



## Review article

Progress in traditional Chinese and Western medicine treatments and nursing care of knee osteoarthritis<sup>☆</sup>Xiao-Hua Shen, Yi Cui<sup>\*</sup>

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## ABSTRACT

This paper reviews the causes of knee osteoarthritis, traditional Chinese and Western medicine therapies and nursing research progress and indicates that traditional Chinese and Western medicine have gradually recognized the cause of knee osteoarthritis. Knee osteoarthritis has been treated with various treatments and nursing care planning, and the combination of traditional Chinese and Western medicine has constantly been improved. Nurses should instruct the discharged patient to correctly treat their disease, adopt the health education, and, via the establishment of a healthy lifestyle, insist on a functional exercise to relieve the pain, delay disease progression, and improve quality of life.

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Knee osteoarthritis is the most common multiple bone and joint disease of the elderly, accounting for approximately 40% of all types of arthritis. Previous studies have shown<sup>1</sup> that the incidence rate of people over 65 years is nearly 100 percent. The pathological features of knee osteoarthritis are joint cartilage deformation and destruction and osteophyte formation. The main clinical manifestations include knee swelling, pain and stiffness, and dysfunction.<sup>2</sup> With an improvement in the patient's standard of living and the growing trend of population ageing, the incidence of knee osteoarthritis continues to increase. It results in motor dysfunction and chronic disabling major diseases that severely damage the patient's quality of life.<sup>3</sup> Currently, relieving pain, slowing the pace of progression, promoting recovery from disease and improving quality of life have become the main tasks of medical staff. The aetiology, treatment and nursing care of knee osteoarthritis in Western medicine and Chinese traditional medicine are summarized as follows.

## 1. Progress in the understanding and treatment of knee osteoarthritis and its aetiology in Western medicine

### 1.1. Western medical understanding of the aetiology of knee osteoarthritis

#### 1.1.1. Genetic factors

Epidemiological studies have shown<sup>4</sup> that the articular manifestations of this disease are an inherited metabolic disorder caused by systemic change.

#### 1.1.2. Age and sex

Knee osteoarthritis is more common in people over the age of 65 years and postmenopausal females. The incidence of patients who develop knee osteoarthritis is higher in females compared to males.<sup>4</sup>

#### 1.1.3. Obesity

Some researchers proposed<sup>5</sup> that obesity increases pressure on the knee joint. Thus it causes damages to knee joint cartilage, and other surrounding tissue.

#### 1.1.4. Joint trauma

Shen et al.<sup>5</sup> showed that knee joint injury and sports injury damage the articular cartilage and lead to the development of knee osteoarthritis.

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### 1.1.5. Autoimmunity

Xiao et al.<sup>4</sup> demonstrated decreasing levels of IgA, IgM, IgG in the synovial fluid of patients with knee osteoarthritis, which increases the possibility of joint infection and refractory periostitis.

### 1.1.6. High-pressure inside bone

Previous studies have found<sup>4</sup> that high pressure changes bone haemodynamics, which results in an insufficient oxygen supply and the accumulation of acidic metabolites. High pressure also reduces synovial blood flow, resulting in the secretion of acid in synovial fluid and subsequent degenerative changes in articular cartilage.

## 1.2. Progress in Western medicine treatment of knee osteoarthritis

### 1.2.1. Non-drug non-surgical treatment

Non-drug non-surgical treatments include physical therapy and exercise therapy.<sup>6</sup> Ji et al.<sup>7</sup> have shown that physical therapy can improve local blood circulation, reduce inflammation and promote the absorption of synovitis, relieve muscle spasms, and reduce intraosseous hypertension. It can also promote the growth of articular cartilage. These treatments include magnetic physical therapy, electrotherapy, thermotherapy, cold therapy, traction, laser, ultrasound, and transcutaneous electrical nerve stimulation. Zhang et al.<sup>6</sup> showed that proper exercise, aerobics and other sports therapy can reduce weight, thereby reduce pressure on the knee.

### 1.2.2. Drug treatment

Previous studies have shown<sup>7</sup> that oral non-steroidal anti-inflammatory drugs, such as aspirin and indomethacin, can relieve pain and diminish inflammation. Wang et al.<sup>8</sup> showed that oral diclofenac and sulindac could promote cartilage synthesis. Yuan et al.<sup>9</sup> showed that oral glucosamine sulphate and diacerein could protect the articular cartilage. Huang et al.<sup>10</sup> found that the intra-articular injection of sodium hyaluronate can lubricate joints, protect articular cartilage and prevent infection, thereby relieve pain. Chai et al.<sup>11</sup> showed that the intra-articular injection of bone peptide can promote cartilage regeneration and the intra-articular injection of triamcinolone acetonide can inhibit inflammatory substances, prevent tissue adhesion, reduce local swelling and pain. Jiang et al.<sup>12</sup> showed that an intra-articular injection of ozone can not only promote vasodilation and absorption of inflammation but can also direct nerve endings to exert an analgesic effect.

### 1.2.3. Surgical treatment

Surgical treatments include arthroscopic debridement, knee arthroplasty and arthrodesis. Arthroscopic debridement can relieve pain. Knee arthroplasty and arthrodesis can promote the recovery of knee function.<sup>6</sup>

## 2. Progress in the understanding and treatment of knee osteoarthritis using traditional Chinese medicine

### 2.1. Chinese medical understanding of the aetiology of knee osteoarthritis

#### 2.1.1. Deficiency of the “liver” and “kidney”(the meanings of these words are different from the liver and kidney in Western medicine)

Knee arthritis, known as “knee arthralgia disease” in Chinese traditional medicine is based on a deficiency of the liver and kidney, which gradually results in muscle weakness.

#### 2.1.2. Meridians impassability and blood deficiency

In classical traditional Chinese medicine, Zheng Yin Mai Zhi states that Meridian impassability and blood deficiency attack joints, resulting in pain, numbness and reduced joint mobility.<sup>13</sup>

#### 2.1.3. Weak “spleen” and “stomach”

A weak spleen and stomach limit the absorption of cereal essence of the source and thus result in the loss of kidney essence. The deficiency of kidney essence causes muscles atrophy and joint acute spasm.<sup>14</sup>

### 2.2. Progress in traditional Chinese medicine treatment of knee osteoarthritis

Traditional Chinese medicine considers that liver and kidney deficiencies, meridian impassability, blood deficiency, weak spleen and stomach are the main causes of knee osteoarthritis. In addition, the treatment should emolliate the liver, tonify the kidney, regulate blood running and cure the spleen and stomach disease. By following the overall concept, treatment of the disease is performed according to different syndromes.<sup>15</sup>

#### 2.2.1. Herbal medicine

The Rougan Recipe, Bushen Recipe and Spleen-Fortifying Stomach-Nourishing Recipe are the most commonly used recipes. The Rougan Recipe can nourish the liver and blood, the Bushen Recipe can invigorate the kidney and strengthen the bones, and the Spleen-Fortifying Stomach-Nourishing Recipe can invigorate the kidney and strengthen muscles.<sup>15</sup>

#### 2.2.2. External treatment with traditional Chinese medicine

External treatment of traditional Chinese medicine consists of fumigating with traditional Chinese medicine,<sup>16</sup> externally applying traditional Chinese medicine,<sup>16</sup> fumigating and washing with decoction of Chinese herbs,<sup>17</sup> sticking and spreading a Chinese crude drug,<sup>17</sup> traditional Chinese medicine plasma import,<sup>18</sup> and Traditional Chinese medicine ironing.<sup>19</sup> Some researchers proposed that external treatment methods using heat and traditional Chinese medicine and applying heat can stimulate the local meridian points. Thus, the drug goes into the meridians and blood comes from the body surface. Hair orifices penetrate the meridian blood to warm the meridians, and *qi* and blood circulation eliminate cold and stop pain. Spleen-Fortifying and Stomach-Nourishing recipes invigorate the kidney and strengthen muscles, while the drug also induces local vasodilation, and reduces bone stress and pain.

#### 2.2.3. Acupuncture

Acupuncture methods include acupuncture, electro-acupuncture, warm needle, fire needles, skin needles, moxibustion, acupuncture point injection, and other techniques.<sup>20</sup> Ran et al.<sup>20</sup> found that when acupoints around the knee, such as Xuehai and Heding, were selected, acupuncture could promote blood circulation and relieve pain. Acupoints in the foot *Yangming* Meridian, such as Xiyan, Liangqiu, and Zusanli, can replenish *qi* and the blood and nourish joint muscles. Acupoints Leong and Yinlingquan can disperse cold in the body and regulate blood flow.

#### 2.2.4. Acupotomy

Previous studies have shown<sup>11</sup> that acupotomy can loosen and decompress the knee joint as can soft tissue therapy. Acupotomy combined with local drug injection can reduce bone high-pressure, improve microcirculation, inhibit cartilage and synovial inflammation, and promote cartilage cells to produce and regulate immune function.

#### 2.2.5. Massage therapy

Liu et al.<sup>21</sup> showed that massage practices can dredge the meridians, warm channels and disperse cold, improve local blood circulation and make significant improvements in knee function.

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