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Knee Osteoarthritis Pain Management in Post menopause Women

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ABSTRACT

Aim: Musculoskeletal disorders are among the chronic diseases and are the main cause of long-term physical disability. Osteoarthritis is one of the most common musculoskeletal disorders and a devastating disease and is the fourth leading cause of disability in the world that causes severe pain, decreased function, decreased social interaction and ultimately quality of life in patients. There is no definitive cure for osteoarthritis of the knee, because the changes caused by this complication are irreversible, but the clinical symptoms can be reduced and tissue damage can be delayed. Non-pharmacological therapies such as physiotherapy and exercise therapy, if positive, can play an important role in treating this disease and preventing the unpleasant complications of the disease.

Among the treatments for osteoarthritis, exercise therapy and knee protection behaviors seem to be one of the most effective, inexpensive and without side effects.

Conclusion: Given the increasing prevalence of osteoarthritis in women and their susceptibility to many diseases and other problems caused by not performing knee protection behaviors in women with osteoarthritis, communities should make this health problem as a priority to be solved.

In this review the prevalence, complication, risk factors and pain management of knee osteoarthritis have been discussed.

Keywords: knee Osteoarthritis - Protective Behaviors- Pain- Muscle Strength- Postmenopausal Women.

Introduction

Chronic diseases are among the most common health problems around the world, and people's health habits and behaviors significantly affect their incidence and severity [1]. These diseases are one of the main and important concerns in the middle-aged and elderly population that have an increasing trend [2]. Musculoskeletal disorders as chronic diseases are a major challenge in the health care system which are the main cause of long-term physical disability at all stages of life [3].

Osteoarthritis is one of the most common musculoskeletal disorders and a devastating disease that causes severe pain, decreased function and range of motion, reduced income, decreased social interaction and ultimately quality of life in patients [4]. Among the large joints of the body, the knee is the most common joint prone to this disease [1]. The main pathological features of this problem are damage to the articular cartilage of the knee, increased activity of the bones under the cartilage, and the formation of osteophytes on the side of the joint [5]. The term osteoarthritis or osteoarthritis of the knee refers exclusively to the severe destruction of cartilage at the articular surfaces of the femur and coarse bones, resulting in wear and tear of the bones on top of each other [5]. Trauma, fractures of joint surfaces, joint dislocations, rupture of menisci and knee ligaments, as well as excessive pressure on the joint can be the causes of this disease. In osteoarthritis of the knee, the joint mechanics change to adapt to the pain, and the failure

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to correct the abnormal forces on the knee further destroys the joint surfaces. According to its causative agent knee osteoarthritis is divided into two types of primary and secondary.

Primary Osteoarthritis: The cause of which is still unknown and is more common in women and people with diabetes. Obesity can probably not be mentioned as one of the causes of this disease, but after the onset of the disease, obesity accelerates the process of tissue destruction [6].

Secondary Osteoarthritis: It may result from joint injury or joint disease, ligament damage, and knee dislocation. Infection and rheumatoid arthritis can also cause secondary osteoarthritis. Improper application of force to the knee joint can also be effective in the development of secondary osteoarthritis [6].

Symptoms of Osteoarthritis of the Knee

Mainly the symptoms, include pain, swelling, dryness of the knee, defect in range of motion, muscle atrophy, tenderness, tingling, localized heat, and instability or abnormal joint movements due to ligament weakness [7]. One of the clinical findings of people with knee osteoarthritis is quadriceps muscle weakness, which indicates osteoarthritis of the knee. In fact, quadriceps muscle strength decreases before the patient reports symptoms of osteoarthritis and observes disability [8].

Osteoarthritis is more common in women than men. It has been found that in the United States, 10-15% of people over the age of 35 and 30-45% of people over the age of 65 have osteoarthritis of the knee [9]. Knee osteoarthritis is the fourth leading cause of disability in the world [10, 11]. However, the incidence and prevalence of osteoarthritis of the knee varies according to the characteristics of the study population and the definition of the disease [12]. In this regard, the numbers of studies that have assessed the incidence of knee osteoarthritis in the population are small. According to the most recent and longest-running study at the University of Oxford in the United Kingdom, the cumulative incidence of osteoarthritis of the knee over a period of 15 years, based on imaging diagnosis, has been reported in middle-aged women at 2.3% [13]. According to radiological findings, in western countries, the prevalence of osteoarthritis of the knee is 2% in people under 45 years, 35% in people aged 45-64 years and 68% in people older than 65 years [14] and more than 80% of people over the age of 75 have osteoarthritis of the knee. Despite the high burden of the disease and the implementation of extensive health measures to control it, osteoarthritis is still known as a vague disease for which little information is available on the epidemiology and risk factors [15]. The importance of knee osteoarthritis not only because of its high prevalence; It's because, compared to other joints, it can start at a young age. Estimates from previous studies show that more than 50% of osteoarthritis occurs in the knee and pelvis [16]. In the United States, 350,000 knee and pelvic joint replacements are performed annually [14]. However, the cost of treatment of this disease is high and its main cost, ie more than two thirds, is due to the cost of medicine [14].

In some communities, including Iran, due to certain habits that cause more pressure on the knee joint, knee osteoarthritis is more common and appears in the lower ages. [17]. In a study conducted by the World Health Organization in 2008 and 2012 on 10,291 people in Tehran, the prevalence of knee osteoarthritis was reported to be 15.3% and 14.89% in these two years, respectively [18]. Evidence suggests that knee osteoarthritis is 15.3% in Tehran, 18.8% in Sanandaj, 19.3% in Tuyserkan and 17% in Zahedan. In this study, the overall prevalence of osteoarthritis

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of the knee is estimated at 18.9% and it is estimated that by 2020, the prevalence of osteoarthritis will increase to 60% [19]. Although few studies have been conducted on the prevalence of knee osteoarthritis based on radiographic findings, there are differing reports. Studies in recent years have estimated the prevalence of knee osteoarthritis in men and women over the age of 65 to be 60% and 70%, respectively [20] There are several studies on the prevalence of knee osteoarthritis in Iran, but the most important and largest study (COPCORD), which showed that the most complaints of musculoskeletal pain in the population over fifteen years, reported a prevalence of 41.9. The same study estimated the prevalence of osteoarthritis at 16.3% and the prevalence of osteoarthritis of the knee at 15.3% [21]. Also, according to studies, the prevalence of osteoarthritis in Iran is 15.5% in urban areas and 16.6% in rural areas. A 2009 study in Iran reported that sitting posture was a major risk factor. In general, nine out of ten patients who are more than 40 years old and see a doctor for knee, back and neck pain have osteoarthritis [17].

There is no definitive cure for osteoarthritis of the knee, because the changes caused by this complication are irreversible, but the clinical symptoms can be reduced and tissue damage can be delayed [22]. Due to the fact that drug treatments increase the risk of gastrointestinal problems and are only effective in reducing pain, it is also temporary and do not play an effective role in the treatment and improvement of the disease itself [23], patients' desire for non-drug treatments has increased. Non-pharmacological treatments such as physiotherapy and exercise therapy, if positive, can play an important role in the treatment of this disease and as a useful component in the management of osteoarthritis of the knee and prevention of unpleasant complications of the disease [24]. Numerous studies have shown that exercises such as Pilates, physio ball exercises, hydrotherapy and tai chi have a positive effect on relieving pain and increasing lower limb muscle strength in these patients [25]. Given that the progression of the disease leads to severe mobility and disability and loss of function and muscle weakness, therapeutic goals of the disease should include reducing pain and muscle weakness and improving function, increasing range of motion and facilitating daily activities. Among the treatments for people at risk for osteoarthritis and people with chronic knee pain at a stage when the pain is not yet severe, it seems that exercise therapy and knee protection behaviors (not sitting on knees, not using stairs, not lifting heavy loads, strengthening the leg muscles, especially the quadriceps muscles, using the right shoes) is one of the effective, cheap methods without side effects.

The most important causes of osteoarthritis are unhealthy lifestyle and poor movement habits. Knee protection behaviors include: sitting properly, using European toilets, not lifting heavy objects, not bending the knee too much, not sitting for long periods of time, being active and strengthening the quadriceps muscles, and wearing appropriate shoes. Behaviors that threaten the health of the knee include: sitting on two knees and four knees, standing for a long time, using the Iranian toilet, long walks, especially on sloping surfaces and curved surfaces.

Improper Sitting Style: Sitting on the knees is a common habit in Iranians. In a study conducted in Iran in 2015, the common sitting pattern in our country in the form of four knees and two knees was reported as a risk factor for knee osteoarthritis [19]. This puts a lot of pressure on the joints. Because the knees extremely bend in their

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last range of motion, the pressure inside the joint increases. Aligning the femur and tibia also causes ligaments, ligaments, and menisci to stretch, which can cause pain and joint damage. Using the Iranian toilet is an important factor in causing osteoarthritis of the knee by putting a lot of pressure on the joints.

Long Standing: This position puts a lot of pressure on the joints and puts all the weight of the body on the legs. Lifting heavy objects: Lifting heavy objects has a mechanism such as weight gain. All young and old should be careful when transporting goods. It is recommended to use wheeled bags when shopping. Lifting a heavy object acts like a blow to the knee, and by repeating this, the blows become more frequent and the cartilage will gradually become layered, reducing the thickness of the cartilage each time until osteoarthritis begins. Bending the knee: The knee joint should not bend more than 100 degrees. So it is better for everyone to sit on a sofa or chair. Of course, the sole of the foot should be completely on the floor and the height of the sofa and chair should be commensurate with the size of the person (the chair should not be too high or too short). Sitting for a long time: People who sit in a chair for a long time, such as those who have to sit in a chair for a long journey or employees and computer users, experience a position in which, after getting up from the chair, their knees feel locked and a little it hurts. Therefore, it is recommended that these people get up for 2 to 3 minutes every hour and take a short walk or massage their knees.

Muscle Mobility and Strengthening: Exercise strengthens leg muscles. The surrounding muscles play a supporting role on the cartilage. The supporting muscles are not limited to the muscles around the knee joints, but the pelvic floor muscles must also be strengthened, because the pelvic joints have a controlling role over the knee. Muscles that need to be strengthened include the quadriceps, hamstrings, extensor, and proximal thigh muscles, and all people, especially those with weak legs or the elderly, can strengthen these muscles with regular exercise, although sometimes athletes carelessly injure their knees. And this damage can be a meniscus tear. Sometimes rupture occurs in the elderly without exercise. Any damage to the meniscus must be repaired. Lack of meniscus causes the cartilage of the joint to break and tear, and over time, wear and tear and arthritis will appear.

Improper Shoes: High-heeled shoes cause the foot to misalign and the knees to bend a few degrees. It also makes it difficult to walk and increase pressure on the knees and joints. A suitable shoe is a shoe that has a heel of three centimeters. Avoid wearing shoes that have slippery soles or are too dry and stiff [26]. Health interventions that include training and recommendations for physical activity and exercise have been suggested for non-pharmacological management in several international guidelines [27]. Although education and treatment interventions are effective in reducing the symptoms of osteoarthritis and its clinical outcomes, their effectiveness is not long-term [28]. Because such interventions are not long-term effectiveness and the most important reason for ineffectiveness is not adhering to behavior change [27]. As osteoarthritis is a chronic and long-term disease and its prevalence increases with age, it is essential to follow the recommendations for correcting effective knee behaviors for long-term improvement in pain and disability and function in patients. However, studies have shown that due to the high cost of health care and time constraints, physiotherapy is often associated with short-term results [17]. As is usually the case, the clinical contact between the patient and the physiotherapist should

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be gradually reduced during the treatment period to continue to perform protective behaviors at home without his supervision [27]. Therefore, when the physiotherapist stops monitoring, the positive effects of these behaviors in patients are reduced. Continuing the effect of physical activity requires long-term adherence to the recommendation and continuous change in physical activity behavior [29].

Here the role of health educators is important, health educators create a sense of responsibility for the health of people with osteoarthritis, which as an important part of daily life, both as a spontaneous action and organized to protect Is your knee. Educational efforts are aimed at influencing lifestyle and behavior change to prevent osteoarthritis problems and complications and to encourage the continuation of knee protection behaviors. Numerous studies have been performed on self-management interventions, including following physical activity in patients with musculoskeletal pain [30]. Behavior change interventions include standardized and coordinated methods that address patients' specific health behaviors that are influenced by lifestyle and culture. It targets the area in which they live. [31]. Behavior change interventions are often complex, and pilot studies have reported conflicting results that have made their continued use in clinical practice difficult [32].

Behavior Modification Techniques: Techniques such as self-regulation, self-efficacy in interventions encourage patients to participate in the management of symptoms, which are more effective than passive techniques such as (providing information and counseling) to maintain protective behavior in patients with osteoarthritis. [27]. Behavior change techniques are active components in behavior change interventions [33]. Mike et al. define behavior change techniques as a visible and reproducible component in an intervention designed to divert scientific processes, including Behavior regulation and techniques such as reinforcement, self-monitoring, and feedback. Identifying behavioral modalities allows specific behavioral modalities to be prominently highlighted, thereby enhancing clinical effectiveness happens [34].

Identifying effective behaviors on the knee and methods of changing the behavior on the knee in interventions for patients with chronic diseases including osteoarthritis has been suggested as a research priority. Although physiologists have recently been encouraged to try to use behavior change interventions in their clinical practice, new evidence suggests that they lack the basic knowledge to do so effectively [35]. Interventions include identifying effective behaviors (threatening and protective) and identifying behavioral modification methods to reduce pain and increase patient function and quality of life and, if possible, to increase the patient's long-term adherence to physical activity recommendations. At present, in the interventions that are treating osteoarthritis patients, there is a lack of attention to specific unhealthy behaviors and a lack of understanding of ways to change specific unhealthy behaviors.

Osteoarthritis self-management is a process in which the knowledge, skills and abilities necessary for self-management behaviors are facilitated [36]. The results of studies have shown that psychological factors such as low self-efficacy and demographic factors such as old age affect self-management and reduce it. Also socio-economic factors such as low education and low income, social factors such as poor personal and family relationships, health system factors such as dissatisfaction with health care and insufficient experience of patient-centered care including poor participatory decision making and poor medical communication, face self-efficacy

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process with serious problems. [37] But in the meantime, those people will be able to cope well with osteoarthritis who take osteoarthritis seriously and take responsibility for managing the disease and its consequences, and successfully merge self-efficacy and self-management of osteoarthritis into their daily lives[37].

Discussion

As what was discussed regarding the importance of knee osteoarthrosis, conducting more researches in women around menopause are so justified. Osteoarthritis is a disease that progresses over time and results in the destruction of cartilage in the joints. Therefore, due to the increasing population of the elderly, knee osteoarthritis has become an important health issue. It has been shown that women are more strongly affected by osteoarthritis. Differences in knee anatomy, range of motion, previous knee injury, and hormonal effects may play a role. Women generally seek treatment for advanced stages of osteoarthritis and have debilitating pain compared to their male counterparts. In addition, health care providers are more likely to recommend arthroplasty (joint replacement) for their male patients. Understanding why and how these gender differences occur will play an important role in shaping a comprehensive strategy to combat osteoarthritis in the future. Knee osteoarthritis is very common in old age, affecting 33.6% of adults over 65 years of age [38].

Women are more likely than men to develop osteoarthritis of the knee and carry the burden of the disease [38]. Studies have shown that osteoarthritis is different in women than in men and may affect certain parts of the knee disproportionately [38]. A study by McAlendon on knee and disability in society reported that knee arthritis in women is significantly higher than men [39]. Differences between men and women may play a role in the development of osteoarthritis. Especially in postmenopausal women, the risk of developing osteoarthritis is higher and this is associated with a decrease in estrogen at this time [38]. Of course, menopausal age is affected by several factors such as genetics, ethnicity, smoking, socio-economic status and pregnancy history [40]. The average age of menopause in the world is reported to be 51 years old, and due to the increase in life expectancy in many countries, more than a third of a woman's life is spent during menopause. The average age of natural menopause in Iran is at a desirable level compared to other countries in the region, but is lower than in developed countries, and therefore, due to the importance of this period in women, educational programs and interventions are necessary.

The average age of normal menopause according to the study of Rajaifard et al. In Iran is estimated to be 48.2 [41]. The period around menopause includes a period of two to eight years before menopause and one year after the last menstrual period, which is sometimes called the critical period and sometimes the menopausal transition period [42]. Menopause is important because of its association with various diseases and quality of life and osteoarthritis is one of these diseases [43]. Regular physical activity among women leads to fitness-balance and muscle strength. Moreover, performing knee protection behaviors has a positive effect on bone density [43]. In addition to the mentioned benefits, these behaviors also have mental benefits in women [44]. Various studies conducted in Iran have shown that not performing these behaviors is especially common in women [43].

Conclusion

Given the increasing prevalence of osteoar-

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thritis in women and their susceptibility to many diseases and other problems caused by not performing knee protection behaviors in women with osteoarthritis, communities should make it a priority to solve their problems, including education that is one of the most effective solutions. Epidemiological, clinical and experimental studies in the field of exercise show that physical activity, including knee protection behaviors, is vital for maintaining and increasing bone mass and physical strength, and therefore helps individuals to prevent fractures caused by musculoskeletal disorders and eventually osteoarthritis.

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Conflict of Interest The authors declare that they have no competing interests.

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