REVIEW ARICLE

A Systematic Review and Evaluation of Non-Pharmacological Interventions for Elderly Patients with Mild Cognitive Impairment

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ABSTRACT

Objective • This study aims to comprehensively summarize and evaluate the impact of non-pharmacological interventions on mild cognitive impairment (MCI) in elderly individuals through a systematic review of pertinent literature. The interventions include acupuncture, massage, ear point pressing, acupoint moxibustion, dietary modifications, and exercise interventions.

Methods • A thorough literature search spanned 2017 to 2023 across databases like Zhichou, Wanfang, PubMed, CINAHL, Web of Science, and the Cochrane Library. It covered pharmacological and non-pharmacological interventions, emphasising MCI in elderly patients. Independent screening, evaluation, and data extraction were conducted and assessed via the AMSTAR 2 scale and GRADE approach. Outcome measures (e.g., MMSE, MoCA, ADL, CDT, overall efficacy) were analyzed.

Results • Three systematic evaluations were assessed using AMSTAR 2. Two were low quality, one moderate. Limited rigor in two studies led to considering only medium-quality papers for evidence grading. Key indicators in RCTs included MMSE (eight studies), MoCA (seven studies), ADL (two studies), CDT (two studies), and overall efficacy (12 studies). GRADE evaluation revealed moderate, high, and high evidence quality for intervention efficacy at one, two, and three months respectively. MMSE evidence was low, MoCA high, ADL very low, and CDT moderate. Adverse events were reported in one publication, suggesting acupuncture's potential pain and resistance.

Conclusions • Non-pharmacological interventions, like acupuncture, cognitive exercises, and exercise, show promise in mild cognitive impairment among the elderly. They enhance cognitive function and daily living while maintaining safety. Acupuncture notably improves MoCA scores, supported by robust evidence. (*Altern Ther Health Med.* 2023;29(7):74-79).

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INTRODUCTION

The continuous advancement of medical capabilities and economic status is leading to a steady growth in the elderly population. Age stands as a crucial determinant influencing the emergence of mild cognitive impairment (MCI). MCI impacts individuals aged 60 and above in our nation and across the globe.[1] According to statistical data, the prevalence of Alzheimer's disease in China ranges between 2.7% and 7.3%, escalating in tandem with the aging process.[2] Approximately 14%-18% of individuals aged over 70 experience cognitive decline, and a noteworthy 44% of these patients transition into Alzheimer's disease within three years. This condition primarily presents as a degenerative deterioration in cognitive function and memory capacity, yet it falls short of the diagnostic criteria for Alzheimer's disease.[3] MCI often emerges in the context of pre-Alzheimer's disease, brain injury, stroke, encephalitis, hypothyroidism, alcoholism, malnutrition, and similar conditions.[4]

Cognitive impairment among elderly patients can profoundly influence their daily living patterns, with adverse repercussions on familial, societal, and economic fronts. Timely intervention in the case of MCI among the elderly holds particular significance, serving as a pivotal factor in the delay of its progression. Both drug interventions and non-drug interventions serve as therapeutic approaches for managing MCI. The adverse effects and efficacy of long-term pharmacological interventions for MCI remain uncertain, potentially leading to decreased patient compliance.[5]

Non-pharmacological interventions, encompassing rehabilitation training, physical therapy, Chinese medicine, and dietary therapy, are commonly employed for MCI. These interventions are characterized by greater safety and a reduced

likelihood of adverse reactions. Moreover, they have demonstrated positive implications for enhancing quality of life and slowing disease progression. Dietary intervention can potentially mitigate cognitive dysfunction in MCI to a certain extent, positioning it as a viable auxiliary treatment. Essential nutrients such as vitamin C, E, carotene, and other antioxidants have been investigated for their impact on cognitive function. Notably, adequate quantities of antioxidant nutrients exhibit a favorable influence on preventing cognitive dysfunction.[3-5]

The Mediterranean diet, renowned for its health-promoting attributes and comprehensive nutritional value, emerges as a noteworthy regulator of cognitive function. Its globally recognized dietary regimen has displayed considerable efficacy in enhancing cognitive function while acting as a preventive measure against various ailments. Cognitive scores among elderly individuals adhering to the Mediterranean diet were notably higher compared to those following a non-Mediterranean diet. Impressively, the Mediterranean diet intervention resulted in a substantial 35% reduction in the risk of cognitive impairment. Even individuals with limited adherence to the Mediterranean diet exhibited a 15% lower risk of cognitive impairment.[6]

Additionally, Li et al.[7] implemented a phased Chinese medicine non-pharmacological intervention lasting 120 days for elderly MCI patients. The outcomes demonstrated notable enhancements in cognitive function and a heightened level of knowledge and belief among MCI patients. Furthermore, another study[8] indicated that dementia patients frequently exhibit concurrent muscle loss, with a close interconnection between muscle health and cognitive function. Muscle weakness emerges as a pivotal criterion for evaluating cognitive impairment. Engaging in appropriate exercise proves beneficial for brain health, and sustained exercise over the long term holds the potential to curtail the risk of cognitive impairment and related disorders. Exercise plays a pivotal role in bolstering neural information transmission, elevating the presence of memory-related genes within the brain, and stimulating the secretion of nerve growth factor. This growth factor serves to mitigate oxidative stress within brain tissues and decelerate cognitive decline.[7-8]

Traditional Chinese Medicine (TCM) has garnered extensive usage in the realm of cognitive disorders. Within the domain of TCM, traditional non-pharmacological interventions encompassing techniques like acupuncture, needling, auricular acupressure, acupuncture point moxibustion, as well as acupressure and acupressure variations, have demonstrated the potential to enhance cognitive function. It's noteworthy that the effects of these interventions may vary based on factors such as depth and choice of acupuncture points.[9-10] In comparison to the Western drug nimodipine, specific acupuncture points like Tai et al.[11] have been shown to significantly activate cognitive areas within the brain and enhance cognitive impairment among MCI patients.

The number of research studies concerning non-pharmacological interventions for MCI is progressively expanding, revealing promising advancements in enhancing cognitive function. However, the comprehensive evaluation of non-pharmacological interventions for elderly individuals with mild cognitive impairment remains an area that demands further refinement. This study contributes a theoretical foundation for the establishment of evidence-based guidelines pertaining to MCI. This research synthesizes evidence from pertinent studies on non-pharmacological interventions for MCI and closely observes their therapeutic effects, thus paving the way for more effective management strategies.

MATERIALS AND METHODS

Study Design

The study design of this study is a systematic review of pharmacological and non-pharmacological interventions for MCI in elderly individuals. Rigorous literature searches were conducted across multiple databases, ensuring a comprehensive range of evidence sources. The selected studies underwent rigorous screening, evaluation, and data extraction, guided by established assessment scales like AMSTAR 2 and the GRADE approach, enhancing the reliability and quality of the findings.

Inclusion Criteria

(1) Types of included literature: Meta-analyses, systematic reviews, comprehensive evaluations, and systematic evaluations; (2) Study population: individuals diagnosed with MCI,[12] aged 60 years or older; (3) Interventions encompassed both non-pharmacological and pharmacological approaches, investigating the effects of acupuncture, massage, auricular pressure, acupuncture point moxibustion, dietary interventions, and exercise interventions on MCI, along with their respective comparisons.

Search Strategy

Literature Search Literature related to drug and non-drug interventions' effects on elderly patients with mild cognitive impairment was systematically searched across various databases, including Zhiwei, Wanfang, PubMed, CINAHL, Web of Science, and the Cochrane Library. The search spanned from 2017 to 2023, utilizing the following keywords: ("mild cognitive impairment" or "MCI") combined with ("non-drug intervention" or "non-drug therapy") combined with ("acupuncture" and/or "massage" and/or "auricular acupoint sticking" and/or "acupoint moxibustion" and/or "dietary intervention" and/or "exercise intervention" and/or "physical exercise") and/or "cognitive training" and/or "cognitive intervention" combined with ("meta-analysis" or "pooled analysis" or "systematic review" or "meta-analysis").

Quality Assessment and Evidence Evaluation

The quality of the incorporated literature underwent scrutiny using the A Measure Tool to Assess Systematic Reviews 2 (AMSTAR 2),[13-14] consisting of 16 items and 6 pivotal criteria. The evaluation outcomes were categorized as high, medium, low, or very low quality, providing a comprehensive assessment. Additionally, the quality of evidence pertaining to outcome indicators within the

literature was appraised using the Grades of Recommendations Assessment Development and Evaluation (GRADE) approach.[15-16]

A framework based on randomized controlled trials (RCTs) was employed to assess five factors of degradation, stratified into high, medium, low, and very low grades. Extracted data from the incorporated literature facilitated a comprehensive evaluation of the impact of non-drug interventions on outcome indicators of mild cognitive impairment in the elderly, including the Mini-Mental State Examination (MMSE), Montreal Cognitive Assessment Scale (MoCA), Activities of Daily Living (ADL), clock drawing test (CDT), safety, and overall effectiveness. In cases of conflicting views between two researchers, a third researcher was engaged to facilitate a collaborative decision-making process.

Data Extraction Process

The literature was carefully screened, evaluated, and independently subjected to data extraction. In cases where discrepancies arose between the judgments of two researchers, a third researcher intervened to arrive at a consensus. From each piece of literature, essential information was extracted, encompassing details such as the authors, number of included studies, total sample size, grouping protocols, intervention methodologies, frequency of interventions, intervention duration, as well as measurements of MMSE, MoCA, ADL, CDT, safety assessments, effective rates, and the publication date.

RESULTS

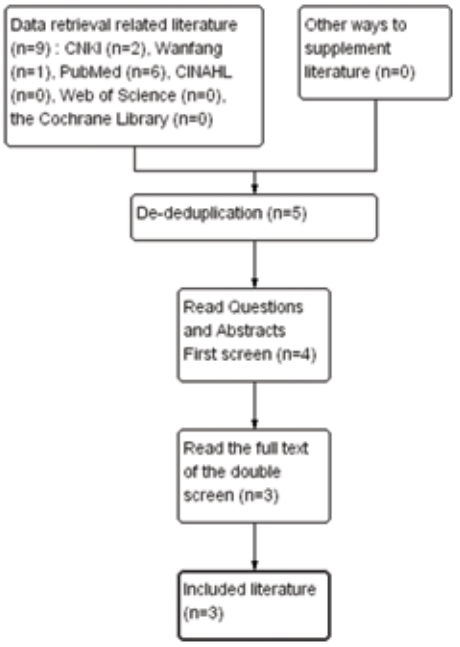
Results of Literature Search

A comprehensive search across multiple databases initially yielded a total of 9 pertinent articles on non-pharmacological interventions for MCI. Following the removal of duplicate records, 4 articles were excluded. Further scrutiny of abstracts led to the exclusion of 1 article, and subsequent full-text assessment resulted in the exclusion of 1 additional article. Ultimately, 3 relevant articles were secured for in-depth analysis. The details of the literature screening process are presented in Figure 1.

Basic Characteristics of Included Literature

This analysis encompassed three meta-analyses, one in Chinese and two in English. Sample sizes ranged from 1051 to 2282 cases, with safety reporting observed in only one study. It is notable that several meta-analyses involving massage, moxibustion, auricular point pressing, and dietary intervention as evidence were not encompassed in this study. The main approaches used in this study included acupuncture, exercise therapy, and cognitive training, among others. Details regarding the fundamental attributes of the included literature are presented in Table 1.

Figure 1. Flow chart of relevant literature screening



Note: Figure 1 depicts the systematic flow chart detailing the process of screening and selecting pertinent literature for the study, outlining the sequential steps involved in identifying and including relevant sources for analysis.

Table 1. Basic characteristics of the included literature

Study Authors	Li W, 2020[17]	Jiao Wei, 2020[18]	Su K, 2022[19]
Inclusion of literature (articles)	15	15	23
Sample size	1051	1608	2282
Intervention method			
Observation group	Acupuncture	Cognitive interventions/physical exercise/integrated interventions	Chinese medicine exercises (Badaanjin exercises, Taijiquan, six-character exercises and finger exercises)
Control group	Conventional treatment	Blank control/health education/routine care	Physical exercise, health education, daily activities and daily care
Treatment time	1-3 months	1.5 - 18 months	12-48 weeks
Treatment Frequency	20-40min, 3-7 times a week	30-120min, 1-7 times per week	15-90 min, 1-6 times per week
Results	Mini-Mental State Examination (MMSE) (8RCT) [mean difference (MD) = 1.53, 95% confidence interval (CI): 1.04 to 2.01, $P < .00001$], MoCA (7RCT) (MD = 2.05, 95% CI : 1.17 to 1.92, $P < .00001$). Effective rate (12RCT) (MD = 2.52, 95% CI: 1.86 to 3.42, $P < .00001$. ADL (2RCT) (MD = 1.71, 95% CI: -1.38 to 4.79, $P > .05$), CDT (2RCT) (MD = 1.91, 95% CI: 1.74 to 2.08, $P < .00001$).	Physical exercise (5RCT) [standardized mean difference (SMD)=0.66, 95% CI 0.14 to 1.17, $P = .01$]. Overall cognitive function outcome, cognitive intervention (5RCT) (SMD=1.06, 95% CI 0.53 to 1.59, $P < .001$). Cognitive intervention combined with physical exercise (7RCT) (SMD=0.99, 95% CI: 0.52 to 1.45, $P < .001$).	MoCA, finger exercise (MD=2.17, 95% CI: 1.52 to 2. 83), eight-danjin exercise (MD=3.27, 95% CI: 2.08 to 4.46), six-character exercise (MD=2.35, 95% CI: 0.26 to 4.44). mmse, finger exercise [mean difference (MD)=1.53, 95% CI: 0.62 to -2.44, eight-danjin exercises (MD: 3.19, 95% CI: 2.12 to 4.27), six-character exercises (MD=0.55, 95% CI: -0.17 to 1.28), and taijiquan (MD: 1.30, 95% CI: 0.52 to 2.07). ADL, eight-danjin exercises (MD=-1.75; 95% CI: -2.26 to -1.24), finger exercises (MD=-2.13, 95% CI: -3.30 to -0.96).
Security	Subjects in 3 of 15 trials could not tolerate the pain of needling	Not mentioned	Not mentioned

Note: Table 1 presents the key characteristics of the included studies, encompassing authors, study years, article inclusions, sample sizes, intervention methods, treatment durations, and treatment frequencies across the selected interventions and control groups.

Figure 2. AMSTAR 2 scale evaluation content

Entry	Evaluation content	Evaluation option
1	Research whether the question and inclusion criteria include a PICO component	Yes/partly yes/no
2	Whether to state that the research method of the system evaluation was determined before the implementation of the system evaluation, and whether to explain any inconsistencies with the research protocol	Yes/partly yes/no
3	Systematically evaluate whether the authors included the types of studies when they included the literature	Yes/partly yes/no
4	Systematically evaluate whether the author adopts a comprehensive search strategy	Yes/partly yes/no
5	Whether to use double-repeat literature selection	Yes/partly yes/no
6	Whether to use two-person duplicate data extraction	Yes/partly yes/no
7	Systematically evaluate whether the authors provide a list of excluded references and explain their reasons	Yes/partly yes/no
8	Systematically evaluate whether the authors described the included studies in detail	Yes/partly yes/no
9	Systematically evaluate whether the authors used appropriate tools to assess the risk of bias in each included study	Yes/partly yes/no
10	Systematic evaluation of whether authors report inclusion of funding sources for each study	Yes/partly yes/no
11	The meta-analysis was conducted to systematically evaluate whether the authors used appropriate design methods to combine the results	Yes/partly yes/no
12	In the meta-analysis, the authors systematically evaluated whether the potential impact of the risk of bias in each included study on the meta-analysis results or other evidence synthesis results was assessed	Yes/partly yes/no
13	Systematic evaluation of whether authors consider the risk of inclusion bias when interpreting or discussing each study result	Yes/partly yes/no
14	Systematic evaluation of whether the authors reasonably explained and discussed any heterogeneity in the results	Yes/partly yes/no
15	If the authors are systematically evaluated for quantitative consolidation, whether publication bias (small sample study bias) is adequately investigated and its possible impact on the results discussed	Yes/partly yes/no
16	Did the systemreview author report all sources of potential conflicts of interest, including any funding received to produce the systemreview	Yes/partly yes/no

Note: Figure 2 illustrates the evaluation criteria encompassed within the AMSTAR 2 scale, providing a comprehensive overview of the elements scrutinized to assess the methodological quality of the included literature.

Figure 3. Evidence grading of MMSE, MoCA, ADL, and CDT

Note: Figure 3 presents the evidence grading for key indicators, namely MMSE (Mini-Mental State Examination), MoCA (Montreal Cognitive Assessment), ADL (Activities of Daily Living), and CDT (Clock Drawing Test), offering a visual representation of the quality assessment and ranking of evidence supporting the efficacy of non-pharmacological interventions in addressing mild cognitive impairment.

Figure 4. Grading of evidence for efficacy

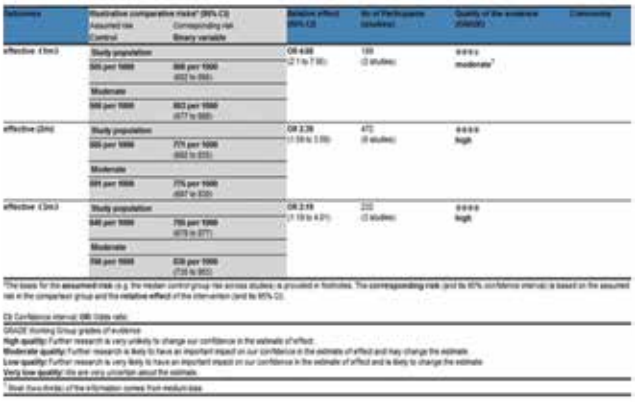


Table 2. Results of methodological quality evaluation of the included literature

Inclusion in the literature	Li W[17]	Jiao W[18]	Su K[19]
Item 1	Yes	Yes	Yes
Item 2	No	No	No
Item 3	No	No	No
Item 4	No	Yes	Yes
Item 5	Yes	Yes	Yes
Item 6	Yes	No	No
Item 7	Yes	Yes	Yes
Item 8	Yes	Yes	Yes
Item 9	Yes	Yes	Yes
Item 10	No	No	No
Item 11	Yes	Yes	Yes
Item 12	No	No	No
Item 13	Yes	Part of it is	Part of it is
Item 14	Yes	Yes	Yes
Item 15	Yes	Yes	Yes
Item 16	Yes	No	No
Overall quality level	Medium	Low	Low

Note: Table 2 provides a comprehensive overview of the methodological quality assessment outcomes for the included literature. The table presents the assessment outcomes for each item across the studies conducted by Li W,[17] Jiao W,[18] and Su K.[19] The assessment encompassed various quality indicators, such as study inclusion, specific criteria fulfillment, and overall quality level, indicating the medium, low, and low quality classifications for each respective study.

Assessment of Evidence Quality in the Literature

The methodological quality of the three documents was assessed using the AMSTAR 2 scale, as depicted in Figure 2. In reviewed studies, two were categorized as low quality, while one was classified as medium quality. Refer to Table 2 for details.

Grading of Evidence Quality

Considering the limited methodological quality observed in two out of the three selected papers mentioned earlier, the current assessment focused solely on the body of evidence from the study conducted by Li W. This evaluation encompassed eight key indicators from randomized controlled trials (RCTs), comprising seven for MoCA, two each for ADL and CDT, and twelve for efficacy. Of these, three gauged efficacies at 1 month of intervention, six at 2 months, and three at 3 months.

Primary Outcome Measures

Most control interventions discussed in the literature were derived from Chinese herbal medicine Tranquility Therapy and Western medications like nimodipine and donepezil. The primary outcome measures encompassed MMSE, MoCA, ADL, CDT, safety evaluation, and efficiency assessment. Notably, safety aspects were omitted in two of the examined papers.

Treatment Efficacy. The outcomes about the effectiveness of non-pharmacological interventions for MCI indicated a notable improvement in MCI patients compared to controls during January, February, and March. The quality of evidence supporting these findings was categorized as moderate, high, and high, respectively. Refer to Figure 3 for a graphical representation.

MMSE Improvement. Examining the impact of non-pharmacological MCI treatment on MMSE scores revealed a

significant enhancement in cognitive function among MCI patients compared to controls. Particularly, the quality of evidence supporting this finding was classified as low. Refer to Figure 3.

Improvement in MoCA Scores. Assessing the impact of non-pharmacological MCI treatment on MoCA scores highlighted a significant enhancement in the mental status of MCI patients. The quality of evidence supporting this observation was deemed high. The non-pharmacological intervention yielded remarkably better MoCA scores in comparison to the control group; please refer to Figure 3.

Enhancement in ADL Scores. Exploring the impact of non-pharmacological MCI treatment on ADL scores emphasized a more noticeable improvement in the ability to engage in daily activities among MCI patients compared to the control group. Notably, the evidence supporting this conclusion was categorized as very low. For a visual representation, refer to Figure 3.

Clock Drawing Test (CDT) Improvement. Analyzing the impact of non-pharmacological MCI treatment on CDT scores revealed a noteworthy enhancement in the cognitive abilities of MCI patients, resulting in markedly superior CDT scores compared to the control group. The quality of evidence supporting these findings was assessed as medium, refer to Figure 3 and 4.

Safety Considerations. Only one study reported adverse events in the reviewed literature, indicating that acupuncture might lead to discomfort and treatment resistance in patients. Despite this, the overall safety profile remained relatively favorable. However, it's important to note that certain RCT studies omitted the discussion of non-pharmacological intervention safety. Further comprehensive trials are required to substantiate these findings in greater detail.

DISCUSSION

In the realm of Chinese medicine, MCI is categorized under "forgetfulness" and "dementia," often linked to deficiencies in kidney essence and marrow insufficiency.[17-20] Acupuncture, a safe and non-toxic therapeutic approach within traditional Chinese medicine, has gained momentum recently for its efficacy and mechanisms in addressing MCI.[21-23] Acupuncture prescriptions typically revolve around standardized acupoint groups, primary and auxiliary acupoints, and acupoint combinations supported by evidence. These commonly involve the Governing Vessel, Conception Vessel, Bladder Meridian, Kidney Meridian, Gall Bladder Meridian, Heart Meridian, and Pericardium Meridian. Several research highlights the effectiveness of acupuncture in MCI treatment.[24]

The precise selection of acupoints greatly influences acupuncture's intervention outcomes, encompassing both the choice and depth of acupunctural application, thereby impacting cognitive function enhancement. Commonly used acupoints used for MCI intervention encompass Baihui, Shenting, Fengchi, and others.[25-26]

MCI's emergence is intricately linked to brain health, as traditional Chinese medicine posits that age-related memory lapses stem from cerebral deficiencies. Acupuncture, by stimulating pivotal brain acupoints, exhibits the potential to augment mental acuity, promote cognitive equilibrium, nourish brain vitality, and regulate cerebral functions. Furthermore, "Qi obtaining," a fundamental principle in acupuncture and moxibustion interventions, strongly connects to treatment efficacy and patient prognoses. Notably, a pronounced positive correlation exists between "Qi obtaining" and treatment outcomes. In this review, three selected studies underscored the positive influence of cognitive interventions, traditional Chinese medicine exercises, and acupuncture on enhancing cognitive function among MCI patients.[25-29] This review highlights the promising potential of non-pharmacological interventions, particularly acupuncture and cognitive interventions, in enhancing cognitive function among elderly individuals with mild cognitive impairment, paving the way for more effective and holistic approaches to managing this prevalent condition.

Study Limitations

However, certain limitations are evident in this study. Firstly, the economic implications of non-pharmacological interventions were not assessed, warranting a comprehensive exploration in future investigations. Furthermore, the study did not exhaustively analyse dietary interventions, ear acupoint compression, psychological interventions, and other pertinent aspects of elderly MCI. Future research in these domains could offer valuable insights and guidance for enhancing the treatment of MCI in the elderly population.

Theoretical Contributions

This study's distinctive and theoretical significance is emphasized by its thorough investigation into the targeted application of acupuncture within MCI treatment. Particularly its in-depth exploration of acupuncture prescription selection and the nuanced impact of needle depth on treatment efficacy. Moreover, the study intricately uses traditional Chinese medicine theory in its analysis, shedding light on the pathogenesis of MCI. A focal point is explaining the integral role played by kidney essence deficiency and cerebral depletion in MCI development. This compelling theoretical framework substantiates the rationale for incorporating acupuncture into comprehensive MCI treatment strategies.

Future Research Directions

In the future, researchers can explore how acupuncture works to treat MCI in more detail. While the current study suggests that acupuncture might improve thinking and mood by stimulating specific points in the brain, future research could focus on understanding how acupuncture affects brain cells and chemicals. Another interesting area to investigate is how acupuncture might affect the connections between different parts of the brain. Furthermore, researchers can conduct randomized controlled trials to understand better the most effective ways to choose specific acupuncture

treatments and the depth of needle insertion. This approach will help explore and identify the best methods for treatment.

Recommendations

To rectify the limitations within this study, researchers can undertake a quantitative approach by integrating additional high-quality original literature. It will strengthen the reliability and credibility of the research results. A crucial aspect that remains unexplored in the present study is the economic implications. Future research endeavors can encompass a comprehensive cost-effectiveness analysis to evaluate the economic advantages associated with acupuncture interventions holistically.

Moreover, the study's scope is constrained due to its focus on only a subset of non-pharmacological interventions. To enrich the scale of future research, broadening the spectrum of interventions under investigation is advisable. This extension could cover various approaches, such as dietary adjustments, ear acupoint compression, and psychological interventions. Such an inclusive approach would enable a comprehensive comparison of various non-pharmacological strategies, leading to a more holistic understanding of their effectiveness.

CONCLUSION

To conclude, this study contributes novel evidence that underscores the efficacy of traditional Chinese medicine acupuncture in treating MCI. The considerable success achieved by non-pharmacological interventions for MCI and the gradual integration of evidence-based medicine into guideline formulation signals a significant stride in medical practice. Contemporary MCI treatment is marked by a strong focus on non-pharmacological approaches within Chinese medicine, encompassing dietary modifications and exercise interventions. These approaches aim to improve thinking abilities, reduce unwanted effects, and slow down the worsening of MCI. Moving forward, collecting and synthesising high-quality original studies will drive the advancement of evidence-based medicine, enrich clinical decision-making, and elevate the overall quality of patient care.

DATA AVAILABILITY

The experimental data used to support the findings of this study are available from the corresponding author upon request.

CONFLICTS OF INTEREST

The authors declared that they have no conflicts of interest regarding this work.

AUTHORS' CONTRIBUTION

Huan Xue and Yang Li Contributed equally to this work and they are the co-first authors.

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