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The Study of Soldier's Sasang constitutions

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Abstract

This research aims to analyze the Sasang constitutions of army soldiers using the measuring tools which were developed by the Korea Institute of Oriental Medicine the government-affiliated Ministry of Science. Then, this research compares the The Sasang constitutions of soldiers to the Sasang typology of Yi Je-Ma, who systemized Korean traditional medicine in 1800s. Also, by comparing each result of subjected army unit, we will recommend proper diet management at regular intervals in order to enhance morals of soldiers. Finally, we also suggest to apply Sasang constitution to consultation in military so as to strengthen the combat power of the army.

Keywords: *So-Eum type, So-Yang type, Tae-Eum type, Tae-Yang type, Yi Je-Ma, Diet, Basic Statistics, ANOVA analysis.*

1. Introduction

In the field of oriental medicine[1], The Sasang constitutions[2] deal with personal health management. The human body is an organism operated by huge and complicated systems. Even if a person has the same cold, the symptoms may be different. According to Yi Je-Ma's《Donguisusebowon[3]》published in the 1800s, human constitutions, or body types,are distinguished into four types: Tae-Eum[4]・ So-yang[5]・ Tae-Yang[6]・ So-Eum[7], united on the profound clinical experience of examining numerous patients. The basic characteristics of the types are as follows: A Tae-Yang type has big lungs but small liver[8] ; a Tae-Eum type has a big liver but small lungs[9] ; a So-Yang type has a big spleen but a small kidney [10], a So-Eum type has a big kidney but a small spleen[11]. Yi Je-Ma pointed out that out of 10,000 people, there are about 5,000 Tae-Eum types (50%), 3,000 So-Yang types (30%), 2,000 So-Eum types (20%), and only 3 to 10 Tae-Yang types. In 2017, The Korea Institute of Oriental Medicine suggested characteristics, health management, and beneficial foods united on Sasang constitutions in "Study on The Sasang constitutions."

[1] medicine(韓醫學)
[2] Sasang constitutions (四象醫學)
[3] Donguisusebowon (東醫壽世保元, The Top of Maintenance Longlife in Oriental Medicine)
[4] Tae-Eum (太陰)
[5] So-yang (少陽)
[6] Tae-Yang (太陽)
[7] So-Eum (少陰),
[8] a big lungs but small liver (肺大肝小)
[9] a big liver but small lungs (肝大肺小)
[10] a big spleen but a small kidney (脾大腎小)
[11] a big kidney but a small spleen (腎大脾小)

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Therefore, this study aims to initiate a survey on soldiers using the measuring tools which were developed by the Korea Institute of Oriental Medicine the government-affiliated Ministry of Science in order to conduct comparative analysis with Yi Je-Ma's research, to analyze the Sasang body types of soldiers and units, and ultimately to suggest recommendations for strengthening their combat power.

The content of this research was measured by 16 questions on a 4-point scale; dietary habits, the presence of sweat, body shapes, face types, mind-set, voices, gaits, excrement, sleep patterns, dialogue, features, drinking patterns, social life, mentality, and feelings. The research subjects are 472 soldiers chosen from various units and ranks who responded candidly as Table. 1 shows. Considering security issues of military, the units are categorized with A, B, and C, and subordinate units are categorized with a,b, and c. Analyzing survey data, we used statistical data analysis in EXCEL such as basic statistics, ANOVA analysis, and T-Test analysis.

Table 1. Participants number by unit & rank

	Unit	Private	Private first class	Specialist	Sergeant	Total
A	a Unit	9	32	23	9	73
	b Unit	13	25	24	12	74
	c Unit	3	9	12	8	32
	Subtotal	25	66	59	29	179
B	d Unit	12	28	33	12	85
	e Unit	10	11	15	4	40
	Subtotal	22	39	48	16	125
C	f Unit	20	25	22	23	88
	g Unit	5	16	22	7	50
	h Unit	8	8	8	6	30
	Subtotal	33	49	50	36	168
	Total Sum	73	142	164	93	472

2. Results

The result of this study is as follows.
First, analysis on the Sasang constitutions of each entire unit.
Second, analysis on the Sasang constitutions of each subordinate unit.
Third, comparative analysis with the result of Yi Je-Ma.
Fourth, ANOVA analysis on each unit.

2.1 Analysis on Sasang constitutions of each entire unit

Table 2 shows the analysis of the questionnaires regarding Sasang constitutions of each entire unit. According to the results, Tae-Eum type made up the largest percent of all the soldiers at 44% (208 soldiers), followed by So-Yang type at 29% (136 soldiers), Tae-Yang type at 18%(87 soldiers), and So-Eum type at 9% (41 soldiers).

Table 2. Analysis on the Sasang constitutions of each entire unit

The Sasang constitutions	number of people	Relative ratio
Tae-yang type	87	18%
So-yang type	136	29%
Tae-eum type	208	44%
So-eum type	41	9%
Total	472	100%

2 Analysis on the Sasang constitutions of each subordinate unit

2.2.1 A unit Sasang constitution analysis

Table 3 shows the analysis of the questionnaires regarding the Sasang constitutions of unit A. According to the result, Tae-Eum type accounts for the largest percent (63%, 32 soldiers), followed by So-Yang type (25%, 8 soldiers), So-Eum type (9%, 3 soldiers), and Tae-Yang type (3%, 1 soldier).

Table 3. Analysis on the Sasang constitutions of Unit A

The Sasang constitutions	number of people	Relative ratio
Tae-yang type	1	3%
So-yang type	8	25%
Tae-eum type	20	63%
So-eum type	3	9%
Total	32	100%

2.2.2 Unit B Sasang constitution analysis

Table 4 shows the analysis of the questionnaires regarding the Sasang constitutions of unit B. According to the result, Tae-Eum type and So-Yang type made up the largest percents at 42%(31 soldiers), followed by So-Eum type at 9%(7 soldiers), and Tae-Yang type at 7% (5 soldiers).

Table 4. Analysis on the Sasang constitutions of Unit B

The Sasang constitutions	number of people	Relative ratio
Tae-yang type	5	7%
So-yang type	31	42%
Tae-eum type	31	42%
So-eum type	7	9%
Total	74	100%

2.2.3 Unit C Sasang constitution analysis

Table 5 shows the analysis of the questionnaires regarding the Sasang constitutions of unit C. According to the result, Tae-Eum type made up the highest percent at 48% (35 soldiers), followed by So-Yang type at 33% (24 soldiers), Tae-Yang type at 15%(11 soldiers), and So-Eum type at 4% (3 soldiers)

Table 5. Analysis of the Sasang constitutions of Unit C

The Sasang constitutions	number of people	Relative ratio
Tae-yang type	11	15%
So-yang type	24	33%
Tae-eum type	35	48%
So-eum type	3	4%
Total	73	100%

2.2.4 Analysis on Sasang constitutions of each subordinate unit

Table 6 shows the analysis of the Sasang constitutions of each subordinate unit. According to the result, h unit has the most Tae-Yang type soldiers at 33%, followed by e unit at 30%.
b unit has the most So-Yang type soldiers at 42%, followed by c unit at 33%.
a unit has the most Tae-Eum type soldiers at 63%, followed by c unit at 48%.
f unit has the most So-Eum type soldiers at 23%, followed by g unit at 30%.

Table 6. Analysis of the Sasang constitutions of each subordinate unit

The Sasang constitutions	a	b	c	d	e	f	g	h
Tae-yang type	3%	7%	15%	12%	30%	10%	16%	33%
So-yang type	25%	42%	33%	32%	20%	23%	26%	26%
Tae-eum type	63%	42%	48%	46%	40%	43%	44%	36%
So-eum type	9%	9%	4%	11%	10%	23%	14%	4%

2.3 Comparative analysis with the results of Yi Je-Ma

Table. 7 shows the results of comparative analysis on the entire unit and Dongmu(東武) Yi Je-Ma's research. Compared to Yi Je-Ma's research, Tae-Yang type increases to 18%, showing the biggest differences from So-Eum type, which declined 11%. Moreover, Tae-Eum type declined 6% and So-Yang type decreased by 1%. The results show that recent Sasang constitutions have change quite a bit from those of the 1800s.

Table 7. Comparative analysis with the result of Yi Je-Ma

Sasang Constitution	Total Unit	Result of Yi Je-Ma
Tae-yang type	18%	0.1%
So-yang type	29%	30%
Tae-eum type	44%	50%
So-eum type	9%	20%
Total	100%	100%

2.4 ANOVA analysis on each unit

The ANOVA analysis looked at whether the Sasang constitution of each unit has an average difference of at the 5% significance level.

2.4.1 ANOVA analysis of three units

As Table. 8 shows, the ANOVA analysis did not find a big difference in the average. The F ratio is le ss than the F Rejection value and the P-value is greater than the significance level of 0.05, it would concl ude in favor of the null hypothesis. Therefore, the difference among the the Sasang constitutions of three units is minor.

Table 8. ANOVA analysis of three units

Factors of variation	Sum of square	Degree of freedom	Square Average	F Ratio	P-Value	F Dismissal
Processing	2.191842	2	1.095921	1.387339	0.250762	3.014949
Residual difference	370.484	469	0.789945			
Total	372.6758	471				

2.4.2 ANOVA analysis on each subordinate unit of unit C

As Table. 9 shows, the result of the ANOVA analysis found that f unit and h unit have differences. The F Ratio is greater than the F Rejection value and the P-value is less than the significance level of 0.05. Then, it would reject the null hypothesis and conclude in favor of the alternative hypothesis. Therefore, the The Sasang constitutions of the three subordinate units of unit C have differences an average at 5% significance level.

Table 9. ANOVA analysis of unit C

Factors of variation	Sum of squares	Degree of freedom	Square Average	F Ratio	P-Value	F Dismissal
Processing	12.99914	2	6.499572	7.541444	0.00073	3.049792
Residual difference	144.7903	168	0.861847			
Total	157.7895	170				

Also, among the three subordinate units of unit C, we identified which unit's Sasang constitution had the biggest differences between averages by using two sample T-test. According to the results, among the subordinate units of unit C,
The Sasang constitutions of f unit and h unit have the largest difference, while as f unit and g unit have the smallest differences in average.

Table 10. T-Test: Two groups of uniformly variance

T-Test :Two groups of uniformly variance	f Base	h Base	g Base	h Base
Average	2.120879	2.8	2.56	2.8
Dispersion	0.863004	0.855172	0.863673	0.855172

Number of observations	91	30	50	30
Pooled Dispersion	0.861095		0.860513	
Hypothesis Difference	0		0	
Degree of freedom	119		78	
t Statistic	-3.47624		-1.1203	
P(T<=t) One-sided test	0.000355		0.133012	
t Rejection value One-sided test	1.657759		1.664625	
P(T<=t) Two-sided test	0.000711		0.266025	
t Rejection value Two-sided test	1.9801		1.990847	

3. Conclusion

The result of analyzing the Sasang constitution of army soldiers using the measuring tools which were developed by The Korea Institute of Oriental Medicine a government-affiliated institute of Ministry of Science are as follows.

First, the analysis of the questionnaires about the Sasang constitution of entire units found that Tae-Eum type made up the largest percent of all soldiers at 44% (208 soldiers), followed by So-Yang type at 29% (136 soldiers), Tae-Yang type at 18%(87 soldiers), So-Eum type at 9% (41 soldiers). Thus, Tae-Eum type is the largest group.

Second, the result of the comparative analysis on whole units and Dongmu(東武) Yi Je-Ma's research identifies that Tae-Yang type increases to 18%, showing the biggest differences from So-Eum type, which has declined 11%. Moreover, Tae-Eum type declined 6% and So-Yang type declined by 1%. The results show that recent Sasang constitutions have huge differences from those of the 1800s.

Third, the ANOVA analysis of the three subordinate units did not show major differences among each subordinate unit. However, the analysis of the Sasang constitutions of subordinate units of one unit shows meaningful differences in the average at the 5% significance level

Thus, based on this research, especially by comparing the result of each unit, we suggest deploying soldiers in accordance with the characteristics as well as diet plans for, each Sasang constitution. Also, we recommend applying the Sasang constitution to military in order to strengthen the combat power of the army.

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