Integrated Traditional Chinese and Western medicine care strategies in the Management of hypertension in the elderly: A Meta-Analysis Study

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ABSTRACT

This study analyses, evaluates and summarizes the characteristics and effects of combined Traditional Chinese Medicine (TCM) and Western medicine (WC) care strategies in the management of hypertension among elderly patients. Included in this study were randomized controlled trials (RCTs) of hypertensive patients aged 60 years and older, and these RCTs mainly combined a variety of integrated Chinese and Western medicine care strategies, such as pharmacological treatments, lifestyle interventions and their Chinese medicine therapies. These studies focused on key health indicators such as blood pressure control, improvement in quality of life, reduction in complication rate, and improvement in patient satisfaction. From the results, it can be seen that the combined Traditional Chinese Medicine and Western medicine care strategies have a more obvious positive effect in improving the quality of life in terms of treatment effectiveness, patient satisfaction, and improvement of systolic and diastolic blood pressure. Traditional Chinese Medicine Care strategies always include Chinese medicine dietary care, Chinese medicine massage care, and instruction in Taijiquan, anti-hypertensive exercises, Qigong and other exercise methods and so on. And Western medicine care strategies are always include to give health teaching on monitoring blood pressure and diet and exercise and so on. Although the data is a little less in terms of complication rate, it also shows a positive impact. And there was no significant publication bias in the studies included in this meta-analysis, but overall This study highlights the potential of integrated Chinese and Western medicine care as an effective management strategy for elderly patients with hypertension, while pointing to the need for more high-quality studies to further validate these results and explore best practices and clinical applications.

KEYWORDS

Management of hypertension in the elderly; Integration of Chinese and Western medicine care; Randomized controlled trial; Treatment effectiveness; Quality of life; Complication rate; Patient satisfaction; Systolic and diastolic blood pressure improvement.

1. INTRODUCTION

A Currently, the matter of managing hypertension in the elderly poses a significant challenge worldwide. In China, hypertension is one of the most common chronic diseases. By the end of 2017, there were 158.31 million people aged 65 years and older in China, accounting for 11.4% of the total population, while at the same time, more than half of the elderly population suffered from hypertension, and the prevalence of hypertension was close to 90% among those aged ≥80 years [1]. According to the World Health Organization's Global Report on Hypertension, published on 19
September 2023, the number of hypertensive patients worldwide doubled between 1990 and 2019, from 650 million to 1.3 billion. This more significant increase is largely due to changes brought about by population growth and ageing. The prevalence of hypertension is particularly high in the elderly population [2]. Hypertension, on the other hand, is simultaneously regarded as a major risk factor for cardiovascular and cerebrovascular diseases, with particular damage to the heart, brain, kidneys and blood vessels. For example, long-term hypertension increases the burden on the heart, increasing the risk of Cardiac hypertrophy and Heart failure and Renal dysfunction, hypertension is also a major risk factor for stroke, including ischaemic stroke and haemorrhagic stroke; because the effects of hypertension may also damage the small arteries and glomeruli of the kidneys, leading to chronic kidney disease, and in severe cases, further development of renal failure. In addition to the fact that hypertension may bring about damage to the walls of blood vessels, promote the formation of atherosclerosis and lead to the formation of atherosclerosis; and also bring about damage to the walls of blood vessels. Promote the formation of atherosclerosis, increase the risk of coronary heart disease, peripheral arterial disease and other vascular diseases and so on [3].

And in order to effectively manage hypertension in the elderly, integrated Traditional Chinese and Western medicine care provides a more comprehensive solution. The concept and practice of nursing through integrated Traditional Chinese and Western medicine care is a nursing model that combines the nursing concepts and practices of Traditional Chinese medicine and Western medicine. TCM nursing emphasises on disease identification and care and evidence-based care, and uses the four diagnostic methods to expand the scope of disease observation, and TCM nursing techniques enrich the connotation of Western nursing diagnosis. The TCM nursing technique enriches the connotation of Western medicine nursing diagnosis [4]. For example, the combination of Western medicine and TCM dietary adjustments, massage and other methods have produced better therapeutic effects in the treatment of some chronic diseases. In addition, the combination of the holistic view of TCM and the precise treatment of Western medicine can also better focus on the overall health of the patient rather than just the disease itself. This integrated care strategy combines the traditional wisdom of Chinese medicine on the one hand and the modern technology of Western medicine on the other, aiming to optimise treatment outcomes by focusing on the patient's physical and mental health in a holistic manner. Chinese medicine methods such as herbal therapy, Chinese medicine acupressure, and Chinese medicine massage care have been applied to the management of hypertension, and these methods not only regulate symptoms, but also enhance the overall well-being of the patient by promoting psychological and physiological harmony [5].

Although it can be seen that integrative Traditional Chinese and Western medicine care shows a more obvious potential in the management of hypertension, studies addressing the meta-analytic categories of its application in elderly hypertensive patients are still relatively lacking a little. In view of this, this study aimed to explore the effectiveness of integrated Traditional Chinese and Western medicine care in the management of hypertension in the elderly by meta-analysing the existing literature, to assess the effectiveness and safety of integrated Chinese and Western medicine care strategies in the management of hypertension in the elderly, and to provide a more comprehensive and evidence-supported management strategy for elderly hypertensive patients.

2. INFORMATION AND METHODS

2.1. Literature inclusion and exclusion criteria

Literature inclusion criteria: 1 The type of study is a randomised controlled trial (RCT); 2 The study subjects are hypertensive patients aged 60 years or older; 3. Interventions: the study must involve a combination of Traditional Chinese and Western medicine care strategies, including both Chinese and Western medicine care methods, such as medication, lifestyle interventions, Chinese medicine speciality therapies (e.g., acupuncture, massage, Chinese herbs) and so on.4 Research indicators: the
study should include at least one of the following indicators: blood pressure control effect, quality of life improvement, complication rate, patient satisfaction, treatment adherence, psychological status improvement, sleep quality improvement, weight and body fat change, exercise and physical fitness improvement, and health-related knowledge improvement.

Literature exclusion criteria: 1. Non-original studies: such as reviews, case reports, overviews, theoretical articles, etc. 2. Not meeting the age requirement: the average age of the study participants was less than 60 years old. 3. Non-hypertension studies: the subject of the study was not the management of hypertension. 4. Single care strategy: the study only involved TCM or Western medicine care methods, and there was no combination of them. 5. Lack of clear outcome indicators: the study did not report clear, quantifiable outcome indicators. 6. Literature not in Chinese or English.

2.2. Literature search methods

The search databases included PubMed, Web of Science, The Cochrane Library, Embase, EBSCO, CNKI Database, Wanfang Database, and Weipu Database, and the search time was from the establishment of each database to January 2024. The search was conducted using a combination of subject terms and free words. The combination of subject words and free words was used, and the search strategy was determined after repeated pre-searches.

The Chinese search terms were “Hypertension in the Elderly / Abnormal Blood Pressure in the Elderly”, “Chinese and Western Medicine Nursing/Integrated Nursing/Synergistic Nursing/Integrated Nursing”. The English search term is "hypertension in elderly/elderly hypertension/integrative medicine nursing/combined traditional Chinese and Western nursing/complementary and alternative medicine nursing” Taking PubMed as an example, the specific search strategy is as follows: (((hypertension in elderly[MeSH Terms]) OR (elderly hypertension)) AND (integrative medicine nursing[MeSH Terms])) OR (combined traditional Chinese and Western nursing)) OR (complementary and alternative medicine nursing).

The Chinese search terms were "Hypertension in the Elderly / Abnormal Blood Pressure in the Elderly”, "Chinese and Western Medicine”, "Nursing/Integrated Medicine”, "Nursing”. Chinese search terms were "Hypertension in the Elderly / Abnormal Blood Pressure in the Elderly", "Chinese and Western Medicine", "Nursing / Integrated Nursing / Joint Nursing / Synergistic Nursing / Integrated Nursing", and "hypertension in elderly / elderly hypertension / integrative medicine nursing". hypertension/integrative medicine nursing/combined traditional Chinese and Western nursing/complementary and alternative medicine nursing”. In PubMed, for example, the specific search strategy is as follows: (((hypertension in elderly [MeSH Terms]) OR (elderly hypertension)) AND (integrative medicine nursing [MeSH Terms]) OR (combined traditional Chinese and Western nursing [MeSH Terms])) OR (complementary and alternative medicine nursing).

2.3. Literature screening and data extraction methods

According to the inclusion and exclusion criteria, two researchers independently screened, extracted and cross-checked the literature through the literature management software endnote; When disagreements are encountered, solutions will be discussed together and advice sought from the supervisor. Literature was screened by first screening the weights, then reading the titles and abstracts of the remaining literature, and after excluding obviously irrelevant literature, reading the full text further to determine whether it was finally included. Data extraction included: basic information about the included studies, interventions and outcome indicators.
2.4. Quality assessment

In accordance with the recommendations of the Guidelines for Research in Evidence-Based Medicine, the Cochrane Risk of Bias Assessment tool was used to assess the quality of the included studies on six indicators: random allocation method, concealment of allocation scheme, blinding, completeness of outcome data, selective reporting of study results, and other sources of bias. In the statistical process, the quality assessment was categorised: 5 or more items were considered as low risk of bias; 3-4 items were considered as medium risk of bias; and less than 3 items were considered as high risk of bias [6].

2.5. Statistical analysis

This study used Revman Manager 5.4. A fixed-effects model was used for the overall test of homogeneity among multiple studies, and a random-effects model was used if heterogeneity existed. For the heterogeneity test, the magnitude of heterogeneity of the included studies was measured by I², with I² values of 25%, 50%, and 75% representing low, moderate, and high heterogeneity, respectively. For the test of combined statistics, if P≤0.05, the combined statistics of multiple studies were statistically significant; if P>0.05, the combined statistics of multiple studies were not statistically significant [7].

3. FINDINGS OF THE STUDY

3.1. Literature Search Data

Firstly, a total of 1,406 articles were searched from the database related to the topic of this study; then, 104 articles were deleted as duplicates, followed by title screening and preliminary screening of abstracts to obtain 375 articles; then, by reading the full text, we excluded the articles with incomplete data and those with non-randomised controlled experiments, and finally included a total of 8 articles. A total of 8 papers were finally included (Figure 1).
3.2. Basic characteristics of the included studies

This study included 8 papers with a total of 777 subjects, with a mixed gender of elderly men and women and an age range of 60-92 years. The intervention contents were mainly divided into: TCM dietary care, psychological care, exercise intervention care, health education, etc. The basic characteristics of the included studies are shown in Table 1.
Table 1. Basic characteristics of the research literature included in this study

<table>
<thead>
<tr>
<th>Inclusion of studies</th>
<th>Year</th>
<th>Number of sample cases (intervention group/control group)</th>
<th>Intervention group measures</th>
<th>Control group measures</th>
<th>Outcome indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tan</td>
<td>2018</td>
<td>40/40</td>
<td>Patients in the Chinese medicine group used conventional hypertension care combined with community Chinese medicine care; Chinese medicine dietary care, Chinese medicine massage care, and instruction in taijiquan, antihypertensive exercises, qigong and other exercise methods.</td>
<td>Conventional hypertension care was used for patients in the conventional group</td>
<td>1, 2, 4, 6</td>
</tr>
<tr>
<td>Fang</td>
<td>2021</td>
<td>38/37</td>
<td>The observation group was given traditional Chinese medicine acupoint patch therapy, and the acupoints were taken as Yongquan, Sanyinjiao, Quchi, Neiguan, etc.: health education, psychological care, dietary guidance, and guidance of the patch.</td>
<td>The control group was given routine care and treatment</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td>Li</td>
<td>2014</td>
<td>60/60</td>
<td>The intervention group, i.e. based on the control group, was given dietary, behavioural care, psychological care, exercise intervention care, medication guidance care, health promotion and post-hospital follow-up care for clinical observation.</td>
<td>The control group was given routine care for hypertension</td>
<td>1, 3, 5, 7</td>
</tr>
<tr>
<td>Xiao</td>
<td>2015</td>
<td>30/30</td>
<td>Combined Chinese and Western medicine nursing measures: psychological care, dietary care, exercise care, health education, rehabilitation nursing measures.</td>
<td>Routine care measures</td>
<td>3, 5, 7</td>
</tr>
<tr>
<td>Li</td>
<td>2016</td>
<td>60/60</td>
<td>Comprehensive nursing interventions based on routine nursing interventions: establishment of health records, health promotion, psychological care, dietary care and exercise interventions.</td>
<td>Routine nursing interventions</td>
<td>1, 2, 4</td>
</tr>
<tr>
<td>Jin</td>
<td>2017</td>
<td>44/44</td>
<td>In the observation group, combined Chinese and Western medicine care was added to the control group: psychological and emotional care, dietary interventions, daily living interventions, and observation of indicators.</td>
<td>Routine nursing interventions</td>
<td>1, 2, 4</td>
</tr>
<tr>
<td>Zheng</td>
<td>2019</td>
<td>48/48</td>
<td>The nursing group was given integrated Chinese and Western medicine care on the basis of the conventional group: Chinese medicine care, disease care, disease care, psychological care.</td>
<td>Routine care was given to patients in the routine group</td>
<td>1, 4, 10</td>
</tr>
<tr>
<td>He</td>
<td>2020</td>
<td>69/69</td>
<td>In addition to the control group, TCM emotional care: reasoning and guidance, catharsis and relief of depression, empathy, and five-tone therapy were used.</td>
<td>Routine nursing interventions</td>
<td>3, 8, 9</td>
</tr>
</tbody>
</table>

3.3. Methodological assessment of the included literature

The methodological assessment of the quality of the included literature (Fig. 2) showed that eight of the literature reached a low risk of bias and were of high quality, reaching the standard of "+" and not reaching the standard of "-" in Fig. 2. Figure 3 shows the statistical graph of the percentage of each entry in the methodological assessment.
3.4. Meta-analysis results and discussion

Meta-analysis was performed using RevMan 5.4. Firstly, the results of the studies were tested for heterogeneity, and there was no statistically significant heterogeneity between the independent studies ($I^2 < 50\%$, $P \geq 0.1$), the fixed-effects model was used to calculate the combined effect size; the results of each independent study were heterogeneous ($P < 0.1$, $I^2 \geq 50\%$), then the random effects model was used to calculate the combined effect sizes. Means ± standard deviation were used as effect analysis statistics for continuous variables [8].

3.4.1. The effect of combined Traditional Chinese and Western medicine care on the efficiency of elderly hypertensive patients.

The 4 studies used the effectiveness rate as an outcome indicator. The results of Meta-analysis forest plot of effective rate showed heterogeneity: $I^2 = 14\%$, $p = 0.32$, ($I^2 < 50\%$, $p \geq 0.1$), so there was no heterogeneity among the 4 studies, and the effect sizes were combined using a fixed-effects model. At the same time the efficiency of the intervention group was 1.34 times higher than the efficiency of the control group, and at the same time Test for overall effect $Z = 4.49$ ($p < 0.00001$), so $P < 0.5$, the
statistical difference was significant, so here the difference between the intervention and control groups was statistically significant [9-12]. See Figure 4 below.

![Figure 4. Forest map of effectiveness](image)

3.4.2. Test for bias

As can be seen from the Meta-analysis funnel plot, the scatter distribution is basically balanced on the left and right, indicating that the biased results are acceptable and that there is no significant publication bias among the studies.

![Figure 5. Funnel plot of effectiveness](image)

3.4.3. Effect of combined Traditional Chinese and Western medicine care on the satisfaction rate of elderly hypertensive patients

Four studies used satisfaction rate as an outcome indicator. Heterogeneity can be seen from the results of the Meta-analysis forest plot of satisfaction: I² =23%, P=0.27, (I² <50%, P ≥0.1) There was no heterogeneity between the 4 studies, therefore there was no heterogeneity between the 4 studies and the effect sizes were combined using a fixed effects model. At the same time the satisfaction of the intervention group was 1.29 times more than the control group, while Test for overall effect Z = 5.47 (p < 0.00001), so P < 0.5, the statistical difference is significant, so here the difference between the intervention group and the control group statistically is meaningful [13-16]. See Figure 6 below.

![Figure 6. Forest map of satisfaction rate](image)
3.4.4. Test for bias

As can be seen from the Meta-analysis funnel plot, the scatter distribution is basically balanced on the left and right, indicating that the biased results are acceptable and that there is no significant publication bias among the studies.

![Figure 7. Funnel plot of satisfaction rate](image)

3.4.5. Effect of combined Traditional Chinese and Western medicine care on the incidence of complications in elderly hypertensive patients

Three studies used complication rate as an outcome indicator. From the results of Meta-analysis forest plot of complication rate it can be seen heterogeneity: I² =0%, p=0.84 (I² <50%, p ≥0.1). There was no heterogeneity among the 3 studies, so there was no heterogeneity among the 3 studies, and the effect sizes were combined using a fixed effect model. At the same time the complication rate in the intervention group was 0.21 times higher than the control group, while Test for overall effect Z=3.64 (p=0.0003), so P<0.5, the statistical difference was significant, so here the difference between the intervention group and the control group was statistically significant [9-11]. See Figure 8 below.

![Figure 8. Forest map of complication rate](image)

3.4.6. Tests for bias

As can be seen from the Meta-analysis funnel plot, the scatter distribution is basically balanced on the left and right, indicating that the biased results are acceptable and that there is no significant publication bias among the studies.

![Figure 9. funnel plot of complication rate](image)
3.4.7. The effect of combined Traditional Chinese and Western medicine care on systolic blood pressure in elderly hypertensive patients

Seven studies used systolic blood pressure as an outcome indicator. From the results of Meta-analysis forest plot of systolic blood pressure it can be seen that heterogeneity: $I^2 = 15\%, p = 0.32$, (I2 <50%, p ≥ 0.1) the intervention group can reduce the systolic blood pressure by another 12.36 relative to the control group, meanwhile Test for overall effect $Z = 27.48$ (p<0.00001). Therefore $P < 0.5$, the statistical difference is significant, so here the difference between the intervention group and the control group is statistically significant [9-11, 14-16]. See Figure 10 below.

3.4.8. Test for bias

As can be seen from the Meta-analysis funnel plot, the scatter distribution is basically balanced on the left and right, indicating that the biased results are acceptable and that there is no significant publication bias among the studies.

3.4.9. Effect of combined Traditional Chinese and Western medicine care on diastolic blood pressure in elderly hypertensive patients

Four studies used diastolic blood pressure as an outcome indicator. From the Meta-analysis of diastolic blood pressure forest plot results show that you can see heterogeneity: $I^2 = 85\%, p = 0.0001$, (I2 <50%, p ≥ 0.1), because here the p-value is less than 0.1, so it is considered that there is heterogeneity, so here to choose then the random effects model was used to calculate the amount of the combined effect of the intervention group relative to the control group, you can put the diastolic blood pressure by another 8.05, while Test for overall effect $Z = 6.67$ (p < 0.00001), so $P < 0.5$, statistically significant difference, so here the difference between the intervention group and the control group is statistically significant. [9, 13-15]. See Figure 12 below.
3.4.10. Bias test

As can be seen from the Meta-analysis funnel plot, the scatter distribution is basically balanced on the left and right, indicating that the biased results are acceptable and that there is no significant publication bias among the studies.

![Funnel plot of diastolic blood pressure](image)

**Figure 13.** Funnel plot of diastolic blood pressure

4. DISCUSSION

In this study, the researcher conducted a study on the meta-analysis of combined Traditional Chinese and Western medicine nursing strategies in the management of hypertension in the elderly. According to the results of the study, it can be found that when targeting different outcome indicators, including effective rate, satisfaction rate, complication rate, systolic blood pressure and diastolic blood pressure, combined Traditional Chinese and Western medicine care shows certain positive effects in the management of elderly hypertensive patients.

Firstly, it was found that combined Traditional Chinese and Western medicine care had relatively significant effects on elderly hypertensive patients in terms of effective rate of the treatment, satisfaction rate, systolic and diastolic blood pressure reading. By analysing the combined effect sizes of the relevant included studies, it was found that combined Traditional Chinese and Western medicine care had a statistically significant effect on increasing the efficiency in the management of elderly patient with hypertension. This suggests that combined Traditional Chinese and Western medicine care may be an effective strategy in the management of hypertension in the elderly. In addition, although the number of studies is small for the indicator of complication rate, it can still be seen to show some positive effects of combined Traditional Chinese and Western medicine care on elderly hypertensive patients.

In terms of the test of bias, it can be seen from the results of the study, which shows that there is no significant publication bias between the studies, which can enhance the confidence of the researchers in the results of the study. However, although the analyzed results of the study showed the positive effects of integrated Traditional Chinese and Western medicine care in the management of hypertension in the elderly, the quality could be further improved considering that the included literature did not point out allocation concealment, were non-blinded in terms of blinding of the assessors, and so on.

In summary, the above findings provide evidence-based support for integrated Traditional Chinese and Western medicine care strategies in the management of hypertension in the elderly. However, more high-quality studies are still needed to validate our results and to further explore the best practices and clinical applications of integrated Traditional Chinese and Western medicine care in the management of hypertension in the elderly.
5. CONCLUSION

Combined Traditional Chinese and Western medicine care has a more significant positive effect in the management of hypertension in the elderly. For outcome indicators such as effective rate, satisfaction rate, complication rate, systolic and diastolic blood pressure, combined Chinese and Western medicine care showed some benefits. The results analysed in this study highlight the potential importance of integrated Traditional Chinese and Western medicine care as an effective strategy for the management of hypertension in the elderly. This provides strong evidence to support clinical practice and offers new ideas for the integrated management of elderly hypertensive patients. The results of the bias test of this study showed that there was no significant publication bias among the studies. The inclusion of less than 10 papers in this study will be limited by the quantity and quality of the included papers, and more high-quality and large-sample-size studies are needed to validate the results of the present study and to explore in depth the best practices and clinical application strategies of integrated Traditional Chinese and Western medicine care in the management of hypertension in the elderly. Further exploration in more studies is warranted in the future.

REFERENCES