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REVIEW

Traditional Chinese Medicine in the Management of Anxiety Disorders: A Narrative Review of Theoretical Foundations, Clinical Applications, and Modern Integrative Approaches

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Abstract: Anxiety disorders are highly prevalent psychiatric conditions that impair quality of life and daily functioning. Despite the availability of pharmacological and psychotherapeutic treatments, limitations such as suboptimal efficacy, adverse effects, and high relapse rates remain unresolved. Traditional Chinese Medicine (TCM) has emerged as a complementary approach, yet its theoretical complexity and lack of standardized evidence hinder broader clinical integration. This review provides a comprehensive synthesis of the role of TCM in the management of anxiety disorders, covering classical theories, epidemiological features, diagnostic principles, therapeutic strategies, and modern innovations. It outlines the pathogenesis of anxiety from a TCM perspective, including syndrome types such as liver Qi stagnation and heart-spleen deficiency, and discusses personalized treatment modalities such as herbal prescriptions, acupuncture, and five-element music therapy. Importantly, it highlights advances in TCM standardization through data mining, integration with metabolomics and neuroimaging, and emerging tools for objective evaluation, such as fNIRS. Clinical trials suggest that TCM interventions may achieve comparable or superior symptom control with fewer adverse effects than conventional treatments. This review offers a structured reference for clinicians and researchers aiming to understand the evolving role of TCM in anxiety management and its potential contribution to future integrative care models.

Keywords: anxiety disorder, DSM-5, ICD-11, 5-HT, TCM

Introduction

Anxiety disorder is a prevalent psychological condition characterized by excessive worry and fear in everyday contexts, which can disrupt daily functioning and is often challenging to manage.[1] The primary classifications of anxiety disorders include generalized anxiety disorder, panic disorder, social phobia, specific phobia, and separation anxiety disorder.[2] The diagnostic criteria for these disorders have undergone significant evolution and refinement. Initially, the conceptualization of anxiety disorders was somewhat ambiguous; however, advancements in the field of psychiatry have led to gradual standardization and clarification of these criteria. The Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD) are instrumental in this developmental process.[3]

Since the inaugural edition of the DSM was released in 1952, it has undergone several revisions. For instance, diagnostic criteria for generalized anxiety disorder (GAD) have become more stringent in recent decades. This tightening has resulted in the exclusion of individuals with elevated anxiety levels who do not fulfill the specific criteria for GAD, often referred to as subsyndromic, subthreshold, or subclinical GAD. Although these individuals do not meet the full criteria for a complete syndrome, the burden of their condition is frequently comparable to that of individuals with

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a complete syndrome, and they are at an increased risk of developing a full syndrome.[4] Concurrently, the ICD's diagnostic criteria for anxiety disorders are continually updated. For example, the ICD-11 has revised the diagnostic criteria for post-traumatic stress disorder (PTSD) by eliminating the criteria related to mood and anxiety, thereby aiming to delineate a more distinct PTSD phenotype. Research has indicated that despite the removal of criteria for depressive and anxiety symptoms, the prevalence of depression and anxiety disorders identified by ICD-11 is comparable to, or even exceeds, that identified by ICD-10, suggesting an intrinsic relationship between these disorders and PTSD.[5]

This review aims to provide a comprehensive overview of the diagnosis and treatment of anxiety disorders, with a particular emphasis on the theoretical foundations, clinical practices, and recent advances in Traditional Chinese Medicine (TCM). Relevant literature was identified through searches of major databases, including PubMed, Web of Science, CNKI, and the Cochrane Library, using search terms such as "anxiety disorder", "Traditional Chinese Medicine", "TCM", "herbal medicine", "acupuncture", and "syndrome differentiation." Articles published in English or Chinese up to April 2025 were considered. Based on these, we first present the epidemiology, diagnostic criteria, and treatment modalities of anxiety disorders to establish a clinical and conceptual background. The subsequent sections systematically examine TCM perspectives on the etiology and pathogenesis of anxiety, the principles of syndrome differentiation, the mechanisms of action of TCM therapies, and the integration of TCM with modern diagnostic technologies. Moreover, the review discusses the clinical effectiveness of various TCM interventions, including herbal medicine, acupuncture and five-element music therapy, and highlights ongoing challenges, controversies, and future research directions in the field.

Current Diagnostic Criteria and Tools for Anxiety Disorders

Currently, the diagnosis of anxiety disorders relies predominantly on the criteria established in the DSM-5[6] and ICD-11.[7] The DSM-5 provides comprehensive diagnostic criteria for various anxiety disorders, including generalized anxiety disorder, social anxiety disorder, panic disorder, detailed symptoms, duration, and other relevant factors. For instance, the criteria for generalized anxiety disorder stipulate that individuals must experience excessive anxiety and worry for a minimum duration of six months, accompanied by symptoms such as restlessness, fatigue, and difficulty concentrating.[8]

In terms of diagnostic instruments, various psychological assessment scales and clinical interview tools are available. One notable example is the Anxiety Disorder Interview Scale (ADIS-IV), which is based on the DSM-IV criteria and is frequently used for the clinical assessment of anxiety disorders. Research involving patients with fragile X syndrome indicated that 86.2% of males and 76.9% of females met the diagnostic criteria for anxiety disorders.[9] Additionally, self-report measures such as the Beck Anxiety Inventory (BAI) and the Generalized Anxiety Disorder 7-item Scale (GAD-7) are employed for rapid screening and evaluation of anxiety symptom severity. In a study involving 264 participants, the GAD-7 demonstrated a diagnostic sensitivity of 89% (95% CI: 81–94%) and specificity of 73% (95% CI: 65–80%) for generalized anxiety disorder, with a recommended cutoff score of 10.[10]

Challenges and Controversies in the Diagnosis of Anxiety Disorders

Diagnosis of anxiety disorders presents numerous challenges and controversies. A significant issue arises from the frequent comorbidity of anxiety disorders with other psychiatric conditions, such as opioid dependence. It is crucial to differentiate between substance-induced anxiety disorders and those that are independent because this distinction significantly influences treatment approaches. Research indicates that the lifetime prevalence of anxiety disorders among individuals with opioid dependence ranges from 26% to 35%, with phobias often emerging before the development of opioid dependence.[11]

Moreover, the application of the diagnostic criteria poses additional difficulties. Clinicians frequently struggle to utilize ICD-11 diagnostic guidelines effectively, particularly in distinguishing anxiety subthreshold cases from normative states. There is also ambiguity surrounding the implementation of new guidelines on panic attacks. A global study involving clinicians revealed that while the diagnostic accuracy and clinical utility of ICD-11 were comparable to or superior to those of ICD-10, practitioners still faced challenges in applying these guidelines.[12] Furthermore, inconsistencies among various diagnostic tools raise concerns, and the exclusion criteria employed can significantly affect the

clinical study outcomes. The current exclusion criteria tend to focus on singular diagnoses, neglecting the presence of multiple comorbid conditions, which may result in the exclusion of as many as 92% of individuals seeking treatment for anxiety disorders. The relationship between the number of exclusion criteria and the magnitude of treatment effects remains unclear.[13]

Epidemiological Study of Anxiety Disorder

Current Global Epidemiology of Anxiety Disorders

Anxiety disorders represent a prevalent category of mental health conditions globally, exhibiting significant regional disparities in their prevalence rates. Research indicates that the global lifetime prevalence of generalized anxiety disorder, as defined by the DSM-5, is approximately 3.7% (standard error [SE] = 0.1%), with a 12-month prevalence of 1.8% (SE = 0.1%) and 30-day prevalence of 0.8% (SE = 0). Notably, the lifetime prevalence of this disorder is highest in high-income nations, at 5.0% (SE = 0.1%), while lower prevalence rates are observed in low- and middle-income countries.[14]

Furthermore, the prevalence rates of social anxiety disorder (SAD) are estimated to be 1.3% for the 30-day period, 2.4% for the 12-month period, and 4.0% for lifetime prevalence. These rates are generally lower in low-income and lower-middle-income countries, as well as in regions such as Africa and the Eastern Mediterranean, while a higher prevalence is noted in high-income countries, the Americas, and the Western Pacific.[15] The impact of anxiety disorders on individuals is profound and often results in significant functional impairment. Additionally, the proportion of individuals seeking treatment for these disorders varies considerably across countries, with higher treatment-seeking rates typically observed in high-income nations.

Epidemiological Characteristics of Anxiety Disorders in Different Populations

Epidemiological characteristics of anxiety disorders exhibit notable variations across different populations. Gender disparities are evident, as the prevalence of anxiety disorders is typically higher in women than in men. A study involving 1333 outpatients revealed a female-to-male ratio of 1.73:1 (95% confidence interval [CI]: 1.63–1.83) for anxiety disorders, with the gender disparity being most pronounced in the case of PTSD, which demonstrated a female-to-male ratio of 2.80:1.[16]

Age also plays a significant role in the incidence of anxiety disorders, with variations observed at different developmental stages. The highest morbidity rates are reported during childhood and adulthood, whereas lower rates are noted during adolescence and early adulthood. Research involving 816 participants indicated a shared genetic predisposition linking childhood anxiety disorders to adult panic attacks.[17] Furthermore, the prevalence of anxiety disorders is influenced by racial and socioeconomic factors. For instance, a study examining a diverse ethnic adult population found that Caucasians exhibited a higher likelihood of obesity associated with 12-month mood disorders (odds ratio [OR] = 1.30, 95% CI = 1.05, 1.62), previously diagnosed mood disorders (OR = 1.37, 95% CI = 1.11, 1.69), and anxiety disorders within the past 12 months (OR = 1.40, 95% CI = 1.02, 1.68).[18]

Future Directions in the Epidemiology of Anxiety Disorders

Epidemiological research on anxiety disorders presents several critical avenues for future research. First, it is essential to investigate the mechanisms underlying the comorbidity of anxiety disorders with other medical conditions. For instance, elucidating the causal relationships and shared pathophysiological mechanisms among anxiety disorders, cardiovascular diseases, metabolic disorders, and other comorbidities is vital for the development of more effective comprehensive prevention and treatment strategies.

Second, there is a need to enhance research on anxiety disorders within specific populations. In particular, the elderly exhibit a high prevalence of anxiety disorders, which significantly impact their well-being; however, current research in this area remains insufficient. A deeper understanding of the unique morbidity mechanisms, clinical manifestations, and treatment responses associated with anxiety disorders in older adults is necessary to improve therapeutic outcomes and enhance their quality of life.

Moreover, the application of emerging technologies, such as big data analytics and artificial intelligence, can facilitate the integration of multi-source data to comprehensively and accurately assess the epidemiological characteristics, risk factors, and disease burden associated with anxiety disorders. This approach provides a solid foundation for the formulation of targeted public health policies. Additionally, investigating the role of gene-environment interactions in the onset of anxiety disorders, as well as exploring early intervention strategies aimed at modifying environmental factors to prevent the development of these disorders, represent another significant direction for future research.[19]

Pathophysiological Mechanisms of Anxiety Disorder

Neurobiological Basis of Anxiety Disorder

The neurobiological underpinnings of anxiety disorders encompass a variety of brain regions and neurotransmitter systems. Research indicates that the prefrontal cortex, amygdala, hippocampus, and other cerebral areas are integral to anxiety onset and progression. For instance, atypical connectivity and dysfunction between the prefrontal cortex and amygdala may result in heightened responses to perceived threats, thereby contributing to the manifestation of anxiety.[20]

5-hydroxytryptamine (5-HT) is a neurotransmitter that is significantly associated with anxiety. Neurons that produce 5-HT in various brain regions exhibit distinct functions; some are implicated in the facilitation of anxiety-like behaviors, whereas others serve to mitigate such responses. For example, 5-HT neurons located in the dorsal and caudal regions of the dorsal raphe nucleus can be modulated through the stimulation of the bed nucleus of the stria terminalis and the dorsal raphe nucleus pathway, which is associated with the promotion of anxiety-like responses. Conversely, activation of the spino-parabrachial pathway stimulates 5-HT neurons in the ventrolateral region of the dorsal raphe nucleus and the ventrolateral periaqueductal gray area, contributing to the inhibition of panic-like responses and elicitation of antidepressant-like effects.[21] Additionally, other neurotransmitters, such as glutamate and gamma-aminobutyric acid (GABA) play critical roles in the neurobiological mechanisms underlying anxiety disorders.

The Interplay of Genetic and Environmental Factors

The interplay between genetic and environmental factors is pivotal in the etiology of anxiety disorders. Genetic epidemiological research has demonstrated a notable degree of familial aggregation in anxiety disorders, with heritability estimates ranging from approximately 30% to 50%.[22] For instance, twin studies have revealed a shared genetic vulnerability between childhood separation anxiety disorder and adult panic attacks, underscoring the significance of genetic influences on this association.[23]

On the environmental front, experiences of childhood trauma and exposure to stressful life events are closely linked to the development of anxiety disorders. A study involving healthy individuals identified a gene-environment interaction (G × E) between childhood maltreatment and a more active genotype of the 5-HTT gene, which affects anxiety sensitivity, particularly its somatic component.[24] Furthermore, lifestyle factors, including insufficient physical activity and poor dietary habits, may increase the risk of developing anxiety disorders. Research involving adult twins has indicated that lower levels of perceived physical activity correlate with increased anxiety levels, a relationship that persists even after accounting for genetic and shared environmental influences.[25]

Recent Advances in the Pathophysiology of Anxiety Disorder

Recent advancements have been made in the understanding of the pathophysiology of anxiety disorders. Neuroimaging studies, particularly those utilizing functional magnetic resonance imaging (fMRI) and other methodologies, have revealed abnormalities in the functional connectivity of the brain during the resting state in individuals with anxiety disorders. For instance, in patients diagnosed with social anxiety disorder, alterations in the functional connectivity between the frontal-amygdala and frontal-parietal regions have been identified, and these changes correlate with the severity of social anxiety symptoms.[26]

Several potential novel therapeutic targets have emerged in the field of molecular mechanisms. One such target is the P2X7 ion channel, a prevalent microglial protein within the central nervous system, which is implicated in pathological processes associated with ATP-driven danger signal transduction. Antagonists that specifically target this channel may

represent promising pharmacological interventions for neuropsychiatric conditions, including anxiety disorders.[27] Furthermore, the relationship between gut microbiota and the brain, referred to as the "gut-brain axis", has garnered increasing scholarly interest. Research indicates that alterations in the gut microbiota can influence central nervous system function through immune, endocrine, and neurological pathways, thereby contributing to the etiology of anxiety disorders.[28]

Clinical Diagnostic Techniques for Anxiety Disorders

Psychological Assessment of Anxiety Disorder

Psychological assessment plays a crucial role in the diagnosis of anxiety disorders by employing various methodologies, including standardized scales and clinical interviews. One notable instrument is the Screening for Anxiety Related Disorders in Children (SCARED), which is used to evaluate anxiety symptoms in pediatric populations. A study involving 959 and 207 children from two pediatric pain clinics demonstrated that the tertile solution derived from the SCARED scale, categorizing anxiety into minimal (0–12), subclinical (13–24), and clinical (≥ 25) levels, was effective in classifying pain-related outcomes and in identifying children with varying degrees of anxiety, thereby facilitating early intervention.[29]

Additionally, the Experience Sampling Method (ESM) and Ecological Momentary Assessment (EMA) are important psychological assessment techniques. These methods allow for the frequent evaluation of symptoms and other relevant variables within naturalistic settings, thereby enhancing our understanding of the progression of anxiety disorders. A comprehensive review of 34 studies employing ESM/EMA in adults with panic, generalized anxiety, social anxiety, post-traumatic stress, obsessive-compulsive, and adolescent anxiety disorders revealed that these approaches elucidate the temporal variability of symptoms and their relationship with everyday emotional, behavioral, and situational factors. Furthermore, ESM and EMA can be integrated with the dynamic monitoring of physiological variables and treatment assessments.[30]

Moreover, psychophysiological assessment techniques, such as monitoring electrocardiogram readings, respiratory rates, skin conductance, and other physiological indicators, are instrumental in evaluating the physiological responses of individuals with anxiety disorders during stress exposure and recovery. These assessments provide valuable insights that can inform both diagnosis and treatment strategies.[31]

Study on Biomarkers of Anxiety Disorder

Research on biomarkers is paving the way for novel pathways for the diagnosis of anxiety disorders. The association between inflammation-related markers and anxiety disorders has garnered considerable interest. Empirical studies have identified abnormalities in certain inflammatory markers, including interleukin-6 (IL-6), tumor necrosis factor-α (TNF-α), and high-sensitivity C-reactive protein (hsCRP), in individuals diagnosed with anxiety disorders. A longitudinal study involving 3,113 participants revealed that the presence of current anxiety disorder (β = 0.09, 95% CI 0.00–0.17) and agoraphobia (β = 0.25, 95% CI: 0.07–0.43) at baseline was linked to a more pronounced increase in hsCRP levels during follow-up, suggesting that chronic low-grade inflammation may be a consequence of these conditions.[32]

Furthermore, neuroimaging markers have emerged as significant in this field of research. For instance, studies utilizing magnetic resonance spectroscopy (MRS) have demonstrated that trait anxiety is negatively correlated with taurine levels in the nucleus accumbens (NAc), whereas perceived contextual stress is negatively correlated with GABA levels in the NAc and positively correlated with the Glu/GABA ratio in healthy individuals. These findings provide insight into the neurochemical underpinnings of anxiety disorders.[33] Additionally, the intestinal microbiota has gained attention as a potential biomarker, with studies indicating that the composition of the gut microbiota in patients with anxiety disorders differs from that of healthy individuals; however, its specific application in diagnostic processes requires further investigation.[28]

Future Development of Diagnostic Techniques for Anxiety Disorders

In the coming years, diagnostic methodologies for anxiety disorders are anticipated to evolve towards greater accuracy and objectivity. Advancements in neuromodulation technologies are expected to yield significant breakthroughs, particularly in the modulation of anxiety-related neural circuits, through techniques such as deep brain stimulation (DBS). This approach may offer a novel therapeutic avenue for the treatment of refractory anxiety disorders. Research has indicated that stimulation of the prefrontal cortex can interfere with the consolidation of fear memories by influencing dopamine D2 receptors in the ventral hippocampus, thereby presenting a potential target for therapeutic intervention in anxiety disorders.[34]

Conversely, the role of digital technology in the diagnostic process is projected to significantly expand. For instance, the utilization of mobile applications for real-time symptom monitoring and assessment can facilitate the collection of extensive patient data, enabling dynamic and personalized diagnostic approaches for anxiety disorders. Furthermore, the application of artificial intelligence and machine learning algorithms can enhance the integration and analysis of multi-source data, including psychological assessments, biomarker information, and neuroimaging results, thereby improving the diagnostic accuracy and efficiency. Additionally, ongoing research and validation of novel biomarkers, particularly those identified through gene expression profiling and metabolomics, will provide crucial support for the advancement of diagnostic techniques in this field.[35]

Treatment Strategies for Anxiety Disorder

Progress in Drug Treatment of Anxiety Disorder

Recent advancements have been made in pharmacological treatment of anxiety disorders. Currently, the most frequently prescribed medications include selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs). In particular, SSRIs are widely utilized for the management of anxiety disorders in pediatric and adolescent populations; however, the safety and efficacy of alternative pharmacological options remain inadequately established.[36]

Ongoing research and development efforts have focused on the discovery of novel therapeutic agents. Certain compounds target specific neurotransmitter systems or receptors, such as ligands for metabotropic glutamate receptors (mGluRs). These agents are anticipated to emerge as new treatment modalities for anxiety disorders based on the hypothesis that alterations in glutamatergic neurotransmission are implicated in the pathophysiology of anxiety.[37] In the context of panic disorders, emerging pharmacological agents, including metabotropic glutamate (mGlu 2/3) agonists and levetiracetam, have exhibited anti-panic effects and efficacy in preliminary investigations, with a favorable tolerance profile, thereby offering potential alternatives for patients who are resistant to conventional treatments.[38] Furthermore, the exploration of combination pharmacotherapy is gaining attention, with studies evaluating the efficacy and safety of various drug combinations to enhance therapeutic outcomes and mitigate adverse effects.

Psychotherapy for Anxiety Disorder

Psychotherapy is a critical component in the management of anxiety disorders, and cognitive behavioral therapy (CBT) is a widely utilized and efficacious approach. In pediatric populations diagnosed with anxiety disorders, CBT facilitates modification of maladaptive thought processes and behavioral patterns through techniques such as exposure therapy and cognitive restructuring. Empirical research examining children with anxiety disorders has demonstrated the effectiveness of CBT in alleviating anxiety symptoms; however, variability in treatment response has been observed across different anxiety disorder subtypes, notably in patients diagnosed with social anxiety disorder, exhibiting a comparatively gradual symptom improvement.[39]

Furthermore, the utilization of Internet-delivered psychotherapy is gaining traction, exemplified by Internet-delivered Acceptance and Commitment Therapy (iACT). A systematic review of pertinent literature indicates that iACT is effective for adults suffering from generalized anxiety disorder and associated anxiety symptoms, with patients reporting high levels of satisfaction regarding treatment. Nonetheless, there is a pressing need for additional randomized controlled trials to substantiate its efficacy across a broader spectrum of anxiety disorders.[40] Additionally, psychodynamic therapy

contributes to the treatment of anxiety disorders by aiding patients in the exploration and resolution of internal conflicts and emotional experiences. An illustrative example is the Unified Psychodynamic Protocol (UPP-ANXIETY), which amalgamates effective principles of psychodynamic therapy and holds promise for enhancing treatment outcomes.[41]

Comprehensive Strategies in the Treatment of Anxiety Disorder

A comprehensive treatment strategy underscores the importance of integrating pharmacological interventions with psychotherapy to enhance the therapeutic outcomes. For instance, research has evaluated the efficacy of paroxetine, cognitive therapy (CT), and their combined application in the management of social anxiety disorder. The findings indicate that CT demonstrated superior effectiveness compared to paroxetine alone and placebo at the conclusion of treatment; however, it did not exhibit a significant advantage over the combined therapy. Notably, at the 12-month follow-up, the recovery rate was markedly higher in the CT group (68%) than in the combination (40%), paroxetine (24%), and placebo (4%) groups.[42]

Furthermore, the involvement of patients and their families has been emphasized. Through initiatives such as patient education and self-management support, there is an enhancement in patients' understanding of their condition and their ability to manage it, which, in turn, improves adherence to treatment. Additionally, attention to lifestyle modifications, including the promotion of regular physical activity and a nutritious diet, can alleviate anxiety symptoms. For example, exercise has been identified as a viable treatment option for anxiety and depression, yielding favorable outcomes compared with cross-diagnostic cognitive behavioral therapy.[43] Therefore, it is essential to consider a multitude of factors and develop a personalized and comprehensive treatment plan to optimize the management of anxiety disorders.

The Basic Theory of TCM in Treating Anxiety Disorder (See Figure 1)

Concept, Analysis of TCM Etiology and Pathogenesis of Anxiety Disorder

In TCM, Qi is regarded as the vital life energy that circulates throughout the body along defined channels known as meridians. Health is believed to depend on the smooth and balanced flow of Qi, whereas disruptions in this flow are associated with illness. One such disruption is referred to as Qi stagnation, a pathological condition in which the movement of Qi is impeded, potentially resulting in both emotional and physical symptoms. Within this framework, the liver is thought to govern the regulation and distribution of Qi throughout the body. Therefore, liver Qi stagnation describes a pattern in which emotional stress or internal disharmony interferes with liver function, leading to manifestations such as anxiety, irritability, or low mood. Although rooted in traditional theoretical constructs, these terms are widely applied in contemporary TCM clinical practice and serve as a foundation for syndrome differentiation and individualized treatment planning.

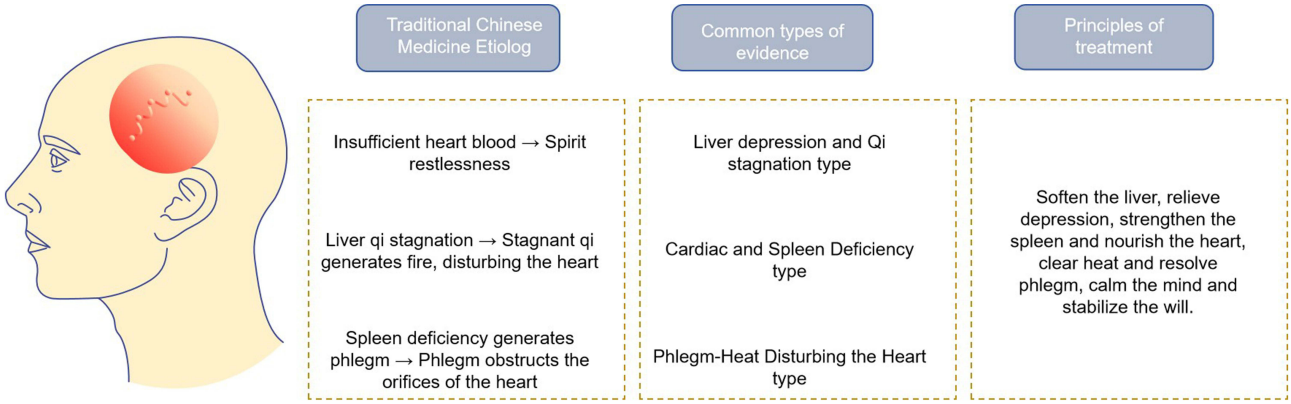

Figure 1 Traditional Chinese Medicine (TCM) Perspectives on the Etiology, Classification, and Treatment Principles of Anxiety Disorders. This figure summarizes key TCM theoretical constructs used to understand and manage anxiety disorders. The etiological section outlines common mechanisms such as insufficient heart blood impairing mental stability, liver Qi stagnation disrupting emotional regulation, and spleen deficiency leading to phlegm accumulation that interferes with mental clarity. Corresponding syndrome types include liver depression with Qi stagnation, heart and spleen deficiency, and phlegm-heat disturbing the heart. Treatment strategies emphasize harmonizing liver function, strengthening the spleen, nourishing the heart, clearing excess heat, resolving phlegm, and calming the mind to restore emotional balance.

While TCM does not contain a direct equivalent to the biomedical term "anxiety disorder", it characterizes related symptoms through clinical patterns such as "depression", "palpitations", and "insomnia." According to TCM theory, the etiology and pathogenesis of anxiety involve multiple organs and complex pathological interactions. The heart is considered the organ that governs the mind (Shen); thus, a deficiency in heart blood is believed to result in insufficient nourishment of the mind, leading to emotional instability and anxiety. As described in the Lingshu (Miraculous Pivot): Evil Guest, the heart is considered the central organ responsible for housing the Shen (mind or spirit), and for coordinating the physiological and emotional functions of the five zang (solid organs) and six fu (hollow organs). Within this framework, a deficiency of heart blood is believed to impair the heart's ability to nourish the Shen, leading to emotional instability, restlessness, and symptoms that correspond to anxiety in modern clinical terms.[44]

According to TCM theory, the liver plays a central role in regulating the smooth flow of Qi and maintaining emotional balance. Emotional stress or internal disharmony may disrupt this function, resulting in liver Qi stagnation, a pattern characterized by impeded Qi movement. This stagnation may further generate internal heat, referred to as the "transformation of Qi into fire", which is believed to disturb mental clarity and emotional regulation. These disruptions are considered to contribute to the development of anxiety-related symptoms. The classical text "Su Wen Ju Tong Lun" notes that "all diseases arise from Qi", emphasizing the role of emotional factors, such as anger, joy, sorrow, fear and surprise, in disturbing the normal flow of Qi, which in turn may precipitate emotional and psychological symptoms. In addition, the spleen and stomach are viewed as the primary source of acquired Qi and blood. When these organs are weakened, potentially due to overthinking, poor diet, or fatigue, their ability to generate and transport Qi and blood is compromised, leading to insufficient nourishment of the heart, which is believed to impair the stability of the "Shen" (mind), thereby increasing vulnerability to anxiety and related emotional disturbances.

From a pathological perspective within TCM, the accumulation of phlegm, stagnation of blood, and excessive heat are considered important factors contributing to anxiety-related symptoms. Phlegm is thought to interfere with the normal functioning of the mind by obstructing the sensory orifices, which may result in confusion, emotional instability, or heightened nervousness. The classical work "Dan Xi Xin Fa Six Depressions" emphasizes the importance of maintaining a dynamic balance between Qi and blood, asserting that any disruption or stagnation in their movement can lead to a range of disorders, including those affecting emotional well-being. Impaired blood flow, referred to as blood stasis, is believed to hinder the heart's regulatory function over mental activities, thereby exacerbating symptoms such as agitation and unease. In parallel, the accumulation of excessive physiological heat, often associated with unresolved emotional tension, is understood to disturb the heart and mind, potentially leading to manifestations such as restlessness, irritability, and anxiety. Together, these interrelated mechanisms form the theoretical basis for understanding the pathogenesis of anxiety disorders in TCM.[45]

The Theoretical Basis of TCM in the Treatment of Anxiety Disorder

The treatment of anxiety disorders within TCM is guided by two core theoretical principles: the holistic view of the human body and the method of syndrome differentiation. The holistic concept holds that physiological and psychological functions are interconnected, with organs, meridians, Qi, and blood functioning an integrated regulatory system. Although anxiety symptoms may appear primarily psychological, TCM regards them as manifestations of systemic functional imbalances. For example, the heart is considered to affect mental activity, while the small intestine is linked to the separation of clear and turbid substances. TCM theory posits a mutual relationship between these organs; dysfunction of the heart may impair the digestive capacity of the small intestine, while disturbances in the small intestine may in turn affect emotional stability. Based on this understanding, TCM treatment aims not only to relieve emotional symptoms but also to restore overall physiological balance and organ coordination.

Syndrome differentiation is a fundamental diagnostic strategy in TCM and is central to formulating individualized treatment plans. Through the assessment of clinical manifestations, including the patient's symptoms, physical signs, tongue appearance, and pulse characteristics, clinicians identify specific pathophysiological patterns. Common syndromes associated with anxiety include liver Qi stagnation, deficiency of the heart and spleen, and disturbance of the heart by phlegm-heat. Once a syndrome is identified, therapeutic strategies are selected accordingly. For instance, in cases of liver Qi stagnation, treatment is directed toward regulating liver function, improving Qi flow, and relieving

emotional tension. Herbal prescriptions such as Chaihu Shugan Powder are frequently used to support these therapeutic goals by promoting emotional regulation and enhancing physiological function. This individualized approach to diagnosis and intervention reflects the precision and adaptability of TCM clinical practice.[46]

The Mechanism of TCM in the Treatment of Anxiety Disorder

The therapeutic mechanisms of TCM in addressing anxiety disorders are characterized by their multidimensional and multitargeted nature. From the standpoint of neurotransmitter modulation, empirical research has indicated that TCM can influence the concentrations of key neurotransmitters, including 5-HT. Dysregulation of 5-HT, a critical neurotransmitter, is closely associated with the pathophysiology of anxiety disorders. Certain TCM formulations have been shown to ameliorate anxiety symptoms by modulating pertinent signaling pathways, enhancing the synthesis and release of 5-HT, and adjusting its receptor activity. For instance, "Xiaoyao" Powder has been demonstrated to regulate 5-HT levels in the brains of rats exhibiting liver depression, thereby exerting anxiolytic effects.[47]

In the context of the neuroendocrine system, TCM exerts regulatory effects on the hypothalamic-pituitary-adrenal (HPA) axis. Prolonged exposure to stress can lead to hyperactivity of the HPA axis, resulting in elevated cortisol secretion and subsequent psychological manifestations, including anxiety. TCM has the potential to restore equilibrium and mitigate anxiety by modulating hormone levels associated with the HPA axis. For example, ginseng, a traditional Chinese medicinal herb, has been shown to regulate the HPA axis, decrease cortisol levels, and alleviate anxiety symptoms.[44] Furthermore, TCM may also contribute to anxiolytic effects through regulation of the immune system and enhancement of neural plasticity, thereby offering a comprehensive intervention strategy for the treatment of anxiety disorders.

An Epidemiological Study of Anxiety Disorder Treated with TCM

Epidemiological Characteristics and TCM Intervention of Anxiety Disorder

The global prevalence of anxiety disorders is notably high and significantly affects the quality of life and social functioning of individuals. A multicenter study conducted in China involving 1,343 participants revealed that 32.80% reported experiencing anxiety symptoms, with 9.90% indicating severe anxiety symptoms.[48] Variability in the prevalence of anxiety disorders exists across regions and demographic groups. Notably, women, younger individuals, those with lower educational attainment, and individuals experiencing sleep disorders or job burnout are at increased risk of developing anxiety disorders.

TCM has garnered increasing interest as a potential intervention for anxiety. Several studies have explored the application of TCM in the treatment of anxiety, yielding promising results. For instance, among stroke patients, 12% utilized TCM, and those who did exhibit a lower mortality rate, despite the prevalence of mental disorders such as anxiety and depression being comparable between TCM users and non-users.[49] This indicates that TCM has the potential to alleviate symptoms and enhance the quality of life of individuals with anxiety disorders. However, further large-scale, rigorously designed studies are necessary to substantiate its efficacy and safety.

Clinical Trial Data Analysis of TCM in the Treatment of Anxiety Disorder

The effectiveness of TCM in addressing anxiety disorders has been assessed in several clinical trials. One such study involved 202 participants diagnosed with generalized anxiety disorder who were randomly assigned to two treatment groups. One group received the Yiqi Wenxin compound in conjunction with cognitive therapy, while the other group was treated with paroxetine alongside cognitive therapy. The findings indicated a significant reduction in scores on both the Hamilton Anxiety Scale (HAMA) and the Zung Self-Rating Anxiety Scale (SAS) for both groups post-treatment; however, no statistically significant differences were observed in scores, efficacy, or efficiency between the two groups ($P > 0.05$). Notably, six months after the cessation of medication, the HAMA and SAS scores in the TCM group exhibited a lesser increase, along with a lower recurrence rate and reduced incidence of adverse reactions.[50]

Additionally, a systematic review and meta-analysis focusing on acupuncture for anxiety disorders analyzed 20 randomized controlled trials. The results demonstrated that acupuncture was more effective than the control group for

generalized anxiety disorder, yielding a standardized mean effect size of −0.41 (95% CI −0.50 to −0.31; P < 0.001). Furthermore, acupuncture interventions were found to be well-tolerated and safe for the treatment of anxiety disorders.[51] Collectively, these studies offer preliminary evidence supporting the efficacy and safety of TCM in the management of anxiety disorders. However, there is a pressing need for further high-quality research to substantiate these findings.

Application of TCM in Patients with Anxiety Disorder

Currently, the use of TCM in the management of anxiety disorders is gradually increasing. Numerous studies have investigated various TCM modalities for the treatment of anxiety disorders, including traditional Chinese medicinal prescriptions, acupuncture, and TCM music therapy. Notably, TCM five-element music therapy (TCM-FEMT) has gained prominence in research concerning anxiety and depression among patients with lung cancer owing to its distinctive advantages. However, there remains a paucity of evidence-based medical research that systematically evaluates its efficacy in alleviating anxiety and depression in this patient population.[52]

Acupuncture is also frequently employed in clinical settings to treat anxiety disorders. Research has examined the effects of acupuncture and moxibustion on patients with intestinal obstruction, revealing that these interventions can effectively and rapidly alleviate symptoms and discomfort, thereby reducing the duration of emergency department stay.[53] Nevertheless, the application of TCM in the context of anxiety disorders faces several challenges, including the absence of standardized efficacy evaluation criteria and lack of clarity regarding the composition and mechanisms of action of certain TCM medicines. These issues necessitate further investigation to facilitate broader and more rational application of TCM in clinical practice.

Diagnostic Techniques for TCM Combined Treatment of Anxiety Disorder (See Figure 2)

A Standardized Approach to Diagnosing Anxiety Disorders in TCM

The diagnosis of anxiety disorders within TCM requires standardization to improve its clinical applicability and reproducibility. While TCM diagnosis traditionally relies on subjective evaluation of symptoms, signs, tongue appearance, and pulse characteristics, efforts have been made to develop more standardized diagnostic methodologies. For instance, several studies have employed data mining techniques to analyze large datasets of clinical records in order to identify common diagnostic features and therapeutic patterns. In one investigation involving 86 clinical trials on the use of acupuncture and moxibustion in treating tic disorders (TDs), data mining was used to identify high-frequency

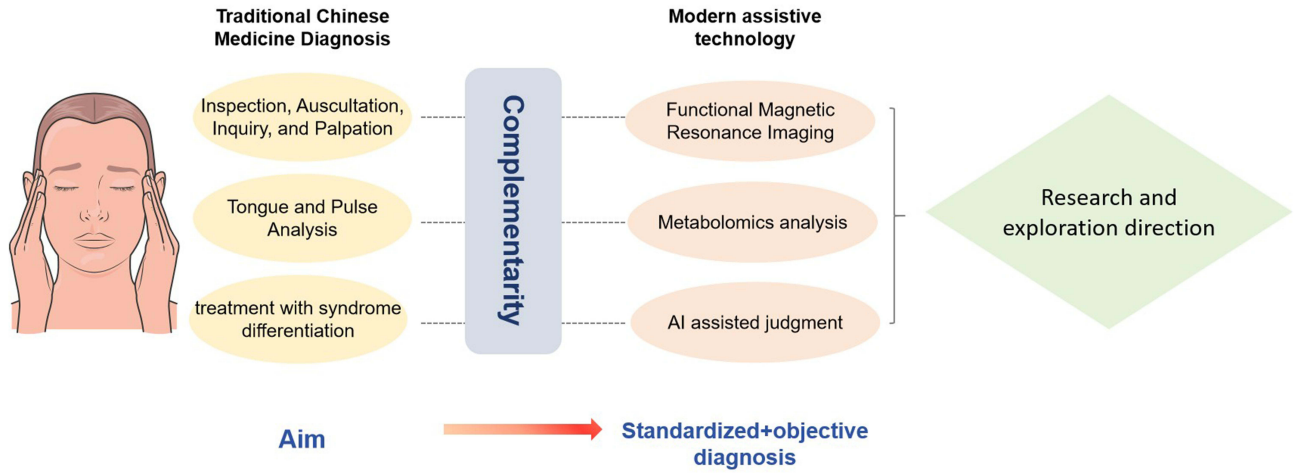

Figure 2 Integration of Traditional Chinese Medicine (TCM) Diagnosis with Modern Assistive Technologies in the Evaluation of Anxiety Disorders. This figure illustrates the complementary relationship between Traditional Chinese Medicine (TCM) diagnostic methods, including inspection, auscultation, inquiry, palpation, tongue and pulse analysis, and syndrome differentiation, and modern assistive technologies such as functional magnetic resonance imaging (fMRI), metabolomics analysis, and AI-assisted diagnostic tools. The integration of these approaches supports the development of more standardized and objective diagnostic frameworks, offering a direction for future research aimed at enhancing diagnostic precision in the clinical evaluation of anxiety disorders.

acupoints such as Baihui (DU20), Fengchi (GB20), and Taichong (LR3). This analysis also clarified frequently used acupoint combinations and treatment strategies, thereby contributing to more consistent approaches in acupoint selection and protocol formulation. Although the study was conducted in the context of TDs, the methodology is relevant for standardizing acupuncture-based approaches in anxiety disorders as well.[54]

Moreover, researchers have explored the integration of TCM syndrome differentiation with objective biomedical indicators to enhance diagnostic validity. For example, a metabolomics-based study on patients with dyslipidemia compared serum metabolite profiles among individuals diagnosed with different TCM syndromes, such as spleen deficiency, kidney yang deficiency, and phlegm-dampness stagnation. The results revealed distinct metabolomic patterns corresponding to each syndrome, suggesting that biological markers can be aligned with traditional diagnostic categories. These findings provide preliminary evidence for the potential to diagnose TCM syndromes, such as those relevant to anxiety disorders, using quantifiable biomedical data. This approach offers a promising direction for improving diagnostic precision, reproducibility, and the integration of TCM concepts within evidence-based medical research.[55]

Application of TCM Combined with Modern Diagnostic Technology

The integration of TCM with contemporary diagnostic methodologies presents a novel avenue for the assessment of anxiety disorders. Advanced diagnostic techniques, including imaging, genetic testing, and proteomics, can yield more precise data and enhance TCM diagnostic practices. For instance, in the context of acupuncture and moxibustion in TCM, functional magnetic resonance imaging (fMRI) can be used to investigate the impact of acupuncture on cerebral functional activity, thereby establishing a foundation for elucidating the central mechanisms underlying acupuncture and moxibustion in the treatment of anxiety disorders. Research has indicated that acupuncture may modulate the activity of specific brain regions, thereby improving patients' quality of life and alleviating symptoms. This offers a fresh perspective on the mechanisms by which acupuncture addresses anxiety disorders and other health conditions.[56]

Furthermore, metabolomic technology facilitates the examination of metabolic alterations within organisms, thereby reflecting their physiological and pathological states. The application of TCM in the management of anxiety disorders can help identify changes in biomarkers and metabolic pathways associated with these disorders, thereby enhancing our understanding of the etiology of anxiety disorders and the mechanisms through which TCM exerts its therapeutic effects. For example, metabolomic analyses of individuals with anxiety disorders have revealed alterations in specific metabolites, suggesting potential targets for TCM interventions.[57]

Individualized Assessment of TCM Diagnosis of Anxiety Disorder

The diagnostic approach to anxiety disorders in TCM emphasizes individualized assessment based on each patient's unique physiological constitution, emotional background, and environmental context. Given that the manifestation of anxiety varies widely across individuals, TCM does not rely on fixed diagnostic categories but instead applies syndrome differentiation to capture the underlying imbalance specific to each case. Practitioners collect diagnostic information using four classical examination methods: inspection (visual observation), auscultation and olfaction (listening and smelling), inquiry (systematic questioning), and palpation (including pulse examination). These methods together enable a comprehensive evaluation of internal organ function, Qi and blood status, and pathological factors. For example, a patient presenting with liver Qi stagnation may report anxiety as the primary complaint, but may also exhibit accompanying features such as a sensation of distending pain in the hypochondriac region, fatigue despite adequate sleep, or menstrual irregularities. These manifestations guide the clinician in refining the diagnosis through syndrome differentiation, often confirmed by tongue and pulse assessment. The resulting diagnosis informs a treatment plan that is tailored to the patient's specific condition rather than applying a one-size-fits-all strategy.

During the treatment phase, this individualized approach continues to guide therapeutic decisions. For instance, in a clinical study of children with anxiety disorders, personalized psychotherapeutic interventions, designed according to each child's symptom profile, psychological status and family environment were shown to improve treatment outcomes.[58] This approach aligns with the patient-centered principles of TCM, allowing for more targeted and effective interventions that address both the psychological and physiological dimensions of anxiety.

Treatment Strategy of TCM Comprehensive Treatment for Anxiety Disorder (See Figure 3)

Comparison of TCM Monotherapy and Compound Therapy in the Treatment of Anxiety Disorder

TCM exhibits distinct characteristics for the management of anxiety disorders. Typically, the constituents of individual herbal remedies are relatively straightforward, and their mechanisms of action are often well-defined. For instance, active compounds derived from traditional Chinese medicinal sources have demonstrated anxiolytic properties in both animal studies and clinical trials. A notable example is Ginsenosides found in ginseng have been shown to alleviate anxiety by modulating neurotransmitter levels and influencing neuroendocrine functions.[44]

In contrast, compound prescriptions consist of multiple types of Chinese traditional medicines, offering the benefits of a multi-component and multi-target synergistic effect. A study focusing on generalized anxiety disorder revealed that patients treated with anti-anxiety granules, a compound formulation of Chinese traditional medicine, experienced significant reductions in HAMA, State-Trait Anxiety Inventory (STAI), and TCM symptom scale scores. These findings suggest that the compound formulation is effective in ameliorating anxiety symptoms.[59] Compared to single prescriptions, compound formulations may provide a more comprehensive regulatory effect on the intricate etiology and pathogenesis of anxiety disorders, facilitated by synergistic interactions among various components. However, the complexity of these formulations poses challenges for elucidating their mechanisms of action.

Clinical Effect of Acupuncture and Moxibustion Combined with TCM on Anxiety Disorder

The integration of acupuncture with Chinese traditional medicines presents notable clinical benefits for the management of anxiety disorders. A study focusing on perimenopausal insomnia accompanied by anxiety compared the efficacy of five-element music therapy combined with auricular point sticking therapy (a technique related to acupuncture) with oral administration of alprazolam. The findings indicated a total effective rate of 93.02% in the treatment group, in contrast to

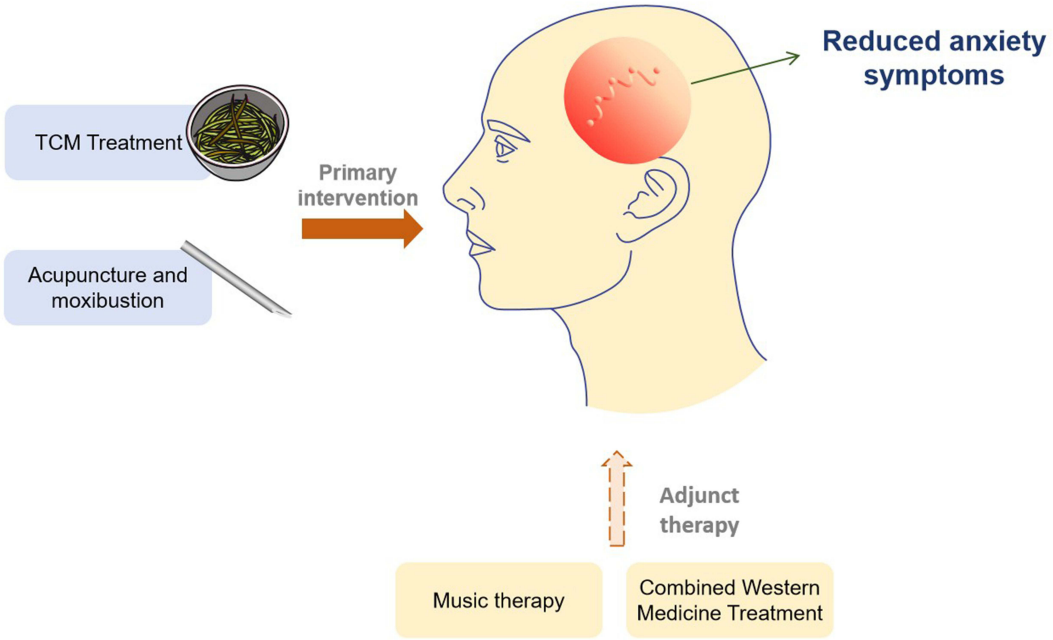

Figure 3 Multimodal Traditional Chinese Medicine (TCM) Intervention Strategy for Anxiety Disorders. This figure presents a framework for TCM-based intervention in anxiety disorders, highlighting acupuncture and moxibustion, herbal treatment, and five-element music therapy as primary treatment modalities. These interventions are supported by adjunctive therapies such as combined Western medicine and psychosocial interventions. The integration of these approaches is intended to reduce anxiety symptoms by modulating both physiological and emotional dimensions, reflecting the personalized and multi-component treatment philosophy of TCM.

88.10% in the control group, demonstrating the superiority of the treatment group in enhancing sleep quality and alleviating anxiety symptoms.[60]

In a separate investigation, patients diagnosed with anxiety disorders received treatment with a combination of acupuncture and TCM, which was then compared to treatment with Western medicine alone. The results imply that the combined therapeutic approach may offer greater benefits in mitigating anxiety symptoms and enhancing patients' quality of life while also presenting fewer adverse reactions. For instance, certain studies have indicated that acupuncture in conjunction with TCM can modulate neurotransmitter levels and bolster immune function, thereby alleviating anxiety symptoms more effectively.[61] When combined with TCM, the synergistic effects of acupuncture and moxibustion can regulate bodily functions through diverse mechanisms, thereby providing a more efficacious treatment option for anxiety disorders.

Individualized Program Design of TCM for Anxiety Disorder

The treatment of anxiety disorders within TCM underscores the importance of an individualized program design. Treatment plans are tailored based on various factors, including the patient's constitution, syndrome, age, and sex. For instance, patients diagnosed with anxiety disorders characterized by a deficiency in both the heart and spleen,[62] particularly those with a weak constitution, are often prescribed traditional Chinese medicinal formulas, such as Guipi Decoction.[63] Furthermore, the dosage and compatibility of these prescriptions can be adjusted according to the specific condition of each patient.

In the realm of acupuncture and moxibustion, there is also a focus on the individualized selection of acupoints and techniques.[64] A thorough differentiation of the patient's symptoms and signs informs the choice of the appropriate acupoints for treatment. For example, patients experiencing anxiety due to liver depression and qi stagnation may receive acupuncture at points along the liver and gallbladder meridians, such as Taichong and Fengchi, to promote liver function, regulate qi, and calm the heart and the mind.[65] Additionally, the manipulation and intensity of acupuncture are tailored to the patient's tolerance levels to optimize the therapeutic outcomes.[66] This individualized approach exemplifies the precision and relevance of TCM treatment, effectively addressing the unique needs of patients and enhancing their therapeutic efficacy.

Progress of TCM in the Treatment of Anxiety Disorder

Research and Development of New Drugs for TCM Treatment of Anxiety Disorder

TCM has led to notable advancements in the formulation of novel pharmacological agents for the management of anxiety disorders. Recent studies have employed methodologies such as network pharmacology and molecular biology to analyze the active constituents and molecular targets of TCM, thereby establishing a foundation for the research and development of new therapeutic agents. For instance, a study examining the efficacy of Ginseng Yangrong Decoction, a traditional TCM formulation, utilized network pharmacology to identify key active components and their associated targets. These findings indicate that Ginseng Yangrong Decoction exerts an anxiolytic effect by modulating the interactions between neural active ligands and receptors, as well as by influencing the PI3K/AKT/mTOR signaling pathway. This research provides a theoretical framework for the development of new pharmacological agents derived from this traditional formulation.[67]

Furthermore, there have been concerted efforts to develop innovative TCM preparations. The application of nanotechnology in TCM has the potential to enhance the bioavailability, stability, and targeting of these drugs. Nanoparticle-based formulations of TCM can address the limitations associated with conventional dosage forms, thereby improving drug absorption and efficacy. This approach offers a promising avenue for research and development of new treatments for anxiety disorders. However, further investigations are imperative to assess the safety and long-term effectiveness of nanoparticle-based TCM preparations.

TCM Is an Innovative Therapy Combined with Modern Medicine

The integration of TCM with contemporary medical practices has led to the development of innovative therapeutic approaches to the management of anxiety disorders. This integration involves the application of TCM syndrome

differentiation and treatment methodologies along with modern psychotherapeutic techniques, particularly cognitive behavioral therapy (CBT). By incorporating TCM principles related to emotional conditioning, practitioners can simultaneously modify patients' cognitive and behavioral patterns using TCM theories to address emotional challenges, regulate mood, and enhance therapeutic outcomes.

Novel combinations of treatment modalities have been developed. For instance, acupuncture has been augmented with modern neuromodulation techniques such as electrical stimulation, allowing for precise adjustments of acupuncture parameters to more effectively stimulate acupoints and regulate neural function. Studies have demonstrated the efficacy of electroacupuncture in treating anxiety disorders, with studies observing the impact of varying frequency and intensity parameters on both anxiety symptoms and neural activity in the brain. These findings indicate that electroacupuncture can significantly alleviate anxiety symptoms and modulate brain function, thereby offering a new practical framework for the treatment of anxiety disorders through the synergistic application of TCM and modern medical practices.[68]

A New Technique for Evaluating the Efficacy of TCM in the Treatment of Anxiety Disorder

Emerging methodologies for assessing the efficacy of TCM in the management of anxiety disorders are continuously being developed. Historically, efficacy evaluations have relied on symptom scales such as HAMA and SAS. However, the integration of contemporary technologies has facilitated comprehensive and objective assessment. For instance, functional near-infrared spectroscopy (fNIRS) enables real-time monitoring of hemodynamic changes in the cerebral cortex, allowing the evaluation of alterations in cerebral functional activity during acupuncture interventions for anxiety disorders. This technique provides an objective neuroimaging foundation for assessing acupuncture efficacy.

Additionally, metabolomic techniques can be employed to evaluate treatment efficacy by analyzing the variations in metabolites in patients before and after TCM intervention. Such analyses can help elucidate the impact of TCM on anxiety-related metabolic pathways. For example, a study utilizing metabolomics revealed that TCM treatment for anxiety disorders resulted in changes in metabolites associated with neurotransmitters and energy metabolism, thereby offering novel biomarkers and insights into metabolic pathways relevant to the evaluation of TCM efficacy. This information contributes to a deeper understanding of the mechanisms and effectiveness of TCM in treating anxiety disorders.[57] The incorporation of these advanced technologies enhances the scientific rigor and objectivity of efficacy evaluation in TCM for anxiety disorders.

Controversial Points and Future Prospects of TCM Comprehensive Treatment for Anxiety Disorder (See Figure 4)

Controversy Over the Safety and Efficacy of TCM in the Treatment of Anxiety Disorder

The safety and efficacy of TCM in the management of anxiety disorders remain subjects of ongoing debate. While numerous studies have suggested that TCM interventions may alleviate anxiety symptoms,[69] concerns persist regarding both the methodological rigor of the evidence and the safety of certain formulations.

In terms of safety, most classical TCM prescriptions are considered to have a low incidence of adverse effects when used appropriately. However, certain preparations have been associated with potential toxicities. For example, some patent TCM products or proprietary formulations have been found to contain heavy metals or undeclared pharmaceutical ingredients, posing health risks with long-term use.[70,71] Additionally, the use of multi-herb combinations increases the potential for herb-drug interactions, especially in patients concurrently receiving conventional pharmacotherapy.[72]

Regarding efficacy, clinical trials and meta-analyses have reported that specific herbal formulas, such as Chaihu Shugan San and Suanzaoren Tang, show therapeutic potential in treating anxiety symptoms.[73,74] However, many of these studies are limited by small sample sizes, short follow-up periods, and inconsistent outcome measures. For instance, a number of trials lack rigorous randomization, blinding, or appropriate control groups, limiting the reliability of their conclusions. Furthermore, the absence of standardized efficacy criteria across studies complicates comparisons and reduces generalizability.

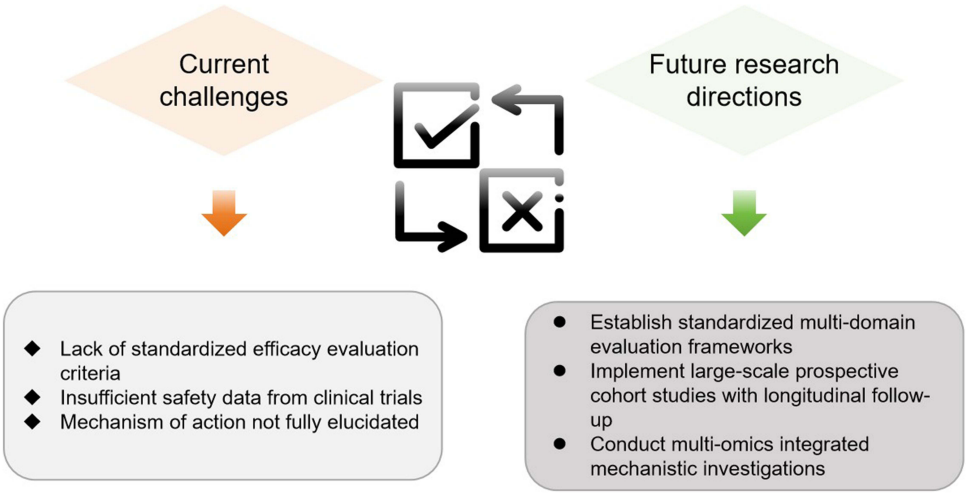

Figure 4 Challenges and Future Directions in the Application of Traditional Chinese Medicine (TCM) for Anxiety Disorders. This figure shows the major challenges in the clinical application of TCM for anxiety, including the lack of standardized efficacy criteria, insufficient clinical safety data, and unclear mechanisms of action. In contrast, future research directions emphasize the need to establish multidomain evaluation frameworks, implement large-scale longitudinal studies, and apply multi-omics technologies to investigate the mechanisms of TCM interventions. These strategies aim to improve scientific rigor and support the modernization of TCM-based treatments for anxiety disorders.

Given these limitations, the current evidence base remains insufficient to support unequivocal conclusions about the safety and efficacy of TCM for anxiety. Future research should emphasize multicenter randomized controlled trials with standardized protocols, validated outcome measures, and long-term follow-up to improve the evidence quality and support more definitive clinical recommendations.

The Challenge of TCM Standardization in the Treatment of Anxiety Disorder

The standardization of TCM for the management of anxiety disorders has encountered numerous obstacles. There is no universally accepted objective standard for TCM diagnosis. The diagnostic process in TCM relies heavily on subjective assessments of practitioners, which can result in variability in syndrome differentiation for the same patient among different clinicians. For instance, disparate conclusions regarding the syndrome classification of patients with anxiety disorders may arise owing to variations in practitioners' experiences and theoretical orientations, thereby impacting the consistency and precision of treatment protocols.

Furthermore, the quality of traditional Chinese medicinal products is inconsistent. Given the diverse sources of TCM, factors such as geographical origin, seasonal harvest, and processing methods can significantly influence its quality. Consequently, the concentrations of active ingredients can vary markedly across different batches of TCM, leading to unpredictable clinical outcomes. Additionally, standardization of acupuncture and moxibustion practices requires enhancement, as there is a lack of uniform guidelines regarding acupoint selection, acupuncture techniques, and treatment frequency. This inconsistency undermines the reproducibility and applicability of acupuncture and moxibustion therapy.

Future Research Direction of TCM Comprehensive Treatment for Anxiety Disorder

Future research on the treatment of anxiety disorders with Traditional Chinese Medicine (TCM) should focus on advancing mechanistic understanding, improving clinical research quality, and enhancing integration with modern medicine. In basic research, further investigation is needed to clarify how TCM formulations exert anxiolytic effects through their multi-component, multi-target actions. Applying multi-omics technologies, such as genomics, proteomics, and metabolomics, could help elucidate the regulatory mechanisms of TCM at the molecular level, particularly regarding its influence on the nervous, endocrine, and immune systems. These findings are expected to provide a stronger theoretical foundation for clinical application.

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In clinical research, it is essential to conduct well-designed, large-scale, multicenter randomized controlled trials that comply with evidence-based standards. Standardized evaluation systems should be established by integrating traditional syndrome differentiation with modern clinical indicators, including validated symptom rating scales, neuroimaging techniques, and biochemical markers, which would allow for more objective and reproducible assessments of therapeutic efficacy. At the same time, safety evaluation must be strengthened by systematically monitoring adverse reactions and assessing the risk of herb-drug interactions, ensuring the safe use of TCM interventions in clinical practice.

To promote the modernization and broader application of TCM in anxiety management, closer integration with contemporary medical science is required. This includes the adoption of advanced diagnostic technologies, data-driven research methods, and innovative drug development strategies. Such efforts will support the refinement of TCM practices and facilitate their alignment with international research standards, ultimately enhancing their role in the global treatment landscape for anxiety disorders.

Conclusion

This review provides a comprehensive overview of the theoretical foundations, clinical applications, diagnostic advancements, and treatment strategies of TCM in the management of anxiety disorders. By synthesizing classical TCM concepts with recent clinical findings and modern integrative approaches, this work aims to support a broader understanding of how TCM contributes to individualized care and future therapeutic innovations. It also highlights key developments and summarizes relevant evidence to guide future research and clinical translation. Study quality and standardization remain important challenges in this field, and limitations such as heterogeneous diagnostic criteria, lack of uniform outcome measures, and methodological variability across studies continue to hinder the broader acceptance of TCM interventions. Thus, addressing these issues will require high-quality, large-scale research efforts and more robust frameworks for efficacy evaluation. Nonetheless, this review provides insights into understanding the evolving role of TCM in anxiety management and its potential integration into modern evidence-based practice.

Abbreviations

DSM, Diagnostic and Statistical Manual of Mental Disorders; ICD, International Classification of Diseases; GAD, generalized anxiety disorder; PTSD, post-traumatic stress disorder; ADIS-IV, Anxiety Disorder Interview Scale; SAD, social anxiety disorder; 5-HT, 5-hydroxytryptamine; GABA, gamma-aminobutyric acid; SCARED, Screening for Anxiety Related Disorders in Children; ESM, Experience Sampling Method; EMA, Ecological Momentary Assessment; IL-6, interleukin-6; TNF-α, tumor necrosis factor-α; hsCRP, high-sensitivity C-reactive protein; MRS, magnetic resonance spectroscopy; NAc, nucleus accumbens; DBS, deep brain stimulation;SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin-norepinephrine reuptake inhibitors; mGluRs, metabotropic glutamate receptors; CBT, cognitive behavioral therapy; iACT, Internet-delivered Acceptance and Commitment Therapy; UPP-ANXIETY, Unified Psychodynamic Protocol; CT, cognitive therapy; TCM, Traditional Chinese Medicine; HPA, hypothalamic-pituitary-adrenal; HAMA, Hamilton Anxiety Scale; SAS, Self-Rating Anxiety Scale; TCM-FEMT, TCM five-element music therapy; TDs, tic disorders; fMRI, functional magnetic resonance imaging; STAI, State-Trait Anxiety Inventory; CBT, cognitive behavioral therapy; fNIRS, functional near-infrared spectroscopy.

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