Analysis of research hotspots and development trends in the field of acupuncture treatment of depression

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Abstract: Depression is a common clinical psychological disorder disease, the main clinical manifestations for a sustained long period of low mood, accompanied by slow thinking, language reduction and other manifestations, in recent years the incidence rate is gradually rising, the incidence of the population is gradually younger and younger, and has a recurrence rate, disability rate, suicide rate and other characteristics. At present, the clinical treatment of this disease is mainly based on oral antidepressant drugs, but the adverse reactions, side effects and drug dependence also largely affect the patients' lives and become a nuisance to the patients. Acupuncture, as a kind of non-specific stimulation, can effectively treat depression and improve patients' depressive symptoms by producing stimulation to acupoints, and it has the advantages of good efficacy, high safety, and basically no side effects, etc. It is also effective in treating patients' depression and improving their symptoms in various aspects such as somatic, gastrointestinal and cardiovascular. In order to better summarize the research hotspots and development trends in the field of acupuncture treatment of depression, this paper analyzes the authors, institutions, keywords, etc. of the relevant literature in this field in the past 15 years, summarizes the current status and development trends of the research in this field, and discovers the shortcomings of the research in this field, so as to promote the further development of this discipline.

1. Introduction

Depression is a common clinical psychological disorder, with continuous and prolonged depressed mood as the main clinical manifestation, accompanied by slow thinking, impaired will activity, reduced language, cognitive impairment and other manifestations [1], and its incidence rate is 30% ~ 65% [2]. Studies have found that the number of people suffering from depression in modern society is increasing year by year, and the incidence of the population is gradually becoming younger and younger, and the high recurrence rate, high disability rate, and high suicide rate of this disease seriously affects the daily life of the patients [3], and brings great pressure and burden to the patient's family as well as to the society. At present, the clinical treatment of depression is mainly based on oral antidepressant drugs, but the adverse reactions, side effects and drug dependence brought by oral medication also bring a lot of trouble for patients, so we urgently

need a safe and effective treatment with low side effects to solve the problem for patients. A large number of modern studies have found that acupuncture, as a kind of non-specific stimulation, can significantly improve the clinical symptoms of patients with depression by stimulating the physiological regulatory mechanisms in the patient's body through stimulation of acupoints to achieve a balance of yin and yang and can improve the symptoms of somatic, gastrointestinal, cardiovascular and other aspects of the symptoms, which has the advantages of good efficacy, high safety and basically no side effects.

At present, there is an increasing amount of research literature related to the treatment of depression by acupuncture, but there is a lack of unified combing of the main research hotspots and research directions in this field. Therefore, this study summarizes the authors, institutions, keywords, etc. of the literature related to the treatment of depression by acupuncture in the past 15 years, systematically analyzes and summarizes the current status of the research and development trend of this field, and discovers the deficiencies of the research in this field, so as to promote the further development of this discipline.

2. Literature Search

2.1 Literature sources

A computerized search of the China Knowledge Initiative (CNKI) database was conducted with the search term "subject" (exact), the search terms "acupuncture" and "depression" were selected, and the search strategy was The search strategy was "acupuncture" AND "depression". The search period was from January 1, 2007 to December 31, 2021, and the search strategy was "acupuncture" AND "depression". A total of 1123 relevant documents were retrieved.

2.2 Literature Screening

Inclusion Criteria: ① :Literature type: including clinical observation, literature research, mechanism research, experience of famous authors, medical cases, ancient book research, basic theory research of Chinese medicine, etc.; ②:Disease type: depression; ③:Intervention method: purely using acupuncture or using acupuncture combined with other traditional Chinese and western medical therapies, such as Chinese medicine, moxibustion, Tui Na combined with acupuncture, acupuncture combined with paroxetine tablets, etc.; ④:Literature language: limited to Chinese.

Exclusion criteria: ①:the main body of the article is "acupuncture", but does not relate to "depression"; ②:only the use of Western medicine or other means of Chinese medicine to treat "depression"; does not involve "Acupuncture" related content;(iii) Literature using the rat model of depression as the research object was excluded; (iv) News reports, call for papers, related newspapers, conference papers and dissertations were excluded; (v) Only the most recent one with the latest date was selected if the same literature was repeatedly published in different journals.

After screening by inclusion and exclusion criteria, 687 literatures were finally included.

3. Results

3.1 Analysis of the annual number of publications

The annual publication volume of acupuncture treatment of depression in the past 15 years was tabulated, and the trend of annual publication volume was analyzed by means of charts and graphs to summarize the current status and heat of research in this field, which is shown in Fig. 1. It can be seen that the annual publication volume of related research literature has shown an overall

fluctuating growth between 2007 and 2013, with fluctuation ranging from 28 to 55, and the annual publication volume reached the highest value of 55 in 2013, with the least number of articles in 2021 being only 10. The amount of annual publications reached the highest value, with a value of 55 articles, and since 2013, the amount of annual publications generally showed a fluctuating downward trend, with the least amount of annual publications in 2021, which was only 10 articles. Overall, the research in the field of acupuncture for depression has been relatively mature, and the declining trend in the number of related papers in recent years indicates that the research enthusiasm in acupuncture for depression has relatively declined, and in future research, we should look for a more novel research angle, and explore from a different perspective than before.
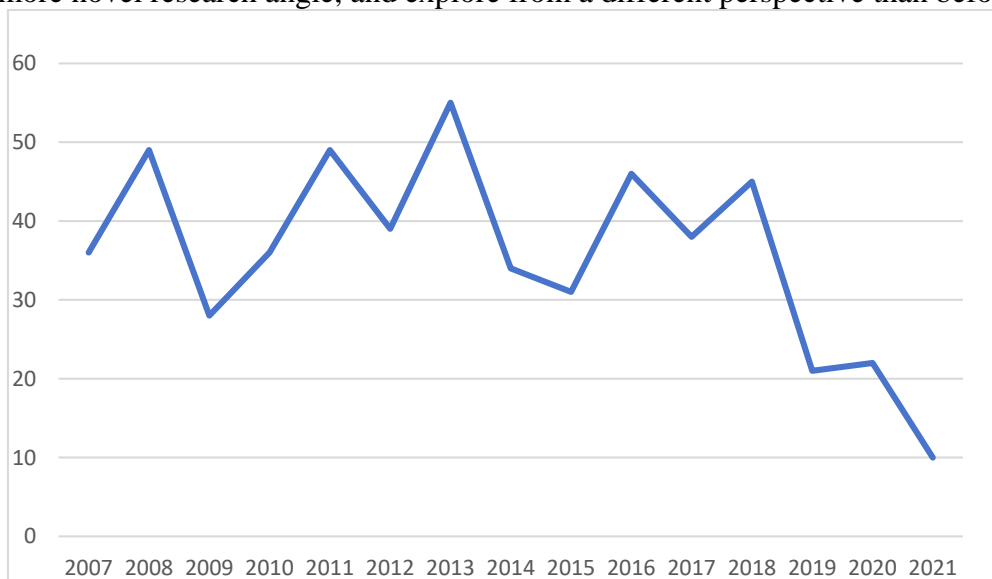

Figure 1: Trends in annual publications in the literature related to acupuncture for depression

3.2 Author Collaboration Analysis

By summarizing and analyzing the authors of the research related to the field of acupuncture for depression in table form, it can be seen that the top three authors in terms of the number of publications are Fu Wenbin, Tuya, and Wang Lingling, with 16, 14, and 12 articles, respectively, as shown in Table 1. There are many researchers in this field, and there are a large number of research teams and close cooperation between teams, but in contrast there is less cooperation between teams. The researchers as a whole have formed two relatively stable teams dominated by Fu Wenbin and Tuya.

Table 1: Top 5 authors in terms of publications. (≥8 publications)

No.	Author	Organization	Number of Articles
1	Fu Wenbin	Guangdong Hospital of Traditional Chinese Medicine	16
2	Tu Ya	Beijing University of Traditional Chinese Medicine	14
3	Wang Lingling	Nanjing University of Traditional Chinese Medicine	12
4	Huang Yong	Southern Medical University, China	8
5	Junqi Chen	The Third Affiliated Hospital of Southern Medical University	8

3.3 Analysis by Research Institutions

The table summarizes and analyzes the relevant research institutions in the field of acupuncture for depression, from which it can be seen that the top 5 institutions in terms of the number of publications are the School of Acupuncture and Tuina of Beijing University of Traditional Chinese Medicine, Heilongjiang University of Traditional Chinese Medicine, the First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine, Tianjin University of Traditional Chinese Medicine, and Guangzhou University of Traditional Chinese Medicine, with the number of publications of 19, 16, 16, 15, and 11, respectively, as shown in Table 2.Through the summarized analysis, most of the research institutions on acupuncture for depression are universities of traditional Chinese medicine and their schools of acupuncture and massage and the affiliated hospitals of the schools, with a large number of institutional publications, close inter-team cooperation, and a high degree of team influence, with Tianjin and Beijing contributing to the field to the greatest extent, but the inter-institutional cooperation is basically with a single institution and its affiliates, such as Tianjin University of Traditional Chinese Medicine and the affiliated hospitals of Tianjin University of Traditional Chinese Medicine, Beijing University of Traditional Chinese Medicine and the Acupuncture and Moxibustion College of Beijing University of Traditional Chinese Medicine, which results in fewer inter-regional institutional collaborations and fewer inter-regional academic exchanges, which is not conducive to the development of academic research in this discipline in the long run.

Table 2: Number of publications by research institutions. (≥10 publications)

No.	Institution	Number of Publications
1	College of Acupuncture and Tuina, Beijing University of Traditional Chinese Medicine, Beijing, China	19
2	The First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine	16
3	Heilongjiang University of Traditional Chinese Medicine	16
4	Tianjin University of Traditional Chinese Medicine	15
5	Guangzhou University of Traditional Chinese Medicine	11
6	Nanjing University of Chinese Medicine	10
7	Nanjing University of Chinese Medicine, Second Clinical Medical College	10
8	Chengdu University of Traditional Chinese Medicine	10

3.4 Keyword Analysis

Keywords are words that summarize the content of the whole text in a concise manner, and high-frequency keywords can reflect the research hotspots in this field. By summarizing and analyzing the keywords in the literature related to the treatment of depression by acupuncture, the high-frequency keywords include depression, acupuncture, needling, review, electroacupuncture, post-stroke depression, etc. Among them, "depression" has the highest frequency of 325, and among the treatments, "acupuncture" has the highest frequency of 155, indicating that these keywords have a deeper influence in the research field of depression. The frequency of "acupuncture" was the highest at 155, indicating that these keywords have a deeper impact in the research field of acupuncture treatment of depression, as shown in Table 3. 14 cluster labels were formed by further cluster analysis of the keywords. They are #0 stroke, #1 post-stroke depression,

#2 post-stroke depression, #3 acupuncture therapy, #4 acupuncture, #5 rat, #6 acupuncture treatment, #7 fluoxetine, #8 acupuncture, #9 acupuncture therapy, #10 efficacy, #11 Sun Simiao, #12 electroacupuncture, #13 integrated acupuncture, and #14 peripheral facial palsy. Among them, the clusters #0 stroke, #1 post-stroke depression, and #2 post-stroke depression labels are basically the same, indicating that depression due to post-stroke stroke accounts for the largest proportion of the overall causes of depression, and therefore, it is important to pay attention to preventing and treating depression in post-stroke (stroke) patients in the clinic; and the four labels, #3 acupuncture therapy, #4 acupuncture, #6 acupuncture treatment, and #8 acupuncture are similar but not identical in content, but overall acupuncture is effective in treating depression; #3 acupuncture therapy is centered around acupuncture and the use of acupuncture and medicine, and is primarily focused on post-stroke depression; #4 acupuncture is based on keywords such as clinical trials, etiology, and the idea of taking acupoints; #6 acupuncture treatment includes keywords such as the pattern of selecting acupoints, clinical research, walking jars, and post-partum depression; and the keywords in #8 acupuncture are myocardial infarction, Tongxinluo capsule, open field experiment, 5-hydroxyindoleacetic acid, inflammatory vesicles, 5-htla receptor, etc., which indicates that in the treatment of depression, acupuncture (acupuncture) has significant efficacy, but in the clinical research of acupuncture treatment of depression, there are different research directions and focuses are different.

The time of keyword appearance and the results of clustering labels were analyzed vertically and horizontally, and the overall distribution of the time nodes and keywords showed that the research hotspots of acupuncture treatment of depression in recent years mainly include: the action mechanism of acupuncture to regulate the related brain nerve function, exploring the action mechanism of acupuncture based on neuro-endocrine-immunity, acupuncture treatment of post-stroke depression, perimenopausal depression, etc., acupuncture treatment of In recent years, the research has favored the study of acupuncture's mechanism of action.

Table 3: Table of high-frequency keywords (frequency ≥ 20)

No.	Keywords	frequency
1	Depression	325
2	Acupuncture	155
3	Acupuncture therapy	104
4	Acupuncture	80
5	synthesis	48
6	Electroacupuncture	45
7	Acupuncture Therapy	30
8	Post-stroke depression	29

By observing the appearance and disappearance time of the theoretical ideas related to acupuncture treatment of depression can be roughly predicted the direction of its research development. It can be concluded that during the period of 2007-2011, fluoxetine had the highest heat in the treatment of depression, followed by the emergence of electroacupuncture, needle-medicine combination and other therapeutic methods, indicating that during these years, the treatment of depression mainly relies on antidepressant drugs, and the treatment of acupuncture has shown its initial success. And the attention to post-stroke depression, perimenopausal depression increased, began to control the symptoms from the causes of depression, the attention to post-stroke depression continues to this day, in recent years, the research is mainly from the perspective of clinical efficacy, safety, neurological function, and so on, and due to the decline in literature research in recent years, researchers began to pay attention to the progress of the research on the treatment of depression by acupuncture, so as to find a new research Hot spot. Through analysis, it

can be seen that the keywords with high influence include electroacupuncture, efficacy, safety, acupuncture therapy, nerve function, etc. This indicates that electroacupuncture is effective in the treatment of depression by acupuncture, which is widely used in clinical application, and that attention has been paid to the research on the efficacy and safety of the treatment of depression by acupuncture, as well as to the research on the nerve function related to depression.

4. Discussions

By focusing on the evolution of the ins and outs of a field of knowledge and analyzing it with the help of charts and graphs, it is more intuitive and in line with the public's cognition, which can better reflect the characteristics of the field, and this approach has gained the favor and attention of more researchers. This study summarizes and analyzes the annual publication volume, author cooperation, research institutions, and keywords of the literature related to acupuncture for depression in the past 15 years, to summarize the research hotspots and research trends in this field, and to provide theoretical guidance for the development of the discipline of acupuncture for depression.

The results of the current study show that in terms of the number of annual publications, there was a fluctuating growth before 2013, peaking in 2013, and a fluctuating decline thereafter, indicating that the attention to this field has declined in recent years, but due to the fast pace of modern society and the multiplication of pressures from all aspects of the society and the family, the incidence rate of depression has been increasing year by year [4], and the study of a more efficient treatment of depression is still very necessary, so there is an urgent need for more researchers and higher quality literature to promote the further development and progress of this discipline. In terms of authors' cooperation, two research teams have been formed with Fu Wenbin and Tuya as the core. The research of Fu Wenbin's team mainly focuses on the treatment of depression from the theory of internal organs, and Tuya's team mainly researches on the mechanism of the improvement of brain function and the release of inflammatory factors of the rat model of depression by acupuncture, and the team has a lot of cooperation and a lot of publications, but the focus of the teams' researches is different, and there is a lack of extensive inter-team cooperation. In terms of research institutions, the institutions with more publications include the School of Acupuncture and Massage of Beijing University of Traditional Chinese Medicine, Heilongjiang University of Traditional Chinese Medicine, the First Affiliated Hospital of Tianjin University of Traditional Chinese Medicine, Tianjin University of Traditional Chinese Medicine, and Guangzhou University of Traditional Chinese Medicine, which are mainly concentrated in the universities of traditional Chinese medicine and their affiliated hospitals and schools of acupuncture and massage, and the institutions have close cooperation with high number of publications, but the inter-institutional cooperation is relatively single, and it is often the cooperation between them and their affiliated units. However, inter-institutional cooperation is relatively single, often with its affiliated units, and inter-institutional cross-regional cooperation is rare. In terms of the cooperation between authors and institutions, we should increase the cooperation between teams and institutions, encourage the integration of resources from all sides, realize more cross-regional cooperation, carry out more academic exchanges and researches, and obtain more in-depth research results, so as to promote the development of this field in a higher quality.

In the keyword analysis, it is found that the research theme of each time period keeps changing, and the research on acupuncture treatment of depression is diversified, and the high-frequency keywords show that the therapeutic effect of electroacupuncture on depression is better, and acupuncture is effective in the treatment of post-stroke depression, which is getting more and more people's attention. Through the keyword clustering results and timeline charts, it can be seen that

the research on acupuncture treatment of depression mainly has the following aspects: Treatment methods, in addition to simple acupuncture, it can also be combined with other Chinese medicine characteristic therapies such as acupuncture combined with electro-acupuncture, cupping, moxibustion, combination of needles and drugs, scalp acupuncture, and acupoints patch, etc., (Han Juan, 2019) et al [5] in comparing the clinical efficacy of electro-acupuncture and simple acupuncture in the treatment of first-episode mild-to-moderate depression found that the efficacy of electroacupuncture and simple acupuncture in the treatment of first-episode mild-to-moderate depression was comparable, but electroacupuncture was more advantageous in improving sleep; (Xu Yingmei, 2016) et al [6], in the observation of the efficacy of Chaihu Shuohe San combined with acupuncture in the treatment of primary depression, found that the improvement of the HAMD score of the patients in the combined group of needles and drugs and the therapeutic effect were significantly better than that of the group of acupuncture and Chinese herbal medicines alone, concluding that the combination of Chaihu Shuohe San and acupuncture can alleviate primary depression, and that the combination of Chaihu Shuohe San and acupuncture can relieve primary depression. Acupuncture and moxibustion can alleviate the symptoms of primary depression and improve the clinical efficacy, which has application value; Clinical efficacy observation, from a number of clinical efficacy observation literature, the treatment of depression by acupuncture has the advantages of good efficacy, high safety, small side effects, and low dependence, and so on.(Wei Lai, 2021) et al [7] in a randomized controlled study of acupuncture treatment of depression by Fu-Yang and Yin-suppressing method, found that the application of Fu-Yang and Yin-suppressing method of acupuncture treatment of depression can reduce the HAMD scores and PSQI scores, and increase the levels of 5 - HT, GABA, etc., and the clinical effect is remarkable; the type of depression, in addition to the simple depression, more often accompanied by the emergence of other diseases. Among them, post-stroke depression and perimenopausal depression are more common in clinical practice, and there are more related researches; Selection of acupoints, such as (Wang Xinyu, 2021) [8]in the study of the selection of acupoints for the treatment of hepatic depression and qi stagnation and depression, found that the acupoints for the treatment of hepatic depression and qi stagnation and depression in the order of frequency are Taichong, Baihui and Neiguan in the order of frequency, and the meridians are mainly chosen by the Directing Vessel, the foot syncopal liver meridian and the hand syncopal pericardial meridian; The main acupoints for the treatment of hepatic depression and depression are Tai Chong, Baihui and Nei Guan. The main meridians are the Directing Meridian, the Foot-Syncopal Liver Meridian, and the Hand-Syncopal Pericardium Meridian; Mechanism research, the study of the mechanism of action of acupuncture for depression, such as (Pu Zhiyi, 2016) et al [9] in the analysis of the immune regulation mechanism of acupuncture treatment of depression, it was concluded that acupuncture can achieve antidepressant effects by inhibiting the production of peripheral and central pro-inflammatory cytokines, restoring the function of HPAA, and promoting neuronal function.The emergent words can reflect the research trend in a certain time period, and the keywords with high emergence intensity include electroacupuncture, efficacy, safety, etc., which indicates that electroacupuncture has an important influence in the research field of acupuncture treatment of depression and attaches high importance to the efficacy and safety, and the keywords with high emergence intensity in the recent years include post-stroke depression, perimenopausal depression, neurological function, research progress, etc., which indicates that the attention to post-stroke depression has increased and the research on neurological function has been carried out in the past few years. This indicates that the attention to post-stroke depression has increased in recent years and that research on neurological function has been carried out.

After analysis, it is found that the research hotspots in this field include post-stroke depression, perimenopausal depression, neurological function, research progress, etc.; the number of

publications has declined in recent years, and there is an urgent need for more high-quality literature to promote the further development of this discipline; the research force is scattered, and there is a lack of communication and cooperation between author teams and research institutes, so that the cooperation between teams and institutes should be increased to carry out more inter-regional cooperation and academic exchanges.

5. Conclusions

Overall, acupuncture has a clear effect in the treatment of depression, and how to utilize the efficacy and safety advantages of acupuncture in the treatment of depression to further explore the efficacy standards, treatment specifications, and to play the strengths of the discipline to make its due contribution is a direction that future clinical researchers need to explore. However, the problems and deficiencies raised in the analysis of the results need to be emphasized in order to improve the research in this field and promote the development of this discipline in a better and higher quality. At the same time, due to the limited sample size selected for this study, the data mainly came from Chinese databases, and only searched the literature in the China Knowledge Network and did not involve other databases, so it can only reflect some of the domestic research results, and due to the limitations of their own reading and analysis, they could not do a comprehensive analysis of some content, and could not do deeper excavation and analysis of the content of the article, so this paper is still a visual analysis of the literature related to the treatment of depression by acupuncture. The visualization analysis of related literature still has limitations. In the future, we should apply more data analysis software and conduct multi-sample and multi-database research, in order to obtain more accurate and perfect visualization results.

References

[1] Xie Shenghui, Niu Guangming, Han Xiaodong, Qiao Pengfei. Progress of applied research on magnetic resonance brain function in depression [J]. International Journal of Medical Radiology, 2013, 36(06):520-524.

[2] Haq Sophia Ul, Symeon Christopher, Agius Mark, et al. Screening for depression in post stroke patients[J]. Psychiatria Danubina, 2010, 22(Suppl 1): S33-35.

[3] Wu Jinchun, Yang Bo, Xiao Rong, Luo Chengfeng, Shang Yannan. Effect of exercise therapy to improve social function and quality of life in patients with depression [J]. PLA Nursing Journal, 2015, 32(12):21-24.

[4] Pan Zhenlu, Wang Yong. Clinical efficacy and quality of life effects of paroxetine combined with psychotherapy on patients with depression [J]. Chinese and Foreign Medical Research, 2017, 15(18):100-101.

[5] Han Juan, Zhang Honglin, Wang Xiaoling, Sun Heshu. Comparative analysis of clinical efficacy of electroacupuncture and simple acupuncture in the treatment of first-episode mild to moderate depression[J]. Journal of Traditional Chinese Medicine, 2019, 60(15):1304-1307.DOI:10.13288/j.11-2166/r.2019.15.010.

[6] Yingmei Xu, Wenhua Huang, Wei Chen. Observation on the efficacy of Chaihu Shuohe San combined with acupuncture in the treatment of primary depression [J]. Liaoning Journal of Chinese Medicine, 2016, 43(12): 2590-2592.

[7] Wei L, Zheng ZY, Liu D, Chen HL, Jin H, Yang JF. A randomized controlled study of acupuncture for depression by supporting yang and suppressing yin [J]. Acupuncture and Moxibustion Clinical Journal, 2021, 37(08):30-34.

[8] Wang Xinyu, Chu Tianyun, et al. Study on the selection pattern of acupuncture points for liver depression and qi stagnation depression [J]. Global Chinese Medicine, 2021, 14(07):1219-1225.

[9] Pu Zhiyi, Gu Yun et al. Analysis of immunoregulatory mechanism of acupuncture for depression[J]. Henan Traditional Chinese Medicine, 2016, 36(09):1631-1633.