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Effects of Mongolian Mind-Body Interactive Therapy on Blood Pressure Control among People with Essential Hypertension during the COVID-19

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1. Abstract

Mongolian Mind-Body Interactive Therapy (MMBIT) is based on the unified theory of Mongolian medicine, combined with knowledge and methods of modern medical psychology. This study investigated the effect of MMBIT on patients with Essential hypertension (EH) and its influence on mental and physical health. During the COVID-19 epidemic, an online mobile program questionnaire survey was conducted among EH patients who received MMBIT. A total of 739 patients were included that 538 patients (72.81%) took oral antihypertensive drugs in the past month, and 201 patients (27.19%) didn't. In SSS after intervention, items somatization, anxiety, depression anxiety and total score were significantly reduced ($P < 0.05$). The positive rate was 56.83%, and it decreased to 49.79% after-MMBIT ($X^2=5.727$; $p=0.010$). Among them, SBP of 525 patients decreased from 136.07 ± 18.85 mmHg pre-MMBIT to 134.17 ± 19.16 mmHg after-intervention ($p=0.0007$). The

blood pressure compliance rate of the subjects was 55.04% pre-MMBIT and 61.52% after-MMBIT ($X^2=4.811$; $p=0.016$). Among 73 patients without antihypertensive drugs and 157 patients taking them for 1-5 years, it was found that SBP decreased after-MMBIT intervention in non-taking group ($P=0.0254$). After-MMBIT, SBP ($P=0.0455$) and DBP ($P=0.0349$) decreased, and SSS changed significantly. Most EH patients benefit significantly from practising MMBIT. This therapy lowers SBP and has a positive effect on somatic symptoms and anxiety. Particularly, patients with an illness duration of 1-5 years benefit greatly.

1.1. Conclusions: Most EH patients benefit significantly by practising MMBIT. This therapy helps reduce SBP and has a positive impact on somatic symptoms and anxiety. Particularly, patients with an illness duration of 1-5 years show substantial benefits.

2. Keyword: Mongolian Mind-Body Interactive Therapy, Essential Hypertension, Survey Questionnaire, Somatic Symptoms, Anxiety

3. Background

Essential hypertension (EH) is a chronic disease with the highest incidence rate among human cardiovascular and cerebrovascular diseases, and it is also one of the common diseases endangering human health [1]. It poses significant public health challenges for both developing and developed countries in terms of economic development [2]. According to the WHO report, it is estimated that there are 1.13 billion people worldwide with hypertension [3]. Currently, the primary treatment approach for hypertension revolves around the administration of antihypertensive medications. Depending on the underlying mechanisms of hypertension, different antihypertensive drugs exhibit specific therapeutic effects. However, long-term use of antihypertensive medications can lead to various side effects, such as headaches, edema, and bradycardia [4]. In May 2020, the International Society of Hypertension released the latest revision of the "Practice Guidelines for Hypertension" that provide globally applicable blood pressure targets for various situations. For patients with hypertension, achieving the target blood pressure value does not necessarily imply reaching the desired outcome. Adjustments should also be made based on individual circumstances, particularly focusing on stabilizing blood pressure through various aspects such as psychological intervention, dietary habits, and lifestyle routines [5]. Many studies have consistently demonstrated a direct relationship between psychological factors and blood pressure [6, 7]. The occurrence and progression of hypertension manifest not only physically but also psychologically.

Mongolian Mind-Body Interactive Therapy (MMBIT) is a psychological therapy rooted in the unified theory of Mongolian medicine, incorporating knowledge and methods from modern

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medical psychology with a focus on Mongolian the cultural characteristics. It primarily utilizes health education as a platform, psychological intervention as the main component, and complementary approaches of health conditioning and medication. Through the application of modern audiovisual technology, it creates a comprehensive mind-body integration treatment model that fosters group interaction effects. A key feature of this model is the utilization of group narrative psychotherapy as a primary component of the comprehensive mind-body integration treatment approach [8]. There is increasing evidence indicating that the theoretical foundation of MMBIT is accurate and health-oriented, while its technical processes are scientific and effective [9, 10]. Moreover, it is a highly practical and efficient mind-body therapeutic approach that has been rapidly disseminated and widely adopted.

Regular blood pressure measurement is crucial in established hypertensive populations. Recent clinical trial data demonstrates that accurate blood pressure measurement can lead to more precise reductions in patients' blood pressure [11, 12]. The latest advancements in smart technology have made it a powerful tool for online blood pressure monitoring [13, 14]. According to a survey conducted by the Pew Research Center among 30,133 individuals across 27 countries, smart technology is widely adopted in daily life, with over 2.5 billion smartphone users in 2019 [15]. The research published by the European Society of Hypertension Blood Pressure Monitoring Working Group also highlights the potential significance of utilizing smart technology in blood pressure monitoring, enabling both hypertensive patients and healthy individuals to timely monitor their blood pressure in everyday life [14]. According to a survey study, statistically significant differences exist between at-home wrist blood pressure self-measurement and conventional monitored blood pressure [16]. In summary, there is currently limited online survey research available regarding the use of smart technology for blood pressure measurement.

In order to evaluate the impact of MMBIT on patients' blood pressure, we conducted a study involving self-measurement of blood pressure by EH patients who accepted MMBIT. The study involved recording medication intake, analyzing relevant physical and psychological scales, with the aim of gaining a more accurate understanding of the effect of MMBIT on blood pressure control and emotional regulation among EH patients. The objective is to assist patients in stabilizing their emotions, thereby improving their home blood pressure control and enhancing quality of life.

4. Methods

4.1. Patients

The study subjects are primary hypertensive patients who are willing to participate in a survey research study and who are capable of completing questionnaire surveys, possessing a smartphone and being able to use it, during the period from June to July 2022. They will also consent to undergo a 21-day MMBIT. All patients voluntarily participate in the research study, which has been approved by the hospital's Ethics Committee (Approval No. 2020-014).

4.2. Survey questionnaire

Publish the designed survey questionnaire on the Questionnaire

Star platform. The survey questionnaire will be released one week before and after the survey. Blood pressure measurements will be conducted at home using a home blood pressure monitor and uploaded in image form to the Questionnaire Star platform (Supplementary Material 1). The survey questionnaire consists of three sections: (i) Confirmation of consent and basic demographic information of the respondents, (ii) Somatic Symptom Scale (SSS), (iii) Images of blood pressure measurements, and (iv) Satisfaction Evaluation. The results of this survey are for scientific research only. Your personal information will be protected in accordance with the provisions of China's Personal Privacy Protection Law. By accepting and completing this survey questionnaire, it is assumed that you have signed the informed consent form. The participation in the survey and research is completely voluntary, and you can also withdraw from the research at any time. We will respect your wishes. Your decision to participate or withdraw will not affect your relationship with the researcher. Every human participant provide their consent. The consent is implied through questionnaire completion [17].

4.3. Blood pressure assessment criteria

According to the 2018 Chinese Guidelines for the Management of Hypertension, hypertension is defined as systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg. Blood pressure measurements below these values are considered within the normal range, and are considered to get the target blood pressure achievement.

4.4. The self-rating scale for somatic symptoms

The SSS is a self-assessment questionnaire specifically designed and developed by Professor Jialiang Mao, a Chinese cardiologist, to measure somatic symptoms [18]. The scale consists of 20 items, including somatic symptom questions. The somatic symptom factor (S-factor) encompasses cardiovascular symptoms such as palpitations, chest tightness, chest pain, and dyspnea, as well as sleep disturbances like difficulty falling asleep, vivid dreams, easy arousal, early awakening, and insomnia, comprising 45% of the scale. Anxiety (A-factor) accounts for 25%, depression (D-factor) accounts for 20%, and comorbid anxiety and depression (AD-factor) accounts for 10%. Each item is further categorized into four levels based on the severity of symptoms: none, mild, moderate, and severe, scored as 1, 2, 3, and 4 points respectively. A total score greater than 36 is considered positive value.

4.5. Data filtering

In June 2022, the "Essential Hypertension Pre-MMBIT Assessment Scale" was launched on the mobile application. 21 days later, data collection for the "Essential Hypertension Post-MMBIT Assessment Scale" commenced (Supplementary Material 1). Pre-intervention, a total of 4484 responses were collected. Among these, 1263 questionnaires of blood pressure images were not compliant, including 39 with missing uploaded images, 33 with mercury sphygmomanometer images, 354 with medication images, and 837 with other images. Additionally, 650 questionnaires of non-compliant blood pressure images included 15 with missing uploaded images, 13 with mercury sphygmomanometer images, 66 with medication images, and 556 with other images (Figure 1). Finally, 739 valid questionnaires were compared pre- and

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post- intervention, undergoing data quality control (Supplementary Material Table 1).

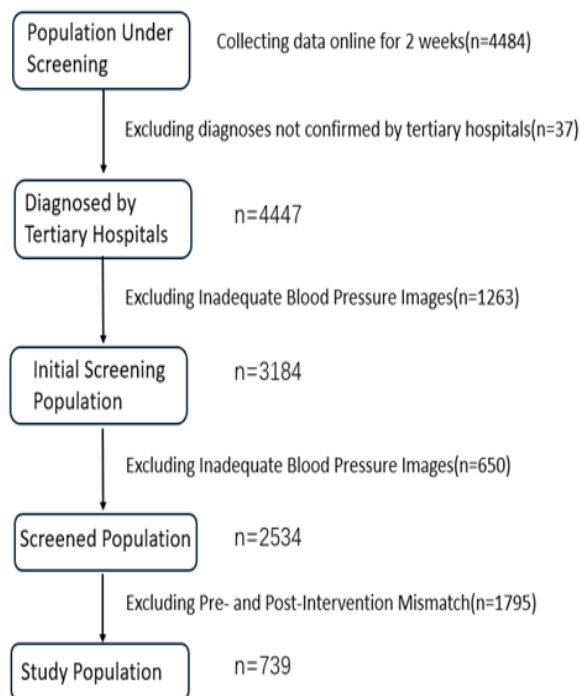


Figure 1. Study and Data Collection Process

4.6. Procedures of the Therapy

The online questionnaire was completed by 739 patients with EH (Table 1). All patients in this sample underwent intervention with MMBIT for 21-28 days. This therapy includes narrative therapy, cognitive therapy, mindfulness therapy, music therapy, cathartic therapy, health education, and other comprehensive therapy. The main process of this therapy includes: MMBIT is a form of group health treatment, which can accommodate simultaneous treatment sessions for 50-500 individuals depending on the capacity of the treatment room. Throughout the entire treatment process, approximately six designated patients presented their illness narratives and symptoms, reporting on how they overcame these symptoms following MMBIT intervention. Subsequently, experienced physicians provided professional commentary. In the study, video group therapy was employed, comprising the following main components: introduction of Mongolian songs, therapy and therapist introduction, health-preserving exercises, case presentations, and conclusion with Mongolian songs. The treatment regimen consists of 21 days per course. In on-site therapy, the portion involving health-preserving exercises is substituted with MMBIT, health and disease education, mind-body practices, as well as dietary and behavioral therapeutic education. Both video group therapy and on-site therapy primarily employ narrative therapy and hypnosis techniques in case presentations. It is recommended that individuals participating in group therapy commence with individual counseling sessions. The intervention regimen consists of 21 days per course. In MMBIT, patient self-awareness and self-reflection are crucial. Therefore, through the testimonials of other patients and professional medical commentary, patients enhance

their self-awareness, alleviate distress, increase self-reflection, and develop ongoing coping mechanisms for these issues. In MMBIT, health education, case presentations, and physician commentary are collectively employed for the implementation of psychological illness intervention[8-10].

Table 1. Sociodemographic characteristics of 739 patients with MMBIT

Characteristics		Values
Gender; n (%)	Male	223 (30.18)
	Female	516 (69.82)
Age group; n (%)	≤60 years	466 (63.06)
	60+ years	273 (36.94)
Academic qualifications; n (%)	Bachelor's degree or below	478 (64.68)
	Bachelor's degree or above	261 (35.32)
Whether your blood pressure is checked regularly; n (%)	Yes	638 (86.33)
	No	101 (13.67)
Whether you take antihypertensive drugs; n (%)	Yes	538 (72.8)
	No	201(27.2)
Course of disease; n (%)	<1 year	111 (15.02)
	2-5 years	230 (31.12)
	6-10years	141 (19.08)
	11-15years	88 (11.91)
	>15years	169 (22.87)
History of immediate family members with high blood pressure? n (%)	Yes	549 (74.29)
	No	190 (25.71)
Knowledge on prevention of high blood pressure? n (%)	Yes	711 (96.21)
	No	28 (3.79)
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4.7. Statistical analysis

Statistical analysis was performed using SPSS 13.0 software. Categorical data were presented as n (%), and intergroup comparisons were conducted using the chi-square test. For normally distributed and homogenous variance continuous data, parametric tests were employed for analysis. For non-normally distributed and heterogenous variance data, non-parametric tests were utilized. $P < 0.05$ indicating statistical significance. Correlations between the post-treatment values and pre-intervention values for each outcome were calculated using the R Cor package (Supplementary Material Table 2).

5. Results

5.1. The influence of MMBIT on blood pressure, physical symptoms, and psychological

Results from EH patients undergoing 21-28 days of MMBIT (Table 2) revealed a significant decrease in SBP post-treatment ($P < 0.05$), while DBP showed no statistically significant difference. In the SSS, significant reductions were observed in S-factor, A-factor, D-factor, AD-factor and the total score ($P < 0.05$), while the D-factor showed no statistically significant difference.

Table 2: Comparisons between pre- and post-intervention in the MMBIT in Somatic symptoms, anxiety, depression and blood pressure.

Variables	pre-intervention	95%CI	post-intervention	95%CI	t	p-value
SBP(n=525)	136.07±18.85	134.06,137.53	134.17±19.16	132.06,135.61	-3.3872	0.0007
DBP(n=525)	83.53±13.83	82.13,84.34	83.16±12.17	81.37,83.50	-0.7963	0.4262
S-factor(n=739)	18.76±5.65	18.61,19.63	17.71±5.8	17.26,18.30	-5.5184	4.74E-08
D-factor(n=739)	7.69±2.61	7.67,8.15	7.54±2.7	7.34,7.83	-1.6432	0.1007
A-factor(n=739)	7.33±2.75	7.26,7.77	6.89±2.67	6.61,7.09	-4.8222	1.72E-06
AD-factor(n=739)	4.33±1.47	4.35,4.61	3.94±1.48	3.90,4.18	-7.7408	3.26E-14
Sum of SSS(n=739)	38.12±11.38	38.01,40.06	36.08±11.75	35.19,37.32	-5.4054	8.73E-08

Note: n represents the sample size, and statistical analysis was performed using paired t-test.

The number of patients achieving the standard blood pressure after receiving MMBIT increased from 289 to 323 cases. Chi-square test conducted through cross-tabulation revealed a significant increase in the number of patients reaching the standard blood pressure after receiving MMBIT compared to before treatment ($X^2=4.811; p=0.016$). The number of individuals with positive values on the scale after receiving MMBIT decreased from 420 to 368 cases (Figure 2). Chi-square test conducted through cross-tabulation revealed a significant decrease in the positivity

rate after receiving MMBIT compared to before treatment ($X^2=5.727; p=0.010$).

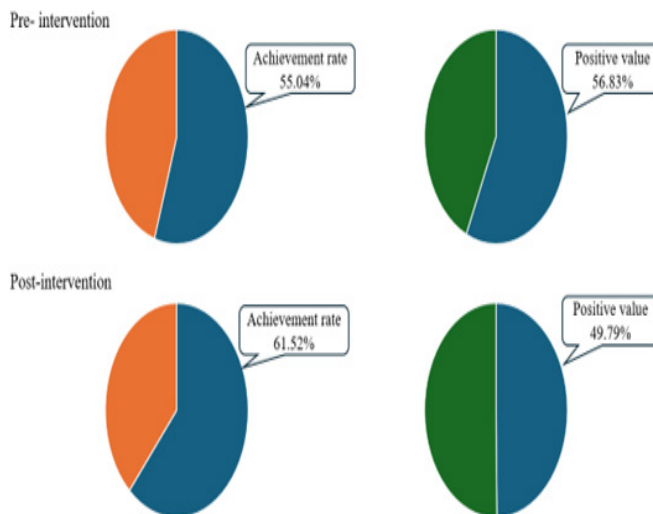


Figure 2: The target blood pressure achievement rate and somatic symptom positive value pre- and post- MMBIT intervention.

5.2. Changes in the main outcomes of subgroup of taking antihypertensive drugs and not taking antihypertensive drugs

Divide the research subjects into various subgroups based on their basic information (Supplementary materials Table 3). The results indicate that when grouped based on whether antihypertensive medications were taken, comparisons of various outcomes pre- and post- intervention revealed that although somatic symptoms decreased in patients not taking antihypertensive drugs, there was no significant difference. However, anxiety significantly decreased in both groups of patients. Moreover, patients taking medication showed a significant decrease in SBP (Table 3).

Table 3. Analysis of outcomes in drug subgroup

Variables	SBP	DBP	S-factor	D-factor	A-factor	A D - factor	Sum of SSS
Taking antihypertensive drugs							
pre-intervention	136.7±19.87	83.50±14.82	19.07±5.91	7.75±2.71	7.36±2.87	4.36±1.50	38.56±11.89
post-intervention	133.9±19.76	82.93±12.24	17.82±5.76	7.54±2.69	6.87±2.64	3.97±1.47	36.21±11.71
P(W)	0.0035	0.0247	0	0.018	0	0	0
n	399	395	537	537	537	537	537
Don't take antihypertensive drugs							
pre-intervention	134.9±15.77	80.44±20.47	17.94±4.83	7.53±2.32	7.24±2.41	4.24±1.38	36.96±9.86
post-intervention	132.9±16.66	83.74±13.14	17.41±5.90	7.52±2.72	6.96±2.75	3.85±1.50	35.75±11.95
P(W)	0.1107	0.59	0.04	0.65	0.03	0.0003	0.02
n	135	132	200	200	200	200	200

4.3. Analysis of drug influencing factors on the MMBIT effectiveness

Comparing EH patients who are taking antihypertensive drug versus those who are not (Table 4), the results indicate significant differences in clinical information such as age, education level,

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disease course, regular blood pressure monitoring, and family history of hypertension between the two groups.

Table 4. Differences in baseline information characteristics between patients treated with and without antihypertensive drugs

Variables		Whether you take antihypertensive drugs			P
		Yes(n=538)	No(n=201)		
Gender				$\chi^2=0.433$	0.53
	Male	166	57		
	Female	372	144		
Age				$\chi^2=15.862$	0
	≤60 years	316	150		
	60+ years	222	51		
Educational level				$\chi^2=9.704$	0.002
	Bachelor's degree or below	366	112		
	Bachelor's degree or above	172	89		
Disease course				$\chi^2=66.504$	0
	<1 years	51	60		
	2-5 years	157	73		
	6-10 years	110	31		
	11-15 years	73	15		
	>15 years	147	22		
Whether your blood pressure is checked regularly?				$\chi^2=29.397$	0
	Yes	487	151		
	No	51	50		
Whether there is a family member with high blood pressure?				$\chi^2=4.586$	0.037
	Yes	411	138		
	No	127	63		
Knowledge on prevention of high blood pressure				$\chi^2=2.147$	0.192
	Yes	521	190		
	No	17	11		

Through ordered logistic regression analysis of different blood pressure intervention outcomes, the results indicate that whether drug is taken is not an independent factor for blood pressure intervention effectiveness (Table 5).

Table 5. Ordered logistic regression analysis of different blood pressure intervention outcomes

	p value	OR	LL	UL
Gender	0.5079	1.1421	0.7709	1.6941
Age	0.7527	1.0643	0.722	1.5689
Education	0.6691	1.085	0.7461	1.5785
Whether your blood pressure is checked regularly?	0.0872	1.614	0.9308	2.7907

Whether you take antihypertensive drugs?	0.7357	0.9292	0.6064	1.4229
Disease course	0.1903	0.9097	0.7893	1.0478
History of immediate family members with high blood pressure	0.6541	0.9053	0.5856	1.3984
Sports situation	0.1713	1.1108	0.9557	1.2919
Knowledge on prevention of high blood pressure	0.6361	0.7921	0.3021	2.0782

Note: Lower limit (LL) and upper limit (UL) of 95% confidence interval.

Upon further comparison of EH patients with different disease courses (Supplementary materials Table 4), it was found that only patients with a disease course of 1-5 years showed significant changes in SBP and SSS (Table 6). Specifically, patients who did not take antihypertensive drugs demonstrated a significant reduction in systolic blood pressure after 21 days of treatment ($P<0.05$), and there was a significant decrease in the AD-factor in the SSS ($P<0.05$). In the group of patients taking antihypertensive drugs, there were significant reductions in SBP, DBP, S-factor, A-factor, AD-factor and total score ($P<0.05$).

Table 6. Situation of MMBIT in EH patients with disease course between 1-5 years

	Variable	P r e - intervention	95%CI	P o s t - intervention	95%CI	P
Not taking antihypertensive drugs group (n=73)	SBP	136.6 ±17.25	131.28,137.15	131.3 ±15.45	128.74,134.73	0.0254*
	DBP	84.05 ±18.12	81.13,85.69	82.93 ±12.10	80.26,84.38	0.0509
	S-factor	18.84 ±4.85	17.34,19.16	18.08 ±5.54	16.17,18.30	0.1113
	D-factor	7.93 ±2.41	7.42,8.29	8.01 ±2.77	7.05,8.04	0.8632
	A-factor	7.68 ±2.34	7.02,7.92	7.38 ±2.59	6.41,7.42	0.2178
Taking antihypertensive drugs(n=157)	AD - factor	4.38 ±1.29	4.20,4.67	3.90 ±1.51	3.60,4.16	0.0126*
	Sum of SSS	38.84 ±10.10	36.19,39.83	37.38 ±11.53	33.41,37.74	0.1469
	SBP	136.7 ±22.52	134.22,138.43	132.7 ±20.89	132.39,136.68	0.0455*
	DBP	85.35 ±13.34	81.91,84.44	83.02 ±12.05	81.22,83.72	0.0349*
	S-factor	18.31 ±5.17	18.81,20.02	17.73 ±5.51	17.36,18.56	0.067
	D-factor	7.52 ±2.57	7.65,8.22	7.51 ±2.73	7.31,7.88	0.66
	A-factor	7.22 ±2.62	7.23,7.84	6.89 ±2.53	6.56,7.10	0.034*
	AD - factor	4.29 ±1.52	4.33,4.65	4.006 ±1.55	3.94,4.25	0.006*
	Sum of SSS	37.36 ±10.85	38.14,40.60	36.15 ±11.43	35.25,37.71	0.0434*

Note: Statistical analysis was conducted using the Wilcoxon test, * indicates $p < 0.05$.

5. Discussion and Conclusions

5.1. Discussion

In this study, utilizing MMBIT as a psychological intervention for patients with EH, a significant reduction in SBP was observed after 21 days of online intervention. The SBP decreased from 136.07 ± 18.85 mmHg pre-MMBIT intervention to 134.17 ± 19.16

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mmHg. One randomized controlled trial, involving 42 patients with mild hypertension, an 8-week intervention consisting of 2h of daily mindfulness meditation and health education was conducted. By the end of the 8th week, it was observed that the mindfulness meditation group had significantly lower 24h SBP (124/77mmHg vs. 126/80mmHg, $P<0.05$) and clinic SBP (130mmHg vs. 133mmHg, $P=0.02$) compared to the health education group[5]. The study conducted by Palta[19] demonstrated that an 8-week mindfulness intervention had a significant blood pressure-lowering effect, with a reduction of 21.92mmHg in SBP and 16.7mmHg in DBP. Additionally, the study conducted by Hughes et al. [20] also found that the blood pressure-lowering effect after an 8-week intervention was more significant compared to progressive muscle relaxation (a reduction of 4.8mmHg in SBP and 1.2mmHg in DBP). The SSS demonstrates significant improvement in symptoms such as dizziness/headache, sleep disturbances, fatigue, cardiovascular symptoms, gastrointestinal symptoms, muscle soreness, numbness in hands/feet or specific body parts, blurred vision, fluctuating body temperature and sweating, discomfort in the throat, and increased urgency/frequency of urination[21]. This SSS has been proven to be reliable in previous studies conducted with cardiovascular patients[22, 23]. Elderly patients with EH may experience difficulties in attention, fatigue, dizziness, and headaches[24]. Furthermore, this study found significant reductions in somatization symptoms, anxiety, depressive symptoms, and the total score on the SSS following treatment. The S-factor decreased from 18.76 ± 5.65 to 17.71 ± 5.8 , the D-factor decreased from 7.69 ± 2.61 to 7.54 ± 2.7 , the A-factor decreased from 7.33 ± 2.75 to 6.89 ± 2.67 , and the AD-factor decreased from 4.33 ± 1.47 to 3.94 ± 1.48 . The sum of SSS decreased from 38.12 ± 11.38 to 36.08 ± 11.75 .

The results of our research analysis align with numerous studies that have reported the direct impact of mental health on blood pressure regulation, including the alleviation of depressive symptoms[25, 26], improvement in quality of life[26, 27], and self-perceived stress[28]. In the 2020 International Society of Hypertension Global Hypertension Practice Guidelines, it is stated that psychosocial aspects and a history of depression are considered risk factors. Blood pressure is influenced by both the sympathetic and parasympathetic nervous systems, which is why there is a close relationship between elevated blood pressure and psychological factors, as seen in psychogenic hypertension and white-coat hypertension. Findings from the epidemiological SONIC study conducted among elderly individuals in Japan revealed a correlation between higher SBP levels in hypertensive patients and the maintenance of cognitive function in the community-dwelling elderly population[29].

In this study, blood pressure and SSS analyses were conducted pre- and post- intervention, taking into account various factors such as gender, age, education level, disease course, use of antihypertensive drug, regular blood pressure monitoring, family history, exercise habits, and knowledge of hypertension prevention. The results revealed significant differences in the SSS analysis among different groups. Numerous studies have found that mind-body therapies can significantly improve patients' negative emotions and alleviate symptoms of depression[30]. In 2016, Neilson et al. conducted a study on patients with gastroenteritis and found that an 8-week mindfulness-based intervention had a significant impact on alleviating anxiety and depressive symptoms in patients[31]. In 2021, Pardos et al. [32] also found that mind-body therapies were

effective in alleviating depression and pain intensity in patients with chronic pain. The groups that showed significant differences in blood pressure analysis were as follows: Age group: Patients below 60 years of age demonstrated significant differences in SBP after treatment. Education level group: Patients with education level below bachelor's degree and those with a bachelor's degree or above showed significant differences in SBP after treatment. Antihypertensive medication group: Patients who were taking antihypertensive drug exhibited significant differences in SBP after intervention. In previous studies, mind-body therapies have yielded varied conclusions regarding their effects on physiological indicators such as blood pressure and blood glucose in patients with different medical conditions. In a study conducted by Momeni in 2016[33], it was found that mind-body therapies had a significant impact on regulating SBP, while the effect on DBP was less apparent. Linden et al. [34] found in their study that alongside mind-body therapy, patients who received concomitant pharmacological treatment were more likely to achieve significant therapeutic effects. The findings of our study align with Linden et al.'s research conclusion. In the subgroup of patients using antihypertensive drug, significant differences in SBP were observed following MMBIT. Based on the above analysis, MMBIT exhibits differential effects in blood pressure regulation and SSS analysis. The clinical reduction in blood pressure is relatively modest, while there is significant improvement in anxiety but not in depression. Among 739 patients, the intervention of MMBIT did not lead to significant improvement in D-factor. However, there were significant improvements in the A-factor and the AD-factor.

Currently, the treatment approaches for EH mainly include pharmacological and non-pharmacological interventions. The 2021 Chinese Guidelines for the Management of Hypertension suggest that lifestyle interventions should be initiated immediately upon the diagnosis of hypertension[35]. It emphasizes that lifestyle interventions are equally important as pharmacological treatment. MMBIT holds broad prospects for clinical application. Based on existing research findings, MMBIT is a psychological therapy rooted in the holistic perspective of Mongolian medicine. It encompasses a comprehensive range of interventions, including health guidance, management, dietary modifications, and positive psychological suggestions. These interventions aim to provide patients with multifaceted services, enabling them to maintain a positive psychological state and manage their physical symptoms. Furthermore, this therapy plays a certain positive role in stabilizing blood pressure.

6. Limitations

This study has several limitations. Firstly, the study was conducted during the 2022 pandemic period, and an online survey questionnaire was used as the data collection method. Many older patients who are not proficient in using smartphones could not be included in this study. This may have resulted in a sample that does not fully represent the actual population receiving MMBIT, as in reality, a larger number of elderly individuals accept this therapy. Secondly, during the home-based period, patients were responsible for self-monitoring their blood pressure. While efforts were made to ensure the reliability of blood pressure readings through the submission of blood pressure images and guidance on blood

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pressure measurement via the internet, it still cannot guarantee the accuracy of blood pressure measurements for all participants in this study. Thirdly, this study only assessed the blood pressure and somatic symptoms pre- and post- MMBIT. Subsequent follow-up studies will be conducted to further investigate.

Conclusions

In summary, there is still a lack of sufficient research on the bidirectional impact between MMBIT and EH [8]. There is a shortage of data to elucidate the relationship between the two. The novelty of this study lies in its first attempt to demonstrate the effects of MMBIT on EH patients using blood pressure measurements and SSS. MMBIT proves highly beneficial for the majority of EH patients. It aids in maintaining stable blood pressure levels and improving somatic symptoms and anxiety among individuals with EH. Particularly, patients with a disease duration of 1-5 years benefit significantly from this therapy.

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