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The male sexual dysfunction etiology and the role of nutrition in its treatment from Persian traditional medicine perspective: A Review Article

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Abstract

Background: Sexual function is an important aspect of overall quality of life, and disruptions in this area can significantly harm interpersonal relationships, emotional well-being, and self-esteem. The high prevalence of sexual dysfunction and its complications, especially in men, and the shortcomings of the current treatments highlight the need for alternative approaches, particularly traditional Persian medicine.

Methods: The methodology used in this narrative review study is content analysis. The search was conducted using sources from traditional Persian medicine, including the following: "Qanoon in Medicine" by Ibn Sina, "Zakhirrh (Repository) of Kharazmshahi" by Seyyed Ismail Jorjani, and "Exir (Elixir)" by Hakim Azam Khan. Additionally, databases such as PubMed, Google Scholar, and SID were searched until April 2023, using relevant keywords without any time restrictions.

Results: From the perspective of Persian traditional medicine (TPM), sexual dysfunction is the inability to have sexual intercourse, and its leading causes include: quantitative and qualitative changes in semen, weakness of vital organs of the body such as the brain, heart, and liver, stomach and kidney, long-term intimacy leaving, low intravascular flatulence (Gas), weakness of mental and emotional states, and weakness of the nerves of the penis. The principles of treating this disorder are based on dietary measures, strengthening vital organs, and then using sexual-enhancing drugs or supplements or manipulations such as massage.

Conclusion: Integrating knowledge from traditional Persian medicine and modern treatments can facilitate future research, develop projects in this area, and enhance the treatment of sexual disorders.

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Highlights

What is current knowledge?

The significant prevalence of sexual dysfunction and its complications, especially in men, and the weakness of existing treatments.

What is new here?

Many of the views of traditional Persian medicine are in agreement with what is proposed today in the diagnosis and treatment of sexual dysfunction. However, some of the important clinical interventions proposed in Persian traditional medicine, including the correction of the nutritional status based on the knowledge of the person's temperament and the organ's temperament, can be investigated in clinical trials.

Introduction

Sexual health is a fundamental and crucial factor for a stable married life. Intimacy is crucial to couples' happiness and overall quality of life (1,2). Sexual dysfunction (SD) can lead to marital disputes (3) and can lead to social problems such as crimes and sexual assaults, mental illnesses, and divorce; indeed, it is considered a leading cause of divorce (4). Sexual disorders include any problem that causes a person or couple to be dissatisfied with sexual activity. (5) SD is an important cause of male infertility and is classified into different categories, such as erectile dysfunction (ED), decreased libido, and abnormal ejaculation. In addition, physiological and psychological factors such as body image perception, fertility concerns, and libido can affect sexual performance. (6) The prevalence of sexual dysfunction varies across different regions globally, with approximately 43% of women and 31% of men experiencing some level of dysfunction.

The common causes of this disorder are psychogenic, neurogenic, vasculogenic (Arterial or cavernosal), hormonal, drug-induced, systemic diseases, and aging. Its management usually includes a combination of psychogenic and organic treatments. The main first-line oral treatment for ED includes phosphodiesterase type 5 (PDE-5) inhibitors, including sildenafil, vardenafil, and tadalafil which blocks cGMP-degrading enzyme (7).

Decreased libido in men can be cured by addressing the underlying mental or physical problems; however, the high prevalence of sexual impotence and its undeniable impact on the quality of life leads to psycho-emotional disorders, family disputes, and social issues are great concerns (8,9). Moreover, the shortcomings and side effects of existing medical treatments (7) and the confusion of patients trying their luck to use traditional and complementary medicine methods (10,11) highlight the need to benefit from the appropriate measures of other medical interventions, including traditional Persian medicine for the prevention and treatment of these disorders.

Considering the importance of the etiology of men's sexual dysfunction in traditional Persian medicine literature and the emphasis on the role of nutrition in this approach, this study aimed to investigate the etiology of this disorder and the role of nutrition in its treatment from a traditional Persian medicine perspective.

Methods

This content analysis narrative review study utilized Persian traditional medicine sources in sexual health. Key texts included: “Qanoon in Medicine” by Ibn Sina, “Zakhireh-e-Kharazmshahi” by Seyed Ismail Jorjani, “Tebb-e-Akbari” by Hakim Arzani, “Exir-e-Azam” by Hakim Azam Khan, “Summary of Al-Hikmat” by Aghili Khorasani Shirazi, “Mofarah al-Qulob” by Hakim Arzani, “Kamel al-Sanaa al-Tebiyyeh” by Majosi Ahwazi, “Behjah al-Nesa” by Ali Al-Rashidi, and “Tohfe al-Asheqin” by Ibn Sina. The keywords used were: "sexual power," "weakness of sexual power," "cause of sexual power," "sexual enhancer," "arousal of sexual power," "helper of sexual power," "intercourse," "closeness," and "close." In combination with the mentioned keywords, the keywords of traditional medicine, Persian traditional medicine, Persian medicine, modern medicine, and standard medicine were searched in available sources, as well as Persian and English articles. Also, the etiology and treatment methods of sexual dysfunction in men with the keywords sexual dysfunction, sexual identity, desire, arousal, orgasm, and resolution were searched in domestic scientific databases such as SID, Magiran, Irandoc, and international scientific databases such as PubMed, Scopus, Google Scholar, and Science Direct. Jame Noor version 1.5 software was used for booting. After removing the duplicate material and, finally, by re-reading the material, the content of the study was analyzed. To assess quality control, articles were separately extracted by two study reviewers. In the next step, the content was categorized with the presence of a third reviewer.

Results

Definitions and general etiology

Weakness of sexual power in Persian medicine is defined as a lack of lust and desire for intimacy, reduction of sexual power, inability to have sexual intercourse, lack of desire to have sexual intercourse, and weakness in intercourse. The two leading causes are physical and psychological. More precisely, the causes of sexual desire weakness include weakness in the whole body, weakness in the body's vital organs (Heart, brain, liver, and gonads), and weakness in other influential organs (Kidneys and stomach). Among other causes, weakness can be due to mental conditions such as anxiety and depression (12). Also, a decrease in the quantity of semen, a change in its quality, or a

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decrease in sperm movement is seen in drug users. Finally, long-term abandonment of intimacy is another cause of weak sexual desire (12,13).

Some causes of penile laxity are common with weak sexual desire. Among these causes are weakness in the whole body and long-term absence of intimacy. One of the uncommon causes of erectile dysfunction that should be investigated is a minute intravascular flatulence (Gas) in the body, which can prevent erection. From the point of view of traditional medicine sages, every food that enters our body goes through four digestion stages: gastric, hepatic, vascular, and organ digestion. Apart from the digested materials, the result of gastric digestion is also gas, which is called digestive flatulence. In vascular and organ digestion, gases are created, which are the cause of erection in the penis. Masturbation is another cause of weakness in the penis (14,15).

General treatment measures

According to the sources of Persian medicine, in general, the principles of treatment are first based on dietary interventions or food drugs and then the use of sexual enhancement drugs or manipulations such as massage. Proper nutrition is one of the basic treatments for sexual weakness. Therefore, it is mentioned in these sources that the benefits and effectiveness of food are greater than those of medicine. For this purpose, the recommended diet should generally consist of foods of the right quality and volume. In other words, nutrition with appropriate composure, strength, and durability, and at the same time with a high digestion speed and light digestion with high nutritional value, delicious and fragrant can cause suitable and non-irritating intravascular flatulence (Gas) (15).

Also, among foods, those that create more suitable heat and moisture in the temperamental conditions of the body are more suitable for strengthening the sexual powers. Honey egg yolk, mutton, figs, grapes, and legumes such as peas are among these foods. Also, another important measure in the treatment of sexual dysfunction is to strengthen the vital and main organs of the body, i.e., the heart, brain, and liver, along with the organs involved in reproduction. Therefore, with defective main organs, merely prescribing drugs cannot strengthen sexual powers and guarantee successful treatment (14,15). Warming the back and kidneys, gently massaging the legs and soles of the feet while sleeping, rubbing aromatic oils on the body while sleeping, and removing hair from the genital area are other effective interventions that can be influential in successfully treating sexual weakness. Dietary interventions, rather than drugs, are considered the cornerstone of treating sexual dysfunction (15-17). Thus, the following sections will discuss the primary causes, typical symptoms, and recommended foods to address these causes.

1-Quantitative changes in semen

From a Persian traditional medicine perspective, the low volume of semen causes sexual weakness. This is attributed to physical weakness and the mal-temperament of the reproductive system with particular symptoms, and there are dietary recommendations to address this. Among the body weakness signs, the weakness and thinness of the body, the yellow color of the face, the signs of the current loss of body fluids, and the history of chronic disease, especially with the involvement of vital and essential organs, are noteworthy (18). The foods that are mentioned to compensate for the weakness of the body include cooked dishes of lamb, chicken, partridge with pumpkin, turnip, onion, apple syrup, meat extract, cooked dishes of meats with warm spices and turmeric, peas, and garlic, ginger jam, coconut, starch halva, almonds, pistachios, honey egg yolk, coconut with sugar, and rice milk. Foods specifically recommended for body weakness caused by fluid loss include Nakhodab (Chickpea broth), lamb, partridge, chicken, sugar halva, and starch mixed with almonds or sesame oil (16,19).

2-Qualitative changes in semen

Changes in the concentration, consistency, viscosity, or viscosity of semen, which are caused by dystemperament or departure from the moderate state of temper and the natural and physiological conditions of the organs involved in sexual performance, can cause sexual dysfunction. For example, the symptoms of the predominance of dry quality in the reproductive system include a decrease in semen volume, thick semen, difficulty ejaculating, anemia, body thinness, and improvement of a person's condition with things that increase moisture in the body, like moisturizing foods. In this case, the recommended foods are silks that create softness, fatty soups and stews, milk, dairy products, grilled fresh fish with raw onions, chicken meat, dates with milk, and porridge (17,20).

The symptoms of the coldness of the genital system are very thick semen, ejaculation with difficulty, and improving the condition with things that increase heat in the body, such as moderate hunger and fasting, moderate exercise, or warm foods. Drug users may experience symptoms of coldness of the genital tract and decreased sperm motility. The recommended foods, in this case, are turmeric or ginger or mandarin jam, simple pea soup (A stew made with chickpeas) or food prepared with bird meat, cinnamon and saffron, turmeric and starch halvah, cooked foods with meat, cinnamon and Kholanjan (Alpine officinarum), coconut with sugar, walnuts, hazelnuts, almonds, pistachios, cashew nuts, mountain pistachios, porridge made with goat meat, goat meat with onions, yellow carrots and turnips, and chicken (21).

The symptoms of the predominance of warm quality in the genital system are the yellow color of the semen, the speed of ejaculation, the size of the testicles, the bulging of the vessels of the penis, and the improvement of the condition with things that induce the cold quality in the body, including consumption of cold-tempered foods such as yogurt. Semen may be thick or thin in this state. The recommended foods, in this case, are Sekanjabin, lemon syrup, cow butter, foods containing barberry, lemon, pomegranate seeds, and grape pomace, barberry soup with goat meat, chicken, mung bean and chickpea soup, milk, goat meat and spinach, soup without meat with barberry, chicken and goat meat with pomegranate, quince jam, amole (Embolic myrobalan) jam and pomegranate paste (22).

The symptoms of moistness in the reproductive system include thin and white semen and conditions that increase moisture in the body. These include drinking excessive and icy water, and interventions that reduce body moisture can alleviate it. The recommended foods in this condition are fried meat and cooked foods containing hot spices such as cinnamon, cumin, thyme, kebab prepared with hot spices, chicken, partridge, sparrow, and small birds (15,23).

3- Weakness of the vital organs (Brain, heart, and liver)

Due to the weakness of the brain, nerves, and psyche, the sensation and movement of the genital organs deteriorate, and this affects the production and stimulation of sperm. The symptoms of weakness of the brain and nerves and the psyche include laziness and slowness in sensation and movement, confused thoughts, difficulty and slowness in movements, low sexual desire and lack of pleasure from intimacy, low sensation of sperm movement, history of brain damage caused by trauma, sleep deprivation, and deterioration of the condition by consumption of excessive water and cold drinks and moisturizing agents.

If the weakness of the brain is caused by the accumulation of waste materials (Material maladjustment), it is recommended that the brain be cleaned with appropriate medicine. If it is caused by a simple temper disorder (Without substance or quality), it is recommended to return the temper to its original state instead of cleaning it. This can be performed through lifestyle modification and proper nutrition (17,20). In the next step, warm and mild foods combined with aromatic spices, such as lamb, sheep, and chicken flavored with cloves, saffron, rose water, and cinnamon, strengthen the brain (24). It is also recommended that perfumes suitable for every temper be used. Thus, in extreme heating of the brain, cool perfumes such as rose and violet are helpful, and in extreme cooling of the brain, warm perfumes such as musk, amber, and oud are helpful (14,25).

The symptoms of heart weakness can include a general lack of warmth in the body, a soft and weak pulse, decreased sexual desire and enjoyment, difficulty achieving an erection, occasional ejaculation without an erection, anxiety, and a history of chronic illnesses, starvation, or significant hardships and suffering. Sometimes, a person may stop doing this due to shame and fear (22,26).

In general, fragrant medicines and foods that create proper moisture in the body are helpful in the treatment of heart weakness. In this case, the recommended foods are nuts, syrups (Such as lemon balm syrup, borage flower, apple with rose water and chives), lemon syrup, young chicken kebab, sparrow, and small birds with solid and uplifting spices. It is recommended to refrain from consuming foods that produce soda, such as beef, lentils, eggplants, pickles, canned foods, and all types of fast food (15).

From the perspective of traditional Persian medicine, due to blood production defects in liver weakness, the quantity and quality of sperm production and sexual power are also affected. In this case, the symptoms include loss of appetite, anemia, indigestion, swelling of the eyelids and face, jaundice or whiteness of the face, feeling of discomfort in the liver area, quantitative and qualitative changes in the blood, decrease in desire for intimacy and lethargy of the penis (20). For treatment, it is necessary to correct and strengthen the temperament of the liver. In this case, the recommended foods include mung beans, chickpeas, and chickpeas prepared with chicken meat (15). Drinking Sekangabin syrup and rose water while fasting and avoiding intense activities is recommended (14).

4- Weakness of important organs (Stomach, kidneys)

The symptoms of stomach weakness include loss of appetite, anemia, indigestion, nausea, restlessness, hiccups, excessive belching, and discomfort in the stomach, especially when eating and drinking (15). In treating stomach weakness, correcting the temperament and strengthening it after cleansing is necessary. Eating light and easy-to-digest food, aromatic digestives, roasted chicken meat flavored with cinnamon, cardamom, cloves, cumin, and saffron and containing a small amount of lemon juice, pomegranate juice, and sumac, not consuming too much hot and dry spices has been recommended. Also, overeating should be avoided, water consumption should be limited, and foods that increase dryness should be avoided (17). From the perspective of Persian traditional medicine sources, kidney cold upset, kidney emaciation, kidney diseases, and its sebum (Which is equivalent to the adrenal gland) can lead to a decrease in sexual desire (27). The kidney and its sebum are one of the factors in the formation of sexual desire because the kidneys and its sebum influence a part of the development process of sperm production, and a person who has the right heat in these organs has a high production of sperm and the ability to have sex (17). Among the symptoms of weakness of these organs, we can mention the shrinking of the kidneys, urinary changes, impotence, ejaculation without lust, and discomfort in the lower back. If the cause of decreased sexual desire is weakness of kidneys and sebum, its treatment is the priority. In most cases, keeping the kidneys and lower back warm is necessary as the heat of this area is very effective in causing an erection, arousal, and stimulation of the genital organs (27). The recommended foods for treating the weakness of these organs are sheep and camel milk, rice milk, kale (Sheep's head and trotters), hawthorn, dates, sweets such as halva or

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carrot jam, astringent foods such as cooked pomegranate soup with raisins, syrup of apple juice, quince juice, pear, rhubarb and lemon, lentils with sumac juice, ab-hora juice and pomegranate juice, partridge meat and small birds containing sumac, watercress and pomegranate juice, and honey egg yolk with sumac (15).

5- Leaving intimacy for a long time

After a prolonged period without intimate contact, sperm production in the body can decrease, similar to reducing milk production, when weaning children. Therefore, in the case of weak libido, the history of sexual intercourse should be asked. This type of sexual power weakness can arise from low self-esteem, particularly in single men (28).

Its management includes stimulating sexual desire correctly and appropriately. Its symptoms include erectile dysfunction and decreased sexual desire. The recommended foods, in this case, are milk, sugar, honey, egg yolk, fresh fish, walnuts, onions, cow's milk boiled with sugar or honey, pistachios, halva in cow yolk oil, pistachios, and hazelnuts, goat meat, chicken, partridge and other birds, Kallepache (Sheep's head and trotters), porridge, sparrow eggs, and yogurt with dates or fresh onions. In general, gradual preparation for marriage and sexual intercourse is necessary in this case (14,19).

6- Lack of intravascular flatulence (Gas)

From the perspective of Persian traditional medicine, wind or flatulence is caused by the effect of weak heat on a thick, moist substance. Flatulence is generally static and limited to the digestive system, while gas can move and is not restricted to that system. In any case, from this point of view, the cause of erection is flatulence or wind (Gas) inside the vessels of the genital area. Therefore, as long as there is no vascular swelling, erection does not take place. The symptoms of this deficiency include better erection by using intravascular flatulent foods and not inside the digestive canal. The recommended foods, in this case, should have the characteristic of producing flatulence and thick wind. These foods include peas, turnips, carrots, grapes, figs, Shahi (Spicy leeks), mountain pistachios, pistachios, Calquze (Chilghoza pine or neja), dates with milk, horseradish, mint, fenugreek, artichokes, beets, bergamot, poppy seeds, cooked garlic, tea, sparrow (In a moist temper), fish, lamb, chicken, duck, pigeon, fresh milk with a bit of cinnamon, as well as other thick and flatulent foods such as chickpeas with onions and chickpea juice, beans and milk (15,24). From the point of view of Persian medicine, flatulence in extreme cold and heat and the absence of sufficient humidity reduces its production and prevents erection. Cold and extreme heat are both anti-flatulent; also, in dry temperament, there is no flatulent substance due to the lack of sufficient humidity. In these conditions, despite the presence of sufficient physical strength, the penis does not get an erection and remains limp. In any case, based on whether the cause is cold, heat, or dryness, the treatment is designed with countermeasures (15,29).

7- Mental-psychological weakness

Weakness is caused by psychological factors (Stress and excitement, anger, sadness or fear, embarrassment, anxiety, and feeling unable to have sex) despite the health of the reproductive organs and the abundance of sperm. There is no desire for intimacy in this case. The effect of psychological factors on the body is more and faster than in other cases. To manage this condition, it's essential to address a person's psyche, mind, and thoughts using appropriate methods, and it is necessary to strengthen the heart and brain. If the heart and brain are strong, wrong mentalities such as fear and feeling powerless from sexual intercourse will not take effect soon (17,25). Foods that strengthen the heart and brain, such as poultry containing saffron and cinnamon, pears, quince, and apples, are recommended in this case (30).

8- Weakness or paralysis of the nerves of the penis

The common symptoms include very thin semen, easy ejaculation without an erection, and rapid ejaculation. The penis has weak sensation and movement and becomes thin, weak, and narrow day by day; the penis is not stretched or slightly stretched by contact with cold water; it can also be caused by sitting for a long time in a cold environment or masturbation. The recommended food, in this case, is chickpeas (15).

Table 1 summarizes these causes and findings. Table 2 also shows a major part of these causes that can be matched with the classifications made in modern medicine's sources.

Table 1. Etiology of erectile dysfunction in traditional Persian medicine

Causes of dysfunction	Characteristics	Dietary measures
Quantitative changes in semen	Changes in the amount of semen	Cooked dishes of lamb, chicken, and partridge with pumpkin, turnip and onion, apple syrup, meat extract, cooked dishes of meat with warm spices and turmeric, peas, onion and garlic, ginger jam, coconut, starch halva, almonds, pistachios, honey egg yolk, coconut with sugar and rice milk.
Qualitative changes in semen	Changes in the concentration, consistency, and viscosity of semen	The measures are different depending on the type of dystemperament. (In general, pea stew, poultry, goat meat with cinnamon and saffron, milk, Sekangabin, etc.)
Weakness of vital organs (Brain, heart, and liver)	Brain, heart, or liver dysfunction	Lamb, sheep, chicken flavored with cloves, saffron, rose water, and cinnamon, apple with rose water, mung beans, chickpeas, and chickpeas prepared with chicken meat
Weakness of major organs (Stomach, kidneys)	Stomach or kidney dysfunction	Roasted chicken meat flavored with cinnamon, cardamom, cloves, cumin, and saffron, with a small amount of lemon juice, pomegranate juice, and sumac (For the stomach). Syrup of apple juice, quince juice, pear, rhubarb, lemon, lentils with sumac juice, ab-hora juice and pomegranate juice, partridge meat and small birds containing sumac, watercress and pomegranate juice, and honey egg yolk with sumac (For kidney).
Being away from intimacy for an extended period.	Erectile dysfunction and decreased sexual desire	Milk, sugar, honey egg yolk, fresh fish, walnuts, onions, cow's milk boiled with sugar or honey, pistachios, halva in cow yolk oil, pistachios, and hazelnuts, goat meat, chicken, partridge, porridge, sparrow eggs, yogurt with dates, fresh onions.
Lack of intravascular flatulence (Gas)	Better erection by using intravascular flatulent	Peas, turnips, carrots, grapes, figs, mountain pistachios, pistachios, dates with milk, horseradish, mint, fenugreek, artichokes, beets, bergamot, poppy seeds, cooked garlic, tea, fish, lamb, chicken, duck, pigeon, fresh milk with a bit of cinnamon, chickpeas with onions and chickpea juice, beans.
Mental-psychological weakness	There is no desire to be close.	Heart and brain tonics (Bird meat containing saffron, cinnamon, pears, quince, apples)
Weakness or paralysis of the nerves of the penis	The presence of shape, sensory, movement, or functional disorder in the penis	Pea stew

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Table 2. Common causes of erectile dysfunction in modern medicine (7)

Category of erectile dysfunction	Causes of dysfunction	Characteristics
Psychogenic	Performance anxiety Relationship problems Psychological stress Depression Schizophrenia	Loss of libido, over-inhibition, or impaired nitric oxide release.
Neurogenic	Stroke or Alzheimer's disease Spinal cord injury Radical pelvic surgery Diabetic neuropathy Pelvic injury	Dysfunction of initial nerve impulse or interrupted neural transmission
Hormonal	Hypogonadism Hyperprolactinemia	Loss of libido and inadequate nitric oxide release
Vasculogenic (Arterial or Cavernosal)	Atherosclerosis Hypertension Diabetes mellitus Trauma Peyronie's disease	Inadequate arterial flow or impaired veno-occlusion
Drug-induced	Antihypertensive and antidepressant drugs Antiandrogens Alcohol abuse Cigarette smoking	Central suppression Decreased libido Alcoholic neuropathy Vascular insufficiency
Caused by other systemic diseases and aging	Old age Diabetes mellitus Chronic renal failure Coronary heart disease	Usually multifactorial and results in neural and vascular dysfunction

Discussion

This analytical article explored the causes and symptoms of sexual dysfunction in men through the lens of traditional Persian medicine, along with its nutritional recommendations.

From the perspective of traditional Persian medicine, Sexual dysfunction is the inability to have sexual intercourse. Its leading causes include quantitative and qualitative changes in semen, weakness of vital organs of the body such as the brain, heart, liver, stomach, and kidney, long-term refraining from intimacy, low intravascular flatulence (Gas), weakness of mental and emotional states, and weakness of the nerves of the penis. The treatment principles for this disorder focus on dietary measures, strengthening vital organs, and utilizing sexual enhancement drugs or alternative methods such as massage.

In general, traditional Persian medicine, as a complementary and holistic medicine, has specific instructions for maintaining sexual health. From the perspective of this alternative medical approach, maintaining sexual health is a crucial aspect of the body's natural functions. In addition to contributing to the survival of future generations, sexual health plays a vital role in overall bodily health. It is considered one of the essential aspects of natural well-being. Based on this belief, the body has four important organs (Heart, brain, liver, and gonads), and the body's general health mainly depends on the health and proper functioning of each. Also, it is necessary to have a balanced sexual relationship for physical and mental health because observing the measures related to sexual relationships leads to an increase in physical strength and the prevention of mental disorders (20).

As a general principle in traditional Persian medicine, lifestyle modification measures should precede other treatments. In the books on hygiene or maintaining health, healthy and correct sexual measures are mentioned jointly for men and women (31).

Moreover, from the point of view of this alternative medicine, drugs should not be used as long as it is possible to treat patients through lifestyle modification. Therefore, to treat decreased sexual desire, dietary measures, modification of the pattern of exercise and physical activity, sleep and wakefulness, cleaning and disposal of waste materials, correction of psychological problems, and the temperature and ventilation of the living environment are recommended. These measures can strengthen the body and important body parts and thus help to treat sexual dysfunction (23,30).

This study shows that the traditional Persian medicine sages' definition of sexual dysfunction is relatively comprehensive, and the approaches of Persian traditional medicine have many similarities with the modern approach. However, there are differences in the way of expression, the type of measures used, and the drugs used. Also, the sages of traditional Persian medicine were sufficiently familiar with the various causes of sexual dysfunction. They emphasized the connection between the health of other organs and the improvement of this disorder. Therefore, it is not sufficient to focus on the function of the reproductive system and the brain and nerves as its guiding system to address sexual dysfunction. Other vital organs of the body, namely the heart and liver, and the digestive system, as a place for digestion and absorption of food, which is the main ingredient of semen, should be considered.

From the point of view of traditional Persian medicine, in treating all kinds of causes of sexual weakness, it is emphasized that all organs of the body, especially the heart, liver, brain, and reproductive and digestive systems, should be strengthened. This depends on the health of the primary and vital parts of the body, the reproductive organs, and the abundance of semen. Even paying attention to the kidneys and their related tissues, including kidney sebum (Which today is referred to as the adrenal gland and participates in the secretion of sex hormones), has been stated as one of the causes of sperm production and sexual desire (32).

Therefore, the primary action in diagnosing and treating sexual dysfunction is paying attention to the central and vital organs of the body (Heart, brain, liver) and evaluating their weakness. Because these organs are the main and influential organs in sexual matters, if we only strengthen the sexual powers and gonads despite the weakness of these organs, the desired result of the treatment may not be obtained. Also, the use of food is one of the pillars of the treatment for the reduction of sperm production, and the sages of Persian medicine have emphasized the use of food to treat sexual disorders more than the use of drugs. In addition, to have a proper sexual function, an erection must also take place, and what causes an erection is bloating and gas that must exist inside the vessels of the penis (28).

Therefore, while expressing this scientific notion, the temperament and types of dystemperament and the effect of the four natural qualities, i.e., coldness and warmth, or wetness and dryness, have also been noted on this flatulence, distinguishing it from modern medicine. From this perspective, the type of treatment and even the foods recommended for different people may differ. It is believed that if the temper or dystemperament is not correctly diagnosed and the proper nutrition or medicine is not prescribed, not only may no result be achieved, but there will also be the possibility of the opposite result (15).

According to the investigations conducted in this study, most causes of sexual dysfunction in Persian traditional medicine are consistent with the causes of sexual dysfunction in modern medicine. Still, the noteworthy point is that some factors from the perspective of Persian traditional medicine are considered to be the cause of sexual dysfunction. It is mentioned that it has not yet been addressed in common medicine and needs more research, including the effect of the four natural qualities (Cold, hot, wet, and dry) on flatulence or intravascular gas.

In conventional medicine, there are rarely definitive and standard treatments, and most available drugs have side effects that prevent the effective use of drugs by limiting their use (7). This is while in Persian medicine, as a general principle, lifestyle modification measures precede other treatments. Therefore, it is believed that drugs should not be used as long as it is possible to treat patients using dietary measures (25).

According to modern medicine, erectile dysfunction can have vascular, hormonal, genetic, neurogenic, and psychological causes (Table 2) (7,33), and most of these causes are compatible with the classifications made in the sources of traditional Persian medicine. For example, vasodilatation disorder in the corpus cavernosum in the male penis leads to erectile dysfunction in men, which can be due to the reduction of nitric oxide gas production in the body. Nitric oxide is a colorless gas that is effective in the expansion of blood vessels and relaxation of smooth muscles, and its deficiency causes problems in the accumulation of

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blood in the corpus cavernosum and erection (34). Taking blood pressure medications, such as thiazide diuretics, can lead to erectile dysfunction due to hormonal effects and a reduction in nitric oxide (35).

Goldenberg et al. reported a relationship between stressful life events and semen parameters, indicating that stressful life events decrease semen quality. The most common hypothesis in this regard is that stressful events may cause a decrease in serum levels of testosterone and luteinizing hormone, which in turn interferes with spermatogenesis (36). In addition, the relationship between the disorder of the main and important organs of the body, such as the central nervous system (37), heart (38), liver (39), digestive system (36) and kidneys (40), as well as the relationship between the disorders of the penis, including Peyronie's disease, which is probably due to trauma to the penis and inflammation in the tunica albuginea, eventually leading to scarring and curvature of the penis, with sexual dysfunction has been proven in new studies (41,42).

A study on 300 patients with symptomatic ischemic heart disease (Mean age, 62.5 years) also showed that 49% had ED, of which 67% reported experiencing ED symptoms before the onset of CHD symptoms (7).

Diseases such as diabetes, which affect the whole body's dystemperament and physiological conditions and make the body suffer from a general dystemperament, weakness, and subsequent quantitative and qualitative changes in semen, can lead to sexual dysfunction. For this reason, the pathophysiology of sexual dysfunction in diabetes is multifactorial, and it leads to neurological, vascular, and hormonal complications. Scientific evidence shows that men with diabetes may be at increased risk of decreased testosterone levels (Hypogonadism) in addition to neurological and vascular problems due to increased blood sugar. Hypogonadism can indirectly reduce the levels of pituitary hormones that are responsible for stimulating the production of testosterone in the testes. Low testosterone levels may lead to loss of libido and directly or indirectly cause ED. Also, diabetic neuropathy can cause autonomic and somatic nervous disorders that are important for erection. In addition, diabetes can cause disturbances in corpus cavernosum smooth muscle relaxation due to endothelium-produced nitric acid, which may be a side effect of glycosylated products (43).

Conclusion

Many views of Persian traditional medicine are in agreement with what is proposed today in the diagnosis and treatment of sexual dysfunction. However, some of the important clinical interventions proposed in traditional Persian medicine, including correcting the nutritional status based on the knowledge of the individual's temperament and the organ's temperament, can be investigated in clinical trials. Therefore, using the knowledge of traditional and complementary medicine, including traditional Persian medicine, along with modern treatments, can open the way for future research and presenting research projects in this field and help to improve the treatment of sexual disorders.

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Ethical statement

All sources used are properly disclosed and all authors have been personally and actively involved in substantial work leading to the paper, and will take public responsibility for its content.

Conflicts of interest

The authors declare that they have no competing interests.

Author contributions

MZ: Conceptualization and Study validation, Supervision, Editing, and Revision; SA.MK: Implementation, Data analysis, Interpretation, Writing, and Reviewing: The authors have read and approved the manuscript.

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