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Adjunctive Interventions for Endometriosis: A Review of Current Literature

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Abstract

Background

Endometriosis is a complex disease that affects many women globally. The efficacy of medication is not at its best, despite advancements in therapeutic approaches. The need for further useful, evidence-based solutions grows along with theoretical knowledge. Among these, food, exercise, and psychological support all have a potential therapeutic role when combined with pharmaceuticals.

Aim

The aim of this article is to assess whether it is appropriate to treat physical activity, food, and psychological therapy as therapeutic interventions in a clinical environment and to investigate their function in treating endometriosis as a supplement to medication.

Review methods

A comprehensive analysis of research papers available on PubMed and Google Scholar was undertaken using the search terms encompassing the following keywords: endometriosis, endometriosis pain, endometriosis management, endometriosis treatment, diet, dietary intervention, anti-inflammatory diet, supplementation, psychotherapy, psychological intervention, pain management, exercises.

Key words: endometriosis, endometriosis pain, endometriosis management, endometriosis treatment, diet, dietary intervention, anti-inflammatory diet, supplementation, psychotherapy, psychological intervention, pain management, exercises

1. Introduction

Endometriosis is both a neuroinflammatory condition and an oestrogen-dependent inflammatory illness [12, 17]. Regardless of social class or cultural background, it is a complicated illness that impacts a large number of women worldwide from the start of their

first menstrual cycle (menarche) until menopause [10]. Nulliparity and early menarche are linked to a higher incidence of endometriosis [13]. Endometrium-like tissue, which is typically found solely in the uterine lining, grows outside the uterus in women with endometriosis, resulting in inflammation and the creation of scar tissue [10, 11]. This endometrial tissue is frequently found in the ovaries, the uterine muscle layer, and non-reproductive organs such the gastrointestinal tract, the urinary system, and the peritoneum. Endometriosis symptoms are caused by migratory endometrial tissue producing its own estrogen and interacting with the body's endocrine, musculoskeletal, circulatory, reproductive, and neurological systems [12]. Ovarian endometriotic cysts, deep-infiltrating endometriosis, and superficial peritoneal endometriosis are common forms of endometriosis [40]. Low birth weight, Mullerian abnormalities, early menarche, short menstrual cycles, increased menstrual flow, low body mass index, nulliparity, and genetic predisposition are risk factors for endometriosis [22]. Endometriosis is just as common as diabetes mellitus and other chronic illnesses. However, because of misdiagnosis, medical professionals' normalization of pelvic discomfort, and the use of hormonal contraception to suppress symptoms, the average period between the onset of symptoms and diagnosis is 10.4 years [5].

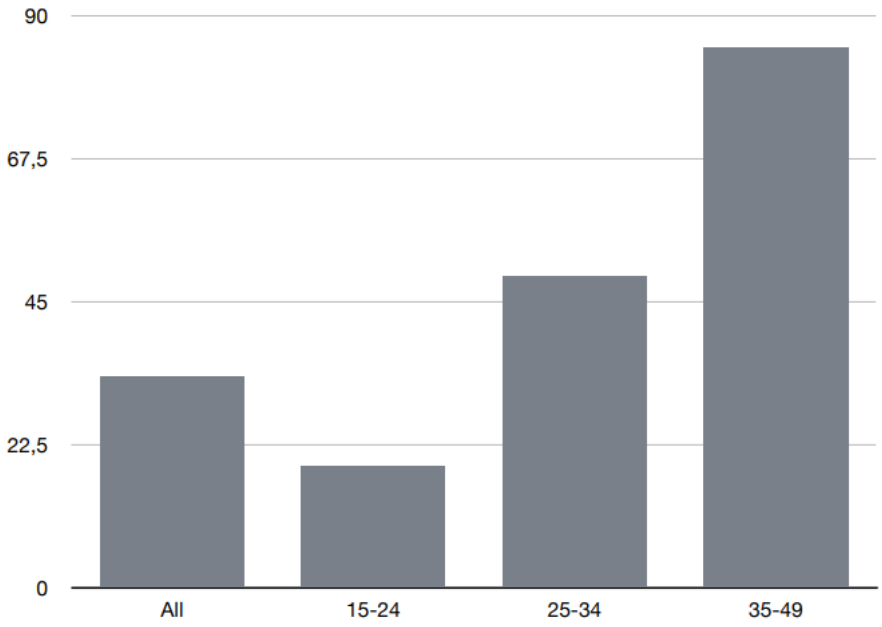
Questionnaires can be a great way to raise the saliency of endometriosis in a differential diagnosis for both individuals looking for a potential explanation for their symptoms and professionals who rarely see endometriosis [21]. There is currently no trustworthy serum manufacturer for this illness, and imaging still fails to identify a large portion of it. When it comes to endometriomas, ultrasound (US) offers good sensitivity and specificity and it is the method for imaging diagnosis of ovarian endometriomas. Recent advances include high-resolution magnetic resonance imaging (MRI) with rectal, vaginal, and bladder contrast. Treatment for endometriosis is difficult, and despite available treatments, endometriosis-related symptoms frequently reoccur [20,23]. In the distal regions of the pelvis, MRI may be a more effective detection method. Whereas ultrasonography is restricted by the transducer's range, an MRI provides a comprehensive image of the pelvic area. However, extensive endometriosis involvement in certain pelvic tissues may be clarified with the use of specialized pelvic ultrasonography [41].

Women from diverse racial and geographic backgrounds have variable endometriosis risks. Black women are 50% less likely than white women to receive an endometriosis diagnosis, according to an international meta-analysis [40].

2. Epidemiology

An estimated 10% (190 million) of women who are of reproductive age globally suffer with endometriosis its etiology and course of treatment remain unclear [10, 15]. The illness has gained more widespread recognition in recent years. The yearly rate of endometriosis diagnoses rose by 32% from 24.9 to 32.8 per 10,000 patients between 2017 and 2024. The rise across age groups ranged from 14% to 44%. The incidence of endometriosis per 100 patients in each age group is displayed in the graph below [39].

Figure 1. The incidence of endometriosis per 100 patients in each age group [39]



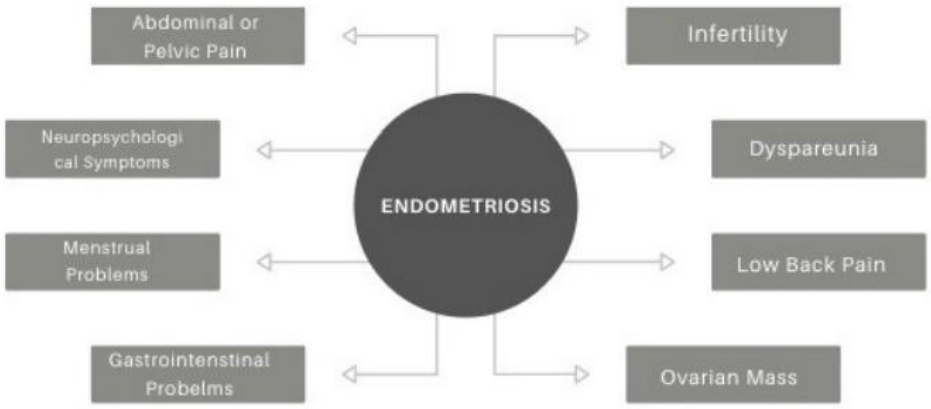
3. Endometriosis symptoms and discomfort

Dysmenorrhea, or discomfort that persists after the menstrual cycle finishes, is the most common symptom experienced by patients [23, 10], but may also have other symptoms such persistent pelvic discomfort, dyspareunia, dyschezia, and dysuria [23], infertility, bloating in the abdomen, and nausea. Additionally, it may be connected to depression, exhaustion and

gastrointestinal issues [17]. Despite the availability of medication, endometriosis is difficult to treat and recurrence of symptoms is frequent [23]. Cell proliferation, inflammation and neuroangiogenesis are mechanisms crucial to the survival and expansion of lesions as well as the generation of pain pathways [17]. Endometriosis symptoms affect everyday activities, appearance, emotional health, financial consequences, physical activity, sex-related consequences, sleep, social interactions, and obligations to one's job or education [5]. Nonetheless, some endometriosis-affected women do not exhibit any symptoms [23].

The graphic below illustrates the most common symptoms experienced by endometriosis patients [39].

Figure 2. The most common symptoms experienced by endometriosis patients [39]



Women with endometriosis frequently experience pain. Patients explain how different phases of their menstrual cycle exacerbate their agony. Pain can be felt at any point during the cycle, from ovulation to the middle of the cycle to a few days before the onset of the period, but it is most severe at the beginning. Over-the-counter medications can hardly alleviate the pain because it can be so intense [18]. Therefore, measuring pain is crucial for studying endometriosis, especially when evaluating medication response or disease progression. A preferred method for determining the degree of pain is to use an 11-point numeric rating scale (NRS), which ranges from 0 (no pain) to 10 (worst agony imaginable) [19].

Figure 3. An overview of the 2017 World Congress on Endometriosis shows pain classification depending on the phase of the cycle. [18]

Severe Pain	High Pain	Moderate Pain	Normal Pain
Period begins	Fews days until period	Ovulation	Mid cycle

4. Endometriosis Treatment

4.1 Pharmacological Treatment of Endometriosis

Pharmacological therapy represents a fundamental component of endometriosis management, with the primary goals of suppressing ovarian hormone production, reducing inflammation and alleviating pain. Current clinical guidelines emphasize the use of combined oral contraceptives and progestins as first-line therapy due to their ability to induce decidualization and atrophy of ectopic endometrial lesions, effectively reducing dysmenorrhea and dyspareunia [13,22]. When symptoms persist or hormonal intolerance occurs, gonadotropin-releasing hormone (GnRH) agonists and antagonists are recommended as second-line agents. These therapies create a controlled hypoestrogenic state, although their long-term use is limited by side effects such as vasomotor symptoms and bone mineral density loss [13, 22].

Advances in the understanding of endometriosis pathophysiology have prompted the development of new pharmacological strategies targeting inflammation, immune dysfunction and aberrant estrogen synthesis. Aromatase inhibitors and selective progesterone receptor

modulators are increasingly investigated for their potential to improve symptom control in refractory cases [11,12,13]. Despite ongoing progress, pharmacological therapy remains suppressive rather than curative, underscoring the need for individualized treatment pathways and combination approaches tailored to disease severity and patient preferences.

4.2 Physical Activity and Physiotherapy in the Management of Endometriosis

Physical activity and physiotherapy constitute core non-pharmacological components in the contemporary management of endometriosis. Due to the chronic and recurrent nature of the disease, therapeutic approaches increasingly emphasize strategies that improve functional capacity, reduce pain, modulate inflammatory activity, and support psychological well-being. Physical activity plays a dual role: as a structured, targeted intervention and as a broader lifestyle factor influencing hormonal balance, immune modulation and stress reduction. Physiotherapy, in turn, focuses on specific musculoskeletal and pelvic-floor dysfunctions typical for women with chronic pelvic pain.

The forms of physical activity prescribed for women with endometriosis fall into several well-defined therapeutic categories:

1. Aerobic training – such as walking, cycling, swimming or low-impact cardio. Aerobic exercise modulates inflammation, improves circulation and supports central pain inhibition. Regular aerobic activity is often recommended for reducing chronic pelvic pain and improving mood and energy levels [1]
2. Strength and resistance training – especially core and pelvic stabilizing exercises. These forms aim to reduce muscular imbalance, protect the lumbar-pelvic region and support postural stability compromised by chronic pain behaviors [1].
3. Flexibility and mobility exercises – including stretching, yoga-based routines and Pilates. These methods promote restoration of mobility in the pelvis, reduce myofascial tightness and support autonomic nervous system regulation. Many women with endometriosis adopt these modalities as part of self-management [4].
4. Mind-body exercise approaches – yoga, Pilates, deep-breathing exercises or gentle functional movement. These reduce sympathetic overactivity, support stress management and complement psychological interventions, offering holistic symptom relief [1].

Physiotherapy approaches are more specialized and address structural and functional impairments caused by chronic pelvic pain, inflammation and compensatory movement patterns:

1. Pelvic-floor physiotherapy – including pelvic-floor relaxation training, coordination exercises and biofeedback. Many women with endometriosis exhibit pelvic-floor hypertonicity, which can worsen dyspareunia and dysmenorrhea [8].
2. Myofascial release and manual therapy – targeting the abdominal wall, lumbar spine, hip musculature and pelvic diaphragm. Scar tissue, adhesions and chronic guarding patterns often lead to fascial restrictions [8].
3. Therapeutic exercise combined with education – physiotherapists increasingly employ structured programs integrating exercise, pain education, pacing strategies and self-management, as seen in recent intervention models [6].

Across the existing literature, physical activity emerges as a promising and increasingly recognized adjunctive therapy for women with endometriosis. The narrative review by Bonocher et al. synthesizes current knowledge by indicating that exercise may reduce endometriosis-related symptoms through anti-inflammatory effects, neuromuscular strengthening, improvement of circulation, and hormonal modulation, although the authors highlight the absence of unified exercise protocols and the need for methodological consistency [1]. Observational research further demonstrates that women with endometriosis tend to engage in significantly less moderate-to-vigorous physical activity than healthy controls, suggesting that fatigue, pain and diminished functional capacity may limit their movement behaviors and conditioning levels [2]. This behavioral reduction underscores the necessity for tailored exercise interventions that begin at a feasible baseline and gradually progress.

Barriers to physical activity have been examined in more detail in cross-sectional research, where women reported that pain, exhaustion and lack of energy were the most significant obstacles to regular exercise. Symptom severity was strongly correlated with reduced activity levels, indicating that physical activity recommendations must integrate pacing strategies, rest–activity cycles and individualized modification rather than rely on generic guidelines [3]. Despite these barriers, large-scale survey data show that many women independently incorporate physical activity into their self-management strategies, with those who exercise more frequently reporting lower pain intensity and higher overall functional well-being. This

observation suggests a natural inclination among patients to engage in movement therapies even without formal prescriptions [4].

Evidence from systematic reviews and meta-analyses further reinforces the therapeutic value of structured exercise programs. The available trials consistently demonstrate reductions in dysmenorrhea, chronic pelvic pain and dyspareunia, along with improvements in quality of life and psychological well-being. Importantly, these interventions are generally safe and well tolerated, with adverse events rarely reported. Nevertheless, both meta-analyses stress considerable heterogeneity in exercise type, dosage and intervention length, which continues to limit the comparability of findings and the development of standardized clinical recommendations [5,7]. Additionally, a recent systematic review reported inconsistent effects of exercise on pain perception, noting that evidence remains limited and heterogeneous [23]. Emerging intervention models, such as the CRESCENDO videoconference-delivered program, demonstrate the feasibility and acceptability of remote, structured exercise combined with endometriosis-specific education, offering solutions to logistical and pain-related barriers to participation [6]. In addition, a secondary analysis of a randomized controlled trial showed that a multimodal supervised therapeutic exercise program improved fatigue, sleep quality, mental health, gastrointestinal symptoms, and sexual function in women with endometriosis unresponsive to conventional therapy [16].

Incorporating exercise as part of a broader holistic approach can enhance overall well-being and coping strategies, complementing traditional treatment methods [24,26]. Furthermore, combining physical activity with integrative lifestyle interventions has been shown to support improvements in multiple health domains, including mental health and functional capacity [24]. Structured multimodal programs not only target physical symptoms but also foster patient engagement and self-management skills, reinforcing long-term benefits [26].

Physiotherapy-focused literature highlights the importance of pelvic-floor rehabilitation, manual therapy and functional retraining as integral components of multimodal care. Comprehensive reviews report that physiotherapy can relieve pelvic-floor hypertonicity, reduce pain associated with fascial and muscular restriction and improve postural alignment and movement efficiency, further complementing the effects of exercise-based interventions [8]. Beyond physical parameters, early pilot data indicate that regular physical activity may enhance psychological well-being, improving self-esteem and perceived quality of life in affected women [9]. Together, these findings depict physical activity and physiotherapy as

complementary tools that address the biological, functional and psychosocial dimensions of endometriosis.

4.3 Dietary Interventions in the Management of Endometriosis

Dietary interventions represent a complementary, non-pharmacological strategy in the management of endometriosis, aiming to reduce inflammation, modulate hormonal balance, improve gastrointestinal function and support overall health. Nutritional therapy is increasingly recognized as a way to influence disease symptoms, particularly pelvic pain, fatigue and quality of life, while potentially enhancing the effects of medical or surgical treatment.

Women with endometriosis may benefit from several specific dietary strategies:

1. Anti-inflammatory foods – diets rich in fruits, vegetables, whole grains, nuts, seeds and omega-3 fatty acids can reduce systemic inflammation, which is implicated in pain and lesion progression [29,32].
2. Reduction of pro-inflammatory or processed foods – limiting red meat, trans fats, refined sugars and ultra-processed foods may decrease inflammatory markers and improve symptom control [29,30].
3. Increased intake of antioxidants and polyphenols – compounds such as vitamins C and E, resveratrol and other phytonutrients can mitigate oxidative stress, which contributes to endometriosis-related inflammation [29,32].
4. Adequate fiber consumption – high-fiber diets support estrogen metabolism and gut microbiota balance, potentially reducing estrogen-driven lesion growth [29,31].
5. Micronutrient supplementation if needed – vitamin D, magnesium and other micronutrients may play a role in modulating inflammation, neuromuscular function and pain perception [29,31].
6. Balanced caloric intake and healthy body weight – maintaining appropriate body weight can improve hormonal and metabolic profiles, supporting general health and possibly reducing symptom severity [29].

A growing body of research supports the beneficial role of dietary interventions in women with endometriosis. A prospective study with a control group demonstrated that a structured dietary program, emphasizing anti-inflammatory foods, reduced pain scores and improved quality of life over six months, compared with usual dietary habits [25]. Systematic and scoping reviews indicate that several dietary patterns, including Mediterranean, plant-based and low-

glycemic index diets, are associated with symptom reduction and enhanced overall well-being [14,29,30].

Specific anti-inflammatory components, such as omega-3 fatty acids, antioxidants and polyphenols, have been found to modulate inflammatory pathways, reduce oxidative stress and improve gastrointestinal and menstrual symptoms in women with endometriosis [32]. Nutrition-focused interventions have also shown improvements in patient-reported outcomes including fatigue, pain severity and psychological well-being, highlighting the multifaceted benefits of dietary modification [31,30].

Although evidence consistently points to positive effects, heterogeneity in study designs, dietary protocols and outcome measurements limits the ability to generate standardized recommendations. Some studies rely on self-reported dietary intake, whereas others implement controlled interventions and durations of follow-up vary. Nevertheless, the cumulative findings suggest that personalized dietary counseling should be considered a core component of a holistic, non-pharmacological management strategy for women with endometriosis, ideally integrated with physical activity and psychological support [14,29,31].

4.4 Psychological Interventions in the Management of Endometriosis

Psychological interventions represent an important non-pharmacological approach for women with endometriosis, addressing the psychosocial and emotional dimensions of chronic pelvic pain and other persistent symptoms. Chronic pain, fatigue, infertility-related stress and social limitations often accompany endometriosis, making psychological support a key component of comprehensive care. Interventions aim to reduce perceived pain, improve coping strategies, enhance quality of life and support mental health.

Several approaches have been explored and applied in clinical practice:

1. Cognitive Behavioral Therapy (CBT) – CBT targets maladaptive thoughts, catastrophizing and unhelpful behaviors related to pain, stress and anxiety. It is delivered in individual or group formats and can be administered face-to-face or via digital platforms [35,36].

2. Mindfulness-based and stress-reduction programs – these programs focus on attention regulation, acceptance of sensations, and relaxation strategies to reduce pain perception and emotional distress [33].
3. Internet-delivered psychological programs – structured online interventions provide psychoeducation, coping skills training and cognitive-behavioral strategies, increasing accessibility for women unable to attend in-person therapy [34].
4. Multimodal psychological interventions – combining cognitive-behavioral techniques, relaxation training, and somatosensory stimulation to target both cognitive and physical components of chronic pelvic pain [38].

Evidence demonstrates that psychological interventions can improve quality of life and reduce pain-related disability in women with endometriosis. A three-armed randomized controlled trial found that cognitive-behavioral and mindfulness-based interventions led to significant improvements in quality of life, emotional well-being and coping, despite persistent pain, highlighting the importance of psychological support as an adjunct to medical or surgical treatment [33]. Similarly, an internet-delivered pain management program, the Endometriosis Pain Course, resulted in reductions in pain catastrophizing, stress and functional impairment, showing that remote delivery can be effective and accessible [34]. Systematic reviews consistently support the efficacy of CBT, noting improvements in coping strategies, psychological distress and patient-reported pain levels, although effects on objective pain measures are mixed [35,36].

Additional evidence from meta-analytic data suggests that psychological interventions, in general, yield moderate improvements in emotional well-being, mental health and perceived quality of life for women with endometriosis [37]. Furthermore, a randomized controlled trial combining psychotherapy with somatosensory stimulation demonstrated reductions in chronic pelvic pain intensity and improvements in pain-related functional outcomes, indicating that integrating cognitive and somatosensory approaches may enhance effectiveness [38]. Collectively, these findings highlight the value of psychological interventions as a critical component of comprehensive, non-pharmacological management for endometriosis, addressing both the emotional and functional consequences of this chronic condition.

4.5 Cannabinoid Therapy in the Management of Endometriosis

Cannabinoid therapy is emerging as a potential non-pharmacological approach for managing pain and other symptoms associated with endometriosis. Cannabinoids, including cannabidiol (CBD) and tetrahydrocannabinol (THC), interact with the endocannabinoid system, which plays a role in pain modulation, inflammation and immune response. Through these mechanisms, cannabinoid therapy may reduce pelvic pain, dysmenorrhea, dyspareunia and associated emotional distress in affected women.

Cannabinoid therapy can be administered through several routes:

1. Oral preparations – oils, capsules or tinctures containing CBD or THC, commonly discussed as the primary route for symptom relief in endometriosis [17,27,28].
2. Topical applications – creams or gels applied to the lower abdomen or pelvic area, mentioned in reviews as potential options for localized symptom management [27,28].
3. Inhalation – vaporized cannabis preparations, noted in the literature as a possible route for rapid analgesic effects [27,28].

The mechanisms of action include modulation of CB1 and CB2 receptors in the central and peripheral nervous system, reducing nociceptive signaling, and suppressing inflammatory mediators within endometriotic lesions [17,28].

Current evidence suggests that cannabinoid therapy may provide symptom relief for women with endometriosis, although the quality of data is still limited. Preliminary studies indicate that CBD can reduce pain intensity, improve sleep, and alleviate emotional distress associated with chronic pelvic pain [17]. A recent review evaluating clinical and preclinical studies concluded that cannabinoids can modulate inflammatory pathways and nociceptive processing in gynecological pain, including endometriosis-related symptoms, though randomized controlled trials in this population remain scarce [27,28]. Collectively, the literature suggests that cannabinoid therapy could serve as a valuable adjunctive treatment, particularly for patients with pain unresponsive to conventional analgesics, but further well-designed clinical trials are needed to establish efficacy, optimal dosing, and safety profiles.

5. Conclusions

Endometriosis is a complex, chronic, estrogen-dependent and neuroinflammatory condition that affects millions of women worldwide, often causing significant diagnostic delays and long-term impairment in quality of life. Its symptoms—most notably chronic pelvic pain, dysmenorrhea and dyspareunia—arise from inflammatory, hormonal and neuromuscular

mechanisms and may substantially interfere with daily functioning, emotional well-being and social participation.

Non-pharmacological interventions, including physical activity, physiotherapy, dietary modification, psychological therapies and emerging cannabinoid treatments, offer valuable complementary benefits. Evidence suggests that structured exercise, pelvic-floor physiotherapy, anti-inflammatory dietary patterns and cognitive-behavioral or mindfulness-based interventions can reduce pain, enhance functional capacity and improve mental health. Cannabinoid therapy shows promise but requires more robust clinical research.

Overall, integrating lifestyle, psychological and rehabilitative strategies alongside conventional treatment provides a more holistic and patient-centered approach, addressing the biological, functional and psychosocial dimensions of endometriosis.

Disclosure

Author Contributions

Conceptualization: Magdalena Waśniowska, Jagoda Węgrzyn, Magdalena Wiernek
Methodology: Magdalena Waśniowska, Jagoda Węgrzyn, Magdalena Wiernek
Software: not applicable;
Verification: Jagoda Węgrzyn
Formal analysis: Magdalena Waśniowska, Magdalena Wiernek
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Supervision: Magdalena Waśniowska, Jagoda Węgrzyn, Magdalena Wiernek
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