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Alternative Medicine for Gonarthrosis Pain

Gonartroz Ağrısında Alternatif Tıp Tedavileri

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ABSTRACT

Osteoarthritis is the most common joint disorder characterized by the gradual deterioration of articular cartilage, in osteoarthritis, not only the joint cartilage, but also all surrounding tissues, including the synovium, subchondral bone, joint capsule, ligaments, periarticular muscles, and nerves are affected and contribute to the pain. The knee is the most common location for this disease, known as gonarthrosis. In the late stages of the disease surgery is the definitive treatment; however before that stage patients seek pain relieving methods for years resulting in repeated visits to physicians. Eventually, they may run out of treatment options and feel desperate.

This review investigates the methods of alternative-medicine for alleviating pain in gonarthrosis patients. Alternative treatments, including prolotherapy with intra-tissue substance injection, radiotherapy, and ozone therapy for modifying chemical balances, are explored for their plausibility and safe side effect profiles. However, the review discourages wet-cupping and leech therapy due to potential infection risks. Ancient practices like acupuncture and reflexology, lacking scientific backing for their mechanisms of action, are criticized. Homeopathy is categorically dismissed as quackery, and caution is advised against cure-all drugs with extravagant promises.

Navigating the intricate interplay of facts and lies, the article underscores the ethical responsibility of physicians, emphasizing the application of scientific truths and the art of medicine which also consist of addressing the patients concerns, reassuring and satisfying them. The review concludes that alternative-medicine should be considered within the medical realm solely for those specific soothing purposes, urging a cautious and evidence-based approach.

Keywords: gonarthrosis, prolotherapy, mesotherapy, hijamat, homeopathy, apitherapy, hirudotherapy, acupuncture, reflexology, cupping, phytotherapy, aromatherapy, herbalism, radiotherapy, ozone

ÖZET

Osteoartrit, eklem kıkırdağının peyderpey bozulmasıyla karakterize en yaygın bir eklem hastalığıdır; osteoartritte yalnızca eklem kıkırdağı değil aynı zamanda sinoviyum, subkondral kemik, eklem kapsülü, bağlar, periartiküler kaslar ve sinirler de dahil olmak üzere eklem çevresindeki tüm dokular da etkilenir ve ağrıya katkıda bulunur. Dizde görüldüğünde gonartroz olarak adlandırılır. Hastalığın ileri evrelerinde nihai tedavi cerrahidir ancak bu evreden önce hastalar tekrar tekrar hekimlere başvurur ve yıllarca çeşitli ağrı giderici yöntemleri denerler. Sonuç olarak tıbbi tedavi seçenekleri tükenebilir ve bazen çaresizce alternatif yöntemlere başvururlar.

Bu derlemede gonartroz hastalarında ağrının azaltılmasına yönelik alternatif tıp yöntemleri gözden geçirilmiştir. Doku içi madde enjeksiyonu ile proloterapi, kimyasal dengeleri değiştirme potansiyeli olan radyoterapi ve ozon uygulamaları etki mekanizmalarının mantık dahilinde olması ve güvenli yan etki profilleri açısından makul bulunmuştur. Ancak, potansiyel enfeksiyon riskleri nedeniyle ıslak hacamat ve sülük tedavisi uygun görülmemiştir. Akupunktur ve refleksoloji gibi etki mekanizmaları mantıktan uzak ve bilimsel olarak desteklenemeyen kadim uygulamalar eleştirilmiştir. Homeopati bir nevi şarlatanlık olarak ele alınmış, abartılı vaatlerle her şeyi tedavi ettiğini iddia eden ilaçlara karşı dikkatli olunması tavsiye edilmiştir.

Gerçekler ve yalanların iç içe girmesini eleştiren makale, hekimlerin etik sorumluluğunun bilimsel gerçeklere göre hareket etmenin yanısıra, hastaların endişelerini gidermeyi, onları rahatlatmayı ve tatmin etmeyi de içerdiğine vurgu yapmaktadır. Derleme, alternatif tıbbın yalnızca bu gibi teskin edici bazı amaçlar için değerlendirilmesi gerektiği sonucuna varmakta aslen ihtiyatlı ve kanıta dayalı yaklaşımları önermektedir.

Anahtar kelimeler: gonartroz, proloterapi, mezoterapi, hacamat, kupa, homeopati, apiterapi, hirudoterapi, sülük, akupunktur, refleksoloji, fitoterapi, aromaterapi, herbalizm, radyoterapi, ozon.

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Introduction

Knee osteoarthritis (gonarthrosis) is a chronic, progressive condition prevalent in the general population that significantly impairs quality of life due to pain and restricted mobility. In advanced stages, surgical intervention is often the definitive treatment. However, in an effort to manage symptoms such as pain and joint stiffness, patients frequently turn to alternative medicine practices. This patient behavior places physicians in a position where they are routinely asked to comment on, or even recommend, such therapies. Accordingly, physicians need reliable, evidence-based information on these modalities.

This review aims to provide clinicians with an up-to-date synthesis of the available evidence primarily drawn from systematic reviews regarding the efficacy of selected alternative medicine approaches in managing knee osteoarthritis symptoms. The alternative methods discussed were specifically chosen because they are widely used in Türkiye and are formally included under the *Traditional and Complementary Medicine Practices Regulation,* which was established by the Ministry of Health in 2011. This regulation authorizes only licensed physicians and healthcare professionals under physician supervision to perform such practices.

The definition of alternative medicine has evolved into different names such as complementary medicine, integrative medicine, and holistic medicine primarily in response to criticism of the term "alternative". In fact, all these definitions point to the same pseudo-science phenomenon; they are no different from each other[1]. In certain countries, traditional medicine holds a significant cultural value and retains importance within societal practices. These nations often endorse ancient medical traditions as an integral component of health tourism. However, these endorsements are primarily driven by political considerations rather than scientific ones, given the substantial economic market, which exceeds hundreds of billions of dollars[2].

In the Turkish context, although the regulation attempts to impose clinical oversight, ethical guidelines remain paramount. Article 20 of the medical deontology regulation advises the physician not to give the patient a medicine that he knows is useless and not to incur unnecessary expenses. However, in cases where a real treatment is not possible, it is suggested that certain medications may be recommended for consolation, with a caveat that expensive palliative drugs should not be recommended to patients who cannot afford them[3]. It is the physician's foremost ethical responsibility to uphold these principles when recommending such treatment modalities.

Pain is the primary complaint in gonarthrosis, and pain reduction is the main goal of most alternative therapies. Given the well-established analgesic effect of the placebo response, recommending harmless alternative interventions may be ethically permissible. However, it is essential that such interventions are not misrepresented as curative, and patients should be advised to adhere to evidence-based medical care whenever possible.

There is a growing body of literature on alternative medicine approaches, but the quality and consistency of evidence vary widely. This review contributes to the field by offering a focused synthesis of methods that are both officially regulated in Türkiye and commonly used in practice. We conducted a thorough review of the current literature, focusing primarily on systematic reviews where available. Our aim was to provide concise insights into these methods that are gaining popularity, despite the ongoing uncertainty surrounding their effects.

Radiotherapy

Especially in Germany and Central European countries, low-dose radiotherapy has been used for a long time in painful diseases of the musculoskeletal system including gonarthrosis. In Germany over one-third of all radiotherapy treatments are for benign diseases, including over 15,000 patients with osteoarthritis however in the USA the use of radiotherapy for such an indication is almost nonexistent[4]. Although its mechanism of action is not fully known, but it is believed to act through multiple mechanisms: it is effective on mononuclear and polynuclear leukocytes, endothelial cells, and macrophages, in addition, it reduces the release of cytokines and proteolytic enzymes by increasing the permeability of the vascular endothelium, killing inflammatory cells such as lymphocytes, modulates the autonomic nervous system, and alters tissue pH. Side effects are negligible[5-7]. Typically, a dose of 0.5 to 1Gy is repeated 3 to 6 times at 2–3-week intervals.

Its analgesic effect is not acute, it appears in the late period, and some studies say that this effect lasts up to two years, so it is ideal in chronic painful conditions such as gonarthrosis[6-9]. Although there were some studies in the 70s showing that it had no different effects than placebo, it has become popular again nowadays especially in benign diseases[10]. However, its effectiveness remains a subject of debate and is not universally accepted or consistently validated. Several meticulously conducted randomized controlled trials have demonstrated no significant benefit from its use [11,12].

Many of the studies demonstrating the benefits of low-dose radiotherapy for osteoarthritis are often criticized for their weak design and methodology, as highlighted in systematic reviews[13]. Even those who advocate for the use of low-dose radiotherapy critique the current literature for its predominantly retrospective and non-standardized nature. Furthermore, there is a general acknowledgment of the absence of large randomized controlled studies, which could offer more conclusive evidence[14].

Systematic reviews revealed that most of the studies regarding low-dose radiotherapy are weakly designed and the probable cause of the positive results are due to regression to the mean effect and response to placebo[12-15]. There is even a randomized prospective sham-controlled blinded study supporting this assertion. In this study, standard doses were compared to a sham treatment (one-tenth of the effective dose) and no significant difference was observed in terms of pain relief and functional improvement[15].

Prolotherapy, Mesotherapy

Prolotherapy is the repeated injection of a sclerosing agent, often such as hypertonic dextrose at concentrations of 12.5% to 25%, into chronically painful areas. The mechanisms of action are not entirely clear. With this method, local tissue irritation is created, and inflammatory pathways are activated. As a result, it is thought that the release of growth factors increases, fibroblasts are activated, and thus tissue healing is accelerated. In vitro studies have shown that prolotherapy with hypertonic dextrose favors the deposition of collagen and metabolic activity of chondrocytes[16,17]. Multiple injections of up to 0.5 mL are made into the structures around the joint that are the source of pain. Generally, 4 to 6 sessions are recommended[16,17]. However, there are in vitro studies that did not find a significant increase in cell proliferation or inflammatory response with prolotherapy[18].

There is a scarcity of well-designed studies available on the topic. However, the limited research available suggests that the effects of prolotherapy may exceed those of a placebo, rendering it a potential option for patients who do not respond to conventional treatments. Positive outcomes lasting up to three months have been reported[19].

For gonarthrosis, both intra-articular and peri-articular injections have been investigated. Hypertonic dextrose injections are suggested to be more effective than serum physiologique, with peri-articular applications showing slightly superior results compared to intra-articular injections[20,21]. Its effectiveness was compared with other substances like corticosteroids, hyaluronic acid, ozone, and PRP, and mixed results have been reported[22-24].

In a comparative study between ozone and prolotherapy, no significant difference was observed [25]. Numerous studies have shown its short-term superiority over a placebo. However, most systematic reviews in the literature caution about the poor quality and high risk of bias present in the published clinical studies [21,23,24,26,27]. Until now, it is not considered a standard treatment for osteoarthritis in guidelines. Since no long-term side effects have been reported, it can be considered safe and can be recommended in selected patients.

Mesotherapy is an alternative medicine method originating from France. Despite the similarity of its name, it is unrelated to mesoderm in histogenesis. It is based on the belief that injection of various enzymes, vitamins, hormones, and local anesthetics into the middle of the skin layer or just below it is beneficial. Originally intended to alleviate pain, it is now predominantly employed for addressing dermatological problems[28].

For musculoskeletal pain, this therapy involves injecting NSAIDs, sterile water, or local anesthetic into the subcutaneous tissue at 5 to 20 different points in the affected area, typically without the use of steroids. Each injection point receives 0.1 to 0.2 mL. It has been reported that it can be applied from a single session

to 9 sessions[29,30]. While systematic reviews highlight the lack of standardization and heterogeneity in studies concerning its use, it is generally considered safe, well-tolerated, and effective[31].

The efficacy of subcutaneous injections in alleviating pain originating from deep tissues is a matter of question. Sterile water is unlikely to yield a discernible effect, and local anesthetics may only offer temporary skin anesthesia lasting a few hours. While subcutaneous NSAID application may offer relief comparable to topical analgesic ointments, the rationale for utilizing injections for this purpose warrants scrutiny.

Ozone

Ozone (O3) is a molecule containing three oxygen atoms, formed in nature as a result of exposure of oxygen to high-energy electric current and ultraviolet rays. It exists as a gas at room temperature. It is colorless and has a characteristic odor, and its name comes from the Latin word ozein, which means odorous, reflecting its characteristic smell. Ozone is an extremely unstable molecule and quickly turns into oxygen. It has strong oxidative potential and may secondarily induce antioxidant responses. It was previously used as a disinfectant in industry, and then it was tried locally on infected wounds to benefit from this effect. In some level 5 studies, it is claimed that ozone primarily increases oxygen radicals in the body due to its strong oxidative effect, and in turn activates antioxidant enzymes, thus creating an antioxidative effect and reducing the release of cytokines and free radicals [32]. Animal studies have found that injecting ozone directly into the joint reduces levels of TNF-α, IL-1β, and IL-6 without causing cartilage damage. It also lowers the expression of matrix metalloproteinase and bone morphogenetic protein [33]. There are studies showing that 4 to 8 sessions of ozone application into the knee in gonarthrosis significantly reduces pain at the end of the session, but its effect is short-lived and decreases within a few months [32,33]. In a study comparing ozone, PRP and hyaluronic acid, it was shown that the pain-relieving effect of ozone disappeared by the 6th month and PRP was superior in this regard [34]. It is important to note that inhalation of this substance can be toxic, and its use is contraindicated in certain conditions such as pregnancy, alcoholism, and hyperthyroidism. Despite these precautions, no serious side effects have been reported following its use. Due to its affordability and safety profile, it may be considered for patients upon request. While its effects have been reported in a few well-planned studies, it is crucial to acknowledge that systematic reviews indicate a majority of the studies were of poor quality and subject to bias [35].

Apitherapy, Hirudotherapy

Bees and Leeches are used in these treatments, which come from the names Apis and Hirudo. Apitherapy typically entails stinging the painful area one or more times, while hirudotherapy involves attaching a leech to the relevant area.

The hirudin substance, produced by leeches, possesses anticoagulant, thrombolytic, and somewhat anti-inflammatory properties, potentially generating both local and systemic effects by enhancing tissue perfusion. Advocates suggest that these effects could be advantageous in relieving joint pain. However, systematic reviews indicate that while osteoarthritis patients may experience benefits from leech therapy, caution is advised due to concerns regarding publication bias and the inherent limitations of the studies available [36]. Medical leeches, not cultivated in public pools and specifically bred for therapeutic purposes, appear to be safe when used once for each patient. However, the risk of infection should be kept in mind. Also, hemarthrosis after a leech therapy has been reported[37].

Bee venom is believed to influence healing by initiating certain neuro-inflammatory processes in the surrounding tissues, thereby reducing pain perception. It is suggested that the effects of bee venom largely occur through the activation of opioid and adrenergic receptors. While its primary applications are in circulatory disorders and inflammatory diseases, it has also been reported to be used for joint pain. Individuals with bee allergy should be identified carefully; anaphylactic side effects that may result in death have been reported[38].

The use of bee venom via bee sting is not considered the optimal therapeutic approach due to its association with severe adverse reactions, including soft tissue infection or renal failure. Therefore, the preferred method is administering adjusted doses through acupuncture[39]. There are studies indicating that bee venom

acupuncture significantly reduces pain and stiffness in patients with knee osteoarthritis. However, it's important to note that the majority of studies included in the analysis were evaluated as having a high risk of bias methodologically[40].

Acupuncture, Reflexology, Hijamat, Cupping

Acupuncture, a component of traditional Chinese medicine, is based on the concept of an energy flow within an individual. It posits that this flow is disrupted by illness, and the practitioner traditionally corrects it by inserting needles or by stimulating specific points on the body with laser or electric current. In certain Far Eastern countries, acupuncture treatment is covered by health insurance. It is claimed to have various effects, including pain relief, sedation, mood enhancement, immune system strengthening, regulation of homeostasis, regeneration enhancement, improvement in digestion, and immunomodulation.

Reflexology is also a method within traditional Chinese medicine where the body's energy flow is mapped onto the feet. It is believed that when energy flow is obstructed, manual intervention is required to open it. Practitioners assert that by applying pressure and massage to specific energy points on the feet, they can influence the functioning of internal organs. The points on the sole of the foot, representing various organs such as the thyroid, pancreas, kidney, and esophagus, are manipulated through squeezing, caressing, and stroking in diverse ways to promote healing.

Hijamat is an ancient type of treatment performed with or without cupping, with the aim of cleansing excessive blood, increasing blood flow and relieving pain in the relevant area. There are studies showing that cupping is especially effective in spasm-related muscle pain[41,42]

These practices belong to the empirical realm of traditional medicine. Rational levels of scientific evidence are absent or very weak[43,44]. Most of the studies that report positive results have poor methodological quality [45]. A small analgesic effect of acupuncture was found, which seems to lack clinical relevance and cannot be clearly distinguished from bias[46]. Six reviews, which included randomized, double-blind studies, have yielded substantial evidence indicating no discernible benefit. Studies advocating for the effectiveness of acupuncture frequently display bias and lack robust evidence to support its efficacy for any indication [43]. Placebo effects might be more pronounced in individuals who believe in them [47]. When proper hygiene standards are maintained, these treatments usually pose no harm.

Phytotherapy, Aromatherapy, Herbalism

Plants have been used for therapeutic purposes in every culture throughout history. In Türkiye, herbalists (Aktar) are indispensable pharmacies of traditional medicine.

The herbalist is familiar with the therapeutic properties of raw plants based on local teachings that are grounded in observations and utilizes this knowledge to craft medicines from the plants. Examples of the herbalist doctrine in traditional Turkish medicine include the belief that mint, and lemon are beneficial for the flu, while senna is effective for constipation[48].

In Türkiye phytotherapy is the most common method of alleviating pain in osteoarthritis patients[49].

With the development of modern pharmacy, the promising ones of these empirical treatments were scientifically examined and substances such as morphine, quinine, atropine, digoxin, and vincristine, which revolutionized medicine, were discovered. Pharmacognosy, a branch of science forming the foundation of modern pharmacy, delves into the examination of natural pharmaceutical raw materials and their chemical properties. Phytotherapy, within this scientific discipline, focuses on studying the therapeutic properties of plants. Aromatherapy, a subset of Phytotherapy, aims to harness the therapeutic benefits of various oil extracts obtained from plants through local application.

Winter cherry, willow, chrysanthemum oil, devil's claw, turmeric, currant seed, sesame oil, ginger, horsetail, nettle, rosehip, oxwort, comfrey and sanqi are commonly recommended by phytotherapists for alleviating joint pain[50,51].

Phytotherapists assert themselves as scientific herbalists; however, in practice, distinguishing them from traditional herbalists, who also lay claim to being phytotherapists, is not straightforward. Instances of quackery are also prevalent in the published literature (Figure 1), emphasizing the need for caution[52]. It's important to be aware that many phytotherapy products may not contain the claimed substance, some could have excessive toxic effects, and certain plants might induce drug interactions.



Figure 1. An example cited in a so-called scientific study ridiculously claims that phytotherapy led to an expansion of the joint space in a patient with a prolapsed knee prosthesis. However, the alleged "reduction in gaps" presented as evidence is simply a result of knee flexion.

For managing gonarthrosis pain, aromatherapy methods, which prioritize local effects over systemic effects and likely benefit from their application not from the oil itself but through massage, may be considered more suitable[53].

Homeopathy, Snake Oils

Homeopathy is an esoteric treatment method based on the belief that a disease can be treated by giving the patient very low doses of substances that would cause the symptoms of the disease in a healthy person [54]. Unlike classical medicine, which seeks to alleviate symptoms such as cough, fever, and pain, homeopathy embraces these symptoms as they are and avoids attempting to suppress them. It argues that the disease exists in another dimension. It claims to render certain disease-causing substances extremely diluted through the "potentialization" process, expose them to mechanical energies like shaking or jiggling, and assert that the resultant product is a form of medicine[55]. These substances are diluted to an extent that can be compared to throwing a sugar cube into the vastness of the Atlantic Ocean. The underlying claim is that the greater the dilution, the more potent the therapeutic effect becomes (Figure 2). Despite their significant dilution,

homeopathic drugs are often disproportionately more expensive than pharmacologically effective counterparts[56]. Proponents contend that shaking, representing a form of mechanical energy, impacts the outcome. The claim is that a sustained effect in homeopathy is typically attained with a single dose of medicine, proving beneficial for diverse physical problems, severe chronic diseases, and mental disorders[57,58].

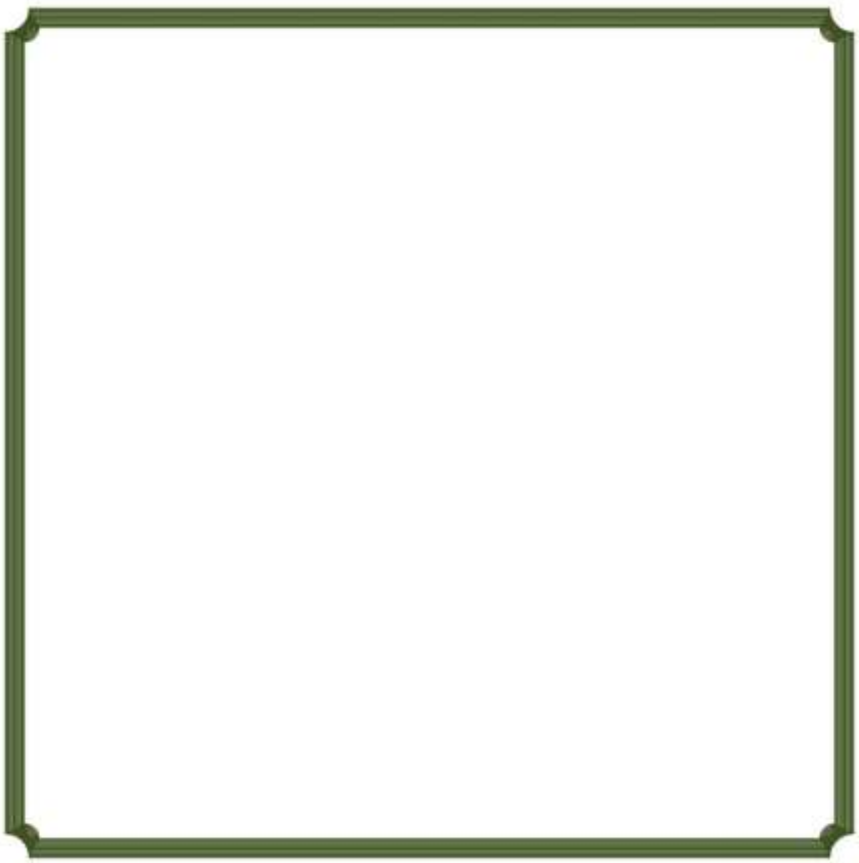


Figure 2.Example of homeopathic remedies:
a) Arnica remedy b) Calcarea phosphorica remedy c) Rhus toxicodendron remedy
The photo has been resized by a ratio of 1/10,000 for better visibility.

Undoubtedly, these claims bear no relation to scientific reality. Nevertheless, in Türkiye, homeopathy has been introduced as a course in certain pharmacy faculties, and even promoted through conferences within universities —an academic misstep comparable to offering astrology in an astronomy department. In very rare cases, if the patient's personality type is suitable for believing in such esoteric powers, it may be offered as a placebo. Ultimately, homeopathic medicines can have no effect, nor can they have side effects; As systematic reviews conclude that any given homeopathic remedy that leads to any effects more than placebo is not supported by any robust evidence[59,60]. Significant evidence of publication bias in favor of homeopathy has been well documented, and it is consistently shown that homeopathic medicine cannot be distinguished from the use of a placebo[60].

"Patent-Medicine" or "snake oil" are terms for non-drug commercial products extensively promoted with the claim that they cure various diseases. This phenomenon became prevalent in the last century, particularly in the United States. These products can take the form of potions, pills, ointments, jewelry, etc., and are frequently named after their inventor or marketer. They are heavily advertised as remedies for a range of related or unrelated diseases like kidney stones, erectile dysfunction, liver problems, clogged veins, etc. Despite having diverse contents, they typically lack an actual active ingredient for the claimed indications[61].

In conditions that cause chronic pain, such as gonarthrosis, patients may desperately seek help from these products. If present, active ingredient rates are generally low and do not cause any harm. However, it should be kept in mind that in cases where more than one drug is used in the elderly or individuals with other systemic diseases, serious side effects of the ingredients may occur.

These types of products are also available in Türkiye. Advertisements are typically broadcast on internet, satellite TV channels and marketed by telephone. Article 32 of Law No. 28886 dated 01.2014 and Article 19 of Law No. 1262 prohibit the sale and advertising of these products.

Conclusion

In Türkiye, the rate of people with chronic diseases applying alternative medicine methods is approximately 60% [49,62]. Patients often prefer these methods to relieve their pain. Nonsurgical treatment for gonarthrosis-related knee pain includes painkillers and life modifications. Weight loss, maintenance of muscle flexibility and strength through exercises, avoiding activities that strain the knee in daily life such as squatting, cross-legged, climbing stairs, and personalized painkillers are the basis of the treatment. In addition, massage and bandaging help reduce pain. A few days of spa vacation with plenty of hydration and heat can be beneficial for joint health[63]. If the patient is not satisfied after all those scientifically proven methods and requests more there is no harm in giving personalized recommendations. It's important to remember that the placebo effect can be a powerful painkiller, especially when its expensive or accompanied by a certain ritual [64-66]. The effectiveness of alternative treatments probably depends on this. Prolotherapy, which is based on intra-tissue substance injections, radiotherapy, and ozone therapy, which can modify the chemical balances within the body, stand out in terms of plausibility and their favorable safety profiles. Wet-Cupping and leech therapy around the joint will not be suitable due to the possibility of infection. Aromatherapy, combined with massage, can be beneficial for joint pain.

Acupuncture and reflexology are ancient Chinese medical practices; their teachings and alleged mechanisms of action have no basis in reality. Likewise, homeopathy stands out as a ridiculous example of quackery. One should stay away from cure-all drugs that are marketed with excessive advertising and make extravagant promises.

When recommending methods to patients in a realm where truth and lies intertwine, physicians must first consult their own conscience. Alongside the application of scientific knowledge with the most appropriate techniques, the practice of medicine also demands human skills like reassuring the patient, protecting their peace of mind, and easing their concerns. Alternative medicine may have a place only within these narrow functions of medical art, and always in conjunction with authentic, evidence-based treatments.

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