

Research Article

Bibliometric Analysis of Acupuncture in the Treatment of Anxiety Disorders

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Abstract

Objective: A systematic analysis of the domestic and international literature on the treatment of anxiety disorders with acupuncture was conducted, and its main features were discussed.

Methods: The database of the Chinese Library was used to conduct the search; this paper used the Wanfang database, Wipu database and Science database as the main research objects, and used the bibliometric method to summarize and conclude the relevant literature.

Results: A total of 2589 relevant papers were retrieved, among which 158 papers in Chinese and 62 papers in English met the admission criteria, with the highest publication rates in journals such as Chinese Acupuncture and Moxibustion and Trails. Anxiety disorders are classified into three categories, such as liver and gallbladder fire type, heart fire on inflammation type and heart and kidney disorder type. Interventional treatments include: acupuncture, acupuncture combined with cognitive behavioural therapy, and acupuncture combined with other Chinese and Western medicines. The most common is a course of acupuncture three times a week for four weeks, for a total of 12 sessions. Common acupuncture points include: Baihui, Neiguan, Shenmen and Sanyinjiao.

Conclusion: Acupuncture therapy has great application value in the clinical treatment of anxiety disorders. In the future, we should focus on the exploration of the phenotype of anxiety disorders, the immediate and sustained effects of acupuncture and its mechanism of action to better guide the clinic.

Keywords: Acupuncture Therapy; Anxiety Disorders; Bibliometrics; Clinical Research

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According to a recent study, approximately 264 million people worldwide suffer from varying degrees of anxiety disorders. Anxiety disorders are a common sleep disorder with major symptoms such as nervous worry without a clear object, fidgeting palpitations, hand tremors, sweating and other neurological dysfunctions, which have a significant impact on the body's work and life, and also increase the risk of events such as hypertension, diabetes, obesity and tumours [1]. Therefore, effective interventions for anxiety disorders are of great clinical importance. Although pharmacotherapy and psychotherapy are the treatment of choice for anxiety disorders, the drawbacks of their specialisation, length of time and poor patient compliance make them difficult to implement in practice [2]. In addition the tranquilizers commonly used to treat anxiety disorders benzodiazepines whose adverse effects include second day hangover and drug dependence [3]. As an important component of Chinese medicine in China, acupuncture is uniquely characterised by its multi-target, multi-level and multi-pathway approach, and its clinical efficacy is so significant that it has been included in the Chinese Guidelines for the Prevention and Treatment of Anxiety Disorders [4]. In recent years, acupuncture therapy has attracted widespread attention internationally, and relevant studies are increasing year by year. However, previous literature reviews have mainly focused on outcome studies, which are not comprehensive enough; therefore, this paper uses bibliometric methods to conduct a mathematical and statistical study of the basic characteristics and contents of the research literature, with a view to presenting the latest progress of research from a multifaceted and objective perspective, with a view to providing future researchers with be of benefit and promote research in this area [5].

Data and Methods

Data sources and search strategy

China Knowledge Resources Database, Wanfang Database, Wipu Database, and Web of Science Database were selected. The Chinese search terms were“针刺”“针灸”“温针”“腹针”“火针”“皮肤针”“耳针”“脐针”“揸针”“皮下埋针”“毫针”“电针”“体针”“手针”“头针”并含“焦虑障碍”、“焦虑症”、“急性焦虑”、“慢性焦虑”。The English search terms are“anxiety disorders”“acute anxiety”“chronic anxiety”“generalized anxiety”“panic attack”“SAD(Swinford Anxiety Disorder)”AND“Acupuncture”“Electroacupuncture”“Needle”。Languages are restricted to Chinese and English. Chinese journals are restricted to Chinese core and English journals are restricted to SCI (Science Citation Index) or SCI-E (Science Citation Index-Expanded). The search period is from January 2012 to December 2021.

Criteria for inclusion in the literature

① Clinical research papers containing medical literature, experiences of famous doctors and clinical trials on the treatment of anxiety disorders mainly with acupuncture or in combination with other therapies. ②Subjects in this trial were those who met the diagnostic criteria for anxiety disorders in the Chinese Classification and Diagnostic Criteria for Mental Disorders (CCMD-3)[6] or the American Classification and Diagnostic Criteria for Mental Disorders (DSM-IV) [7], the Guidelines for Clinical Research on New Chinese Medicines [8],

and the Diagnostic Efficacy Criteria for Chinese Medical Evidence [9]. (iii) In the literature, the method of acupuncture point extraction is clear and complete. All three of these conditions must be met for inclusion.

Literature exclusion criteria

① Duplicate published literature. ② Literature for which the full text is not available. 1 of the above will be excluded.

Research method

The literature was categorised and censored using EndNoteX9 by reading the title, abstract or full text of the paper and eliminating those parts that did not fit the content of the paper. The basic characteristics of the statistical literature and the content of the studies were sorted out. The 2006 international standard GB-12346-2006 naming standard for meridian points was used to standardize the disposition of the selected points [10].

Results

Literature search

After a search to initially obtain 2589 publications, and after End Note X9 and manual checking and screening according to the inclusion and exclusion criteria, 158 valid publications were finally obtained from the Chinese database and 62 from the English database. Changes in annual publication volume.

The number of Chinese literature showed an effective increase from 2012 to 2021, with 13 in 2014, 27 in 2019, and the largest increase from 2017 to 2019, from 16 to 27. The number of English literature gradually increased from 2012-2014, then the number of publications started to decrease again, but in 2018 it increased again from 1 to 8, and from 2018 to 2021, the average annual number of publications fluctuated around 7 [11].

Literature publication journals

There are 31 journals that include Chinese literature, of which Chinese Acupuncture and Moxibustion is the highest, with 46 associated papers; there are 28 journals that include English literature, of which *Trails* is the highest, with 13 associated papers.

Among the English papers, there were 7 papers with SCI impact factors greater than 4, accounting for 11.29% of all papers. 2 clinical papers were published in *Jnci-J Natl Cancer I*. Among them, a team in New Hampshire, USA, treated anxiety disorders in oncology patients with acupuncture and CBT-I, and a team in Finland studied the clinical treatment of chronic anxiety disorders using acupuncture. A study was conducted. (Papers were included for both newly selected and unsuccessful core journals) [12-14].

Regional distribution of publications

Researchers of Chinese literature come from 28 provinces and cities, and scholars of English literature are distributed in 17 countries. In terms of the number of publications, the top 10 provinces and cities in terms of the number of Chinese publications published 117 Chinese publications, accounting for 74.05% of the total number of Chinese publications. The top three provinces in terms of the number of publications were Guangdong, Beijing and Zhejiang, with 67 papers published, accounting for 42.41% of the total number of Chinese papers, showing that provinces and cities with better economic

conditions have better research platforms and research power, and that inter-regional exchanges and cooperation should be strengthened to shorten the differences between provinces and cities [15,16]. For the English literature, the top 10 countries in terms of publications published 53 papers, accounting for 85.48% of the total English literature; China has the most with 35 papers, accounting for 58.33% of all English papers, which may be related to the fact that China is the origin of acupuncture; the United States, Korea, Germany, the United Kingdom, Australia, Canada and other countries also have relevant research reports, indicating that acupuncture therapy is recognized worldwide. The United States, Korea, Germany, the United Kingdom, Australia and Canada have also reported relevant studies, indicating that acupuncture therapy has been recognised worldwide, with acupuncture treatment in the United Kingdom, the United States, Canada and Australia being included in local health insurance [17,18].

Types of anxiety disorders in the study population

By analysing the different types of anxiety disorders, the results show that there are 22 anxiety disorders and 15 anxiety disorders in the English and Chinese literature. Although there is currently more research on primary anxiety disorders in China, there is some research on other types of anxiety disorders. Tumour-related anxiety disorders and perimenopausal anxiety disorders, among others, demonstrate the importance and depth of the issue of anxiety disorders to researchers [19].

Interventions in the observation group

Data were analysed using acupuncture, acupuncture combined with CBT-I or western medicine; where other Chinese medical methods included bloodletting, acupoint embedding, auricular pressure, snap acupuncture, abdominal acupuncture, navel acupuncture, eye acupuncture, flying acupuncture, five elements music, tui na and gong fu. Physiotherapy includes repetitive needling, hyperbaric oxygen, biofeedback, electrostatic therapy, etc. Based on the publication of relevant literature, this paper concludes that acupuncture treatment is an effective treatment method, but in practice, a combination of methods should be used to achieve the best therapeutic effect [20].

Duration of treatment and follow-up

The results of treatment sessions and follow-up in the Chinese and English literature show that the longest session was 3 sessions/week lasting 4 weeks, for a total of 12 sessions. A total of 32 papers (20.25%) in Chinese and 35 papers (56.45%) in English mentioned follow-up, indicating that current researchers lack sufficient attention to the treatment outcome, causes of relapse, reasons for relapse and treatment methods for patients with anxiety disorders.

Analysis of different acupoint selections

EndNoteX9 was applied to the selected acupoints and standardised to unify the names of the acupoints. The results showed that of the 27 most frequently used acupoints in the Chinese and English literature, 11 were identical: Baihui, Neiguan, Shenmen, Sanyinjiao, Yintang, Fusanli, Sishencong, Taichong, Shenting, Anmian, and Xinyu. These 11 acupuncture points are commonly used in the clinical treatment of anxiety disorders in China and abroad and can be combined in the clinical selection of acupuncture points.

Selection of observation indicators

The analysis of 220 documents in English and Chinese showed that the observation indexes were rich in content, amounting to 107

items, of which the Self-Assessment Scale for Anxiety Disorders (SAS), Hamilton Anxiety Inventory (HAMA) and Spielberg Self-Assessment Inventory (STI) were the main scales. Fourteen of these were used to observe anxiety disorders using polysomnography, eight were studied by means of functional magnetic resonance imaging, and 13 were studied using blood indicators [21].

Discussion

Basic features of the literature

In recent years, there has been an upward trend in the amount of international literature on acupuncture for anxiety disorders, a trend that is consistent with trends in other fields and suggests that the impact of acupuncture on anxiety disorders is becoming more profound internationally. Chinese Acupuncture and Trails published 59 articles on the subject, accounting for 26.82% of the articles, showing the recognition of acupuncture therapy in anxiety disorders and worthy of future researchers. Despite the regional distribution of research on acupuncture for anxiety disorders around the world, there is little collaboration between researchers and there is a need for greater academic exchange in the future to promote research in this area [22].

Treatment options

Firstly, national and international researchers have focused their attention not only on long-term anxiety disorders, but also on disorders related to other diseases, such as: anxiety disorders related to cancer; anxiety disorders related to perimenopause, etc., showing the importance researchers attach to precision and individuality, which is in line with the current international update of views. However, there are still different academic views on the types of anxiety disorders, with some advocating the classification of chronic and acute types; some scholars advocate the classification of anxiety disorders and accompanying symptoms into three types: acute, generalised and phobic; and some scholars suggest that disorders such as tumour-related anxiety disorder and perimenopausal anxiety disorder are common causes of anxiety disorders [23,24]. Therefore, in future research, modern technology should be used to study the life history, personality, anxiety trajectory and physiological indicators of patients with anxiety disorders with a view to finding the best expression of anxiety disorders. Secondly, although conventional acupuncture therapy (112 articles, accounting for 50.91% of all articles) has been widely used in clinical practice because of its simplicity of thought and operation, it has not been recommended by the clinical guidelines of the American College of Physicians due to the lack of valid evidence, so the reasons for the lack of valid evidence can be explored by analysing randomised controlled trials of conventional acupuncture interventions, so as to provide a follow-up research of clinical studies on acupuncture to be close to clinical practice [25-27].

Although the frequency and periodicity of interventions for the same anxiety disorder type were not consistent, all showed significant improvement in anxiety disorders with acupuncture, and Meta-analysis showed that patients experienced significant improvement in anxiety disorders after more than three weeks of intervention. Therefore, future studies could explore the effect of different sessions on the effectiveness of acupuncture treatment and explore a session that is both clinically appropriate and achieves optimal results. In addition, only 72 reports (32.73%) mentioned follow-up for a maximum of one year and a minimum of one week, all of which indicated that acupuncture remained in place during follow-up, but no systematic studies

have been conducted to date, so relevant studies could be conducted to explore the sustained effects of acupuncture for anxiety disorders in order to identify the best time to use acupuncture to improve its efficacy [28,29]. In the Chinese and English literature, the top three acupoints generally used are Baihui, Neiguan and Shenmen, which are consistent with the previous findings, but there is little literature on the clinical effects of different acupuncture combinations; therefore, further research is needed in the future to select the best acupuncture combination to serve the clinic [30].

Observational indicators

In the subjective scale, the researchers assessed and measured anxiety, affective impact, and cognitive function; on this basis, the researchers will focus more on multiple domains to explore the mechanism of action and interconnections. In terms of objective indicators, high-tech instruments such as sleep monitors and MRI are used. Sleep monitors record the patient's EEG and ECG activity, allowing researchers to objectively assess the effects of treatment in terms of anxiety parameters and HRV, and to analyse EEG signals using theories such as ApEn, D2 and EEG super-slow fluctuations in order to observe the immediate or long-term effects of acupuncture on their modulation and to explore possible mechanisms of action. However, existing sleep monitors have disadvantages such as low sensitivity, low accuracy of output data, expensive equipment and cumbersome operation, which limit its application, so more advanced and convenient equipment can be further developed to study its mechanism of action more accurately [31,32]. FMR can reflect the signal strength of different brain regions. Researchers used low frequency amplitude, local coherence analysis to analyse the intensity of activity in brain regions, seed point analysis to analyse the intensity of activity in each brain region, the strength of functional connections in each brain region, and the nodal centrality of voxels to analyse the functional changes in resting state brain regions and explore its possible central role. The results showed that acupuncture can regulate mood, activity in cognitive-related brain regions, and functional brain networks in patients with anxiety functional connections, thereby shortening anxiety latency, reducing anxiety continuity, decreasing anxiety duration and improving anxious-depressed mood, consistent with the results of subjective scales. Blood indicators were used to explore the mechanisms surrounding anxiety disorders, including hypothalamic-pituitary-adrenal axis-related adrenocorticotrophic hormone, cortisol, adrenocorticotrophic hormone, and anxiety-related adrenaline, lactate, neurotransmitters, monoamine neurotransmitters (e.g. 5-hydroxytryptamine, norepinephrine, dopamine), TNF- α , IL-1, IL-1 β , IL 6, etc. The results suggest that acupuncture can regulate the release levels of anxiety hormones such as adrenaline and thus less anxiety, but no effective mechanism has been found so far, so the mechanism of the role of serum markers in anxiety disorders needs to be explored in depth in future studies [33,34].

Summary

The authors summarized the research results on the treatment of anxiety disorders with acupuncture over the past 10 years; comprehensive analysis of the regions of publication, intervention targets, intervention modalities, frequency and periodicity, follow-up time, acupoint selection methods, and observation indexes concluded that the current anxiety disorder phenotype has some research value, but there are still the following problems: 1) researchers still debate the current anxiety disorder phenotype, and in the future, advanced technology should be used to comprehensively analyze the demographic characteristics and

biological information, explore anxiety disorder specificity, select the most characteristic anxiety disorder phenotypes, and explore individualised interventions to serve the clinic; ② Due to the lack of valid evidence, acupuncture therapy has not yet been recommended by the clinical guidelines of the American College of Physicians, therefore, in future research, we can analyse the experimental design of randomised controlled trials of acupuncture interventions for anxiety disorders by to identify the relevant etiology and make the experimental design more reasonable, thus providing a better empirical basis for clinical evidence. The results of this study show that the duration of acupuncture treatment for patients with anxiety disorders varies and the number of follow-up visits is low, which is not conducive to observing its immediate and sustained effects. In the future, we can explore the optimal duration of treatment and the timing of re-intervention by comparing the effects of different treatments on their effects and conducting a systematic analysis of their sustained effects. The etiology of anxiety disorders is not yet clear, and the application of blood indicators, EEG signals and functional MRI to the mechanism of anxiety disorders needs to be further explored in the future. Finally, the research in this paper will help to expand the thinking of researchers and allow for more in-depth studies, thus opening up a new path for clinical development [35].

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