Modern Health Science; Vol. 8, No. 2; 2025
ISSN 2576-7291 E-ISSN 2576-7305
https://doi.org/10.30560/mhs.v8n2p60

Research Progress on Acupuncture in the Treatment of Olfactory Disorders after Upper Respiratory Tract Infection

Wang Weigang[1] & Nan Ye[2]

[1] Affiliated Hospital of Shaanxi University of Chinese Medicine, China

[2] Shaanxi University of Chinese Medicine, China

Correspondence: Nan Ye, Shaanxi University of Chinese Medicine, Xianyang, China. Tel: 86-157-3521-3077. E-mail: 1395394215@qq.com

Received: April 26, 2025; Accepted: May 16, 2025; Published: May 17, 2025

Abstract

Olfactory disorder after upper respiratory tract infection is a common clinical condition, which is mainly manifested as loss or loss of sense of smell, which not only affects people's quality of life, but also may bring potential safety hazards due to the inability to accurately identify harmful gases, such as natural gas leakage and fire warning. In recent years, acupuncture, as a characteristic therapy of traditional Chinese medicine, has shown unique advantages in the treatment of this disease because of its safety, effectiveness, and few side effects. This article reviews the research progress of acupuncture in the treatment of olfactory disorders after upper respiratory tract infection. It discusses the understanding of the disease by traditional Chinese medicine and the reports of external treatment methods of traditional Chinese medicine to treat the disease, to promote the application of acupuncture in the treatment of olfactory disorders.

Keywords: olfactory disorders, upper respiratory tract infections, acupuncture, research progress

1. Introduction

Upper respiratory tract viral infection is the most common cause of olfactory disorders, accounting for 18% to 45% of the total number of people with olfactory disorders[1]. Olfactory disorders after upper respiratory tract infection are mostly hyposmia, which is more common in people aged 40 to 80 years old, and women are more common than men[2]. Olfactory disorder refers to abnormal odor perception caused by organic or functional lesions in each link of the olfactory pathway during odor perception, conduction, and information analysis and integration[3]. At present, it is believed that at least 1% of the quality of life of the population is affected by complete loss of smell, and the overall prevalence of olfactory disorders exceeds 20%, which can pose a threat to life, such as the inability to effectively detect dangers such as natural gas leaks, fires, spoiled food and environmental toxins, and may also impair working memory and cognitive function. In other words, the loss of olfactory function is not just a sensory problem; it is also capable of affecting an individual's quality of life and daily functioning[4]. Therefore, the treatment of olfactory disorders after upper respiratory tract infection is urgently needed. At present, the treatment of this disease is mainly oral or nasal corticosteroids, and long-term use of small doses can lead to"low risk"harms, including an increased risk of early osteoporosis, infection, and cardiovascular disease, and impaired glycemic control in diabetes[5]. The medicine of our motherland has unique advantages in the treatment of this disease, including internal administration of traditional Chinese medicine and external treatment methods such as acupuncture, fumigation of traditional Chinese medicine, and acupoint injection, with remarkable clinical efficacy, among which acupuncture, as a safe, effective, simple and non-invasive green therapy, has gradually attracted the attention of researchers.

2. Disorders Following Upper Respiratory Tract Infections: Pathogenic Mechanisms and Implications

Olfactory disorders following upper respiratory tract infections are a common complication, with complex and multifactorial etiology. The following are several major pathogenic mechanisms associated with post-viral olfactory dysfunction[6-9]:

(1) Direct Viral Injury. Some viruses, such as coronaviruses, rhinoviruses, and influenza viruses, are closely associated with the development of PVOD. These pathogens can directly damage the olfactory epithelium, leading to decreased mucus production, loss of energy sources, shedding of olfactory cilia, infection of sustentacular(Sertoli-like)cells, and damage or death of Bowman’s glands, basal cells, and microvillar cells within

the lamina propria. Viral infection also triggers a local inflammatory response. Elevated levels of inflammatory markers in the olfactory epithelium, such as interferon(IFN), tumor necrosis factor-α(TNF-α), and interleukin-6(IL-6), may contribute to olfactory dysfunction. These cytokines can downregulate the expression of olfactory receptors in olfactory sensory neurons, cause ciliary loss, neuronal degeneration, and lead to epithelial edema, degeneration, and necrosis—all of which impair normal olfactory function. Additionally, viral replication within the olfactory epithelium can directly disrupt cellular integrity, further exacerbating the damage. The cumulative effect of these processes results in significant impairment of olfactory perception.

(2) Immune-Mediated Injury. In some cases, the immune response to viral infection may become overactivated, resulting in autoimmune-mediated damage that disrupts the structure of the olfactory system. This hyperactive immune response can lead to the destruction of olfactory receptor neurons and supporting cells, thereby compromising olfactory function. Moreover, immune complexes formed after infection may deposit in the olfactory region, triggering local inflammation and tissue damage. This deposition can initiate a cascade of events, including the activation of complement pathways and recruitment of inflammatory cells, which further exacerbate olfactory dysfunction.

(3) Microcirculatory Disturbances. Viral infection may induce vasoconstriction or thrombosis in the microvasculature of the olfactory region, reducing local blood supply and causing ischemia and hypoxia in the olfactory epithelium—ultimately impairing olfactory function. Furthermore, infection-induced local edema may compress microvessels, further aggravating ischemic conditions. This compromised blood flow not only affects the immediate oxygenation and nutrient supply to the olfactory epithelium but also hinders the removal of metabolic waste products, contributing to cellular stress and dysfunction.

(4) Damage to the Neural Conduction Pathway. Viral infections may interfere with normal signal transmission between olfactory neurons, leading to impaired axonal transport and consequently affecting olfactory perception. Some studies suggest that certain viral infections not only affect the peripheral olfactory system but may also involve central nervous system structures related to olfaction, such as the olfactory bulb and primary olfactory cortex, thereby further compromising olfactory function.

As shown above, the occurrence of olfactory dysfunction following upper respiratory tract infection is the result of multiple interacting factors, including direct viral injury, abnormal immune responses, microcirculatory disturbances, and damage to neural pathways. A better understanding of these underlying mechanisms can guide the development of more effective preventive and therapeutic strategies, ultimately improving patients' quality of life.

3. Understanding of Olfactory Disorders after Upper Respiratory Tract Infections in Traditional Chinese Medicine

Olfactory disorders have been documented in ancient Chinese medical texts under terms such as "no smell of smell", "nasal deafness", and"nasal obstruction". While the disease primarily manifests in the nose, it is closely related to the functional states of several internal organs, especially the lungs, spleen, and stomach.

Traditional Chinese Medicine(TCM)attributes the etiology and pathogenesis of olfactory dysfunction following upper respiratory tract infections(URI)mainly to three factors:invasion by external pathogenic factors(external evils), dysfunction of internal organs(viscera), and disturbances in the circulation of qi, blood, and body fluids. The core pathogenic mechanism involves the invasion of external evils—such as wind, cold, heat, and dampness—into the lungs, resulting in impaired lung function and nasal obstruction[10]. This aligns with the classical TCM theory that states: "Lung qi communicates through the nose; when the lungs are in harmony, the nose can perceive odors." If these pathogenic factors are not resolved in a timely manner, they may become stagnant and transform into heat, condense into phlegm, or combine with epidemic toxins, further obstructing the nasal passages and leading to reduced or complete loss of the sense of smell. Moreover, individuals with constitutional weakness, particularly those with deficiency in lung and spleen qi, often exhibit poor defensive(wei qi)function, making them more susceptible to external pathogens and slower to recover after illness. Prolonged illness or repeated infections may lead to depletion of qi and blood, resulting in insufficient nourishment of the nasal passages and persistent olfactory dysfunction. If the condition persists over time, it may further progress to patterns of qi stagnation and blood stasis, impaired circulation of meridians, or deficiencies of the liver and kidneys, which contribute to systemic debility and exacerbate olfactory impairment[11].

In terms of treatment, TCM emphasizes syndrome differentiation and treatment, based on the principle of"re-olfaction". For those who do not declare lung qi, the treatment is to promote the lungs, and then use Xinyi to clear the lungs; For those with dampness and heat in the spleen and stomach, strengthen the spleen and dissolve dampness, choose Shenling Atractylodes to disperse Huoxiang Zhengqi; For those with qi stagnation and blood

stasis, activate blood and dispel blood stasis, and use Tongqi to activate blood decoction; For those with liver and kidney yin deficiency, nourish the liver and kidney, and add or subtract Qi Ju Dihuang pills. At the same time, it can be combined with acupuncture(such as Yingxiang, Yintang, and other acupoints), traditional Chinese medicine nasal fumigation(Xinyi, Angelica, etc.), and dietary conditioning(such as Xinsan's products)and other external treatments to enhance the curative effect. In general, TCM treatment focuses on dispelling evil spirits and strengthening righteousness at the same time, by regulating the functions of the lungs, spleen, liver, kidneys, and other viscera to dredge qi and blood, so that the nasal passages can be nourished and the olfactory function is gradually restored.

4. Treatments

4.1 Acupuncture Treatment

Acupuncture treatment involves the insertion of fine needles into specific acupoints on the human body, followed by the application of various acupuncture techniques to regulate the meridians and promote health. As a core therapeutic modality in Traditional Chinese Medicine(TCM), acupuncture has also demonstrated significant clinical efficacy in the management of olfactory disorders. It exerts its therapeutic effects through multiple mechanisms, including promoting the regeneration of olfactory neurons, regulating neuropeptides to reduce inflammation in the olfactory mucosa, modulating immune responses, improving vascular function, enhancing nasal ventilation, and delaying neurodegenerative processes[12].

Jiang Tianxin et al. [13]conducted a study involving 28 patients with post-COVID olfactory dysfunction. The treatment protocol included acupuncture and moxibustion at the following acupoints:Yintang, Baihui, Fengfu, Qihai, and bilateral Yingxiang, Fengchi, Xuehai, and Zusanli. Among these, Yintang was deeply punctured to reach the periosteum of the nasal bone, and warm needle acupuncture was applied. Each session lasted 40 minutes, administered once daily, six days per week, with one day of rest, for a total of four weeks. Outcomes were evaluated using the T&T olfactory test score, TCM symptom score, serum cortisol levels, Hamilton Depression Rating Scale(HAMD), and Hamilton Anxiety Rating Scale(HAMA). Results showed increased serum cortisol levels after treatment, along with an overall effective rate of 96. 4%. Therefore, it can be concluded that acupuncture effectively alleviates symptoms of long-COVID-related olfactory dysfunction, increases serum cortisol levels, and helps relieve anxiety and depression. Li Jinfei et al. [14]randomly divided 80 patients with olfactory dysfunction following upper respiratory tract infection(URTI)into an observation group and a control group. The observation group received acupuncture targeting the sphenopalatine ganglion combined with olfactory training, while the control group was treated with oral methylcobalamin tablets and mometasone furoate nasal spray. The results indicated that the total effective rate in the observation group was 75. 00%, significantly higher than the 42. 86%observed in the control group. Moreover, the olfactory bulb volume in the observation group was notably greater than that in the control group. These findings suggest that acupuncture of the sphenopalatine ganglion combined with olfactory training is an effective treatment for URTI-induced olfactory dysfunction and can significantly increase the volume of the olfactory bulb in affected patients.

Jiang Meiqi et al. [15]analyzed the theoretical basis and mechanism of acupuncture at the Tongtian acupoint in the treatment of olfactory disorders from a TCM perspective. They proposed that stimulation of the Tongtian acupoint benefits the qi and blood of all meridians, helping to expel pathogenic factors, promote lung qi, dispel wind, and clear nasal obstruction. They further suggested the hypothesis of a "Tongtian acupoint–olfactory groove–olfactory nerve–nasal mucosa" pathway and conducted more in-depth and systematic experimental research on the regulatory role of the "neuro-endocrine-immune" network, aiming to promote the application of acupuncture in treating olfactory disorders.

Professor Sun Yuanzheng[16] highlights the unique advantages of acupuncture and moxibustion in treating this condition. In his approach, he emphasizes the holistic view of disease, focuses on strengthening healthy qi, and seeks the root cause of illness. Guided by the principle of “head acupuncture for general regulation”, he places importance on specialized head acupuncture techniques. He also advocates for “local dredging” as the main therapeutic strategy, which involves clarifying the location of the lesion and identifying the involved meridian. Additionally, he incorporates “distal coordination”, based on the concept that “where the meridians pass, there lies the main treatment.” These three strategies work together synergistically—treating both the root and the manifestation of the disease, addressing the local, systemic, and meridian-level imbalances simultaneously. This comprehensive method can significantly alleviate patient symptoms and improve quality of life, making it highly valuable for clinical application and promotion.

4.2 Integrative Therapy

Acupuncture therapy for olfactory dysfunction is frequently integrated with other complementary treatment modalities, such as tuina(therapeutic massage), acupoint injection, warm acupuncture, and a combination of acupuncture with pharmacological interventions.

Acupoint injection, also known as"hydroacupuncture, "represents an integrative therapeutic approach that combines traditional acupuncture techniques with modern medical injection methods. This method involves injecting medicinal substances or therapeutic fluids—such as vitamins, herbal extracts, or normal saline—into specific acupoints along the meridians to regulate physiological functions and promote disease recovery. The therapeutic mechanism of acupoint injection relies not only on the mechanical stimulation of needle insertion at acupoints but also on the localized and systemic effects of the injected agents, thereby enhancing overall clinical efficacy[17]. Ma Xiaojun et al. [18]conducted a clinical study involving 90 patients diagnosed with olfactory dysfunction following viral infection. These participants were randomly assigned to either a control group or an observation group. The control group received standard olfactory training and conventional drug therapy, while the observation group underwent additional treatment with acupuncture combined with acupoint injection based on the same foundational regimen. The results demonstrated that the total effective rate was significantly higher in the observation group(93.3%)compared to the control group(82.2%). Moreover, post-treatment improvements in all measured clinical indicators were more pronounced in the observation group. Notably, the positive expression scores of fibroblast growth factor 2(FGF2), insulin-like growth factor 1 receptor(IGF-1R), and Ki-67 were markedly elevated in the observation group relative to the control group. These findings suggest that the integration of acupuncture and acupoint injection can substantially enhance therapeutic outcomes and alleviate olfactory impairment in patients with post-viral olfactory dysfunction when compared to Western medical treatment alone. This effect may be attributed to increased expression levels of various regulatory molecules within the nasal mucosa. Pang Zhihui et al. [19]carried out another randomized controlled trial involving 90 patients with olfactory disorders caused by previous viral infections. Participants were randomly divided into three groups:an acupuncture group, an acupoint injection group, and a blank control group. The acupuncture group received manual acupuncture at bilateral Yingxiang, Shangyingxiang, and nasal mound points; the acupoint injection group received lidocaine injections at the Yingxiang acupoint; and the control group received no intervention apart from routine clinical monitoring. The total effective rates among these groups were recorded as 44.0%, 46.7%, and 13.3%, respectively. The study concluded that both acupuncture and acupoint injection can effectively improve olfactory function, with therapeutic efficacy closely related to the severity of olfactory impairment.

Tuina(therapeutic massage)exerts its effects through manual manipulation applied to acupoints and meridians, including pushing, grasping, and pressing techniques. In the context of nasal health, local nasal massage may involve(nasal pinching with breath-holding technique)and direct manual stimulation over the nasal region. Specifically, nasal massage typically involves using the fingertips to perform back-and-forth strokes along both sides of the nasal bridge—from the inner canthus downward to the alae nasi—and localized massage from the Shangyingxiang point to the Yingxiang point. This therapeutic approach aims to promote the circulation of qi and blood, unblock nasal passages, and restore proper nasal function[20].

Warm acupuncture, a traditional Chinese medicine modality, integrates the principles of classical acupuncture with those of moxibustion. Following standard needle insertion, ignited mugwort wool is attached to the handle of the needle, allowing heat to conduct through the metallic shaft into the targeted acupoint. This dual-action technique preserves the stimulating effect of acupuncture while introducing the warming properties of moxibustion, thereby potentiating therapeutic outcomes. Deng Cong et al. [21]investigated the effects of Du Channel warm acupuncture combined with Jiao's scalp acupuncture on motor function and olfactory disturbances in patients with Parkinson's disease. Both groups received baseline pharmacological therapy, while the treatment group additionally underwent acupuncture therapy. The results indicated that this integrative approach exerted a beneficial regulatory influence on olfactory dysfunction.

The combination of acupuncture and herbal medicine refers to a comprehensive treatment strategy in which various forms of acupuncture—including manual acupuncture, electroacupuncture, warm acupuncture, and acupoint injection—are synergistically combined with pharmacological agents such as traditional Chinese herbal decoctions, patent medicines, or plant-derived extracts. This integrative model aims to enhance therapeutic efficacy, minimize adverse effects, and provide a more holistic treatment plan for complex or refractory conditions.

Zhang Chuanfei et al. [22]conducted a randomized controlled trial involving 68 patients with olfactory dysfunction, who were equally divided into a treatment group and a control group. The treatment group received a self-formulated Chinese herbal prescription in conjunction with acupoint injection at the Yingxiang point, whereas the

control group was administered prednisone, vitamin Bco, ATP, and similar conventional medications. Comparative analysis revealed that the total effective rates were 85. 3%in the treatment group and 47. 1%in the control group. Therefore, it was concluded that the integrative use of a self-designed herbal formula combined with Yingxiang acupoint injection yielded superior therapeutic outcomes in managing olfactory dysfunction compared to standard Western medical treatment. Guo Chunhua et al. [23]randomly assigned 30 patients diagnosed with nasogenic olfactory dysfunction into either a treatment group or a control group. The treatment group received oral administration of a self-developed Chinese herbal formulation targeting olfactory loss, alongside acupuncture therapy, while the control group was treated with prednisone, vitamin Bco, and similar pharmaceuticals. The results showed that the total effective rates were 86. 7%in the treatment group and 73.3%in the control group. These findings indicate that a comprehensive TCM-based therapeutic approach demonstrates significantly better efficacy in treating olfactory dysfunction than conventional Western medical treatment alone.

5. Summary

The clinical efficacy of acupuncture in the treatment of olfactory dysfunction following upper respiratory tract infection(URTI)has been widely recognized and repeatedly validated through numerous clinical trials. Over recent years, acupuncture-based therapies have gained increasing acceptance in both clinical practice and academic research, with various modalities being employed for this condition. These include traditional needle acupuncture, tuina(therapeutic massage), acupoint injection, and integrative approaches that combine acupuncture with pharmacological treatments or herbal medicine. A growing body of clinical evidence suggests that acupuncture exerts its therapeutic effects through multiple mechanisms. It can effectively regulate the imbalance of lung qi, promote the circulation of qi and blood, reduce inflammatory responses, and facilitate neural repair, particularly in the olfactory system. These beneficial actions contribute to the recovery of olfactory function and improvement in patients'quality of life.

Despite the promising results observed in clinical settings, several limitations remain in the current body of research on traditional Chinese medicine(TCM)external therapies for post-viral olfactory dysfunction. First, while clinical outcomes are generally positive, there is a relative paucity of studies exploring the underlying mechanisms from a modern medical or neurobiological perspective. This gap hinders the broader scientific understanding and international acceptance of these interventions.

Second, many existing studies suffer from methodological limitations, including relatively simple clinical designs, small sample sizes, lack of long-term follow-up data, and insufficient blinding procedures. As a result, the robustness and generalizability of findings remain questionable.

Moreover, there is currently a lack of standardized guidelines for diagnosis and treatment within the field of TCM. Diagnostic criteria and outcome evaluation indicators vary significantly across studies, leading to inconsistencies in patient selection and therapeutic assessment. Additionally, the diversity of acupuncture point selection, manipulation techniques, and stimulation parameters further complicates efforts to establish a unified treatment protocol. The complexity and variability in acupuncture methods—ranging from manual acupuncture and electroacupuncture to warm needle therapy—also highlight the need for greater standardization and consensus among practitioners.

Furthermore, most published studies have not adequately addressed the synergistic effects of combining acupuncture with moxibustion or other complementary therapies. There is also limited exploration into optimal treatment parameters, such as the ideal duration of needle retention, frequency of sessions, depth of needle insertion, and intensity of stimulation. Without clear guidance, it becomes difficult to replicate results or conduct comparative effectiveness research.

To address these challenges, future research should prioritize the development of large-scale, multi-center randomized controlled trials(RCTs)with rigorous methodologies and extended follow-up periods. Such studies would provide more reliable evidence regarding the long-term efficacy and safety of acupuncture in treating olfactory disorders. In addition, integrating advanced technologies—such as functional magnetic resonance imaging(fMRI), positron emission tomography(PET), and molecular biology techniques—could offer valuable insights into the central nervous system changes induced by acupuncture, particularly in brain regions associated with olfactory processing. Another important direction for future investigation involves optimizing acupuncture parameters and exploring the potential synergies between different treatment modalities. For instance, combining acupuncture with moxibustion may yield enhanced therapeutic benefits due to their complementary mechanisms of action. Similarly, investigating the integration of acupuncture with olfactory training or pharmaceutical interventions could lead to the development of more effective multimodal treatment strategies.

In conclusion, acupuncture—as a non-pharmacological and minimally invasive therapy—demonstrates significant promise in the management of olfactory dysfunction following upper respiratory tract infections. While existing evidence supports its clinical application, further high-quality research is essential to clarify its mechanisms of action, standardize treatment protocols, and enhance its global recognition and adoption. With continued scientific inquiry and clinical validation, acupuncture has the potential to become an integral component of comprehensive care for patients suffering from olfactory impairments.

References

[1] I. K., A. H., J. F., et al. (2006). Post-infectious olfactory dysfunction exhibits a seasonal pattern. *Rhinology, 44*(2), 135–139.

[2] Ni, D. (2010). *[Ear, Nose, and Throat Science]* (pp. 269–272). Beijing: People's Medical Publishing House.

[3] Han, R., Meng, C., Zhu, D., et al. (2023). 2021 American Society of Allergy, Asthma and Immunology expert consensus interpretation on the treatment of post-infectious olfactory dysfunction. *Journal of Clinical Otorhinolaryngology-Head and Neck Surgery, 37*(2), 81–86.

[4] L. R. D. (2022). Olfactory dysfunction in COVID-19: Pathology and long-term implications for brain health. *Trends in Molecular Medicine, 28*(9), 781–794. https://doi.org/10.1016/j.molmed.2022.06.005

[5] Suneel, U., & Dinesh, K. (2018). Potential harms with long-term glucocorticoid use. *American Journal of Physical Medicine & Rehabilitation, 97*(1), 72–74. https://doi.org/10.1097/PHM.0000000000000811

[6] Xu, Y., Meng, X., Yu, H., et al. (2024). Correlation analysis between brain morphology and olfactory function in patients with olfactory disorders after upper respiratory tract infection. *Chinese Journal of Otolaryngology and Skull Base Surgery, 30*(1), 71–76.

[7] Liu, J., Zhan, X., Yao, L., et al. (2022). [Study on olfactory recovery mechanisms]. *Journal of Clinical Otorhinolaryngology-Head and Neck Surgery, 36*(7), 510–514.

[8] Rafal, B., Katarzyna, B., & S. C. B. V. (2022). Olfactory dysfunction in COVID-19: New insights into the underlying mechanisms. *Trends in Neurosciences, 46*(1), 75–90. https://doi.org/10.1016/j.tins.2022.11.003

[9] Irene, F., Francesco, G. N., Federica, Z., et al. (2023). Neurons, nose, and neurodegenerative diseases: Olfactory function and cognitive impairment. *International Journal of Molecular Sciences, 24*(3), 2117. https://doi.org/10.3390/ijms24032117

[10] Wei, R., Wang, J., Jiang, H., et al. (2023). [Olfactory rehabilitation based on TCM principles]. *Beijing Journal of Traditional Chinese Medicine, 42*(7), 745–747.

[11] Cao, Y., Chang, X., Tao, R., et al. (2024). Sun Shentian's clinical experience in acupuncture and moxibustion treatment of acupuncture and occlusion. *Chinese Journal of Acupuncture, 44*(3), 313–317.

[12] Tu, M., Hu, H., Hu, R., et al. (2020). [Acupuncture therapy in olfactory recovery]. *Chinese Acupuncture, 40*(4), 425–428.

[13] Jiang, T., Yang, Q., Li, F. (2025). 28 cases of olfactory disorder after long COVID treated by acupuncture and moxibustion. *Chinese Journal of Acupuncture, 45*(3), 331–334.

[14] Li, J., Ding, L., Wang, J. (2022). Clinical study on acupuncture of sphenopalatine ganglion combined with olfactory training in the treatment of olfactory disorders after upper respiratory tract infection. *China Journal of Traditional Chinese Medicine Information, 29*(11), 120–124.

[15] Jiang, M., Zhou, H., Liu, J. (2025). Discussion on the theoretical basis and mechanism of acupuncture in the treatment of olfactory disorders after new crown and mycoplasma pneumonia. *Journal of Practical Chinese Medicine Internal Medicine*, 1–7.

[16] Li, K., Ding, Y., Xia, X., et al. (2022). Professor Sun Yuanzheng's experience in acupuncture and moxibustion in the treatment of olfactory disorders after viral infection. *Journal of Zhejiang University of Traditional Chinese Medicine, 46*(10), 1103–1106.

[17] Wang, M., Wang, C., Ding, Y., et al. (2020). Comparative study on the clinical synergistic effect of water acupuncture therapy in the treatment of olfactory disorders after viral infection by Tiantu acupoint and Yingxiang acupoint. *Chinese Journal of Integrated Traditional and Western Medicine, 28*(4), 266–271.

[18] Ma, X., & Feng, H. (2020). Clinical study on acupuncture combined with acupoint injection in the treatment of olfactory disorders after viral infection. *Journal of Modern Integrated Traditional and Western Medicine, 29*(31), 3492–3495.

[19] Pang, Z., Yu, H., & Dai, Q. (2016). [Combined TCM and Western methods in olfactory disorder therapy]. *Chinese Journal of Integrated Traditional Chinese and Western Medicine, 24*(1), 23–26.

[20] Zhang, X., Yan, Y., Wang, R., et al. (2024). Exploring the pathogenesis and treatment strategy of traditional Chinese medicine for olfactory disorders based on the four-in-one integration of "Zongqi-Heart-Lung-Brain-Nose." *Chinese Journal of Integrated Traditional Chinese and Western Medicine, 32*(2), 101–104, 125.

[21] Deng, C., Lao, J., & Li, Z. (2018). Effect of Dumaiwen acupuncture on motor function and olfactory impairment in the treatment of Parkinson's disease. *Journal of Practical Chinese Medicine, 34*(5), 601–602.

[22] Zhang, C., Wan, Z., Zhang, L., et al. (2007). Observation on the efficacy of traditional Chinese medicine in the treatment of olfactory disorders. *Chinese Journal of Traditional Chinese Medicine*, (6), 1300–1301.

[23] Guo, C., & Wang, R. (2017). [Follow-up study on olfactory disorder recovery]. *Hunan Journal of Traditional Chinese Medicine, 33*(1), 63–65.