



Avicenna's Points in Improving Female Urinary Incontinence with Lifestyle Options

Nematollah Masoudi¹, Zahra Niktabe², Malihe Tabarra^{2*}, Ali Masoudi³, Fereshteh Ghorat⁴,
Fateme Moradi², Alireza Abbassian²

¹Baqiyatallah University of Medical Sciences, Tehran, Iran

²Department of Traditional Medicine, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran

³Department of Psychology, Faculty of Educational Sciences and Psychology, Mohaghegh Ardabili University, Ardabil, Iran

⁴Non-Communicable Diseases Research Center, Sabzevar University of Medical Sciences, Sabzevar, Iran

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Abstract

Urinary Incontinence (UI) is a significant reason for the decline in women's quality of life. The unexpected occurrence of UI and its high costs around the world are evident. Numerous methods are used for the management of UI; however, there is no worldwide agreement on any of these methods. Traditional medicines are a source of human medical experiences and this study is a review on the books of the most famous Persian medicine (PM) physician, Avicenna, to find about his approach to UI. Keywords such as: "female urinary incontinence", "lifestyle", and "nutrition" were selected. As a library research, Avicenna's (980- 1037 AD) "the Canon of Medicine" (Al-Qanun Fi al-Tibb), was reviewed and coded. Some other PM famous books like "the Great Continens" (Al-Hawi fi Al-Tibb) of Rhazes (865- 925 AD) and "The Comprehensive Book on Medicine" (Al-Shamil fi Al-Sana'a Al-Tibbiya) of Ibn al-Nafis al-Qarshi (1213- 1288 AD) were used as a help to interpret the codes just in case it was required. Modern literature was searched with the same keywords at electronic databases such as Google Scholar, PubMed, and Magiran. Finally, the results were compared. Recent studies care on conservative and lifestyle management in the treatment of UI. In PM, principles of lifestyle management (Setteh-e-zarurieh) is one of the main characteristics of prevention and treatment with six essential principles including weather, eating and drinking, sleep and wakefulness, movement and rest, evacuation and retention, and psychological and mental reactions. In healthy people, these six axes are designed by temperament and personal characteristics. In this manuscript, we discussed five mentioned subtypes. These managements are appropriate for designing various pieces of clinical trials to survey their effects on female UI.

Keywords: Urinary incontinence; Persian medicine; Lifestyle; Nutrition; Avicenna; Female

Introduction

Urinary Incontinence (UI) is a significant cause of the decrease in quality of life, mostly in the middle aged Women [1]. Main types of Female Urinary Incontinence (FUI) include urge urinary incontinence (UUI) with unconscious urination with urge and quick to drain urine, stress urinary incontinence (SUI) with

incontinence throughout sneezing, cough, sudden change in the state of physical activity, and mixed urinary incontinence (MUI) with symptoms of SUI and MUI [2]. The high occurrence of UI, as well as its high social and financial burden significantly affect patients' quality of life [1-4]. Although various therapeutic methods such as behavioral therapy, bladder

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*Corresponding Author: Malihe Tabarra

Department of Traditional Medicine, School of Persian Medicine, Tehran University of Medical Sciences, Tehran, Iran

Email: dr.mtabarra@yahoo.com

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rehabilitation, pelvic floor exercise, functional electrical stimuli, intravaginal and surgical instruments for the treatment of FUI are used [2,5,6], several problems still remain. Surgery has short-range and long-standing difficulties and there is no widespread agreement on using certain oral medications such as duloxetine. The ineffectiveness of drug treatments and notable complications for treatment of UUI is evident [2,7]. Therefore, it seems crucial to pay more integrative medical attention to lifestyle improvements and healthy nutrition. Patient training regarding bladder health is also supportive in the management of SUI. Healthy bladder habits include lifestyle modifications such as eliminating bladder irritants from the diet, supervising fluid consumption, weight management, bowel functional constancy management, and smoking cessation [1]. On the other hand, complementary and alternative medicines all over the world have several dietary recommendations and life style modifications for these patients which can be helpful in both primary and secondary prevention of the disease. Persian medicine (PM) is one of the most ancient medical doctrines which is globally known with the works of great physicians such as Rhazes (865- 925 AD) and Avicenna (980-1037 AD).

Avicenna is one of the most well-known Persian physicians of Islamic era. His book, "the Canon of Medicine" (Al-Qanun Fi al-Tibb) was the text book of medicine until the 16th century [8]. In view of Avicenna, one of the main features of disease management is lifestyle modifications. In this regard, three main components of treatment include lifestyle modification, local and oral management of the drug, and manual interventions (Amal-e-yadavi) such as cupping, phlebotomy (Fasd), and small surgeries, if needed [9,10]. The purpose of this study is to achieve lifestyle options for prevention, deceleration of disease progression, and stoppage the relapse of the disease in PM, and to compare the results with the conventional medicine.

Methods

In this review study, the data regarding the recommendations of Avicenna for the management of FUI were collected in a library search. An electronic search was performed to extract current treatment methods in conventional medicine. We researched single or compound words of the keywords including "Prevention", "Lifestyles", "Urinary Incontinence", "Female Urinary incontinence", "Urge Urinary Incontinence", "Mix Urinary Incontinence" and "Stress Urinary Incontinence" at various databases including Google Scholar, PubMed, Web of Science, Scopus, Magiran, and Scientific Information Database (SID). Then, the recommendations of Avicenna in "the Canon of Medicine" about UI were reviewed. This survey was widespread with the keywords "Bladder",

"Bladder anatomy", "Bladder disorders", "Sals-al-Bol" (frequent urination), "Bol fi al-ferash" (nocturnal enuresis), "Taghtir al-Bol" (urinary incontinence), "Humor", "Bladder tonics", "Principles of lifestyle management" (Setteh-e-zarurieh). In the next step, some additional notes about UI from other PM famous books were similarly searched such as: "the Great Continens" (Al-Hawi fi Al-Tibb) of Rhazes (865-925 AD), "The Comprehensive Book on Medicine" (Al-Shamil fi Al-Sana'a Al-Tibbiya) of Ibn al-Nafis al-Qarshi (1213- 1288 AD), "Kholasat al-Hekmah" and "Makhzan al-advieh" of Mohammad Hadi Aghili Khorasani (1670- 1747 AD), "Tebb-e Akbari" of Hakim Mohammad-Akbar Arzani (18th Century AD), "Kamel al-Sana'ah al-Tibbiya" of Haly Abbas (10th century AD), "Zakhireye Khwarazmshahi" of Ismail Jorjani (12th century AD), "Exir Azam" of Hakim Mohammad Azam Khan Chishti (1829- 1902 AD), and duplicate topics were removed. Lastly, the outcomes were compared with the results of the new conventional and complementary medicine studies.

Results

Six essential principles of lifestyle management in PM (Setteh-e-zarurieh) are weather, eating and drinking, sleep and wakefulness, movement and rest, the process of persistence and retention of materials in the body, or repelling them (evacuation and retention), and psychological and mental reactions. In healthy people, these six principles are personalized by their temperament and characteristics. There are guidance and modifications to treat the disease upon each of these six principles. Moreover, medicines and additional therapeutic methods are recommended in more complex cases [9]. In PM view, four qualities of coldness, hotness, dryness, and wetness should exist in all body organs in a balanced way. Dominancy of each of these qualities is called dystemperament which results in dysfunction of body function [11,12]. In PM text books, UI is the equivalent of "Salas-Al-Bole" that is caused by two main reasons: weakness, dysfunction, and laxity of the muscle surrounding the bladder, and bladder dystemperament which consequently impairs the function due to increased coldness and wetness in the bladder tissue. In view of conventional medicine, dysfunction of the muscle of the bladder wall, detrusor, causes UUI. Also, hypermobility of the bladder sphincter muscle causes SUI [13]. Some risk factors of UI are obesity, race, age, pregnancy and childbirth, menopause, functional impairments, and familial history of UI, cigarette smoking and chronic lung disease [14,15]. According to PM, mentioned factors lead to a cold dystemperament in the bladder and surrounding tissues [15,16]. Also, in PM, stress is considered as one of the reasons for UI [17]. Considering the above-mentioned factors, life style modification can

critically contribute in the management of UI which are discussed as follow.

Recommendations related to weather, ambient temperature, and geographical living environment

It is recommended that patients avoid frequent or prolonged sitting in cold and humid places and do not use cold water to wash and clean the urogenital area [9,15]. In a study, cold water induction from the lower urinary tract (LUT) to the bladder was used as a diagnostic test to evaluate neurogenic disorders. This study examined the effects of cold stimulation in the lower urinary tract of urethane-anesthetized rats. Cold saline injections in the rat bladder compared with the body-or room-temperature saline show that cold saline increases 100% in the baseline bladder pressure and the pressure threshold for inducing micturition [18]. According to the results of this study, cold water can lead to loss of bladder function and increase the possibility of UI.

Recommendations related to sleep and wakefulness

According to Avicenna's description, excessive sleep and long sleep during the day lead to increase excessive moisture in tissues. Patients with UI should have a decent sleep and avoid too much sleeping during the day [9]. Although in conventional medicine studies, the effects of insomnia and irregular sleep have been addressed and their adverse effects on attention, memory, and personality functioning have been considered, no study was found on the effects of sleep and its quality on urinary system function [19,20].

Recommendations related to movement and rest

In terms of PM, this category includes rest, physical activity, exercise (Riazat), massage (Dalk), and acupressure (Ghamz). Patients with UI should avoid physical inactivity. Local and general exercises, massage and acupressure with moderate intensity and duration are suggested for patients suffering from UI [9].

1- Exercise

In conventional medicine, pelvic floor muscle-building exercises, especially kegel, are effective methods for preventing UI [3]. Similar to PM which suggests moderate exercise, in conventional medicine, heavy exercise is considered as a risk factor for UI [21]; while an appropriate increase in physical activity levels reduces SUI [5].

2- Massage

In PM, along with discussions about the treatment of UI, body massage is suggested as a general recom-

mendation. Today, in recent studies, the use of massage and manual techniques have been considered in the treatment of female diseases. For example, the positive impact of perineal massage to facilitate childbirth and reduce perineal trauma, as well as manual physical therapy to improve female sexual function and dysmenorrhea are mentioned [11,22].

Recommendations related to evacuation and retention

To regulate lifestyle, issues such as retention, abnormal decrease or increase of urine, feces, menstrual blood, intangible water loss, and sweating due to hot bath are important. Retention or obstruction of each of these paths leads to the accumulation of excess moisture in the body and can lead to UI development [9,12]. In PM, constipation can cause or aggravate UI via disrupting the rate of movement and removal of materials from the body and applying compressive effects on the pelvic and bladder [17]. Today, constipation is a common health problem which causes and develops several diseases. Changes in dietary habits and the impact of psychological and social factors in recent decades lead to a remarkable increase in the incidence of constipation which has negative effects on human health and quality of life [23]. In one study, the incidence of constipation was directly associated with SUI. Coyne and colleagues found higher rates of constipation in men and women with overactive bladder (OAB) compared with patients without OAB. Treating constipation has been demonstrated to improve urgency and frequency in older patients [1]. Bathing for a medium time (not too long) and avoiding bathing with a full stomach are the recommendations of Avicenna to prevent the accumulation of excessive wetness (9). In recent studies, some points like the positive effects of hyperthermic baths have been considered in patients with depression [24], but no study has been conducted on UI.

In PM, sweat therapy is one of the best ways to remove excess wetness and can help prevent and treat many diseases. Today, some of the beneficial effects of sweat therapy have been revealed. In a study published by the Japanese Department of Cardiology, sweat therapy has led to significant improvement in the left ventricular diastolic dimension, left atrial dimension and ejection fraction compared with conventional treatment, and the plasma concentration of brain natriuretic peptide (BNP) significantly decreased in these patients [25]. However, no studies have been done on patients with UI.

From the viewpoint of PM physicians, the uterus, in addition to participation in reproduction, is also an excretory organ. The abnormal quantity and quality of menstrual blood leads to accumulation of waste material in the body [17]. On the other hand, there is a close connection between the bladder and the uter-

us, and one of the principles of treating some types of amenorrhea is the use of appropriate medications to improve bladder function [17]. Hysterectomy is a treatment modality for some gynecological disorders that has not been proposed in the past, but according to this view, bladder dysfunction in patients with hysterectomy is predictable. A cross-sectional study has shown that the previous hysterectomy has been known by associated with higher incidence of UI [26]. At the same time, we find reports of no association between hysterectomy and UI [27]. In some studies, also pre-hysterectomy conditions such as obesity and vaginal delivery have been concerned in the incidence of UI after hysterectomy [28]. However, in conventional medicine, the relation between FUI and hysterectomy is not clear [6]. According to conventional medicine, childbirth is one of the risk factors for UI. Childbirth can drop the bladder neck. It can also be caused by partial pelvic necrotizing by pudendal neuropathy creation [5]. Therefore, the prevention of any abnormal pelvic pressure, including proper treatment of asthma, constipation, and proper delivery, is also a preventing method in conventional medicine [3]. Suitable labor management avoids pelvic organ prolapse, urethral injury, and pelvic floor muscle damage [3]. From Avicenna's perspective, pregnancy, especially in people with bladder weakness, can lead to UI. In PM, the effect of compression of internal organs on the bladder is one of the causes of UI, and this effect is pronounced in the process of childbirth. Therefore, to prevent possible complications during childbirth, some non-pharmacological and pharmaceutical measures have been proposed separately to facilitate the childbirth process in women's affairs such as consumption of some foods, abdominal mild massage with herbal medicinal oils, and use of sitz bath with special herbs in the last month of pregnancy [17].

Recommendations related to psychological and mental reactions

All psychological and mental reactions such as sadness, happiness, fear, hope, anxiety, and obsession are discussed in this axis. In patients with obsessive-compulsive disorder, attention to its treatment to prevent UI is urgent [9]. Although PM does not directly refer to the association of mental states with UI, it is believed that mental states such as sadness and depression tend to cause cold dystemperament, leading to organ failure. On the other hand, happiness and hope lead to the balanced organ function and prevents dystemperament. Moreover, cold body impairment increases the likelihood of sadness, low mood, and depression [9]. Currently, mental health moderately facilitated the relationship between lower urinary tract symptoms severity and health-related quality of life as dignified by specific questionnaires [29]. In conventional medicine

studies, patients with pelvic floor dysfunction have some anxiety and depression symptoms [30]. In one study, the incidence of depression in women with UI was 27.5%. Also, the severity of UI symptoms in depressed patients is higher and their quality of life is more affected than other patients [31].

Recommendations related to eating and drinking

Balance in food intake and having a balanced weight in PM are associated with UI prevention. The weight loss programs in controlling UI in PM is important. Almonds, pine fruit, walnut, pistachio, figs, and raisin have a bladder tonic effect in PM. Some of the harmful foods for bladder in PM are yogurt, pickles, and high amounts of liquids. Due to their temperament, they can injure the bladder by increasing the coldness and moisture of the bladder tissue. The excessive consumption of sour foods due to the coldness of their temperament is also considered harmful from the perspective of PM [9]. Meanwhile, according to new findings, consumption of foods with high acidity leads to exacerbation of frequency and urgency. Caffeine with its diuretic effects can worsen the symptoms of stress and urge urinary incontinence by increasing the pressure of bladder detrusor muscle [15].

Discussion

In this study, we reviewed the Avicenna's recommendations for lifestyle modification of patients with UI. Persian physicians believe that considering these points, explained as the six principles for lifestyle modification, will improve the situation of these patients or decrease the severity of the symptoms. Based on PM, avoiding long-term contact of the body, and especially the pelvic region from coldness and wetness is one of the main principles for bladder health. Coldness of the pelvic organs for a long time cause bladder dysfunction in proper control of urinary excretion and leads to diseases such as UI. A clinical study showed that use of cold water on urinary tract to the bladder causes a temporary bladder dysfunction due to exposure to coldness which is in line with the findings of PM. Based on the results of this study, coldness increased intra-bladder pressure and decreased the microvascular threshold [18]. Weight loss programs is a part of controlling UI in modern medicine which is also mentioned in PM [18]. According to conventional medicine, smoking cessation is an important approach in improving the symptoms of UI [1,5,9,17]. Cigarette causes coughing, exacerbation of SUI, stimulation of bladder in UUI, along with secretion of nicotine and other toxins in the urine [1]. In PM, tobacco injury to the brain and heart has been confirmed in some of the temperaments; however, no suggestion has been found against it in UI [32].

According to Avicenna's point of view, factors such as the intensity of physical activity, local and general exercises, massage (Dalk), and acupressure (Ghamz) that affect UI control are referred to as heating factors (Asbab-e mosakheneh). These factors can be effective in improving the function of many organs such as joints [33], bowel [34], and bladder by increasing heat and reducing tissue wetness. In conventional medicine, an appropriate increase in the duration of physical activity is recommended for reducing SUI [1]. According to the viewpoint of PM, topical exercises are effective in UI control, and today, it is demonstrated that pelvic floor muscle training, such as Kegel's exercise, can strengthen the function of pelvic floor muscles [3,35]. Based on PM, positive and negative mental states can affect the overall functioning of the body, especially in conditions of a disease. According to new studies, mental health and UI seem to be deeply related. In general, it seems to be considerable consensus in the prevention of FUI and also in recommendations for relative lifestyle in PM and conventional medicine, including weight control, various sports and general exercises, reduced volume of fluids, control of constipation, and the facilitation of delivery. The recommendations of PM in preventing and improving the lifestyle of patients due to the etiology of this disease in this medicine, have great comprehensiveness and wide scoping, and can provide the basis for the preparation of a curriculum in this area. However, future clinical studies are essential to assess the effectiveness of these recommendations.

Conclusion

Based on Avicenna's view, the six principles of lifestyle modification are the main steps of prevention and treatment in different diseases, including UI. In healthy people, these principles are defined based on the temperament and personal characteristics to prevent UI; while patients with UI are more vulnerable to environmental factor in the exacerbation of their symptom and should highly consider these principles to prevent the development of the disease. Although some of these recommendation is supported by the current evidence, further studies are essential to evaluate the effectiveness of these treatment methods in clinical settings.

Conflict of Interests

The authors declare that they have no conflict of interest.

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