Traditional Chinese Medicine Constitution (TCMC)'s validity and reliability in the Indonesian language

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Abstract

Purpose: Traditional Chinese Medicine Constitution (TCMC) is an instrument to measure health condition levels. This study aimed to measure the construct validity and reliability of the TCMC in Indonesia. **Methods:** Indonesian experts of TCMC checked the TCMC Indonesian translation, then tested it on 50 people to determine whether the items were understood or not. Next, TCMC was used to collect data in community service activities. 391 TCMC data were collected, and after checking data's completeness, there were 377 data for analysis. This study used Pearson correlation for measuring construct validity and Cronbach's alpha for reliability analysis. **Results:** All items from TCMC were valid with Sig value. (2-tailed) < 0.05. For reliability, the value of Cronbach Alpha on Qi-Deficiency was 0.608 (moderate); Yang-deficiency was 0.728 (high); Yin-deficiency was 0.769 (high); Phlegm-dampness was 0.672 (moderate); Damp-heat was 0,501 (moderate); Blood Stasis was 0.531 (moderate); Qi-stagnation was 0.777 (high); Inherited special was 0.719 (high) and Balanced was 0.727 (high). **Conclusions:** TCMC in Indonesian is valid and reliable and can be used to measure human health conditions from the perspectives of Traditional Chinese Medicine.

Keywords: validity; reliability; Traditional Chinese Medicine Constitution; TCMC

INTRODUCTION

Humans differ individually [1]. That is why constitutional medicine is applied based on individual differences, and related to the incidence, development, diagnosis, treatment, and prognosis according to basic human characteristics [1]. Based on this, there are various constitutional medicines from various countries, for example from China, Japan, and Korea which are different because they are influenced by geographic culture, social environment, practice at the national level and other factors [1]. One of the constitutional medicines from China is called the Traditional Chinese Medicine Constitution [TCMC] instrument.

TCMC is a concept to differentiate individuals in terms of human physiological characteristics through the TCM lens [2]. The constitutional theory of TCM is based on the Canon of Internal Medicine, or also called the Treatise of Febrile and Miscellaneous Disease [1], Yellow Emperor's Canon of Medicine which is the oldest Chinese medicine book as an early application of constitutional theory [2].

Constitution is considered the origin (something that is the initial source / basic characteristics) while syndrome is a symptom. It is stated that the occurrence of diseases and syndromes can be associated with the constitution. For this reason, the constitution must be considered when providing care to patients [3].

The constitutional differences in Chinese medicine are based on the individuals' inherited constitutions and lifestyle, geographical environment and climate. Constitution affects health and illness: so, it is necessary to be able to measure the constitution in a scientific way [4]. One of the constitutional classifications is that of Wang which is divided into 9 dimensions [4] consisting of Qi-Deficiency, Yang-Deficiency, Yin-Deficiency, Phlegm-dampness, Damp-heat, Blood Stasis, Qi-Stagnation, Inherited special and Balanced [5]. This constitutional classification is used for the general population and has proven useful in clinical as well as in practical settings [4].

This TCMC has been used to determine the relationship between nine types of TCMC and five chronic diseases using data from 2,660 participants and provides useful information for TCM practice [6], as well as in 1,639 clinical studies [7]. In addition, TCMC can also be a tool for early identification - warning identification - of a disease so that the results of the TCMC assessment can be used for planning to prevent illness [8]. Not only related to physical conditions, this TCMC has also been used to look at risk factors other than physical problems, namely psychological problems: the incidence of depression in a study conducted by Yap, Sin Yee [9].

TCMC has been used in various languages and psychometric test measurements were carried out, including in Japanese [10] and the results showed that TCMC in Japanese was reliable and valid, when it was used to conduct a survey on 130 subjects in Japan and has been used for Chinese people in Hong Kong [11].

Evaluating the validity of an instrument is an important part of development and innovation and it is very important to realize that we cannot learn well about everything which we cannot measure accurately [12].

Construct validity refers to the continuous process of measuring psychological construct validation in which the construct is part of the theory [14]. Construct validity is now even seen as a unified form of psychological measurement, which includes content validity and criterion validity which were previously seen as different forms of validity [15]. It is added here that construct validity is said to be comprehensive, capable of covering all sources of evidence that support a specific interpretation of the score of a measurement, as well as actions based on its interpretation [14].

In addition to validity, reliability is also important for an instrument, and references state that reliability is considered a major quality of an instrument [13]. The

definition of reliability itself is the ability to obtain consistent measurement results associated with time and place, observers, and which show aspects of coherence, stability, equivalence and homogeneity [16].

The classification of the physical constitution of TCMC is also contained in the ICD-11 on the classification of morbidity and mortality published by WHO. The study of the validity of the reliability of the Indonesian version is very relevant for its use in diagnosis and reporting, especially in the field of traditional Indonesian health services which are being developed today.

Given the importance of measuring a person's health condition from the perspective of TCM, this study aimed to measure the construct validity and reliability of TCMC in Indonesian.

METHODS

This research is a psychometric testing research. The data were obtained from the results of data collection in community services activities in June 2021 in Yogyakarta. Respondents were given health services in accordance with their complaints and patients were interviewed for TCMC measurements. Before this community service activity was done, the TCMC had been translated into Indonesian and was checked by Indonesians who are TCM experts and who can speak Chinese. TCMC was then tested on 50 people to find out whether the items in the TCMC questions were understood. After that, TCMC was used for community service activities and 391 TCMC data were collected. The data were then checked to find out whether the data are complete or not. After checking, as many as 377 documents of TCMC found completed and were ready to be analyzed. Statistical analysis for construct validity was conducted using Pearson Correlation and to measure reliability, Cronbach's Alpha was used.

RESULTS

There were 391 TCMC filling data and after checking, 377 complete data entries and are ready to be analyzed. The types of complaints from 377 respondents and the number are as follows: headache (77), pain in extremities (75), digestive system (65), respiratory system (29), back pain (28), circulation system (13), hip pain (15), neck pain (12), problem in face (11), fever (7), eye problems (8), urinary system (8), toothache (5) and other complaints (24). The results of the validity and reliability values can be seen in Tables 1-10.

Table 1. Qi-Deficiency (n = 377)

Variable			r xy	r tabel		Sig. (2 tailed)	Explanation
				5%	1%		
No	**Item**	**of**					
Qi-Deficiency							
	1		0.63	0.11	0.18	0.00	Valid
	2		0.48	0.11	0.18	0.00	Valid
	3		0.51	0.11	0.18	0.00	Valid
	4		0.50	0.11	0.18	0.00	Valid
	5		0.51	0.11	0.18	0.00	Valid
	6		0.53	0.11	0.18	0.00	Valid
	7		0.51	0.11	0.18	0.00	Valid
	8		0.46	0.11	0.18	0.00	Valid

Table 2. Yang-Deficiency (n = 377)

Variable		r xy	r table		Sig. (2 tailed)	Explanation
			5%	1%		
No Item of						
Yang-Deficiency						
	1	0.40	0.11	0.18	0.00	Valid
	2	0.64	0.11	0.18	0.00	Valid
	3	0.74	0.11	0.18	0.00	Valid
	4	0.77	0.11	0.18	0.00	Valid
	5	0.52	0.11	0.18	0.00	Valid
	6	0.73	0.11	0.18	0.00	Valid
	7	0.41	0.11	0.18	0.00	Valid

Table 3. Yin-Deficiency (n = 377)

Variable			r xy	r table		Sig. (2 tailed)	Explanation
				5%	1%		
No	**Item**	**of**					
Yin-Deficiency							
	1		0.65	0.11	0.18	0.00	Valid
	2		0.64	0.11	0.18	0.00	Valid
	3		0.59	0.11	0.18	0.00	Valid
	4		0.45	0.11	0.18	0.00	Valid
	5		0.69	0.11	0.18	0.00	Valid
	6		0.60	0.11	0.18	0.00	Valid
	7		0.58	0.11	0.18	0.00	Valid
	8		0.70	0.11	0.18	0.00	Valid

Table 4. Phlegm-dampness (n = 377)

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Phlegm-dampness					
1	0.64	0.11	0.18	0.00	Valid
2	0.69	0.11	0.18	0.00	Valid
3	0.63	0.11	0.18	0.00	Valid
4	0.54	0.11	0.18	0.00	Valid
5	0.48	0.11	0.18	0.00	Valid
6	0.48	0.11	0.18	0.00	Valid
7	0.51	0.11	0.18	0.00	Valid
8	0.40	0.11	0.18	0.00	Valid

Table 5. Blood Stasis (n = 377)

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Blood Stasis					
1	0.39	0.11	0.18	0.00	Valid
2	0.30	0.11	0.18	0.00	Valid
3	0.54	0.11	0.18	0.00	Valid
4	0.60	0.11	0.18	0.00	Valid
5	0.49	0.11	0.18	0.00	Valid
6	0.63	0.11	0.18	0.00	Valid
7	0.56	0.11	0.18	0.00	Valid

Table 6. Qi Stagnation (n = 377)

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Qi Stagnation					
1	0.70	0.11	0.18	0.00	Valid
2	0.82	0.11	0.18	0.00	Valid
3	0.79	0.11	0.18	0.00	Valid
4	0.64	0.11	0.18	0.00	Valid
5	0.57	0.11	0.18	0.00	Valid
6	0.55	0.11	0.18	0.00	Valid
7	0.41	0.11	0.18	0.00	Valid

Table 7. Inherited Special (n = 377)

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Inherited Special					
1	0.65	0.11	0.18	0.00	Valid
2	0.59	0.11	0.18	0.00	Valid
3	0.61	0.11	0.18	0.00	Valid
4	0.64	0.11	0.18	0.00	Valid
5	0.66	0.11	0.18	0.00	Valid
6	0.47	0.11	0.18	0.00	Valid
7	0.61	0.11	0.18	0.00	Valid

Table 8. Damp-heat (n = 377)**

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Damp-heat					
1	0.68	0.11	0.18	0.00	Valid
2	0.70	0.11	0.18	0.00	Valid
3	0.43	0.11	0.18	0.00	Valid
4	0.67	0.11	0.18	0.00	Valid
5	0.28	0.11	0.18	0.00	Valid

Table 9. Balanced (n = 377)

Variable	r xy	r table		Sig. (2 tailed)	Explanation
		5%	1%		
No Item of Balanced					
1	0.43	0.11	0.18	0.00	Valid
2	0.67	0.11	0.18	0.00	Valid
3	0.63	0.11	0.18	0.00	Valid
4	0.64	0.11	0.18	0.00	Valid
5	0.61	0.11	0.18	0.00	Valid
6	0.47	0.11	0.18	0.00	Valid
7	0.65	0.11	0.18	0.00	Valid
8	0.55	0.11	0.18	0.00	Valid

Table 10. The Cronbach's Alpha of 9 dimensions of TCMC (n = 377)

Variable	Number of item	Cronbach's Alpha	Level of reliability
Qi-Deficiency	8	0.60	Moderate
Yang-Deficiency	7	0.72	High
Yin-Deficiency	8	0.76	High
Phlegm-dampness	8	0.67	Moderate
Blood stasis	7	0.53	Moderate
Qi stagnation	7	0.77	High
Inherited Special	7	0.71	High
Balanced	7	0.72	High
Damp-heat	5**	0.50	Moderate

**) Two item questions in Damp-heat were not included in the analysis because the questions were aimed at both women and men and the sample size was insufficient if both questions were included in the analysis. So that the data analyzed is on 5 question items only.

DISCUSSION

The results showed that all the items analyzed were valid and reliable. Regarding validity, there are three types of Construct Validity [16], namely hypothesis testing, structural or factorial validity and cross-cultural validity. Hypothesis testing is a measure of construct validity by asking different groups to fill out the instrument and the results from filling out the two groups are then compared. However, this was not done in this study because the characteristics of the TCMC instrument can be used by the general population. Another way related to hypothesis testing is to compare it with other instruments and this has been done in other studies, namely comparing the TCMC with similar instruments but these are commonly used for the population in Japan [10]. Another technique for construct validity is to use factorial analysis, to find out whether one variable is closely related or not with other variables, which in this study, the construct validity was not measured using factor analysis.

The third type of construct validity is cross-cultural validity where there is evidence to support that the original and translated instruments have been culturally adapted and aligned with the original instruments [17]. This research belongs to the third type, namely the existence of cross-cultural validity where the instrument

is translated and has been checked by a TCM expert who is an Indonesian, because the main factor here is in terms of language. In addition, the strength of the process of measuring validity in this study is the existence of a trial on 50 Indonesians before being used for data collection in community services.

Several aspects that can be explained as reasons why all of the items measured are valid include the following, namely: the basic theory of this instrument, items from the instrument and the evidence obtained from the measurement results of the instrument.

TCMC has a very old theoretical basis and continues to be developed today, and the theory is continuously appreciated [14]. Related to this theory, Cronbach [18] states that the strength of the validity construct depends on a precise theory and an accurate understanding to represent an ideal concept. Of course, the weak construct of validity is because it comes from a theory that is not clearly stated, including its definition. If applied in TCMC, then TCMC has a strong theoretical basis and each dimension is defined by a clear definition.

The second explanation is related to the reasons that may be the cause why all items in this instrument are valid are related to the characteristics of the items in the instrument. One of the important aspects related to the item is the existence of a score that reflects a single construct, and this is in accordance with what is mentioned by Strauss [14]. In addition, the items in the instrument are not instruments in abstract form and this has been proven from the results of trials on 50 respondents related to understanding the questions in the instrument.

In addition, related to items in the instrument, one item is related to other items, and this is in accordance with what was mentioned by other researcher which states that the adequacy of evidence in one category is influenced or informed by other categories [19]. The items in the instrument also do not repeat, and this also contributes to the validity of the instrument [20]. This is stated as a heterogeneous item where the item is able to predict the criteria being measured [21].

Validity is closely related to reliability where an instrument cannot be considered as valid if it is not reliable [22]. However, the reliability of the instrument does not depend on its validity as stated by Nunnaly (1994) cited from Tavakol [22].

The results showed that the reliability value was divided into two categories, namely moderate and high reliability [23]. Reliability describes that all items in an instrument are able to measure the concept of the same construct and there is a relationship between one item with another item in a test [22], and the value of alpha increases when the items in the questionnaire are related to one another [22]. It's just that alpha is also associated with the length of the test time. If the test is too short, the value of alpha actually decreases [22][24]. The TCMC measurement carried out on respondents is about 10-15 minutes, and this is the ideal time according to the number of measured items.

To increase alpha, more items with the same concept can be added to the instrument [22], however, this is not done in this study because the addition of items will affect the process of calculating the interpretation of this instrument which has been compiled by the original owner of this instrument..

Another aspect that affects the value of alpha is that the value of alpha will increase if a test consists of only one concept or construct and is related to the number of items in the questionnaire [22]. In TCMC, the number of question items from each dimension is relatively similar. The low alpha value is usually associated with poor correlation between items [22].

Reliability depends also on the function of the instrument, as well as on the population that uses it, and the current situation, which is adapted to the context, so the same instrument may be considered unreliable under different conditions [25]. In this study, however, the instrument is reliable and this can also be found in studies with TCMC in Japanese and also when used on people in Hong Kong.

Other aspects that affect reliability are: environment (raters or raters, sample characteristics, type of instrument and method of giving), and statistical methods [26]. The data collectors from this community service activity are those who have been trained to use this instrument, so that the assessors have the same ability to interview respondents. While related to the sample from this study, the types of complaints from patients are very varied. It's just that in the Damp-heat dimension there are two questions aimed at different genders, which are women and men. This causes the number of male and female respondents to be unbalanced and in the end these two items are not measured for validity and reliability. However, the results of the measurement of the items analyzed are valid and reliable and this shows that this instrument can be used for the general population, and this is in accordance with the objectives of the instrument maker, which of course intends to be able to use this instrument on both healthy and sick populations.

There are several practical implications of using TCMC, including: health workers can evaluate and monitor disease in a more standardized manner so that

prognosis can be predicted and disease worsening can be prevented. In addition, for the general public, using TCMC will be able to assist in the prevention of a disease, a guide to the development of a healthier lifestyle, as part of a health promotion program.

In the current development of the traditional health service in Indonesia, the nomenclature of disease and disease syndromes that applies internationally is important in integrating the service and reporting system in the field of public health, especially complementary traditional health services with the international community.

CONCLUSION

TCMC in the Indonesian version is valid and reliable to use. The recommendation for further research is related to the Damp-heat dimension that needs to be re-tested with the same number of male and female respondents and a larger sample, so that validity and reliability testing can be conducted according to gender.

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