

Investigation and Analysis on Constitution and Syndrome Types of High-Normal Blood Pressure People in Hebei Area in the Year of 2017

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Abstract: Purpose: To investigate the distribution of population and syndrome patterns in high-normal blood pressure people in Hebei area. Methods: A total of 453 people who met the inclusion criteria were investigated using a high-normal blood pressure human mass survey questionnaire. Results: of the 453 constitution types of high-normal blood pressure patients in Hebei area, 184 were the constitution of yin-yang harmony, accounting for 40.62% of the total; 73 were the constitution of yang asthenia, accounting for 16.11% of the total; 59 were the constitution of damp-heat, accounting for 13.02% of the total; 52 were the constitution of qi asthenia, accounting for 11.48% of the total; 8 were the allergic constitution, accounting for 1.77% of the total. In addition, of their syndrome types, the syndrome of liver-fire hyperactivity were accounting for 30.24%; the syndrome of excessive phlegm-dampness were accounting for 26.71%; the syndrome of yin-deficiency and yang-predominance were accounting for 23.18%; the syndrome of deficiency of both yin and yang were accounting for 19.87%. Conclusion: Among the high-normal blood pressure people in Hebei area, the proportion of the constitution of yin-yang harmony is the highest, followed by the constitution of yang asthenia, the constitution of damp-heat, and the constitution of qi asthenia, with the lowest percentage being the allergic constitution. In addition, when it comes to the syndrome of them, the proportion of the syndrome of liver-fire hyperactivity is the highest, followed by the syndrome of yin-deficiency and yang-predominance, and the lowest is the syndrome of deficiency of both yin and yang.

Keywords: High-normal blood pressure people; Constitution types; Hebei area; Regularities of distribution; Sleep disorders

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DOI: <http://doi.org/10.30564/jams.v1i3.57>

1. Introduction

Normal high blood pressure is the critical state between normal blood pressure and high blood pressure, which belongs to the category of not existing diseases of TCM (traditional Chinese medicine). High-normal blood pressure has the characteristics of high detection rate and low awareness rate. However, high-normal blood pressure people have suffered different degrees of damage to the vascular endothelial function and early damage to heart, brain, kidney and other target organs. Based on the above considerations, from the perspective of "treating disease", Traditional Chinese Medicine Development Center of Hebei Province, Cangzhou Hospital of Integrated TCM-WM·Hebei, Traditional Chinese Medicine Hospital of Hebei Province and other units (hereinafter referred to as the cooperative units) unite the high-normal blood pressure population in Hebei area. The epidemiological investigation of the TCM constitution and syndrome distribution was carried out, and the correlation between high-normal people's group quality, syndrome type, risk factors, and sleep status was further analyzed, and experimental data were provided for clinical intervention. This

article examines the physical fitness of 453 eligible individuals included in the collaborative unit from March 1, 2017 to November 1, 2017. The report is now as follows:

2. Objects and Methods

2.1 Inclusion and Exclusion Criteria

Inclusion criteria: (1) The blood pressure in the consulting room meets the diagnostic criteria for high blood pressure; (2) $18 \leq \text{age} \leq 89$; (3) Drugs that affect blood pressure and its rhythm cannot be taken after inclusion; (4) voluntarily accept this study and sign it Informed consent;

Exclusion criteria: (1) People with essential hypertension or secondary hypertension; (2) Severe primary diseases such as heart, brain, liver, kidney, and hematopoietic system, mental patient groups, and sleep apnea syndrome; (3)) Persons aged <18 years or >89 ; (4) Night workers; (5) Pregnant women; (6) Other clinical trial participants who are participating in the evaluation of the results of this research.

2.2 Survey Methods

The training of blood pressure measurements in the clinic is conducted to ensure the accuracy of the measured blood

pressure in the consultation room. The training on the normal high-normal blood pressure population mass survey questionnaire was conducted to ensure the consistency of the clinical questionnaire data.

2.3 Survey Objects

Based on the above-mentioned inclusion criteria, a total of 453 people aged between 18 and 89 were included in the survey from March 1, 2017 to November 1, 2017. There were 236 men and 217 women.

2.4 Survey Contents

Unified high-value blood pressure people's mass survey questionnaire was issued. The main contents of the questionnaire were related to general conditions, identification of Chinese medicine physique, syndrome type, and risk factors (Pittsburgh Sleep Quality Index).

2.5 Statistical Analysis Methods

All statistical calculations were analyzed with SPSS 21.0 statistical software. $P < 0.05$ was considered statistically significant as the difference. $P > 0.05$ was not statistically significant.

3. Results

3.1 General Situation

3.1.1 Distribution of Gender and Age in High-Normal Blood Pressure Population

Table 1. Distribution of Gender and Age in High-Normal Blood Pressure Population

	Male		Female	
	n	%	n	%
(18-44) Youth Age	45	9.93%	35	7.73%
(45-59) Middle Age	113	24.94%	96	21.19%
(60-89) Old Age	78	17.22%	86	18.98%

From Table 1, we can see 453 cases of this investigation, 236 men and 217 women, male to female ratio of 1.087:1. Among all age groups, the highest incidence rate was 46.13% in the middle-aged group, followed by 36.20% in the elderly group, and the youngest group had the lowest incidence rate, 17.66%. The survey data of this group suggested that the high-normal blood pressure people are most concentrated in the middle-aged age group of 45-59 years old.

3.1.2 Smoking and Drinking Population Distribution in High-Normal Blood Pressure Population

Table 2. Smoking and Drinking Population Distribution in High-Normal Blood Pressure Population

	Smoking	Drinking
n	139	116
%	30.68%	25.61%

From Table 2, we can see that of the 453 people with normal high blood pressure, 139 had smoking habits, accounting for 30.68% of the total; 116 drinking habits accounted for 25.61% of the total.

3.1.3 Distribution of Past Diseases in People with High-Normal Blood Pressure

Table 3. Distribution of Past Diseases in People with High-Normal Blood Pressure

	Diabetes Mellitus	Hyperlipidemia	Insomnia	Obesity
n	58	181	67	120
%	12.80%	39.96%	14.79%	26.49%

Table 3 shows that of the 453 patients with normal high blood pressure, in the previous history of past diseases, 181 were hyperlipidemia, accounting for 39.96% of the total; 120 were obese, accounting for 26.49% of the total; the number of people with Insomnia was 67, accounting for 14.79% of the total; and those with diabetes were 58 or 12.80% of the total.

3.2 The Distribution of Constitution and Syndrome Types of in High-Normal Blood Pressure People

3.2.1 The Distribution of Constitution Types of in High-Normal Blood Pressure People

Table 4. The Distribution of Constitution Types of in High-Normal Blood Pressure People

Constitution Types	n	%
Constitution of Yin-Yang Harmony	184	40.62%
Constitution of Qi Asthenia	52	11.48%
Constitution of Qi Stagnation	22	4.86%
Constitution of Yang Asthenia	73	16.11%
Constitution of Damp-Heat	59	13.02%
Allergic Constitution	8	1.77%
Constitution of Yin Asthenia	31	6.84%
Constitution of Phlegm-Dampness	10	2.21%
Constitution of Blood Stasis	14	3.09%

As can be seen from Table 4, among 453 patients with high-normal blood pressure, 184 were the constitution of yin-yang harmony, accounting for 40.62% of the total; 73 were the constitution of yang asthenia, accounting for 16.11% of the total; 59 were the constitution of damp-heat, accounting for 13.02% of the total; 52 were the constitution of qi asthenia, accounting for 11.48% of the total; 31 were the constitution of yin asthenia, accounting for 6.84% of the total; 22 were the constitution of qi stagnation, accounting for 4.86% of the total; 14 were the constitution of blood stasis, accounting for 3.09% of the total; 10 were the constitution of phlegm-dampness accounting for 2.21% of the total; 8 were the allergic constitution,

accounting for 1.77% of the total. The proportion of the constitution of yin-yang harmony is the highest, followed by the constitution of yang asthenia, the constitution of damp-heat, and the constitution of qi asthenia, with the lowest percentage being the allergic constitution.

3.2.2 Analysis on the Syndrome Types of High-Normal Blood Pressure People

Table 5. Analysis on the Syndrome Types of High-Normal Blood Pressure People

Distribution of Syndrome Types	n	%
Liver-fire Hyperactivity	137	30.24%
Yin-Deficiency and Yang-Predominance	105	23.18%
Excessive Phlegm-Dampness	121	26.71%
Deficiency of Both Yin and Yang	90	19.87%

As can be seen from Table 5, among 453 patients with high-normal blood pressure, 137 were the syndrome of liver-fire hyperactivity, accounting for 30.24%; 121 were the syndrome of excessive phlegm-dampness, accounting for 26.71%; 105 were the syndrome of yin-deficiency and yang-predominance, accounting for 23.18%; 90 were the syndrome of deficiency of both yin and yang, accounting for 19.87%. The proportion of the syndrome of liver-fire hyperactivity is the highest, followed by the syndrome of yin-deficiency and yang-predominance, and the lowest is the syndrome of deficiency of both yin and yang.

3.2.3 The Correlation between Constitution and Syndrome Types of High-Normal Blood Pressure People

Table 6. The Correlation between Constitution and Syndrome Types of High-Normal Blood Pressure People

	a	b	c	d	e	f	g	h	i
A	42	16	6	25	20	6	11	6	5
B	48	15	4	14	5	3	9	2	5
C	52	11	6	18	19	1	5	4	5
D	40	7	6	12	13	1	5	2	4

Notes: a, b, c, d, e, f, g, h, and i respectively represent the constitution types: Constitution of Yin-Yang Harmony, Constitution of Qi Asthenia, Constitution of Qi Stagnation, Constitution of Wang Asthenia, Constitution of Damp-Heat, Allergic Constitution, Constitution of Yin Asthenia, Constitution of Phlegm-Dampness, and Constitution of Blood Stasis;

A, B, C, and D respectively represent the syndrome types: Liver-fire Hyperactivity, Yin-Deficiency and Yang-Predominance, Excessive Phlegm-Dampness and Deficiency of Both Yin and Yang.

The syndrome types: Liver-fire Hyperactivity, Yin-Deficiency and Yang-Predominance, Excessive Phlegm-Damp-

ness and Deficiency of Both Yin and Yang: $P < 0.05$, the differences were statistically significant, suggesting that there is a correlation between syndrome type and physical fitness.

It can be seen from Table 6 that in the syndrome of liver-fire hyperactivity, the proportion of the constitution of yin-yang harmony is the highest, accounting for 30.67%, followed by the constitution of yang asthenia, accounting for 18.25%; in the syndrome of yin-deficiency and yang-predominance, the constitution of yin-yang harmony is the highest, accounting for 45.71%, followed by the constitution of qi asthenia, accounting for 14.29%; in the syndrome of excessive phlegm-dampness, the constitution of yin-yang harmony is the highest, accounting for 42.97%, followed by the constitution of damp-heat, accounting for 15.70%; in the syndrome of deficiency of both yin and yang, the constitution of yin-yang harmony is the highest, accounting for 44.44%, followed by the constitution of damp-heat, accounting for 14.44%.

3.3 Analysis on the Correlation between Sleep Status and Constitution and Syndrome Types of High-Normal Blood Pressure People

3.3.1 The Distribution of Sleep Status of in High-Normal Blood Pressure People

Table 7. The Distribution of Sleep Status of in High-Normal Blood Pressure People

	Basically Regular	Irregular
n	281	172
%	62.03%	37.97%

As can be seen from Table 7, among the 453 patients with high-normal blood pressure, the number of patients who have basically regular sleep status was 281, accounting for 62.03%; the number of the number of patients who have irregular sleep status was 172, accounting for 37.97%.

3.3.2 Analysis on the Correlation between Sleep Status and Constitution Types

Table 8. Analysis on the Correlation between Sleep Status and Constitution Types

	a	b	c	d	e	f	g	h	i
Irregular Sleep	57	21	10	24	33	3	8	3	13
Regular Sleep	124	30	11	48	24	4	23	7	10

Notes: a, b, c, d, e, f, g, h, and i respectively represent the constitution types: Constitution of Yin-Yang Harmony, Constitution of Qi Asthenia, Constitution of Qi Stagnation, Constitution of Wang Asthenia, Constitution of Damp-Heat, Allergic Constitution, Constitution of Yin Asthenia, Constitution of Phlegm-Dampness, and Constitution of Blood Stasis.

$P < 0.05$, the differences were statistically significant, suggesting that there was a correlation between sleep irregularity and constitution types; $P < 0.05$, the differences were statistically significant, suggesting that there was a correlation between sleep regularity and constitution types.

From Table 8, it can be seen that, of the people who have basically regular sleep, the proportion of the constitution of yin-yang harmony is the highest, accounting for 33.14%, followed by the constitution of damp-heat, accounting for 19.19%, while the lowest is the allergic constitution and the constitution of phlegm-dampness, accounting for 1.4%; in addition, of the people who have irregular Sleep, the proportion of the constitution of yin-yang harmony is the highest, accounting for 44.13%, followed by the constitution of yang asthenia, accounting for 17.08%, while the lowest is the allergic constitution, accounting for 1.7%.

3.3.3 Analysis on the Correlation between Sleep Status and Syndrome Types

Table 9. Analysis on the Correlation between Sleep Status and Syndrome Types

	A	B	C	D
Irregular Sleep	60	41	39	32
Regular Sleep	77	63	82	59

Notes: A, B, C, and D respectively represent the syndrome types: Liver-fire Hyperactivity, Yin-Deficiency and Yang-Predominance, Excessive Phlegm-Dampness and Deficiency of Both Yin and Yang.

$P < 0.05$, the differences were statistically significant, suggesting that sleep irregularities are related to the syndrome types; $P < 0.05$, the differences were statistically significant, suggesting that there is a correlation between sleep patterns and syndrome types.

From Table 9, it can be seen that, of the people who have irregular Sleep, the proportion of the syndrome of liver-fire hyperactivity is the highest, accounting for 34.88%, followed by the syndrome of yin-deficiency and yang-predominance, accounting for 23.84%, while the lowest is the syndrome of deficiency of both yin and yang, accounting for 18.60%; in addition, of the people who have basically regular sleep, the proportion of the syndrome of excessive phlegm-dampness is the highest accounting for 29.18%, followed by the syndrome of liver-fire hyperactivity, accounting for 27.40%, while the lowest is the syndrome of deficiency of both yin and yang, accounting for 21.00%.

4. Discussion

High-normal blood pressure is the transitional stage from normal blood pressure to hypertension, and the disease is still in its embryonic state. It belongs to the category of "occult syndromes", "Pro-disease" and "coming disease"^[1]. The constitution of TCM believes that differences in constitution determine the susceptibility of individuals to diseases, and that different constitutions have certain susceptibility to the occurrence of diseases. Constitution factors are related to whether the body is affected, the tendency to disease development and the development, changes and prognosis after the disease^[2]. High-normal blood pressure is a necessary stage of high blood pressure. Epidemiological investigation of the distribution of the syndromes of high-normal blood pressure people will help to understand the nature of high-normal blood pressure.

Clinical studies in the past five years have shown that there is a close relationship between high-normal blood pressure people and the type of TCM constitution. Liqun Tang et al.^[3] found that the normal high blood pressure was mainly distributed in the calm-type, Qi-deficiency, and yin deficiency-type populations. There is a close relationship with qi deficiency type and yin deficiency type. And that the normal high blood pressure Chinese medicine type has its own unique performance. Hongbo Li et al.^[4] investigated the prehypertension TCM constitution of community residents in Nanning and found that the prehypertensive population in Nanning had a tendency of qi deficiency and yin deficiency, and there was a rising risk of cardiovascular disease. Junhong Kong et al.^[5] observed the characteristics of traditional Chinese medicine in pre-hypertension population in Changzhou City and found that the pre-hypertension risk factors were yin deficiency, blood stasis, moist heat, qi stagnation, and dampness. The crowd took corresponding physical adjustment measures. Lianhua Yin et al.^[6] studied the correlation between traditional Chinese medicine constitution and arteriosclerosis in 300 prehypertensive patients and found that the prepulse patients had significantly higher bi-vessel pulse wave velocity, early changes in arterial stiffness, and hypertension. The degree of arteriosclerosis in pre-experimental patients was related to yin deficiency, phlegm and sputum blood quality. Jianxia Gu et al.^[7] found that the TCM syndromes of the high-normal blood pressure group are mostly liver stagnation and spleen deficiency type, liver stagnation and fire type, and hot heat disturbance type. Chuanhua Yang et al.^[8] found that the normal high blood pressure before the age of 50 was mostly irritated by liver and blood, and after the age of 60, there were more yin deficiency and impotence and yin and yang deficiency. Xi-

aoyuan Wang et al.^[9] showed that the patients with normal high blood pressure were mainly in the liver, spleen, and kidney; the syndromes of traditional Chinese medicine were mostly liver and kidney yin deficiency, phlegm and blood stasis, and liver qi stagnation; Deficiency syndrome is mostly caused by liver and kidney yin deficiency.

The survey of constitution and syndrome types of 453 high-normal blood pressure patients in Hebei area revealed that: of the 453 constitution types of high-normal blood pressure patients in Hebei area, the proportion of the constitution of yin-yang harmony is the highest, followed by three biased constitution types in turn: the constitution of yang asthenia, accounting for 16.11%; the constitution of damp-heat, accounting for 13.02%; the constitution of qi asthenia, accounting for 13.02%. When it comes to their syndrome types, the proportion of the syndrome of liver-fire hyperactivity is the highest, accounting for 30.24%, followed by the syndrome of excessive phlegm-dampness, accounting for 26.71%; the syndrome of yin-deficiency and yang-predominance, accounting for 23.18%; the syndrome of deficiency of both yin and yang, accounting for 19.87%. This survey has defined the distribution law of constitution and syndrome types in the high-normal blood pressure patients in Hebei area. It will provide an important basis for future clinical intervention programs, and will also provide powerful clinical data for further popular science lectures and monographs.

With the regard to the prevention and treatment of hypertension, people are currently paying more attention to how to effectively reduce the overall risk of cardiovascular disease in patients. Therefore, the impact of various risk factors on hypertension patients has received increasing attention in recent years. China Hypertension Prevention Guidelines pointed out that high sodium, low potassium diet, overweight and obesity, drinking, mental stress and other factors are risk factors for the development of hypertension^[10], Xiaohong Tang et al.^[11] analyzed the normal high blood pressure of civil servants in Changsha City Investigations revealed that age, smoking, alcohol consumption, family history, blood lipids, blood glucose, and body mass index were closely related to the occurrence of high-normal blood pressure and high blood pressure. More than 10% of normal high-normal blood pressure and high blood pressure civil servants combined 3 and more than 3 risk factors. Huanhuan Zhao et al.^[12] surveyed the normal high blood pressure residents in the Tianjin community and found that the body mass index, waist circumference, triglyceride, male ratio, and alcohol consumption ratio of the normal high blood pressure group in different age groups were higher than those in

the normal blood pressure group. 70-year-old high-normal blood pressure residents have the phenomenon of known high blood pressure risk factors. In recent years, studies have found that insomnia is closely related to hypertension among many risk factors. Because the normal high blood pressure non-dipper population has more serious autonomic dysfunction and diurnal rhythm of melatonin secretion, resulting in non-dipper blood pressure affect brain function, so the normal high blood pressure non-dipper population than the skeleton type population Severe sleep disorders, sleep disorders become independent risk factors for non-dipper blood pressure. Jiexia Chen et al.^[13] found that the resting activity and circadian rhythm of sleep arousal were changed in patients with non-dipper hypertensive patients compared with patients with dipper-type hypertension, with nocturnal activity increased, sleep benefit decreased, nocturnal awakening points and sleep rhythm. Increased fragmentation, activity and sleep may be two important factors affecting blood pressure circadian rhythm. Therefore, it is of great significance to focus on the prevention of normal high blood pressure by focusing on the sleep quality of people with normal high blood pressure, especially improving sleep quality and improving blood pressure circadian rhythm.

5. Conclusion

For the intervention of high-normal blood pressure people, we prefer simple and convenient ear acupuncture therapy. More clinical studies have shown that: auricular acupressure as a typical method of non-pharmacological intervention, is a traditional method of Chinese medicine treatment, with dredge meridians, adjust the organs, balance yin and yang, prevent health care role^[14]. Ping Li^[15] found that ear acupressure treatment can significantly reduce the systolic blood pressure and diastolic blood pressure in patients with Phase I of simple hypertension, so as to achieve the purpose of controlling blood pressure. The ear has a close relationship with the body's organs and meridians. It is said in "Lingshu • Kouwen" that: "The ear gathers in the place of the pulse". At the same time, modern research found that there is a close relationship between auricular specificity and biomolecular activity, including gene mutations, gene expression and regulation. The electrophysiological characteristics of the auricular point reflect the specificity of the physiological function and pathological changes of the body, and its coincidence rate has a clinical significance^[16]. Xuezhong Guan et al.^[17] found that in addition to the distribution and dominance of the nerve structure in the auricle, an outstanding morphological feature is the distribution of vagal and glossopharyngeal nerves. These nerves contain parasympathetic

nerve fibers. In most patients with hypertension, enhancement of sympathetic nervous system activity is the initiating factor of hypertension. The enhancement of sympathetic nerves on the heart and blood vessels is the basis for maintaining blood pressure. Auricular acupressure in the treatment of hypertension may increase the excitability of the parasympathetic nerve to suppress the abnormal sympathetic state of the sympathetic nerve, thereby reducing the blood pressure effect^[18]. In the autonomic nervous system, the sympathetic nerves are excited during the day, and the nighttime nerve tension is reduced, while the parasympathetic excitability is enhanced, which is one of the factors of the change of blood pressure rhythm. Therefore, auricular acupressure from the regulation of law and blood pressure to achieve the therapeutic goals may be related to the regulation of the autonomic nervous system, but also the auricular acupressure play a role in the adjustment of liver and kidney, the role of a possible mechanism of calming the nerves.

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