Application of Cupping Therapy and Hirudotherapy in Family Medicine

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ABSTRACT

Cupping therapy (Hijama) and hirudotherapy (leech therapy) are increasingly popular Traditional and Complementary Medicine (TCM) practices in family medicine. This review focuses on their historical background, mechanisms of action, clinical indications, evidence of effectiveness, safety, and regulatory framework.

Cupping therapy, rooted in Chinese and Islamic medicine, is believed to reduce pain by increasing circulation through local suction. Systematic reviews support its efficacy in conditions like low back and neck pain.

Hirudotherapy works through bioactive substances in leech saliva that provide anticoagulant and anti-inflammatory effects. It has shown benefits in osteoarthritis and venous congestion, although adverse effects such as prolonged bleeding and infections require caution.

In Türkiye, these practices were officially regulated by the 2014 TCM Regulation, and application is restricted to certified professionals. Family physicians play a key role in patient education and appropriate referrals. However, gaps in training and inconsistent integration into family medicine practice limit their use.

In conclusion, cupping and hirudotherapy are traditional, low-cost treatment options with some clinical benefit. However, further high-quality studies are needed to confirm their efficacy and safety. Strengthening training programs, regulatory support, and evidence-based guidance is crucial for their safe and effective use. Enhancing family physicians' knowledge in this field may support safer and more informed use of these therapies in primary care.

Keywords: Complementary medicine, cupping therapy, family medicine, hirudotherapy

INTRODUCTION

Traditional and complementary medicine (TCM) practices are increasingly being integrated into modern healthcare systems, in line with the World Health Organization's (WHO) strategic framework (1). Cupping therapy (hijama) and hirudotherapy (leech therapy) are among these practices and have gained global popularity, particularly for the treatment of musculoskeletal conditions and chronic pain (2–4). In recent years, these methods have attracted growing attention in primary care, particularly in family medicine (5-7).

However, the quality and consistency of scientific evidence regarding their efficacy and safety remain variable (2, 8). In addition, challenges related to standardization, practitioner competence, and patient education persist, particularly in primary care settings (9). Given the increasing patient demand and the cultural relevance of these therapies in many communities, it is essential for family physicians to be actively engaged with TCM practices. By developing foundational knowledge, attending certified training programs, and maintaining an evidence-based perspective, family physicians can play a pivotal role in guiding safe and informed use of these therapies (10). Strengthening this role not only enhances patient trust but also promotes holistic and integrative care within the primary healthcare system.

In Türkiye, the 2014 Regulation on Traditional and Complementary Medicine Practices legally defined and standardized the use of several TCM modalities, including cupping and hirudotherapy,

creating a formal framework for certified professionals (11). This regulation has provided all licensed physicians with a formal legal pathway to practice these methods following approved certification. It represents a key step toward integrating TCM practices into mainstream medical care under controlled and safe conditions.

This review aims to provide a comprehensive overview of the historical background, physiological mechanisms of action, clinical indications, levels of evidence on efficacy, safety profiles, potential complications, as well as the legal framework in Türkiye and the role of family physicians in the context of these therapies.

CUPPING THERAPY

Historical Background

Cupping therapy is an ancient healing practice with origins traced back to at least 3000 BCE in ancient Egypt (12). It was later adopted and developed by Greek and Roman physicians such as Hippocrates and Galen. Over the centuries, cupping spread across various medical traditions, becoming an integral part of both Traditional Chinese Medicine, and Islamic medicine (12). In Islamic medical texts, particularly during the Golden Age, wet cupping, known as Hijama, was widely advocated and systematized by scholars like Avicenna (13). Traditionally and in recent times, cupping has been practised in two main forms: dry cupping, which involves suction only, and wet cupping, which involves making small incisions in the skin to remove blood (14, 15).

The primary aim of cupping therapy is to enhance local blood circulation and facilitate the elimination of toxins by creating negative pressure on the skin (15). During the Islamic Golden Age, scholars like Avicenna (Ibn Sina) referenced cupping in medical texts, further supporting its dissemination.

In Ottoman-era and early Republican Türkiye, cupping was widely practiced by folk healers and religious figures, often without formal regulation (16). Despite the absence of standardized medical oversight, the practice remained embedded in community-based healing traditions and persisted across generations (17). This long-standing cultural presence has contributed to a high level of public familiarity and acceptance. As a result, many patients today continue to express interest in cupping therapy, particularly in contexts where conventional treatments may be perceived as insufficient (17). Such sustained demand has become increasingly visible in primary care settings, where family physicians often serve as the first point of contact for patients seeking information or access to these therapies.

In modern medicine, cupping therapy is being revisited as a complementary and alternative treatment method, particularly due to its potential effects on pain modulation, circulatory support, muscle relaxation, and inflammation reduction (15, 18). Recent clinical studies have reported promising results not only in the management of musculoskeletal pain syndromes but also in conditions such as migraines, tension headaches, and some inflammatory disorders (19, 20). Emerging evidence has also suggested possible roles in enhancing local tissue perfusion and promoting general well-being, although further research is warranted (19). These developments have renewed attention among healthcare professionals, including family physicians, who are increasingly expected to provide guidance not only regarding the safety of such traditional interventions but also their clinical relevance and appropriate indications across diverse patient presentations.

Mechanism of Action and Safety Profile

Although the precise mechanisms of action of cupping therapy remain unclear, existing evidence suggests that it may enhance pain control through analgesic and relaxing effects (18). Proposed physiological mechanisms include increased endogenous opioid release, improved regional blood flow, modulation of inflammatory responses, and nitric oxide release induced by local hypoxia (15). These processes are believed to promote vasodilation and enhance microcirculation. In addition, it has been hypothesized that cupping stimulates the parasympathetic nervous system, contributing to a general sense of relaxation and stress reduction.

Clinically, cupping therapy is most frequently utilized in the management of musculoskeletal conditions such as chronic low back pain, neck pain, rheumatic disorders, and migraines (20). Beyond its analgesic effects, cupping has been associated with improvements in functional capacity and overall well-being (21). A growing number of systematic reviews and meta-analyses have demonstrated beneficial effects, particularly in chronic low back pain, where significant improvements in pain intensity and physical function have been consistently reported. Furthermore, studies exploring its use in migraine management have shown promising trends toward reduced attack frequency and intensity (22). Although current evidence in this area is still evolving, these findings highlight the potential role of cupping as a supportive intervention. Similarly, cupping therapy has been explored as a

complementary approach in inflammatory joint diseases such as osteoarthritis, with some studies reporting symptomatic relief (23). The diversity in techniques (e.g., wet vs. dry cupping), treatment parameters, and study designs may partly explain the variability in outcomes and underscores the need for further standardized research.

In terms of safety, cupping therapy is generally considered low-risk (24). Common side effects include skin bruising, itching, and transient burning (24). However, the risk of infection increases if sterile techniques are not followed. Rarely, complications such as abscess formation, anemia, and claims of toxin accumulation have been reported (24). According to the literature, these adverse events are largely preventable with proper sterilization protocols.

From a primary care perspective, it is essential that family physicians not only recognize the potential complications of cupping therapy but also engage proactively in patient education. By providing accurate information on safety protocols and therapeutic indications, physicians can help patients make informed decisions and reduce the risks associated with unsupervised or improperly conducted procedures. Furthermore, by guiding patients toward certified practitioners and evidence-informed practices, family physicians can play a pivotal role in integrating safe and effective traditional therapies into modern primary care.

HIRUDOTHERAPY

Historical Background

Hirudotherapy, or leech therapy, is a traditional bloodletting method that dates back to around 1500 BCE (25). Evidence of its use is found in ancient Egyptian tomb illustrations, and it was described by classical medical authorities such as Galen and Avicenna (Ibn Sina) as a means of restoring humoral balance within the body's systems (26).

In Türkiye, leech therapy has long been used in traditional healing practices, particularly in rural and religious settings, often administered by non-medical practitioners. This cultural familiarity contributes to continued patient interest, despite limited regulation in earlier decades. Historically, leech therapy was not only associated with folk medicine but also referenced in Ottoman medical manuscripts, indicating its widespread use across social and professional strata. The formal recognition of hirudotherapy in national health policy has encouraged its re-evaluation within the scope of evidence-based medicine and family practice. This shift has helped transition the practice from informal settings into regulated clinical environments, promoting safer and more standardized application.

Mechanism of Action, Clinical Use, and Safety

Although the use of leech therapy declined during the 20th century, it has regained clinical relevance in recent years, particularly in the context of microsurgical procedures and integrative medicine (7). The therapeutic application of medicinal leeches (e.g., Hirudo medicinalis) is primarily attributed to a complex mixture of bioactive compounds in their saliva, which possess anticoagulant, anti-inflammatory, analgesic, and vasodilatory properties (27). Among these, hirudin acts as a potent thrombin inhibitor; eglin and bdellin suppress inflammation; and vasodilators improve local blood flow. Additionally, hyaluronidase increases tissue permeability, facilitating the diffusion of these substances into surrounding tissues (27).

Each leech can extract 5–15 mL of blood during therapy, and its secretions enter the systemic circulation, thereby contributing to improved tissue perfusion and modulation of local immune responses. These effects underpin the use of hirudotherapy in a range of clinical scenarios. Commonly accepted indications include the treatment of postoperative venous congestion (especially in flap or replantation surgeries), prevention of deep vein thrombosis, management of diabetic complications and peripheral vascular diseases, and symptomatic relief in conditions such as tinnitus, migraine, and osteoarthritis (28). Among these, knee osteoarthritis has been most extensively investigated. However, challenges remain regarding optimal treatment protocols (including the number of sessions, duration, and site of leech placement) which currently limit standardization and broader adoption (25).

In terms of safety, hirudotherapy is generally well tolerated when performed under sterile conditions by trained professionals (4). Nonetheless, several adverse effects require attention. The most commonly reported risks include prolonged bleeding, allergic reactions, and infections—particularly those caused by Aeromonas species naturally present in leech saliva (4). To reduce the risk of infection, prophylactic antibiotics such as ciprofloxacin or third-generation cephalosporins are recommended. When clinical guidelines are followed, serious complications are rare.

IMPLEMENTATION AND REGULATION IN FAMILY MEDICINE

In Türkiye, TCM practices were formally recognized and standardized with the enactment of the "Regulation on Traditional

and Complementary Medicine Practices," published in the Official Gazette on October 27, 2014 (Issue No. 29158) (11). This regulation defines 15 approved TCM modalities and outlines detailed requirements for practitioner qualifications, clinical settings, equipment, and indications/contraindications.

Cupping therapy and hirudotherapy fall under this regulatory framework and are legally permitted only when performed by certified healthcare professionals who have completed Ministry of Health-approved training programs. For instance, leech therapy can be administered by physicians, pharmacists, dentists, or veterinarians, while wet cupping must be carried out in clinical environments that meet strict hygiene and medical waste disposal standards (11).

Although the regulation applies broadly to licensed practitioners, it has particular implications for family physicians, who often serve as patients' first point of contact. A June 2025 update to the legislation permits certified family physicians to provide certain TCM services, such as acupuncture and phytotherapy, outside regular working hours (28). This amendment represents a significant step toward broadening access to TCM and integrating these modalities more systematically into primary care. It also reflects a policy-level effort to support the safe, standardized, and community-level dissemination of TCM practices within the national health system.

In this context, the integration of TCM practices into primary care not only enhances patient-centered service delivery but also contributes to the broader goals of holistic and preventive medicine. As public interest in these therapies continues to grow, family physicians—whether as certified practitioners or informed advisors—will be central to guiding safe, evidence-informed choices. To this end, supporting family physicians through structured certification pathways, regionally accessible training programs, and inclusion of TCM in continuing medical education will be critical. Such measures can help bridge traditional healing practices with modern medical standards, ensuring that interventions like cupping therapy and hirudotherapy are used responsibly and effectively within the scope of family medicine.

DISCUSSION

Public interest in TCM practices such as cupping therapy and hirudotherapy has been steadily increasing. Studies show that a significant proportion of patients in primary care are aware of these therapies, yet much of their knowledge comes from informal sources like media or the internet (5, 17). A considerable number undergo these treatments in unregulated environments, raising concerns regarding safety, hygiene, and misinformation (5, 8). These patterns highlight a crucial opportunity for family physicians to provide evidence-based guidance, address misconceptions, and help patients make informed decisions.

Despite regulatory advancements and the growing prevalence of certified practitioners, gaps remain in the formal education and practical readiness of family physicians regarding TCM. While some family physicians have obtained certifications in certain modalities, many report limited knowledge, largely due to the lack of structured TCM training during medical education (9). Incorporating TCM into undergraduate curricula and continuing professional development may help bridge this gap and foster more informed, balanced clinical perspectives (1, 10).

From a clinical standpoint, cupping therapy and hirudotherapy offer promising benefits, especially for chronic pain and vascular conditions (2, 7, 18, 27, 29). Although the mechanisms—particularly for hirudotherapy—are increasingly well understood, the current evidence base is characterized by heterogeneity and methodological limitations (18, 27). Variations in treatment protocols, small sample sizes, and insufficient blinding affect the generalizability of results. Nevertheless, both therapies are generally considered safe when performed under certified, hygienic conditions, underscoring the importance of guiding patients toward regulated services.

To support safe and appropriate use of these therapies, a multi-pronged approach is essential. This includes expanding regionally accessible training programs, integrating TCM topics into national medical education strategies, and fostering interdisciplinary collaboration among physicians, researchers, and policy-makers. Such efforts can help build standardized, evidence-informed pathways for incorporating TCM into routine primary care.

CONCLUSION

Cupping therapy and hirudotherapy represent historically rooted, cost-effective therapeutic options that continue to attract attention in contemporary healthcare. Although the scientific literature demonstrates potential benefits the need for high-quality, large-scale clinical research remains critical.

In Türkiye, formal regulation of these therapies provides a valuable framework for safe implementation. Within this system, family

physicians are uniquely positioned to offer informed counseling, mitigate risks associated with unregulated use, and, when trained, provide or refer patients to appropriate care.

Moving forward, integrating TCM into family medicine will depend on strengthening physician education, standardizing practice protocols, and conducting rigorous research. Empowering primary care providers with the knowledge and tools to navigate this evolving field will be key to developing safe, effective, and culturally sensitive integrative healthcare models.

DECLARATIONS

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