

Review

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[Agata Puszcz](#)*, Paulina Kozłowska, Justyna Wójcik, Anna Morawska, [Małgorzata Wójcik](#), [Katarzyna Plagens-Rotman](#), [Monika Englert-Golon](#), [Jakub Mroczyk](#), [Małgorzata Mizgier](#), [Ewa Jakubek](#), Magdalena Pisarska-Krawczyk, [Stefan Sajdak](#), Klaudyna Madziar, Witold Kędzia, [Grażyna Jarząbek-Bielecka](#)

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Review

Lifestyle and Selected Issues Related to Sexual Health: The Importance of Specialist Care in Balneology, Dietetics, and Physiotherapy

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Abstract

Background/Objectives: Sexual health is shaped by lifestyle factors alongside biomedical determinants. This review synthesises evidence on physiotherapy, balneology/peloidotherapy and diet therapy as preventive and therapeutic adjuncts for female sexual dysfunctions and related gynaecological conditions. **Methods:** A structured narrative review of PubMed and Google Scholar (June–July 2025) was conducted by three independent reviewers using predefined keywords in English and Polish. Case reports, preprints and studies before 2015 were excluded. From 7322 records, 47 studies met inclusion criteria for qualitative synthesis. **Results:** Physiotherapy—particularly pelvic floor muscle training, multimodal manual therapy, neuromuscular electrical stimulation (including PTNS), magnetostimulation, short-wave diathermy and capacitive–resistive monopolar radiofrequency—was consistently associated with reductions in dyspareunia, chronic pelvic pain and urinary symptoms, with parallel improvements in sexual function and quality of life. Balneological procedures (brine baths/irrigations, crenotherapy, selected radon/sulphide/iodine–bromine applications) and peloidotherapy demonstrated analgesic, anti-inflammatory and perfusion-enhancing effects, with signals of benefit in vulvodynia, endometriosis and infertility support. Dietary measures—higher fruit intake (notably citrus), adequate vitamin D, targeted omega-3 use in PCOS, Mediterranean dietary pattern and prudent red-meat limitation—were associated with favourable endocrine–metabolic profiles and, in selected contexts, reduced disease risk. **Conclusions:** Integrating lifestyle-medicine modalities with standard care may meaningfully prevent and manage female sexual dysfunctions by addressing pain, perfusion, neuromuscular control and endocrine–metabolic drivers. Implementation frameworks and high-quality trials are warranted to refine indications, dosing and long-term effectiveness.

Keywords: sexual dysfunction; women’s health; balneotherapy; physical therapy modalities

1. Introduction

According to the World Health Organization, sexual health constitutes a complex integration of biological, emotional, cognitive, and social factors that play a significant role in shaping personality, interpersonal relationships, and the capacity to form emotional bonds and love [1]. This concept fits within the broader context of health promotion, encompassing efforts to popularize a health-promoting lifestyle, balanced nutrition, and physical activity. Within a holistic model of treating sexual dysfunctions, it is appropriate to consider diverse therapeutic strategies that include not only pharmacotherapy and psychological interventions. Bearing in mind that sexual health is influenced not only by general physical and mental condition but also by lifestyle factors such as physical activity, diet, daily routine, and the quality of the partner relationship, integrating core therapy with elements of lifestyle medicine appears justified— including natural methods, an appropriately tailored diet, and physical exercises. A similar approach should be applied to the treatment of infertility disorders, which often result from sexual dysfunctions, co-occur with them, or— conversely—constitute their primary cause.

The use of balneotherapy, physiotherapeutic interventions, and a properly balanced diet may significantly improve the sexual quality of life in women. These effects may be direct—through increased libido, sexual satisfaction, improvement in potency, and alleviation of pain during intercourse (dyspareunia)—as well as indirect, through mitigation of symptoms of chronic diseases that contribute to reduced sexual satisfaction. Particular attention should be paid to conditions such as chronic pain in the lesser pelvis and the lumbar spine, pelvic organ prolapse, endometriosis, vulvodynia, and vaginismus, which are significant factors limiting sexual activity.

It is also warranted to consider the potential of the aforementioned therapeutic interventions in the context of improving fertility and supporting the sexual health of postmenopausal women.

The present review provides an analysis of the potential utility of physiotherapeutic, balneological, and dietary methods in the treatment of sexual disorders. It takes into account both their direct therapeutic applications and their indirect effects on sexual health through pain reduction, mitigation of local inflammation, control of underlying conditions (such as vulvodynia or endometriosis), as well as the improvement of parameters related to fertility.

The primary objective of this review is to demonstrate the importance of physiotherapy, balneotherapy, and diet therapy in the context of sexual health as a complement to classical therapeutic methods.

2. Materials and Methods

Three independent reviewers conducted searches of the medical databases PubMed and Google Scholar, using keywords and MeSH terms: gynecology or sexology, appearing in the article together with the terms: fizjoterapia (=physiotherapy, 1142 results), fizykoterapia (=physical therapy, 1956 results), peloidoterapia (=peloid therapy, 3 results), balneologia (=balneology, 27 results), dietoterapia (=dietotherapy, 2450 results), dieta (=diet, 1744 results) (in both English and Polish). The exclusion criteria were: case reports, works prior to the peer-review process (preprints), and works older than ten years (before 2015).

In this article, the authors analyze aspects of the use of physiotherapy, diet, and balneoclimatology in sexology. The literature review was conducted from June to July 2025. The collected items were then assessed for compliance with the established inclusion and exclusion criteria based on abstract analysis.

Of the 7322 articles initially qualified for further analysis, 2458 were excluded due to duplication, and 1231 due to failure to meet the aforementioned criteria. The remaining articles underwent abstract analysis, of which 96 publications were qualified for further, detailed analysis. All included articles were evaluated in terms of: form, method, type of therapy applied, therapeutic objective, and conclusions resulting from the conducted studies. Ultimately, 47 articles were included in the review.

3. Results and Discussion

Health, including sexual health, is also a reflection of an individual's lifestyle. Healthy sleep, a healthy, balanced diet rich in vitamins and minerals, regular physical activity, and the avoidance of stimulants have a positive effect, for example, on libido and the overall condition of the body [2].

According to the World Health Organization, sexual health is the integration of the biological, emotional, intellectual and social aspects of sexual life, which are important for the positive development of personality, communication and love [1].

Diet may be crucial for libido; indeed, it is even claimed: 'Healthy eating therefore also means successful sex [3].

The prevention of many diseases aims to ensure good quality of life, including functioning in the sexual sphere. Sexual health has a strong impact on overall well-being. However, during the medical interview this aspect is often omitted by patients, and there is a need for physicians—as well as dietitians, physiotherapists and psychologists—to enquire about these issues. Sexual dysfunctions, broadly speaking, are not an uncommon problem and concern both men and women [4]. Assuming that a satisfying intimate life is one of the foundations of successful partnerships, this is a problem in a broad sense—sexual health problems markedly reduce quality of life, disrupting even everyday functioning. It turns out that a deterioration in sexual health is influenced by overweight, obesity, diabetes, cardiovascular diseases, the increasingly frequent occurrence of metabolic syndrome, chronic kidney disease and neoplastic diseases [5-9]. Some of these conditions may arise as a result of an unhealthy lifestyle and an improper diet, which also results in a reduction in sexual attractiveness.

In addition, an unhealthy lifestyle, including tobacco smoking, has a highly adverse effect on sexual attractiveness and sexual function [10]. Impairment of sexual function—for example, issues related to achieving and maintaining an erection—also results from cardiovascular diseases, such as ischaemic heart disease or arterial hypertension [7].

It is worth noting that many medical problems that may negatively affect sexual health are diet-related. One of the main causes of their occurrence is an inappropriate diet, and diet-related diseases may co-occur, which is even more dangerous. In the course of these diseases, narrowing or even damage to blood vessels may occur, which in turn hinders the transport of blood to and from the genital organs; this, for example, is a cause of erectile problems in men (an insufficient volume of blood reaching the penis may impede or even preclude an erection) [11].

It is worth emphasising that successful sexual intercourse is possible thanks to the interplay of psychological factors and various systems, including the endocrine, vascular, nervous and muscular systems, and the current lifestyle—characterised by an unhealthy diet, stress and lack of physical activity—may substantially disrupt the functioning of the central nervous system, consequently impairing the production of hormones and neurotransmitters that influence sexual performance [12,13].

It is important to draw attention to the fact that, as a consequence of an improper lifestyle, obesity readily develops, and it is often accompanied by disorders of lipid and carbohydrate metabolism, as well as arterial hypertension and endocrinopathies, which may result in problems related to functioning in the sexual sphere, together with a loss of a sense of sexual attractiveness and reduced self-esteem in both women and men. Secondarily, there may even arise a fear of criticism of the obese person's appearance, including by a partner, which leads to reluctance to engage in sexual activity and disrupts the quality of partner relationships [14].

It is therefore advisable, in preventive activities—both in the context of general health and sexual health, and of proper development—to promote the 'Healthy Eating and Physical Activity Pyramid'. In the context of therapy for sexual dysfunctions, a holistic treatment model is important, encompassing a range of therapeutic strategies that include not only pharmacotherapy and psychological interventions, but also physiotherapy, diet therapy and balneotherapy.

3.1. The Significance of Balneotherapy and Peloid Therapy

Balneotherapy encompasses a wide range of therapeutic procedures employing natural medicinal resources, such as mineral waters (e.g., brine baths, vaginal irrigations, crenotherapy), therapeutic gases (including ozone), and peloid.

The literature indicates that balneotherapy confers benefits in alleviating climacteric symptoms, in chronic inflammations (of the urinary tract, the lesser pelvis, the vulva and the vagina), in the treatment of vulvodynia and endometriosis, and potentially also infertility. Moreover, a direct, positive effect on sexual health has been demonstrated through the reduction of pain during intercourse [15].

Brines exhibit antiseptic and immunostimulatory effects. In brine baths, solutions are used of sodium chloride (most commonly), as well as salts of calcium, potassium, magnesium or other elements; the solution temperature is maintained within the range 33–40 °C. In patients immersed in a brine bath, an increase in blood electrolyte concentrations is observed, which in turn leads to activation of cutaneous receptors, interoceptive and autonomic responses, and stimulation of the endocrine glands. The secretion of histamine, adrenaline and serotonin increases. The effects of these phenomena include vasodilatation, improved skin perfusion, muscle relaxation, reduced excitability of sensory and motor nerves, and enhancement of non-specific immune defence [15,16]. Brine irrigations are performed on a gynaecological chair using specialised cannulas with a tip enabling controlled infusion of the solution and its even distribution within the vagina. Crenotherapy is the oral administration of brine waters [16].

Brine therapies have been applied primarily in the treatment of chronic pain syndromes—chronic pelvic pain (CPP), pelvic pain of orthopaedic aetiology, and vulvodynia. It should be noted that CPP is a well-established risk factor for sexual dysfunctions: its course encompasses both dyspareunia and disorders of vaginal perfusion and lubrication, which lead to difficulties in achieving orgasm (anorgasmia) and arousal disorders (hypolibidaemia) owing to anticipatory fear of pain. Vulvodynia may give rise to burning, stinging, tingling, or a sensation of wounds within the vulva, even with minimal touch, and may even result in secondary vaginismus. The effectiveness of brine baths has also been demonstrated in cases of primary dyspareunia not associated with a chronic inflammatory process [15].

Selected forms of balneological therapy—such as brine baths and irrigations, as well as crenotherapy—are used in the treatment of endometriosis [16]. It is worth emphasising that these are the only spa procedures recommended in this group of patients, since peloid-based treatments—owing to the presence of phytoestrogens—may potentially exacerbate symptoms and adversely affect the course of the disease. During menstruation, endometriotic foci undergo ischaemic transformations, which lead to chronic inflammation, adhesion formation and intensification of pain, especially during sexual intercourse. Prolonged hormonal therapy with GnRH analogues and combined oral contraceptives often results in disturbances of libido. Additionally, women with endometriosis more frequently experience symptoms of depression, anxiety and reduced self-esteem, which significantly translates into a deterioration in sexual quality of life and diminished satisfaction with intimate relationships [16].

Among other balneological procedures used in the treatment of gynaecological conditions, a special place is occupied by radon baths at concentrations in the range of 40–200 nCi/L [15]. The beneficial effect of radon in the therapy of chronic inflammatory conditions is attributed to radiation hormesis, which posits that low doses of alpha radiation stimulate the body's defence responses and support tissue repair processes [17]. Radon baths are employed in the treatment of endometriosis [15].

Other brine baths that have found application in the treatment of chronic gynaecological diseases that diminish the quality of sexual life include: sulphide baths (sulphide concentration 100–150 mg/L, recommended for the treatment of vulvodynia), iodine–bromine baths (for chronic inflammations), and arsenic baths [15].

The research team of Dias et al. (2023) draws attention to the potential of ozone saunas in the treatment of infertility. The medical experiment aimed to test whether combining OST (ozone sauna therapy) and PEMF (pulsed electric field therapy) could improve infertility treatment outcomes in women with diminished ovarian reserve—both in vivo and in vitro in granulosa cells (GC). In the in vitro trial, OST with PEMF increased aromatase expression fivefold. In the in vivo trial, the number of embryos formed was significantly higher following OST+PEMF. Additionally, an improvement in endometrial thickness (EMT) was observed, which is an important indicator of pregnancy success [18].

Peloid, i.e., medicinal peat, plays a significant role in the treatment of gynaecological disorders, particularly chronic inflammatory conditions of the genital organs, the alleviation of climacteric symptoms, and as an adjunct therapy in the treatment of infertility. Treatment with peloid is referred to as peloidotherapy. Peloidotherapy procedures are carried out in various forms, depending on clinical need. The most common are wraps, sitz baths, peloid tampons, peloid 'briefs', and rectal instillations [19].

Medicinal peloid contains a range of bioactive chemical compounds, including humic substances, sulphides, amino acids, esters, sugars and bituminous compounds. The latter in particular exhibit properties similar to the action of oestrogenic hormones. Appropriate preparation of peloid yields a plastic, dense mass characterised by high heat capacity and excellent sorptive properties. The active substances contained in this natural peloid are absorbed through the skin and mucous membranes, exerting a comprehensive effect: anti-inflammatory, desensitising, resorptive, anti-oedematous, bactericidal, inhibiting exudative and infiltrative processes, improving the rheological properties of the blood and, as a result, increasing tissue perfusion; regulating the activity of the hypothalamic–pituitary axis; and improving the endocrine function of the ovaries [15,19,20]. As demonstrated in studies, peloid may influence the concentrations of sex hormones such as oestradiol, oestriol, progesterone and testosterone, and may also contribute to a reduction in blood insulin levels. These properties make peloidotherapy applicable as an adjunct method in the treatment of infertility, especially in cases of endocrinological aetiology [21].

The physicochemical processes occurring during peloid baths and packs are based on ion-exchange properties and on the ability of humic acids to penetrate the skin, which enables detoxification of the organism. At the same time, it has been observed that peloid exerts a beneficial effect on the functioning of the autonomic nervous system. During the procedure, sympathetic tone increases, whereas after its completion there is prolonged stimulation of the parasympathetic branch, which may consequently bring relief from symptoms characteristic of the menopausal period [22]. Peloid also exhibits a stimulating effect on ovarian function. This may occur both locally—via thermal heating of the gonads—and systemically, through the penetration of oestrogen-like bioactive compounds and their action on the hypothalamic–pituitary axis [19].

In the treatment of chronic and recurrent inflammations of the adnexa and the vagina, a special place is occupied by columnisation, i.e., the intravaginal introduction of peloid in the form of a tampon. For these procedures, a specially prepared preparation—peloidin—is used, obtained from peloid milled for several hours to achieve particles with a diameter below 0.01 mm. This material is then heated to body temperature or slightly higher (up to 44 °C) and shows high bioavailability, as its active components readily permeate the mucous membrane. The degree of comminution of the peloid mass affects the efficiency of substance exchange between it and the patient's tissues—the finer the fraction, the more effective the diffusion. These procedures last from ten to twenty minutes and are performed three to five times per week. The tampon is inserted on a gynaecological chair, and after the procedure it is removed by thoroughly rinsing with sterile water at a temperature of 38–40 °C [19]. Habek et al. (2020) draw attention to the potential of peloid tampons in the treatment of lichen sclerosus et atrophicus of the vulva. It is worth noting that lichen lesions lead to narrowing of the vaginal introitus and the formation of adhesions, which are a cause of dyspareunia [15].

The team of Min et al. (2020) conducted an experiment in Korea in a group of patients (n = 16) with CPP. The balneotherapy programme comprised two brine baths and two peloid packs during a

5-day course. A reduction in pain symptoms was observed in the patients, as well as decreases in inflammatory markers (IL-1 and TNF- α) in serum [23].

Peloid packs are a recognised form of treatment for CPP, as well as chronic inflammation of the adnexa. The procedure involves applying a peloid pulp heated to 45 °C to the lower abdomen or sacral area. The application thus prepared is wrapped in a sheet, foil and a blanket in order to maintain the temperature. A session lasts from 20 to 30 minutes, with the thermal effect developing gradually and persisting for several hours, ensuring vasodilatation in the deeper tissue layers. Packs made from volcanic peloids (fango) also have potential in the treatment of infertility and sexual disorders such as dyspareunia and hypolibidaemia [15,19].

In physiotherapy practice, peloid at iontophoresis is also used. The procedure consists of applying high-grade peloid to the sacral region in a layer approximately 3 cm thick, followed by the application of a cathode conducting a galvanic current of 10–20 mA. The session lasts from fifteen to twenty minutes and should be repeated three–four times per week [24].

3.2. The Significance of Physiotherapy

Disorders of pelvic organ support and the associated urogynaecological problems constitute a form of disability that limits physical and sexual activity. Data indicate that over 50% of women with these disorders exhibit hypolibidaemia or alibidaemia, feel less attractive and avoid sexual contact, which disrupts partner relationships. This state is contributed to by discomfort during intercourse caused by atrophic changes resulting from hypo-estrogenism and by irritation of the genital organs by urine (climacturia), as well as recurrent inflammations and infections of the urogenital tract. It is therefore worth seeking effective dietary and physiotherapeutic interventions as adjunctive treatment. In the management of urogynaecological disorders, a particular role may be played by manual therapy, including pelvic floor exercises, as well as physical medicine procedures such as electrostimulation, magnetostimulation, monopolar radiofrequency and shortwave diathermy [19, 24].

Pelvic floor muscle exercises are the basic physiotherapeutic method in urogynaecology, used prophylactically and therapeutically for disorders of pelvic organ support, urinary incontinence and pain syndromes such as dyspareunia or vulvodynia. They constitute first-line treatment in women with various forms of urinary incontinence. In a study by Weber-Rajek et al. (2020), patients with stress urinary incontinence were instructed for 12 weeks to contract the pelvic floor muscles using a technique involving activation of the transversus abdominis muscle—the therapy led to an alleviation of symptoms, resulting in improved quality of life [25]. In another study, a programme of alternating long-hold and rapid pelvic floor contractions performed in various positions produced similar effects and also favourably influenced sexual function, as assessed using the Female Sexual Function Index (FSFI) [26]. The cited studies show that different pelvic floor muscle training techniques, although distinct, can effectively alleviate the symptoms of urinary incontinence.

Pelvic floor muscle exercises are also effective in the therapy of pain and sexual dysfunctions. In perimenopausal women with dyspareunia, a training programme encompassing therapy of fascial trigger points in the pelvic floor muscles, the abdominal diaphragm, the piriformis and the iliopsoas in five one-hour sessions resulted in pain reduction, improved muscle function and enhanced sexual function [27]. Similar effects are achieved in patients with endometriosis and chronic pelvic pain with vulvodynia—regular exercises relax the pelvic floor muscles and reduce pain symptoms [28]. In provoked vestibulodynia, a combination of several techniques proved effective, including pelvic floor contractions, stretching exercises using a dilator, fascial therapy and neuromuscular re-education. A 10-week course of therapy yielded better outcomes than the topical use of lignocaine—it led to pain reduction, improved sexual function and decreased intercourse-related stress [29]. Biofeedback can be helpful in the therapeutic process, facilitating control and assessment of correct exercise performance, enabling women to better control muscle activity and increase training effectiveness [30]. Both individual training under the supervision of a physiotherapist and group classes or exercises performed independently at home yield positive results, making this method

readily accessible and applicable for most women. However, it is important that the training programme be prepared and tailored by a specialist, who will also assess whether the patient has any contraindications to exercise. This ensures that the therapy is safe and effective [31].

Electrostimulation, encompassing techniques such as neuromuscular electrical stimulation (NMES) and transcutaneous electrical nerve stimulation (TENS), is used in gynaecology both for pain relief and for stimulation of the pelvic floor muscles. Its analgesic effect is explained by the gate control theory, according to which stimulation of large-diameter nerve fibres inhibits the transmission of pain stimuli by small fibres. Regular electrostimulation of the pelvic floor muscles, in turn, induces their remodelling by increasing the proportion of slow-twitch fibres, which improves tone and contraction strength as well as the stabilisation of organs [21]. Vaginal probes, rectal probes and surface electrodes are used in therapy [32]. Effectiveness depends on proper diagnosis of the patient and, depending on the condition, selection of appropriate stimulation parameters, especially pulse frequency. Electrostimulation helps in the treatment of voiding disorders such as urge urinary incontinence, overactive bladder and neurogenic conditions, supporting the sphincter and detrusor muscles and thereby improving control of micturition [32]. Particularly good results are achieved with percutaneous tibial nerve stimulation (PTNS), which—as shown in studies by Musco et al. (2016)—improves not only urinary symptoms but also sexual function, even in patients who had not previously reported difficulties in this sphere [33]. Electrostimulation is also used in the treatment of chronic pelvic pain and dyspareunia in women with endometriosis, bringing pain reduction and improved quality of life, including sexual quality of life [15,16]. Additionally, TENS may effectively support hormonal therapy in pelvic pain syndrome associated with deeply infiltrating endometriosis [34].

Magnetostimulation is another physiotherapeutic method used in urogynaecology that employs a variable magnetic field to stimulate the pelvic floor muscles. Its action involves activation of the sodium–potassium pump and regulation of depolarisation of motor neurones, which elicits muscle contractions in the innervated area; within the pelvis, the effect is focused mainly on the motor fibres of the pudendal and visceral nerves. For therapeutic purposes, various types of devices emitting a magnetic field are used. One of the simpler forms comprises small applicators that can be placed in underwear in the perineal region. These allow direct exposure of the pelvic organs to the magnetic field, which may be continuous or periodic depending on the indication [21]. A more advanced form of therapy is extracorporeal magnetic innervation (ExMI) delivered via a so-called magnetic chair, which emits a magnetic field with a high flux density of up to 2 tesla and an adjustable frequency from 10 to 50 Hz [25]. ExMI focuses on the stimulation of the sacral nerves, which control the pelvic floor muscles and the functions of the bladder, urethra and rectum, thereby supporting their proper functioning. The therapy is painless and convenient, as it does not require undressing or the use of vaginal or rectal probes [19,32]. Magnetostimulation also helps reduce pain in the lumbosacral spine, especially when combined with laser therapy, which improves microcirculation, increases myelination of nerve fibres and the enzymatic activity of tissues [35].

Shortwave diathermy is a procedure that uses an electromagnetic wave at a frequency of 27.12 MHz to heat tissues deeply, which accelerates biochemical reactions, increases metabolism, and results in analgesic and anti-inflammatory effects. Its advantage over superficial heat sources is its ability to warm deeper organs [21]. It is used, among other indications, for chronic adnexitis and pelvic pain, including in the course of chlamydiosis or gonorrhoea [36].

Capacitive–resistive monopolar radiofrequency (CRMRF), similarly to shortwave diathermy, acts by generating heat in deep tissues, improving perfusion and metabolism, and supporting regenerative processes. It differs, however, in the use of a lower electromagnetic field frequency (448 Hz), which allows a thermal effect to be achieved without the risk of excessive overheating, and therefore does not require cooling systems. Evidence for the effectiveness of CRMRF in the treatment of chronic pelvic pain is provided by the study of Carralero-Martínez et al. (2022), in which a series of ten treatments significantly reduced pain in patients with chronic pelvic pain syndrome [37].

The techniques cited may be combined in a multimodal approach, which translates into greater effectiveness in treating disorders that affect women's sexual health, such as dyspareunia. Integrated use of manual methods, physical therapy and pelvic floor muscle exercises promotes symptom reduction, improvements in sexual function, and overall quality of life [30].

3.1. The Significance of Proper Diet

Dietary habits may constitute both a protective factor and a factor increasing the risk of developing disorders that affect sexual health. The literature lists numerous links between the intake of specific nutrients and the development of diseases of the reproductive system, such as uterine fibroids, endometriosis and polycystic ovary syndrome (PCOS), in the treatment of which an important recommendation is a change in lifestyle, including dietary modification.

The most frequently analysed components of the diet include vegetables and fruit. The team of Shen et al. (2016) observed reduced consumption of broccoli, cabbage, Chinese cabbage, tomatoes and apples among women diagnosed with uterine myomas [38]. Uterine myomas are common benign neoplastic lesions in the female population. Depending on the size of the tumour, they may cause lower abdominal pain, constipation, difficulty in urination, as well as dyspareunia and infertility.

The consumption of vegetables and fruit may also have a protective effect with regard to endometriosis. The manifestation of the disease in the form of chronic pelvic pain, painful menstruation and dyspareunia significantly reduces patients' physical and psychological well-being, as well as their sexual satisfaction. A diet rich in fruit is associated with a lower incidence of laparoscopically confirmed endometriotic foci. This relationship is particularly evident in the case of citrus fruit—there was a 22% reduction in the risk of endometriosis in women consuming one portion of citrus fruit per day. In the case of vegetables, a similar correlation was not found; however, daily intake of cruciferous vegetables may be associated with a higher risk of endometriosis compared with consumption less frequent than once a week [39].

Furthermore, the team of Schwartz et al. (2022) indicates a higher risk of endometriosis among women following a diet with a high intake of fibre derived from vegetables [40].

Among vitamins, the greatest protective effect against the occurrence of uterine fibroids has been demonstrated for vitamin D, particularly among white women [41]. The team of Ciavattini et al. (2016) conducted a study involving 208 women with vitamin D deficiency who had been diagnosed with uterine myomas [42]. In 53 individuals with a small fibroid burden, adequate vitamin D supplementation was implemented. Twelve months after the initial diagnosis, a lower proportion of disease progression to an extent requiring surgical intervention or pharmacological treatment was noted. No change in the dimensions and number of myomas was observed in patients who properly supplemented vitamin D, whereas in women who did not use such supplementation a slight increase in lesion size was recorded, necessitating the use of appropriate treatment [42].

In a study conducted in a population of women of Chinese nationality, the mean serum concentration of 25OHD in participants with uterine fibroids was compared with that in women without such a diagnosis. The prevalence of fibroids in women with 25OHD deficiency was significantly higher than in women with a normal 25OHD concentration (>20ng/ml) [43].

Similar observations were made when examining 25OHD concentrations in women with endometriosis—the 25OHD concentration was significantly lower in serum samples from patients with a severe form of the disease compared with healthy women or those with a mild form of endometriosis [44].

High-dose vitamin D supplementation has also shown a beneficial effect in women with PCOS accompanied by insulin resistance. In patients taking 4,000 IU of vitamin D together with metformin daily for 12 weeks, favourable outcomes were achieved: reductions in total testosterone, insulin, fasting glucose and the inflammatory marker (hs-CRP); a decrease in the free androgen index (FAI); and a reduction in the severity of hirsutism. The study group also exhibited an increase in the mean concentration of sex hormone-binding globulin (SHBG) and total antioxidant capacity (TAC)

compared with the group taking lower doses of vitamin D (1,000 IU daily) and the placebo group [45].

In a 5-year prospective study, Brasky et al. (2020) assessed the relationship between dietary fat intake and the incidence of uterine fibroids. Total fat consumption and individual fractions (saturated, monounsaturated, polyunsaturated and trans) showed no significant correlation with the proportion of women diagnosed with fibroids. Intake of omega-3 fatty acids, however, was associated with a higher incidence of uterine fibroids—the dietary share of docosahexaenoic acid (DHA) correlated with a 49% higher incidence [46].

The study by Di Nicuolo et al. (2021) provides evidence that alpha-lipoic acid (ALA) reduces the migration and invasion of endometriosis cell lines, which may lead to inhibition of disease progression [47].

Studies indicate that a diet rich in omega-3 fatty acids may exert a beneficial effect in patients with PCOS by reducing concentrations of CRP, MDA (malondialdehyde), luteinising hormone (LH) and total testosterone (TT), and by increasing total antioxidant capacity (TAC) and the concentration of sex hormone-binding globulin (SHBG) [48].

A favourable element of diet therapy for women with endometriosis is limiting the consumption of red meat. Research data confirm the adverse effect of its intake on the risk of developing endometriosis, particularly in the population of women who have never reported infertility [49]. Avoiding red meat in the diet is also associated with a lower risk of erectile dysfunction in men [3].

To date, no unequivocal effect of milk and dairy products on the risk and growth of uterine fibroids has been demonstrated. In a prospective cohort study conducted by Gao et al. (2018), frequent intake of cow's milk and soya in the diet was found to be a potential factor in the development of uterine fibroids [50]. Owing to conflicting results obtained in earlier studies, further analyses are needed to determine the role of these products in the aetiopathogenesis of uterine fibroids [51]. Consumption of dairy products during adolescence may, however, reduce the risk of developing endometriosis at a later age [52].

Excess body mass, constituting an element of the metabolic syndrome and often co-occurring with PCOS, may cause disturbances in body image leading to anxiety and avoidance of sexual activity, irrespective of patients' hormonal profile [53]. The Mediterranean diet may be an effective tool in the weight-loss process. Owing to its anti-inflammatory, antioxidant and vasodilatory properties, this dietary model may also improve sexual function in both women and men. Moreover, studies indicate a beneficial effect of the Mediterranean diet on sperm motility [54].

In summary, a radical change in lifestyle is important also in the context of sexual health; it contributes to improved quality of life and a reduction in the incidence of the civilisation diseases of the 21st century (Jarząbek et al., 2024; Jarząbek et al., 2024).

4. Conclusions

Effective support for women's sexual health requires the integration of classical treatment methods with elements of lifestyle medicine. The inclusion of physiotherapy, balneotherapy and diet therapy may significantly improve sexual quality of life by reducing pain, enhancing perfusion and muscle function, and optimising metabolic and hormonal parameters.

The use of brine baths, irrigations, crenotherapy, radon treatments, sulphide baths, iodine-bromine baths and peat-based therapies shows beneficial effects in the treatment of chronic pelvic pain, vulvodynia and endometriosis, as well as in supporting the treatment of infertility. Peloidotherapy plays a particular role in regulating endocrine functions, improving tissue perfusion and modulating the inflammatory response.

Pelvic floor muscle training, manual therapy, electrostimulation (including PTNS), magnetostimulation, shortwave diathermy and monopolar radiofrequency contribute to reducing symptoms of urinary incontinence, dyspareunia, chronic pelvic pain and sexual dysfunctions. A multimodal approach increases therapeutic efficacy through the synergistic action of different techniques.

Dietary modification plays a key role in the prevention and adjunctive treatment of diseases such as uterine fibroids, endometriosis and polycystic ovary syndrome (PCOS). A diet rich in fruit (especially citrus), vegetables, vitamin D and omega-3 fatty acids (in selected indications) may favourably influence hormonal and metabolic parameters. Limiting the consumption of red meat and adopting a Mediterranean diet are associated with improvements in sexual function and fertility parameters.

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