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**A STATISTICAL APPROACH TO TRADITIONAL
VIETNAMESE MEDICAL DIAGNOSES STANDARDIZATION***

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I. Introduction

The Vietnamese Traditional Medicine has some thousand years of development and becomes an important part of oriental medicine. In diagnosis, prophylaxis and therapeutics one can see it as:

- Four diagnoses, "eight rules diagnoses"...
- Self-treatment methods as exercises, massage, acupression...
- Treatments without medicament as acupuncture, moxibustion...
- Treatments using medicament as herbal plants..

Unfortunately, after many changes in the history of Vietnam, the traditional medicine left to later generations is rather practical without a theoretical basis. Traditional practitioners use this diagnosis, treatment methods in combination with their own experiences and get good, sometime wonderful results. However, they are not able to explain them scientifically.

In general, the procedure of traditional medicine diagnosis consists of so-called "four diagnoses" (Inspection, Hearing, Interrogation, Palpation) for so-called "eight rules diagnoses" (Yin-Yang, Cold-Heat, External-Internal,

Empty-Plenitude). According to the oriental medicine, health is the balance between Yin and Yang, vital energy and blood. Loosing balance, one get disease. The basis of traditional medicine is rebalancing Yin and Yang. In the Traditional Vietnamese Medicine, the "eight rules diagnoses" play a basal role. Without knowing exactly the Yin-Yang tendention, Cold-Heat state, External-Internal position of disease and Empty-Plenitude state of the patient traditional practitioners are hardly to treat them well by applying combination of eight therapy methods based on traditional medicine. In this paper, we briefly describe the first results of the statistical approach for Cold-Heat diagnosis standardization as our first work in the "eight rules diagnoses" standardization of Traditional Vietnamese Medicine. Finally, some conclusions and suggestions for further work are given.

II. Summary of results

II.1. Methodology

Until now, the traditional method used for Cold-Heat diagnosis is based mainly on experiences and professional feeling of practitioners.

After entering the Institute, a patient would be examined by an practitioner and answers his questions. The result of the exam and the answers are the main information for the practitioner, who combines it to his own experiences and professional feeling to decide the state of the patient: whether he is cold, heat or mixed. For the new methods of Cold-Heat diagnosis, a series of symptoms as lip colour, finger colour, attitude of the patient... will be examined. Each symptom has two values, one of cold and another of heat. Using Chi-square statistic to test the significance of differency, we say that the patient is cold if the percentage of cold symptoms is significantly large. Inversely, the patient is heat if the percentage of heat symptoms is significantly large. If not, he is mixed.

In this period of the survey, the same weight has been given for each symptom. An arbitrary symptom as "pale lip", "pale tongue" is considered as an unit to measure cold or heat state of the patient. Different weights will be given in further surveys for better diagnosis.

Some control variables as the date of data collection, weather, age, sex, occupation, blood pressure, pulse, body temperature of the patient are under

consideration. In fact, practitioners always count for these factors as they have really effect on Cold-Heat state of the patient.

For each patient, there are computer-diagnosis and man-diagnosis for comparison. First, we consider the difference between these two diagnoses for each case, then the difference on the sample. Finally, we examine the importance of each symptom for practitioners by testing the effect of those symptoms on their diagnosis.

II.2. The questionnaire

The questionnaire is divided into 3 parts:

Part I collects information on control variables as:

- Weather factors: Date, temperature, air pressure, humidity, weather.
- Background and some measures of the patient: Name, age, sex, occupation, blood-pressure, pulse, body temperatures (at arm pits, finger, toe respectively)
- Disease of the patient: Doctor's diagnosis (modern medicine), traditional practitioner's diagnosis (traditional medicine).

Part II contains 40 items to collect information on treatment variables as cold or heat symptoms. Each item has two values for cold and heat symptoms respectively. The items are filled in by the practitioner from his observation or answers of the patient.

- Item 1-10 and 31-35 are cold, heat symptoms on the upper half of patient's body and on the four limbs.
- Item 12-13 are cold, heat symptoms on patient's behaviour.
- Item 11, 20-22 are cold, heat symptoms on patient's habits on wearing, bathing
- Item 1-18, 23-30 are cold, heat symptoms on fooding and digestion.
- Item 36-40 are cold, heat symptoms on partient's pulse.

Part III contains 2 diagnosis of the traditional practitioners and the computer. The computer's diagnosis come from the above data analysis.

II.3. Sampling and data collection

60 patients had been chosen for interview by table 1 from those who were treated at the National Institute of Traditional Medicine of Vietnam in the winter of 1988-1989. The sampling was a combination of random and proportion methods. Based on the number of patients of departments we decided the number of observations for each departement and there a random selection was carried out.

There were measuring instruments in each interview room to get data of temperature, humidity, air pressure, body temperature... The diseases of the patients were known at that time from both doctor's and traditional practitioner's diagnosis.

Surveyor observed and examined patients, asked them questions then filled in items. Noticing that some items were not filled in as the patient had neither cold nor heat symptoms for these.

II.4. Summary of results

60 patients were interviewed from November 11, 1988 to January 1, 1989. They were 21 men and 39 women. Their ages varies from 6 to 60. In general, weather at the time of data collection were shadow or sunshine. The blood pressure varies from 55 to 99 (minimum) and from 90 to 170 (maximum). Pulse was from 61 to 123. Body temperature at arm pits, finger and toe were 31-44, 22-35 and 19-36 respectively.

Each questionnaire produced an cross-table of 2x2 size and we used Chi-square statistic to test the significance of Cold-Heat symptoms proportion. Here the degree of freedom was 1 and significance level was chosen at 0.05. By the computer classification, the numbers of patients from cold, heat and mixed group are 27, 4 and 29 while by the traditional practitioners they are 31, 18 and 11 respectively.

Table 2 shows us the traditional practitioner's and computer's diagnosis for each patient and the comparison with following abbreviations:

a : Two diagnoses correspond to each other.

b : They are half correspondant, that is patient was cold or heat by the computer's diagnosis and mixed by the practitioner's diagnosis or mixed by computer and cold or heat by the practitioners.

c : They are not correspondant, that is the patient was cold by the computer's diagnosis and heat by the practitioner's diagnosis or inverse. From the analysis of an 2x3 cross-table representing two classifications (by computer and practitioners) we can see that the difference was significant. We examined also an variable called "correspondant" which have two values labels "yes" and "no". We gave 1 to "yes" and 0 to "no" if the comparison was at "a" level, 1/2 to "yes", 1/2 to "no" if at the "b" level and 0 to "yes", 1 to "no" if at "c" level. Frequency proportion of this variable was 42,5:17,5 so us also the significant difference between two ways of diagnosis.

- This difference may be explained by testing effect symptoms on practitioner's diagnosis. From our analysis of 40 cross-tables 2x2 we can see that 31 from 40 symptoms given in the questionnaire had no effect on practitioner's diagnosis. Their code numbers are 4, 5, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39.

- Using sex as a control variable, we got correspondant diagnosis at the male group. The result was not the same at the female group.

- 8 diseases on mental, endocrine, digestive, urinary, rheumatism, circulatory system, respiration and genital were also considered as control variables. For circulatory system and respiration the number of patients was too little to calculate any statistic. Traditional practitioners's and computer diagnosis were nearly the same for patients having digestive, urinary, rheumatism and genital diseases while they significantly different for these having mental, endocrine diseases.

III. Some conclusions and suggestions

This is one of the first works of a long-term project for diagnosis standardization of Vietnamese Traditional Medicine. Although the sample size is rather little, the sampling was done carefully and it satisfied requirements of data processing and analysis. Specialists had discussed a lot on Items to be put into the questionnaire and accepted them for a try-out period. The calculations show that in general there is a difference between traditional practitioner's and computer diagnoses. However, for some control variables as sex diseases the two diagnoses are the same. It lead to an conclusion that we need different questionnaires for diagnosis of patients from different

disease groups. In further researches some items may be dropped from the questionnaire, but that coded 1, 2, 3, 6, 7, 11, 20, 21, 40 must stay by their significance as shown in II. 4.

We recall that this is only a try-out period of the project, some other must be conducted under the guidance of traditional practitioners in cooperation with statisticians and computer specialists. By this way, we will continue a standardization for External-Internal position of diseases, Empty-Plenitude state and Yin-Yang tendency of patients.

Our final aim is building a questionnaire set for "eight rules diagnoses" combined the traditional experts' clinical experiences which are basis of knowledge base for an expert system for "eight rules diagnoses" in Traditional Vietnamese Medicine. This system can be used in clinic for "eight rules diagnoses" and also used in classroom for students.

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Table I The questionnaire for Cold-Heat diagnosis

Date		Diagnosis card		Medical record		
t°:	Atmospheric pressure	Humidity degree %	Cold-Heat		No.:	
Climate Sunny Rainy Windy Cloudy						
Name	Age	Art Tension		Dis ease		
		Pulse		Tradi- tional Medi- cine	Mo- dern Medi- cine	
Sex	Male Female	T°	Armpit Topfinger Top toe			
Occupation						
Symptoms COLD			+	Symptoms HEAT		
I N S P E C T I O N	1	Lip : pale ?		1	Lip : pink ?	
	2	Cheeks : pale ?		2	Cheeks : pink ?	
	3	Palm : pale ?		3	Palm : pink ?	
	4	Nails pale ?		4	Nails pink ?	
	5	Conjunctive white ?		5	Conjunctive red ?	
	6	Want to close one's eyes ?		6	Want to open one's eyes ?	
	7	Tongue pale ?		7	Tongue red ?	
	8	Lingual coated tongue; white ?		8	Lingual coated tongue; red ?	
	9	Wet tongue ?		9	Dry tongue ?	
	10	Sputum white, transparent ?		10	Sputum white condensed ?	
	11	Thick clothing ?		11	Light clothing ?	
	12	Posture: Standstill		12	Posture : Agitated	
HE-AR-ING	13	Taciturn ?		13	Talkative ?	
I N T E R O G A	14	Little thirst ?		14	Much thirst ?	
	15	Little drink ?		15	Much drink ?	
	16	Mouth tasteless ?		16	Dry mouth ?	
	17	Like heat drinking, eating, feeding ?		17	Like cool drinking, eating, feeding ?	
	18	Dislike heat drinking, eating ?		18	Dislike cool drinking eating ?	
	19	Like heat condiment?		19	Like cool water ?	
	20	Like bathing heat water in summer		20	Like bathing cool water in winter	
	21	Afraid to bathe		21	Afraid to bathe heat	

T I O N	22	cool water ?			water ?
	23	Often catch a cold		23	Often get a sunstroke
		Is urine clear ?		23	Is urine yellow, impure ?
	24	Long urination ?		24	Short urination ?
	25	Urine long and clear ?		25	Heat sensation during micturition ?
	26	Loose stools ?		26	Dry stools ?
	27	Pasty stools ?		27	Stools in pieces ?
	28	Uncoloured stools		28	Yellow, brown stools
	29	Fishy smelling stool		29	Foul stools
	30	Go to stool many times/day		30	Constipation 2-3 days /time
P A L P A T I O N	31	Hand and foot cold?		31	Hand and foot heat ?
	32	Breast cold ?		32	Breast heat ?
	33	Abdomen cold ?		33	Abdomen heat ?
	34	Front cold ?		34	Front heat ?
	35	Nape cold ?		35	Nape heat ?
	36	Pulse profound deep?		36	Pulse superficial ?
	37	Filiform pulse ?		37	Pulse large ?
	38	Slow pulse ?		38	Pulse rapid ?
	39	Pulse normal ?		39	Pulse very quick ?
	40	Forceless pulse ?		40	Pulse strong ?
		Percentage cold %		Percentage heat %	

Result of diagnosis

Traditional practitioner's diagnosis

Cold	
Heat	
Mixed	

Traditional practitioner

Computer diagnosis

Cold	
Heat	
Mixed	

Researcher

Statistic result on history record

P =

Table 2: A comparison of traditional practitioner's and computer diagnosis

Code number	Traditional practitioner diagnosis			Computer's diagnosis			Correspondant Level
	Cold	Heat	Mixed	Cold	Heat	Mixed	
1	+					+	b
2	+						a
3	+			+			a
4	+			+			a
5	+					+	a
6			+			+	b
7	+			+			a
8			+			+	a
9	+					+	a
10		+				+	b
11			+			+	a
12			+			+	a
13			+			+	a
14		+			+		a
15			+			+	a
16			+			+	a
17		+			+		a
18		+				+	b
19	+			+			a
20		+			+		a
21	+			+			a
22		+				+	b
23	+			+			a
24	+			+			a
25		+			+		a
26		+		+			b
27		+		+			c
28		+		+			c
29		+	+			+	b
30	+					+	b
31		+		+			c
32	+			+			a
33		+				+	b
34			+			+	a
35	+			+			a
36		+				+	b

37	+			+			a		
38		+					c		
39	+					+	a		
40	+					+	a		
41	+					+	a		
42	+					+	a		
43	+					+	a		
44	+						b		
45				+		+	b		
46	+					+	b		
47		+				+	c		
48	+					+	a		
49		+				+	b		
50				+			b		
51		+				+	c		
52	+					+	b		
53	+					+	b		
54	+					+	b		
55	+					+	b		
56	+					+	a		
57	+						b		
58	+					+	a		
59	+					+	a		
60		+				+	c		
Total	31	18		11		27	4	29	