main problems reported by patients include: chronic pelvic pain, dysmenorrhea, infertility, dyspareunia, painful bowel movements, fatigue, depression, and symptoms of irritable bowel syndrome (IBS). (Muharam et al., 2025) Because the clinical presentation of this disease is non-specific, diagnosis is often delayed. (Barnard et al., 2023) Furthermore, infertility is one of the most common complications of endometriosis, affecting up to 50% of patients. (Elizur et al., 2025)

To date, the exact cause of endometriosis has not been established. It is assumed that immunological, hormonal, environmental and genetic factors play a role in its development. Consequently, there are still no therapeutic options that completely cure patients with this disease. (Abramiuk et al., 2024; Habib et al., 2022) Current treatment methods primarily focus on reducing patients' pain. To this end, appropriate medication is primarily used. In more advanced stages of endometriosis, laparoscopic surgery is used to remove endometriotic lesions. (Abulughod et al., 2024) However, the use of these methods does not exclude the possibility of a recurrence. Therefore, research continues to identify factors that can inhibit the development of endometriotic lesions and support the treatment process. (Neri et al., 2025)

Recently, a growing amount of evidence has indicated the significant role of diet in the development and treatment of endometriosis. Certain nutrients influence the inflammatory processes and oxidative stress associated with ectopic lesions, which may modify disease progression. (Martire et al., 2025) Additionally, diet can impact the endocrine system, particularly estrogen levels. (Cirillo et al., 2023) Some studies suggest that certain nutrients, particularly those rich in antioxidants, may help alleviate pelvic pain. (Sinha, 2017)

Despite extensive evidence suggesting that diet influences the development of endometriosis and supports its treatment, high-quality randomized trials are still needed to more accurately determine these relationships. The results obtained could serve as a basis for developing clear recommendations and guidelines for patients with this disease. (Abulughod et al., 2024)

The aim of this article is to review the latest research on the impact of selected diets and nutrients on the development and progression of endometriosis.

Material and Methods:

A review of articles on the impact of diet and nutrients on the development and progression of endometriosis was performed. For this purpose, the PubMed and Google Scholar databases were searched. The analysis primarily included articles published between 2016 and 2026. To identify older, relevant publications, a manual review of the reference lists was conducted to complete the search process. This review included original articles, review articles, meta-analyses, and case reports. Articles not written in English were excluded. The following keywords were used in the search: "endometriosis," "diet and nutrition," "dietary supplements," "antioxidant," "vitamin D," "vitamin C," "vitamin E," "pro-inflammatory diet," "Mediterranean diet," "anti-inflammatory diet," "low-FODMAP diet," "gluten-free diet," "curcumin," "N-acetylcysteine," "omega-3 fatty acids."

Treatment Options for Endometriosis

Currently, there is no treatment that can completely cure patients with endometriosis. The therapy primarily focuses on alleviating symptoms, particularly reducing pain. For this purpose, drug therapy and laparoscopic surgery are the main treatments used. Management is selected individually for each patient, taking into account their symptoms, the stage of the disease, and future reproductive plans. (Elizur et al., 2025; Saunders & Horne, 2021)

The main issues reported by patients include chronic pelvic pain, dysmenorrhea, and infertility. Despite advances in endometriosis research and the search for effective treatments, patients, especially those planning to become pregnant, still have limited management options. This is why there is a constant search for new therapeutic methods to support treatment and improve quality of life. (Muharam et al., 2025; Saunders & Horne, 2021)

Pharmacological Treatment

Pharmacological treatment involves hormonal therapy and symptomatic management. The primary goals are to reduce pain, slow progression of the disease, and induce regression of endometriotic lesions. (Smolarz et al., 2021) Hormone therapy suppresses ovulation and menstruation by reducing fluctuations in the levels of gonadotropic and ovarian hormones. (França et al., 2022) The following are used: combined oral contraceptives, progestins, danazol, levonorgestrel-releasing intrauterine systems, gonadotropin-releasing hormone (GnRH) agonists or antagonists, and aromatase inhibitors. (Elizur et al., 2025) For immediate relief of pain and to reduce inflammation, nonsteroidal anti-inflammatory drugs may also be used. Pharmacotherapy can be used as a standalone treatment, to prepare for surgery, or to prevent recurrence during the postoperative period. (Smolarz et al., 2021)

Oral contraceptives and progestins, which work by suppressing ovulation, are often the first choice. They offer many benefits: are readily available, inexpensive, generally well-tolerated, help reduce pain, and can be used long term. However, some women experience bothersome side effects, including irregular bleeding, weight gain, breast tenderness, and mood swings. This may lead to discontinuation of treatment. (Becker et al., 2017; França et al., 2022) For patients who do not wish to take pills, a levonorgestrel-releasing intrauterine device is also an option. It functions similarly to progestogen preparations, but it acts locally. (Smolarz et al., 2021) Second-line treatments include GnRH agonists, which inhibit gonadotropin secretion and thereby downregulate ovarian steroidogenesis. In this way, they cause a state of hypoestrogenism. However, this therapy is associated with side effects similar to those experienced during menopause. For this reason, it is only used for a short period of time. (Di Spiezio Sardo et al., 2025) In contrast, hyperandrogen treatment with danazol, although effective in lowering estrogen levels, is associated with numerous side effects resulting from increased androgen levels. (Becker et al., 2017) In cases of endometriosis that is resistant to drug therapy, aromatase inhibitors may be used in combination with other medications. (Boroncsok et al., 2026)

Hormonal therapy for endometriosis reduces pelvic pain and dysmenorrhea in many patients. No specific treatment has been shown to be more effective than others. (Di Spiezio Sardo et al., 2025) When selecting an appropriate method, patients' preferences and concerns should be considered. (Rolla, 2019)

However, there are still certain limitations to hormone therapy. A systematic review conducted in 2017 by Becker et al. found that 11%–19% of patients did not experience a reduction in pain symptoms following pharmacological treatment. (Becker et al., 2017) Additionally, hormone therapy is not recommended for pregnant patients or those planning to become pregnant. (Barnard et al., 2023) Therefore, there is a need to identify new therapeutic approaches that are highly effective while minimizing the risk of side effects.

Surgical treatment

For patients with severe pain or infertility, particularly those with deep infiltrating endometriosis (DIE), surgical treatment should be considered. (Boroncsok et al., 2026) In highly specialized centers, laparoscopic surgery is routinely performed, and an experienced team further reduces the risk of complications. The goal of surgical treatment is to remove all visible endometriotic lesions, repair damaged organs, and restore normal anatomy. (Bafort et al., 2020)

A multicenter, prospective study by Byrne et al. showed that women who underwent laparoscopic removal of rectovaginal endometriosis experienced reduced pelvic pain and dysmenorrhea six months after surgery. The patients' conditions continued to improve for two years after the procedure. (Byrne et al., 2018)

An important part of preparing for surgery is evaluating the extent of endometriotic lesions and considering the patients' expectations. Major surgery may be associated with complications, such as rectovaginal fistulas. Therefore, it is recommended that these procedures be performed at specialized centers. (Di Spiezio Sardo et al., 2025) Patients who do not plan to become pregnant in the near future are advised to take hormone therapy after surgery to reduce the risk of disease recurrence. (Boroncsok et al., 2026)

The Role of Diet in the Treatment of Endometriosis

A growing number of studies point to the role that diet and specific nutrients play in the development and progression of endometriosis. (Abramiuk et al., 2024; Neri et al., 2025; Roshanzadeh et al., 2023) While some dietary components may alleviate symptoms, others are associated with exacerbating them. (Martire et al., 2025) Women are also becoming increasingly aware of the impact of diet on the progression of endometriosis. A study conducted by Mazza et al. among Italian women found that 66% of them decided to change their eating habits after being diagnosed with endometriosis. (Mazza et al., 2023)

Diet has a complex effect on the mechanisms underlying endometriosis. It has been shown that dietary interventions can not only influence its development but also affect its progression, thereby reducing pain. (Boronsok et al., 2026) The nutrients influence chronic inflammation and excessive oxidative stress within endometriotic lesions, as well as hormonal balance and the composition of the gut microbiome. (Martire et al., 2025) As knowledge about the impact of nutrition on the course of the disease develops, taking supplements is becoming increasingly popular. (Bahat et al., 2022) Despite advances in research in this area, it remains unclear whether a properly selected diet is effective enough to serve as a standalone treatment. (Muharam et al., 2025)

Currently, increasing importance is being placed on a holistic approach to the treatment of endometriosis, one that includes not only medication and surgery but also a carefully tailored diet and supplementation. This method can bring many benefits to the patient, both in terms of symptom management and improved fertility. For this reason, it is also a good idea to include consultations with a dietitian in the treatment plan. (Barrea et al., 2025)

Below, we outline the impact of certain diets and nutrients on the development and alleviation of endometriosis symptoms.

The Mediterranean Diet

Among various diets, the Mediterranean diet shows particularly promising results, and following it can offer numerous therapeutic benefits. It is based on vegetables, fruits, seeds, nuts, and legumes, while the consumption of saturated fats and red meat is limited. (Martire et al., 2025)

In a study conducted by Cirillo et al., the Mediterranean diet in 35 women with endometriosis led to a reduction in pelvic pain, dyspareunia, and dyschezia. An increase in the levels of vitamins B12 and E, folic acid, and zinc was also observed. (Cirillo et al., 2023) This effect may be linked to high intake of omega-3 fatty acids, which exhibit anti-inflammatory effects by regulating and reducing prostaglandins and inflammatory cytokines, particularly interleukin-1 (IL-1), interleukin-2 (IL-2), interleukin-6 (IL-6), and tumor necrosis factor-alpha (TNF- α). Also of significant importance is a high intake of fruits and vegetables rich in antioxidants, which can limit damage caused by free radicals. (Abulughod et al., 2024; Cirillo et al., 2023; Helbig et al., 2021) Additionally, extra virgin olive oil contains oleocanthal, a compound with a molecular structure similar to ibuprofen. Both substances have cyclooxygenase-inhibiting properties. (Nirgianakis et al., 2021)

Due to its lack of side effects and other benefits, the Mediterranean diet may be recommended to endometriosis patients as a treatment aid. (Nirgianakis et al., 2021; Piecuch et al., 2022)

Anti-Inflammatory Diet

This diet is focused on consuming foods and ingredients with anti-inflammatory properties, as well as providing a high intake of polyphenols, anthocyanins, and isoflavones. To some extent, it resembles the Mediterranean diet, but it includes a greater variety of fruits and vegetables, fatty fish, lean meat, healthy fats, and anti-inflammatory spices, such as curcumin and ginger. (Boronsok et al., 2026)

The Dietary Inflammatory Index (DII) is used to evaluate the overall inflammatory potential of a diet. It considers the impact of food on inflammatory markers, such as C-reactive protein (CRP), IL-6, and TNF- α . (Abulughod et al., 2024) A cross-sectional analysis conducted by Liu et al. showed that consumption of a pro-inflammatory diet, characterized by a higher DII score, was associated with an increased risk of endometriosis. This study suggests that following an anti-inflammatory diet may be related to a lower likelihood of endometriosis. (Liu et al., 2023)

One study also showed that women with endometriosis who followed an anti-inflammatory diet before becoming pregnant may be at lower risk for preterm birth and perinatal complications. (Kyozyuka et al., 2021)

Low-FODMAP Diet

The basis of the low-FODMAP diet is the restriction of fermentable oligosaccharides, disaccharides, monosaccharides, and polyols (FODMAPs). In people with visceral hypersensitivity, these molecules are poorly absorbed in the intestines and easily fermented by gut bacteria. This leads to excessive gas production and intestinal distension, resulting in abdominal pain and discomfort. (Khan et al., 2025)

The low-FODMAP diet is recommended for people with visceral hypersensitivity, including those with irritable bowel syndrome (IBS). Patients with endometriosis often experience gastrointestinal symptoms similar to those of IBS, such as irregular bowel movements, bloating, and abdominal pain. This diet is used to alleviate these symptoms. (Abulughod et al., 2024) Additionally, the results of the meta-analysis indicate that the risk of IBS in patients with endometriosis is twice as high. (Chiaffarino et al., 2020) The overlap in gastrointestinal symptoms between the two conditions may suggest a shared pathophysiology. (Martire et al., 2025)

A retrospective study conducted by Moore et al. evaluated the effect of a low-FODMAP diet on 160 women diagnosed with IBS, 36% of whom had confirmed endometriosis. After four weeks on the diet, 72% of women with endometriosis reported improvement in gastrointestinal symptoms. By contrast, only 49% of patients with IBS alone reported improvement. (Moore et al., 2017)

A low-FODMAP diet may be recommended for patients with endometriosis who experience gastrointestinal symptoms. However, it is best to start this diet under the supervision of a dietitian. (Wilder et al., 2025)

Given the limited number of studies on the effects of this diet among patients with endometriosis, it is necessary to conduct randomized trials to assess its long-term effects.

Gluten-Free Diet

Both celiac disease and endometriosis are characterized by chronic inflammation. Levels of interferon-gamma (IFN- γ) and IL-6 are also elevated in both conditions. (Habib et al., 2022) It has been shown that following a gluten-free diet in patients with endometriosis may reduce pelvic pain and also have a beneficial effect on gastrointestinal symptoms. (Mazza et al., 2023) This is thought to be due to a reduction in the inflammatory response resulting from a decrease in the intake of gliadin proteins. (Brouns et al., 2023) However, the exact mechanism linking endometriosis to gluten has not been explained. (Abulughod et al., 2024) Moreover, there are few studies available on this topic.

A gluten-free diet can be challenging for patients because it requires finding gluten-free alternatives to certain foods, which are often more expensive. Additionally, it may carry a risk of fiber deficiency. (Mazza et al., 2023)

The Effect of Selected Nutritional Factors in the Treatment of Endometriosis

Vitamins C and E

Although the pathophysiology of endometriosis is not fully understood, it is generally assumed that oxidative stress plays an important role. It is defined as an imbalance between reactive oxygen species and biological antioxidants. (Amini et al., 2021) Antioxidants work by neutralizing reactive oxygen species. Therefore, increasing their levels in the body may be beneficial in the treatment of endometriosis by reducing oxidative damage. (Hoorsan et al., 2022)

Vitamin C is a strong antioxidant. It works by reducing free radicals and lowering oxidative stress. It also regulates inflammatory mediator levels. (Boroncsok et al., 2026) The human body cannot produce it on its own, so it must be obtained through food. (Piecuch et al., 2022) Research conducted on animals suggests that vitamin C may reduce the development of endometriotic lesions. (Erten et al., 2016; Hoorsan et al., 2022)

A study performed by Hoorsan et al. demonstrated that treatment with vitamin C in female mice with surgically induced ovarian endometriosis resulted in a reduction in the growth of endometrial implants. (Hoorsan et al., 2022) Another trial, conducted by Erten et al., also achieved similar results. In groups of rats with endometrial implants who were treated with vitamin C, the growth of lesions was reduced. (Erten et al., 2016)

Current research is evaluating the combined effects of vitamins C and E, due to their synergistic action. Vitamin E is also a strong antioxidant and has anti-inflammatory properties by inhibiting the production of prostaglandin E₂. (Abramiuk et al., 2024) In a randomized study conducted by Amini et al. involving patients diagnosed with endometriosis who received 1,000 mg/day of vitamin C and 800 IU/day of vitamin E for 8 weeks, a decrease in oxidative stress markers-malondialdehyde (MDA) and reactive oxygen species-compared to the control group was observed. Additionally, after 8 weeks of supplementation, a reduction in the severity

of pelvic pain, painful menstruation, and dyspareunia was also observed. (Amini et al., 2021) A meta-analysis conducted by Zheng et al. showed that supplementation with antioxidant vitamins alleviates pelvic pain in patients with endometriosis. However, the authors emphasize that the reliability of the results is limited due to the small number of studies. (Zheng et al., 2023)

Despite the promising results, additional randomized studies are needed to definitively determine the effect of vitamins C and E on endometriosis development and severity, as the number of available studies on this topic remains limited.

Vitamin D

Vitamin D is a fat-soluble vitamin that is mainly found in fatty fish, eggs, and liver. However, it is primarily produced in the skin when exposed to sunlight. (Abulughod et al., 2024) This vitamin acts as an immunomodulatory mediator, inhibits angiogenesis, increases levels of anti-inflammatory cytokines, and reduces levels of pro-inflammatory cytokines. (Sassi et al., 2018) It has also been shown that vitamin D receptors (VDRs) are present in the endometrium and ovaries, suggesting a local effect. Due to its properties and the presence of VDRs in the endometrium, this vitamin continues to be studied for its potential impact on the development and symptoms of endometriosis. (Muharam et al., 2025) In addition, studies examining plasma levels of this vitamin in patients with endometriosis have shown lower concentrations compared to the control group. (Miyashita et al., 2016; Yarmolinskaya et al., 2021)

Vitamin D may affect the inflammation associated with endometriosis by regulating pro-inflammatory cytokine levels, especially those of interleukin-17 (IL-17) and IL-6. A study by Burjiah et al. on mice implanted with endometriosis confirms this. The mice were divided into four groups and supplemented orally with vitamin D at doses of 8, 16, and 24 IU, respectively. The fourth group was the control one. After three weeks of treatment, the group that received 24 IU of vitamin D had significantly lower levels of IL-17 than the control. A reduction in endometriotic lesions was also observed in the groups receiving 16 and 24 IU of vitamin D. (Burjiah et al., 2022) Another study conducted by Akyol et al. on rats with induced endometriosis showed that vitamin D supplementation at a dose of 42 µg/kg/day significantly reduced IL-6 levels. (Akyol et al., 2016)

The effect of vitamin D on pain symptoms in patients with endometriosis was also evaluated. The results in this regard are conflicting. A trial conducted by Yarmolinskaya et al. showed that standard hormone therapy combined with vitamin D supplementation leads to a significant reduction in pelvic pain compared to hormone therapy alone. (Yarmolinskaya et al., 2021) Another randomized study of women with endometriosis who received 50,000 IU every two weeks for 12 weeks showed significant improvement in pelvic pain compared to the control group. (Mehdizadehkashi et al., 2021) These results are associated with the ability of vitamin D to reduce inflammatory mediators, particularly prostaglandins, in the endometrium. (Boronsok et al., 2026)

However, some authors did not observe a reduction in pain symptoms after vitamin D supplementation. In a study involving 38 patients with endometriosis who underwent surgery and received 50,000 IU once a week for 8 weeks after the procedure, no difference was observed in menstrual and/or pelvic pain. (Almassinokiani et al., 2016) These differences may be due to varying inclusion criteria, small group sizes, or differences in the dosage and frequency of vitamin D administration. (Yarmolinskaya et al., 2021) Therefore, further randomized trials involving large groups of patients are needed to clarify these inconsistencies.

Curcumin

Curcumin is a polyphenol found in turmeric, a spice derived from the plant *Curcuma longa*. It is used in the treatment of endometriosis due to its broad-spectrum anti-inflammatory, antioxidant, anti-angiogenic, and anti-cancer properties. (Hewlings & Kalman, 2017)

Curcumin may have multifaceted effects on the development and treatment of endometriosis. One study found that curcumin may inhibit the growth of endometrial cells by lowering estradiol levels. (Zhang et al., 2013) This is important because endometriosis is a condition that depends on estrogen. Additionally, it may also influence angiogenesis. In a study using endometrial cells, curcumin reduced the expression of vascular endothelial growth factor (VEGF). (Cao et al., 2017) It may also offer potential benefits to infertile women with endometriosis by reducing inflammation and improving folliculogenesis. (Hendarto et al., 2019)

However, the primary effect of curcumin comes from its ability to reduce inflammation. Treatment with curcumin significantly reduced the secretion of proinflammatory cytokines and chemokines in eutopic endometrial stromal cells obtained from patients with endometriosis. On the other hand, it increased the levels of interleukins 10 (IL-10) and 12 (IL-12), which have anti-inflammatory effects. (Chowdhury et al., 2018)

Although curcumin has low bioavailability, this can be improved by using liposomes or phospholipid complexes, (Vallée & Lecarpentier, 2020) as well as by taking it together with black pepper, which contains piperine. (Piecuch et al., 2022)

N-acetylcysteine

N-acetylcysteine (NAC) is a cysteine precursor. It has anti-inflammatory and antioxidant properties. Its antioxidant activity stems from the presence of a free thiol group, which neutralizes oxygen free radicals. NAC is also a precursor to another antioxidant, glutathione. (Yahia et al., 2024)

In a study of patients with ovarian endometriosis who were awaiting laparoscopic surgery, treatment with 600 mg of NAC three times a day, three days a week, was administered. The total duration of treatment was 3 months. After this period, a slight reduction in endometrial cysts (-1.5 mm) was observed in patients treated with NAC, compared to the control group, where there was a significant increase (+6.6 mm). Additionally, patients who underwent NAC therapy reported a significant reduction in pain symptoms. (Porpora et al., 2013)

Another trial conducted by Anastasi et al., included 120 female patients diagnosed with endometriosis. All of them began taking 600 mg of NAC three times a day, three consecutive days a week, for a total of three months. After this period, a significant reduction in menstrual pain, dyspareunia, and chronic pelvic pain was observed. In addition, six months after the start of treatment, 39 of the 52 women who had planned to have children became pregnant naturally, without the use of assisted reproductive technology. (Anastasi et al., 2023)

Omega-3 polyunsaturated fatty acids (Omega-3-PUFAs)

Polyunsaturated fatty acids (PUFAs) include omega-3 and omega-6 fatty acids. They are found mainly in fatty fish and vegetable oils. (Field & Robinson, 2019) Omega-6 fatty acids have pro-inflammatory effects, increasing levels of prostaglandins PGE2 and PGF2 α . In contrast, omega-3 fatty acids have anti-inflammatory, anti-angiogenic, and anti-proliferative properties, which is why their impact on endometriosis is currently being studied. (Bahat et al., 2022)

A study conducted by Hopeman et al., evaluated the effect of serum PUFA concentrations on the development of endometriosis. The levels of α -linolenic acid, eicosapentaenoic acid (EPA), docosahexaenoic acid, linoleic acid, and arachidonic acid were assessed. A trial involving 205 women, 24 of whom were diagnosed with endometriosis, showed that high serum EPA levels were associated with an 82% lower risk of receiving an endometriosis diagnosis. (Hopeman et al., 2014)

Omega-3 fatty acids may reduce inflammation associated with endometriosis. Studies have shown that taking supplements containing these fatty acids helps lower levels of IL-6 and TNF- α . (Abramiuk et al., 2024) They also influence the formation of endometrial adhesions. A study performed on mice whose diet was supplemented with fish oil two weeks prior to endometriosis implantation surgery and continued for one week after the procedure showed a reduction in the number of adhesions and endometriotic lesions. This is compared to mice that did not receive fish oil, in which a more extensive increase in endometrial changes was observed. (Herington et al., 2012)

The results regarding the effect of PUFAs on pain are inconclusive. A study involving 120 female students with primary dysmenorrhea showed an improvement in pain symptoms. In the first group, the patients took 1,000 mg of fish oil capsules throughout their entire menstrual cycle, while in the second group, the women took only ibuprofen when the pain began. The final results revealed that fish oil was more effective than ibuprofen at alleviating menstrual pain. (Zafari et al., 2011) A study of rats with induced endometriosis showed that omega-3 fatty acid supplementation reduced endometriosis-related pain. (Gomes Pereira et al., 2019)

However, Nodler et al. obtained different results. Among a group of young women with surgically confirmed endometriosis, the amount of pain relief experienced after six months of omega-3 supplementation was not statistically different from that experienced by the group that received a placebo. (Nodler et al., 2020) Therefore, further research is needed to confirm or exclude the impact of PUFAs on endometriosis-related pain.

Nutrients that influence the severity of symptoms and the progression of endometriosis

However, just as some diets and nutrients can improve patients' conditions, others can worsen their symptoms. It has been shown that a pro-inflammatory diet high in simple sugars, highly processed foods, and saturated fats increases the risk of endometriosis fourfold. Additionally, consuming more than two servings of red meat per day increases the risk by 56%. (Abulughod et al., 2024)

A high-fat diet may be associated with the development of endometriotic lesions and the progression of endometriosis. (Heard et al., 2016) This effect is linked to increased production of inflammatory markers, particularly IL-6, in response to dietary intake of trans fats found in processed foods or meat. In addition, excessive consumption of saturated fats can lead to elevated estrogen levels. (Habib et al., 2022) A conducted meta-analysis showed that women with higher intakes of red meat, trans fatty acids, and saturated fatty acids had a higher risk of being diagnosed with endometriosis. (Arab et al., 2022)

Alcohol is another factor that negatively affects the progression of endometriosis. It exacerbates chronic inflammation by increasing the activation of pro-inflammatory pathways. It also contributes to elevated estrogen levels in the blood by inhibiting aromatase activity. (Li Piani et al., 2022) Another problem is using alcohol to cope with pain. Patients with endometriosis are at a higher risk of developing alcohol-related disorders, which can exacerbate the disease. (Muharam et al., 2025)

The impact of caffeine consumption is not fully understood. On the one hand, caffeine is considered to affect the endocrine system, which may worsen endometriosis. However, studies on women have not shown a significant link between caffeine intake and endometriosis. (Chiaffarino et al., 2014; Kechagias et al., 2021)

The evidence regarding the impact of specific nutrients and diets on the progression of endometriosis is limited due to the small number of high-quality studies. (Abulughod et al., 2024)

Discussion

The treatment of endometriosis is a significant clinical challenge. The current standard of care includes drug therapy and surgery. However, despite promising results, these methods can be associated with numerous side effects. Therefore, there is an ongoing search for additional supportive therapies aimed at improving the quality of life for patients with this chronic disease. (Elizur et al., 2025)

The results of the analyzed studies indicate a link between diet and the development and progression of endometriosis. This association stems from diet's impact on chronic inflammation, oxidative stress, and estrogen metabolism. (Boronsok et al., 2026; Liu et al., 2023; Mazza et al., 2023) Available literature suggests that certain nutrients may have beneficial effects, such as reducing pain and limiting the development of endometriotic lesions. (Anastasi et al., 2023; Burjiah et al., 2022) On the other hand, pro-inflammatory products may increase the likelihood of developing the disease. (Heard et al., 2016; Martire et al., 2025)

In the reviewed literature, the Mediterranean diet has shown promising results in terms of its impact on the progression of endometriosis. (Martire et al., 2025) In a study of patients with this condition, a reduction in pain associated with the diet was observed. This effect is primarily attributed to the diet's anti-inflammatory and antioxidant properties. (Cirillo et al., 2023) Due to its favorable profile and lack of side effects, it may be recommended as an adjunctive treatment. (Nirgianakis et al., 2021) However, further research is needed to determine its efficacy and impact on endometriosis.

Regarding the anti-inflammatory diet, available studies suggest that it has a positive effect both in preventing endometriosis (Liu et al., 2023) and in reducing complications associated with preterm birth. (Kyozyuka et al., 2021) However, the amount of data in this area remains limited.

Studies on the effects of elimination diets on endometriosis have also shown promising results. (Mazza et al., 2023; Moore et al., 2017) Their beneficial effects may indicate that endometriosis shares a common pathophysiology with other conditions, such as IBS. However, these diets should be recommended primarily to patients with exacerbated gastrointestinal symptoms. (Wilder et al., 2025)

Many studies have also emphasized the importance of supplementing certain nutrients. Particular attention has been paid in this regard to vitamins D, E, and C, omega-3 fatty acids, and other polyphenols or antioxidants such as curcumin or NAC. (Abulughod et al., 2024; Bahat et al., 2022; Santanam et al., 2012) The beneficial effects of vitamins C and E may be related to their ability to reduce oxidative damage and limit inflammation. (Boronsok et al., 2026; Hoorsan et al., 2022) In trials, they reduced pain symptoms in patients. (Amini et al., 2021; Zheng et al., 2023) However, it should be noted that the number of such studies is limited.

Due to its immunomodulatory and anti-inflammatory properties, vitamin D may influence endometrial cell proliferation, angiogenesis, and levels of pro-inflammatory cytokines. (Sassi et al., 2018) However, results

regarding its efficacy in patients with endometriosis, particularly with regard to pain relief, are inconclusive. (Almassinokiani et al., 2016; Yarmolinskaya et al., 2021) These discrepancies may be due to varying study inclusion criteria, disease stage, or different doses of vitamin D.

A correlation has also been demonstrated between a pro-inflammatory diet, which is high in simple sugars, highly processed foods, and saturated fats, and an increased risk of endometriosis. (Abulughod et al., 2024) This may be due to the increased production of pro-inflammatory cytokines, which play a significant role in the pathogenesis of endometriosis. (Habib et al., 2022)

It should also be noted that dietary interventions are currently considered more of an adjunctive therapy than a standalone treatment for endometriosis. (Muharam et al., 2025; Nirgianakis et al., 2021) Certain foods may help reduce pain, improve fertility, or limit the progression of endometriotic lesions. (Martire et al., 2025) Based on the available research, it has not been possible to identify a single specific diet or nutrient that would have the best therapeutic effect. Therefore, the most appropriate approach appears to be a personalized one, taking into account the patient's medical history, the nature of her symptoms, and any accompanying conditions, such as gastrointestinal disorders or food intolerances. (Barrea et al., 2025)

The available literature presents promising, though not always conclusive, results, the analysis of which may be complicated by their considerable heterogeneity. Consequently, it may be difficult to compare the results. (Abramiuk et al., 2024; Nirgianakis et al., 2021) Further research is therefore needed to determine the effectiveness of specific diets and supplements on the development and progression of endometriosis. It is also important to determine the long-term effects of dietary interventions and the target group of patients who would benefit most from them. (Barrea et al., 2025; van Haaps et al., 2023) A more thorough understanding of these relationships could lead to the creation of standardized dietary recommendations for patients.

Conclusions

Endometriosis is a chronic inflammatory disease dependent on estrogen with a multifactorial etiology involving immunological, hormonal, environmental, and genetic factors. It significantly impacts patients' quality of life, primarily manifesting as chronic pain and infertility. Current treatment methods, which mainly involve pharmacotherapy and surgery, have numerous limitations and do not provide complete control over the disease's progression. Therefore, the search continues for factors that can inhibit its development and limit the formation of endometriotic lesions.

Many studies highlight the impact of diet on the development and progression of this disease. (Neri et al., 2025) An analysis of the available research indicates that diet may affect the pathophysiological processes associated with endometriosis, including chronic inflammation, oxidative stress, and hormonal imbalances.

The Mediterranean and anti-inflammatory diets have been shown to have a beneficial effect on the course of endometriosis. It has been demonstrated that they can help reduce inflammation and oxidative stress, thereby improving symptoms. For patients experiencing gastrointestinal symptoms, a low-FODMAP or gluten-free diet is worth considering. However, the number of studies on elimination diets for women with endometriosis is still limited.

Promising results have also been observed with the supplementation of certain antioxidants, polyphenols, vitamins, and polyunsaturated fatty acids. Due to their anti-inflammatory and antioxidant properties, they may offer potential benefits in improving the symptoms and progression of endometriosis.

At the same time, the effects of a pro-inflammatory diet are highlighted. There is an observed association between consuming highly processed foods, red meat, and foods high in simple sugars and saturated fats and an increased risk of developing endometriosis. Patients are advised to avoid these foods, as they may worsen the disease.

The studies did not identify a single specific nutrient or diet that would be most beneficial for supporting the treatment of endometriosis. The most optimal approach seems to be an individual one tailored to the patient, taking into account her medical history, lifestyle, and ability to follow medical recommendations. A holistic approach can optimize the therapeutic process. Therefore, when planning treatment and making recommendations, it is advisable to include a dietary consultation.

A significant proportion of the analyzed studies regarding the impact of diet on endometriosis demonstrated the potential benefits of specific dietary interventions. However, it should be noted that the available data have certain limitations resulting, among other things, from the limited number of studies, small study populations, the high heterogeneity of the groups, and differences in methodology. Therefore, additional well-designed clinical trials involving large groups of patients are needed to clarify the exact mechanisms by which diet influences the course and progression of this chronic disease. This would also allow for the development of specific dietary recommendations for patients.

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